Table of Contents

Chapter 1: PREFACE ..................................................................................................... 10
Chapter 2: OBJECTIVE AND METHODOLOGY .......................................................... 11
  2.1 Objectives ............................................................................................................ 11
  2.2 Methodology ........................................................................................................ 11
Chapter 3: EXECUTIVE SUMMARY ........................................................................... 12
  3.1 Global market overview ...................................................................................... 12
  3.2 Historic Review .................................................................................................. 13
  3.3 Major Markets of the World ............................................................................... 13
    3.3.1 The United States .......................................................................................... 13
    3.3.2 The United Kingdom ..................................................................................... 14
    3.3.3 France ............................................................................................................ 15
    3.3.4 Germany ........................................................................................................ 16
    3.3.5 Belgium ......................................................................................................... 16
    3.3.6 Japan .............................................................................................................. 16
  3.4 Distribution Channel Trends ............................................................................... 17
  3.5 Retailers Product Basket .................................................................................... 17
Chapter 4: INTRODUCTION TO THE FROZEN MARKET ...................................... 18
  4.1 Global Frozen Food Industry Overview ................................................................ 18
  4.2 Global Frozen Fruits and Vegetable Market analysis ........................................... 19
    4.2.1 Market trends .................................................................................................. 19
    4.2.2 Current and Future Market analysis ............................................................... 21
    4.2.3 Historic Review .............................................................................................. 23
  4.3 Major Product Segments .................................................................................... 23
    4.3.1 Global Frozen Vegetables Market ................................................................. 23
    4.3.2 Global Frozen Fruits Market ......................................................................... 24
    4.3.3 Dehydrofreezing: A Technological Breakthrough ........................................ 24
  4.4 Frozen Fruits and Vegetables: Product Overview ................................................. 25
    4.4.1 Freezing Retains Nutrition Value of Vegetables ............................................. 25
    4.4.2 Frozen Fruits and Vegetables: Process and Methods of Freezing .................. 25
    4.4.3 Packing Methods for Vegetables .................................................................... 27
    4.4.4 Packaging Methods for Fruits ....................................................................... 28
    4.4.5 USDA: Quality Grades for Frozen Vegetables ............................................... 28
  4.5 Frozen Fruits and Vegetables: Product Classification .......................................... 29
    4.5.1 Frozen Fruits .................................................................................................. 29
    4.5.2 Frozen Vegetables .......................................................................................... 40
  4.6 FFV: Production, Consumption and Import, Export Trends ................................ 58
    4.6.1 FFV: Production, Consumption trends ............................................................ 58
    4.6.2 Global Frozen fruits and vegetables Import/Export trends ............................ 59
      4.6.2.1 Category wise analysis of global ffv import and exports (*Source: Faostat, Comtrade, Eurostat) .............................................................. 59
      4.6.2.1.6 Frozen Potatoes .................................................................................... 59
      4.6.2.1.6 Frozen Legumes .................................................................................. 62
      4.6.2.1.6 Frozen Spinach ................................................................................... 65
      4.6.2.1.6 Frozen Sweet Corn ............................................................................. 68
      4.6.2.1.6 Frozen Peas ......................................................................................... 71
      4.6.2.1.6 Frozen Beans ....................................................................................... 74
      4.6.2.1.6 Frozen Mix Vegetables ........................................................................ 77
      4.6.2.1.6 Other Frozen Vegetables ...................................................................... 80
4.6.2.1.9 Frozen Strawberries ................................................................. 83
4.6.2.1.10 Frozen Raspberries ................................................................. 86
4.6.2.1.11 Frozen Fruits & Nuts ............................................................... 89
4.6.2.2 Summary of Category wise analysis of global ffv import and exports .... 92
4.7 Global Market Perspective ............................................................. 93
4.8 Global Players in the Market .......................................................... 96
4.9 Value Chain Analysis ................................................................. 104
  4.9.1 Key Players in the FFV Value Chain ............................................. 104
  4.9.2 Value Chain Analysis: EU ........................................................... 106
  4.9.3 Frozen fruits and vegetables value chain in US ............................. 108
  4.9.4 Frozen fruits and vegetables value chain in Japan ......................... 109
4.10 EU Market Access Requirements ................................................. 109
  4.10.1 Non tariff trade barriers ............................................................. 109
  4.10.2 Tariffs and Quotas ..................................................................... 118
  4.10.3 Import Procedure ..................................................................... 121
4.11 USA Market Access Requirements ............................................... 121
  4.11.1 Non tariff trade barriers ............................................................. 121
  4.11.2 Import Procedure ..................................................................... 133
4.12 Japan Market Access Requirements ............................................... 134
  4.12.1 Non tariff trade barriers ............................................................. 134
  4.12.2 Import Procedure ..................................................................... 136
  4.12.3 Labeling Requirements .............................................................. 138
  4.12.4 Packaging and Container Regulations ....................................... 140
  4.12.5 Quality ..................................................................................... 141
  4.12.6 Regulations and Procedural Requirements at the Time of Sale .. 142
  4.12.7 Key considerations for entering the Japanese Market ................ 143
  4.12.8 Distribution Channels ............................................................... 143
  4.12.9 Policies related to Imports of Vegetables & related products ... 144
    4.12.9.1 Border Measures ................................................................. 145
    4.12.9.2 Policy Implications .............................................................. 148
4.13 WTO Commitments ................................................................. 151
  4.13.1 EU’s WTO Agricultural Commitments ........................................ 151
    4.13.1.1 EU’s Market Access Commitments ...................................... 151
    4.13.1.2 EU’s Domestic Support Commitments ................................. 152
    4.13.1.3 EU’s Export Subsidies ......................................................... 152
    4.13.1.4 Effects of EU’s WTO Commitments .................................... 152
  4.13.2 The US WTO Commitments .................................................... 153
  4.13.3 Japan’s WTO Commitments ..................................................... 154
  4.13.4 India’s WTO Commitments ...................................................... 154
    4.13.4.1 WTO Commitments In Indian Food Processing .............. 155
    4.13.5 Effects of WTO Commitments on Indian Exports ............ 156
Chapter 5: UNITED KINGDOM MARKET ............................................. 157
5.1 UK Frozen Fruits and Vegetables Market analysis ............................ 157
  5.1.1 Current and Future Analysis ....................................................... 157
  5.1.2 Historic Review ...................................................................... 157
  5.1.3 Market Overview ..................................................................... 157
5.2 Consumption Trends ..................................................................... 157
5.3 Import Trends ............................................................................... 158
  5.3.1 Category wise analysis of imports of UK (*Source: Eurostat, Comtrade,
       Faostat) .................................................................................... 158
10.1.3 Market Overview ................................................................. 209
10.2 Consumption Trends ............................................................. 210
10.3 Import Trends ........................................................................ 210
10.3.1 Category wise analysis of Japan FFV imports (*Source: Comtrade, Faostat) ................................................................. 211
10.4 Overview of Organized Food and Grocery Retailing in Japan ........ 215
10.5 Market Analytics ................................................................. 219

Chapter 11: INDIAN MARKET ...................................................... 221
11.1 Indian Frozen Fruits and Vegetables Market analysis ................... 221
11.1.1 Current Analysis ............................................................... 221
11.1.2 Historic Review ............................................................... 221
11.1.3 Market Overview ............................................................... 221
11.2 Production and Consumption Trends ....................................... 221
11.3 Import/Export Trends ............................................................ 222
11.4 Government Policies, Export/Import Schemes, Incentives and Subsidies ................................................................. 227
11.4.1 Export Promotion programmes ......................................... 228
11.4.2 ASIDE- An Introduction .................................................. 231

Chapter 12: COUNTRY WISE ENTRY STRATEGY & POTENTIAL ANALYSIS OF
KEY FROZEN PRODUCTS ................................................................. 251
12.1 PROCESS FOR SHORTLISTING KEY FROZEN PRODUCTS .......... 251
12.2 Primary & Secondary Research Outcome .................................. 252
12.2.1 Secondary Research Outcome .......................................... 252
12.2.2 Primary Research Outcome .............................................. 253
12.3 Country Wise Entry Strategy .................................................. 254
12.3.1 Belgium .......................................................................... 254
12.3.1.1 Product Potential Analysis .............................................. 254
12.3.1.2 Pricing Strategy ............................................................... 254
12.3.1.3 Make or Buy Analysis .................................................... 255
12.3.1.4 Key FFV Players for Potential Partnerships and Alliances .... 255
12.3.2 France ............................................................................. 256
12.3.2.1 Product Potential Analysis .............................................. 256
12.3.2.2 Pricing Strategy ............................................................... 256
12.3.2.3 Make or Buy Analysis .................................................... 257
12.3.2.4 Key FFV Players for Potential Partnerships and Alliances .... 258
12.3.3 Germany .......................................................................... 259
12.3.3.1 Product Potential Analysis .............................................. 259
12.3.3.2 Pricing Strategy ............................................................... 259
12.3.3.3 Make or Buy Analysis .................................................... 260
12.3.3.4 Key FFV Players for Potential Partnerships and Alliances .... 260
12.3.4 United Kingdom .............................................................. 261
12.3.4.1 Product Potential Analysis .............................................. 261
12.3.4.2 Pricing Strategy ............................................................... 261
12.3.4.3 Make or Buy Analysis .................................................... 262
12.3.4.4 Key FFV Players for Potential Partnerships and Alliances .... 263
12.3.5 United States of America .................................................. 264
12.3.5.1 Product Potential Analysis .............................................. 264
12.3.5.2 Pricing Strategy ............................................................... 264
12.3.5.3 Make or Buy Analysis .................................................... 265
12.3.5.4 Key FFV Players for Potential Partnerships and Alliances .... 266
12.3.6 Japan .............................................................................. 267
12.3.6.1 Product Potential Analysis ................................................................. 267
12.3.6.2 Pricing Strategy.............................................................................. .... 267
12.3.6.3 Make or Buy Analysis......................................................................... 268
12.3.6.4 Key FFV Players for Potential Partnerships and Alliances ................. 268
12.3.7 Summary.............................................................................................. 269

12.4 Make or Buy Analysis ........................................................................................ 269

12.4.1 Introduction .......................................................................................... 269
12.4.2 Benefits of Setting up own Infrastructure in India.................................. 270
12.4.3 Benefits of Outsourcing DC Management in Europe/US/Japan............ 270
12.4.4 Advantages of Having Third Party Logistic Provider (3PL) in
Europe/US/Japan ........................................................................................ .... 271

Chapter 13: COMPETITIVE ANALYSIS OF COUNTRIES EXPORTING FROZEN
PRODUCTS............................................................................................... 272

13.1 Major Exporting Nations for Frozen Products.................................................... 272

13.2 Policies and Competitive Advantages of Exporting Nations.............................. 272

13.2.1 Bulgaria........................................... ................................................... .. 272
13.2.2 China ...................................................... ........................................... .. 274
13.2.3 Canada ................................................................................................ 277
13.2.4 Chile................................................................. .................................... 278
13.2.5 Guatemala ............................................................................... 279
13.2.6 Indonesia ..................................................................................... 280
13.2.7 Kenya............................................... ................................................... . 282
13.2.8 Mexico ............................................................................................ 283
13.2.9 Morocco .................................................................................... 285
13.2.10 New Zealand ................................................................. ................................................... .... 286
13.2.11 Saudi Arabia .................................................................................. ..... 287
13.2.12 Thailand .................................................................................. 288
13.2.13 USA ...............................................................................................289
13.2.14 EU (Belgium, France, Netherlands, Poland, Sweden, Spain, UK) ........ 290

13.3 Competitor Approach Summary ..................................................................... 292

Chapter 14: APEDA’s ROLE – TECHNOPAK RECOMMENDATIONS ................... 293

14.1 APEDA’S ROLE – GAP ANALYSIS AND RECOMMENDATIONS ............ 293

Chapter 15: TRANSCRIPTS ~ MEETING WITH INDIAN EXPORTERS ................. 303

15.1 IQF, Bangalore............................................................................................ 303
15.2 Pagro foods ltd., Chandigarh .......................................................................... 305
15.3 Himalayan international ltd., Delhi .................................................................. 306
15.4 Vadilal Group, Ahmedabad ........................................................................... 307
15.5 Capital Foods Exports pvt. ltd., Mumbai............................................................ 310
15.6 Mother Dairy............................................................................................... 312

Chapter 16: TRANSCRIPTS ~ JAPANESE AGGREGATORS................................. 314

16.1 Shinei Kaisha ...................................................................................... 314
16.2 Shoie Foods Corporation ............................................................................ 315
16.3 CGC Japan ............................................................................................... 317
16.4 Toshin Trading Co Ltd................................................................................. 318
16.5 Eiko boeki kaisha ltd................................................................................... 319
16.6 Daimaru Kogyo Ltd..................................................................................... 320

Chapter 17: TRANSCRIPTS ~ EUROPEAN AGGREGATORS.............................. 321

17.1 Company: Ardo NV, Belgium ..................................................................... 321
17.2 Company: Crops NV, Belgium....................................................................... 327
17.3 Company: Netra Agro B.V. (SVZ International B.V) ........................................ 329
17.4 Company: Scandimeat (Denmark) ................................................................. 331
17.5 Company: Good Food Group (Denmark) ......................................................... 333
17.6 Company: Interterra (Spain) ........................................................................... 336
17.7 Company: Mondi Foods NV, Belgium ............................................................. 338

Chapter 18: PROFILES OF LOGISTICS AND SHIPPING PARTNERS.............. 340

18.1 LOGISTIC PARTNERS .................................................................................. 340
   18.1.1 Maersk logistics ...................................................................................... 340
   18.1.2 DHL ....................................................................................................... 340
   18.1.3 Kuehne + Nagel Inc ............................................................................... 342
   18.1.4 Eagle Global Logistics .......................................................................... 343
   18.1.5 Penske .................................................................................................... 344
   18.1.6 Soonius Transport B.V. .......................................................................... 344
   18.1.7 Seabrex/ Ebrex ...................................................................................... 345

18.2 SHIPPING PARTNERS .................................................................................. 346
   18.2.1 A.P. Moller - Maersk A/S .................................................................... 346
   18.2.2 Evergreen Marine Corporation (Taiwan) Ltd ......................................... 347
   18.2.3 Nippon Yusen Kabushiki Kaisha (NYK Lines) ..................................... 348
   18.2.4 Neptune Orient Lines Limited ............................................................... 349
   18.2.5 Hanjin Shipping Co., Ltd. ........................................................................ 350
   18.2.6 Mediterranean Shipping Company, S.A. ............................................. 351
   18.2.7 Mitsui O.S.K. Lines, Ltd ........................................................................ 352

Chapter 19: REFERENCES .................................................................................... 353
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<td>FRESH PRODUCE EXPORTERS ASSOCIATIONS OF KENYA</td>
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<td>MINISTRY OF FOOD PROCESSING INDUSTRIES, ...</td>
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<td>ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT</td>
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<td>SANITARY AND PHYTOSANITARY</td>
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<td>UK REGISTER OF ORGANIC FOOD STANDARDS</td>
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<td>WMS</td>
<td>WAREHOUSE MANAGEMENT SYSTEM</td>
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Chapter 1: PREFACE

The frozen fruits and vegetables market in the world contributes a meager percentage to the total consumption of fruits and vegetables. In the developed markets like Europe and US, frozen vegetables are 10% to the total vegetable consumption. In the underdeveloped and developing markets, its share is much lower. However in the recent years, this category has gained importance due to some basic advantages it offers in comparison to fresh fruits and vegetables. With a strong back up from the technological innovations, the advantages of frozen fruits and vegetables have made it much more reachable and affordable to the consumers around the globe.

The ability to preserve the food has enabled the producer to make its product available to consumers sitting in the other corner of the world. Added to this is the advantage of convenience, which has become very relevant in today's world as people are leading busier lives. With more and more women working, the amount of time spent in the kitchen is reducing. As a result, frozen food category is expanding. The advent of new technologies has resulted in the affordability of the frozen food, which means frozen food reaching even the middle class kitchens. The statistics shows a very healthy growth rate. The share of frozen fruits and vegetables category is expected to grow in the future at the expense of fresh fruits and vegetables. These market realities have made this category attractive enough to the marketers to be explored. Thus a lot of countries and companies are focusing their efforts on capturing some share in the world market for frozen fruits and vegetables.

This study is commissioned by APEDA (the Govt. of India body for promoting exports of agricultural related products from India). The objective of this study is to identify market opportunities for India in the frozen fruits and vegetables domain and to coin strategies to capture market share internationally. India has a vast potential of growing and exporting fruits and vegetables. However, this requires a lot of effort in terms of product quality and infrastructure. Despite being the largest producer of fruits and vegetables in the world, India’s share in exports is miniscule. This is due to several reasons like inappropriate product quality, insufficient infrastructure etc. The major markets for the frozen fruits and vegetables, which include EU and US, are very particular in the quality specifications. Thus to match up to their standards, special efforts are needed on the supply side.
Chapter 2: OBJECTIVE AND METHODOLOGY

2.1 OBJECTIVES

• To study the potential for exports of Frozen Fruits and Vegetables (FFV) in potential markets and suggest the ways for increasing India's exports to the identified markets.
• To collect data on products, demand, exports and imports of Frozen Fruit and Vegetables in the identified markets.
• To analyze the import pertaining to Frozen Fruit and Vegetables.
• To devise a market entry strategy for India in the identified potential markets.

2.2 METHODOLOGY

The methodology followed for the study was a combination of primary and secondary research for collecting the information.

For primary research, sources of information were –
• Indian exporters of frozen fruits and vegetables
• Embassies and Consulates of Importing countries for the Importing policies
• Embassies and Consulates of exporting countries for the exporting policies
• International Aggregators / Processors

Technopak consultants met with the above mentioned sources for gathering information related to frozen fruits and vegetables. The information was collected with the help of structured questionnaires.

The secondary sources of information included –
• Euro Stats website
• FAO Stats website
• COM Trade website
• USAD website
Chapter 3: EXECUTIVE SUMMARY

3.1 GLOBAL MARKET OVERVIEW

The global frozen fruits and vegetables market was around 14 million tonnes in 2005. This is expected to grow to 15 million tonnes by 2006 and to 17 million tonnes by 2010, growing at a stable rate of 3.26% per annum between 2001 and 2010.

Europe is the largest market for frozen fruits and vegetables, with demand estimated to total 5 million tons in 2005. The market is projected to grow at an annual rate of 2.75% for the period 2001-2010, to reach around 6 million tons by 2010. The European market is estimated to account for 37.51% of world’s consumption in 2005 while US, the second largest market, is estimated to account for a market share 33.33% in 2005.
3.2 HISTORIC REVIEW


Out of frozen fruits and vegetables, the latter had a share of 91.41% in 1991. Frozen vegetables market touched the 11 million tons mark in 2000 and showed a CAGR of 2.50% over the 10-year analysis period 1991-2000. Frozen fruits market escalated from 862 thousand tons in 1991 to around 1 million tons in 2000.

Frozen fruits and vegetables present a huge opportunity in Asia and Russia, as the markets are practically untouched by these product categories. Fresh Fruits and Vegetables still dominate the scene in these regions. In Europe a mixed trend is being witnessed. In countries like Germany, UK and Scandinavian countries, the growth is stagnating. However in Italy, France, Spain and Portugal a healthy above average growth rate is being experienced.

As a part of trend, the product composition in the frozen fruits and vegetables category has also undergone a change. It has evolved from food in a raw form to prepared and processed foods. There is increasing demand for more and more consumer packs as compared to bulk packs earlier. Increased demand for consumer packs is directly related to the packaging industry as it requires convenient and attractive packaging as compared to the bulk packs.

3.3 MAJOR MARKETS OF THE WORLD

3.3.1 THE UNITED STATES

The United States can be termed as the single largest market for frozen fruits and vegetables in the world. The US market consumed an approximate of 4.5 million tonnes of frozen fruits and vegetables in 2005. With an annual growth rate of around 3%, it is expected to reach the 6 million tonnes level by 2010.

Frozen vegetables totally dominate the frozen fruits and vegetables category in US with a share of 93% in 2005. With future even better for frozen vegetables, the share is expected to increase to 94% by 2010, meaning 5.6 million tonnes. Frozen fruits category’s share is projected to plunge to 5.9% by 2010.
US also acts as a major production centre for certain vegetables like cut corn, green peas, and whole green beans which are produced in huge amounts. Areas such as Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington and Wyoming have shown significant increases in production in the recent past.

**Frozen Fruits vis-à-vis Fresh Fruits**

The rising popularity of frozen fruit products is propelled by the fast paced modern lifestyle that has led consumers to look for easy and hygienic fruit products that eliminate the conventional hassles of cleaning and chopping fresh fruits thereby by evading the all important time-constraints of traditional cooking. The leading category in the frozen fruits market is “sliced strawberries in sugar” which has displayed excellent perseverance in terms of sales. Another major emerging category expected to witness high growth patterns is blueberries, which are epitomized for their inherent antioxidant qualities.

**Sunny Skies Ahead for Frozen Fruits and Vegetables**

The US market is no different from other western hemisphere market, where the category of frozen fruits and vegetables present an interesting opportunity. With the demand soaring, the market for frozen vegetables and fruits continues to gain momentum with leading manufacturers commercializing the benefits of vegetables and fruits as an indispensable part of a healthy diet. With their fast paced lifestyle, the consumers are more than willing to get rid of the fresh vegetable concept. As a result of which, processors are innovating hard to make life easy for the consumers. The leading players in the frozen fruits and vegetables market are showering the market with innovative easy to cook garnished, spiced and seasoned fruits and vegetables that are designed to tantalize the taste buds of consumers.

### The United Kingdom

**Consumers becoming health conscious**

United Kingdom is the largest European market for frozen fruits and vegetables with a total volume of around 1 million tonnes in 2005. The market has been clocking a growth rate of around 2.5% for this decade and is expected to contribute over 26% to the total frozen fruits and vegetables market in Europe at the end of this decade. Similar to the US market, frozen vegetables contribute 99% to the category. The frozen fruits market in UK is expected to grow at a CAGR of 2.15%.

Consumers in United Kingdom are getting more and more inclined towards healthy food as a part of a lifestyle change. There has been a considerable shift from high fat food
products to low fat and high protein vegetables and fruits. Also joining the natural diet bandwagon are meat-eaters who in recent years are increasingly resorting to vegetarian foods. The frozen vegetables market in the United Kingdom is expected to emerge with the best prospects for growth in the coming years. This is also fuelled by the growing food related health scares like mad cow disease, bird flu etc, due to which there has been a compulsive push out of the meat eating habits. With increasing awareness about the benefits of fruits and vegetables, this category is bound to show a promising growth in the future.

**Frozen Vegetables pitched against traditional food products**

In its current stage, the frozen fruits and vegetables are fighting a mighty competitor in the form of conventional food i.e. fresh fruits and vegetables. Thus it is not more than a niche segment constituting 10% to the total vegetables market corresponding to a 70% share of fresh vegetables.

Although the consumption of frozen vegetables is expected to grow at a CAGR of 2.5% in the present decade, there are certain dampening factors associated with it. These are the controversy of genetically modified foods and a general perception of frozen foods not being equally nutritious. This can only be dealt with by continuous innovation and spreading awareness.

Thus the key driver in the UK frozen vegetables market includes convenience and value addition. An increasing number of consumers are opting for products that considerably reduce the time involved in conventional preparation of unprocessed vegetables.

### 3.3.3 France

France represents one of the largest market in the European Frozen fruits and vegetables market. French frozen fruit and vegetable market is estimated to total 962 thousand tons in 2005. The market for these products is projected to grow at a compounded annual rate of 2.56% to reach 1,088 thousand tons by 2010.

Frozen vegetables segment is estimated to hold a lion’s share in the total French Frozen fruits and vegetables market in 2005. The market is projected to reach 1,077 thousand tons by 2010. Frozen fruit market is estimated to total 9 thousand tons in 2005. The segment is projected to grow at a CAGR of 4.17% to during the ten-year analysis period.
3.3.4 GERMANY

German market for frozen fruits and vegetables was estimated to total 886 thousand tons in 2005, and is 906 thousand tons in 2006. The market is projected to grow at a moderate rate of 2.49% over the analysis period 2001-2010 to reach 999 thousand tons by 2010. Frozen vegetables segment is projected to account for a share of 90.43% of the German frozen fruits and vegetables market in 2005.

The market for frozen fruits is projected to grow at a compounded annual rate of about 2.64% to reach 97 thousand tons by 2010. This segment is projected to experience a market share gain over the 2001-2010 periods, to represent 9.67% of the total market by 2010.

3.3.5 BELGIUM

The Belgian frozen food market grew by 5.2% in 2003 to reach a value of $785 million. In 2008, the market is forecast to have a value of $979 million, an increase of 24.7% since 2003. Frozen meat, fish and seafood remained the leading segment in the market. In 2003, frozen meat, fish and seafood generated 44.9% of the frozen food sales. In 2003, the Belgian market generated 1.8% of the European frozen food sales.

During the next five years, the market is expected to experience strong but gradually decelerating growth rates. By 2008, the market is forecast to reach a value of $979 million, which equates to a CAGR of 4.5% in the period of 2003 – 2008, higher than the European market. Indeed, it is expected that the Belgian market will be the strongest performing frozen food market in Western Europe in the next five years, heavily outpacing the larger markets of France, Germany and the UK.

3.3.6 JAPAN

The Japanese market for frozen fruits and vegetables was estimated at 1,153 thousand tons in 2005, and is 1,189 thousand tons in 2006. The market is projected to grow at a compounded annual rate of about 3.44%, to reach 1,324 thousand tons by 2010. The Japanese frozen fruits market was estimated to be 247 thousand tons in 2005, and is projected to grow at a CAGR of 2.31% to reach 268 thousand tons by 2010. The frozen fruit segment is projected to experience a decline in market share through the ten-year period and account for 20.23% of the total market by 2010.
3.4 DISTRIBUTION CHANNEL TRENDS

![Distribution Channel Trends Chart]

*Technopak Research Analysis

Worldwide majority of the frozen fruits and vegetables are sold through Supermarkets and Hypermarkets, followed by a mix of formats like convenience stores, mom and pop stores etc. and lastly come the Discounters or EDLP stores that offer huge discounts on all products.

3.5 RETAILERS PRODUCT BASKET

As mentioned earlier, the frozen fruits and vegetables market is dominated by frozen vegetables. This is quite evident from the product basket of some of the prominent retailers like Wal-Mart, Metro, Carrefour, Aldi, Lidl, Edeka, Auchan, Esselunga etc. Though the product basket for the frozen fruits and vegetables varies slightly across Europe, however there are certain products which are commonly popular. These products are –

- Frozen Potatoes – Solid form, French Fries form and Wedges form
- Frozen Cauliflower
- Frozen Broccoli
- Frozen Beans
- Frozen Peas
- Frozen Mushrooms
- Frozen Spinach
- Frozen Corn
- Frozen Cut Vegetables – Concoction of above mentioned vegetables

Very few frozen fruits are stocked as of now, however the trend is changing and retailers are experiencing the demand for frozen fruits.
Chapter 4: INTRODUCTION TO THE FROZEN MARKET

4.1 GLOBAL FROZEN FOOD INDUSTRY OVERVIEW

The frozen food market is one of the largest and most dynamic sectors of the food industry. The frozen food market consists of frozen bakery products, frozen desserts, frozen fish/sea food, frozen fruit, frozen meat products, frozen pizza, frozen potato products, frozen ready meals and frozen vegetables. In spite of considerable competition between the frozen food industry and other sectors, extensive quantities of frozen foods are being consumed all over the world.

The US is the single largest market for frozen foods while Asia and Russia offer huge potential, as the markets are relatively immature due to late adoption of frozen foods. The market for frozen foods in Europe is experiencing a mixed bag of growth with Germany, the UK, and Scandinavia reporting below average growth arising due to market saturation. However, other European countries such as Italy, France, Spain, and Portugal are witnessing faster growth. ConAgra Foods, Inc. in the market leader in US with 13.6% market share and Unilever is market leader in Europe with 10.2% market share.

Frozen food industry is progressively moving from bulk un-processed food market to manufactured and processed food market. The increase in demand for processed food is directly influencing food processing and packaging equipment manufacturing industry. Although bulk products do not require attractive packing, processed foods, which are supplied through retail market, require convenient and attractive packaging. The market has also evolved from selling raw foods such as frozen meat, fish, vegetables and fruits to prepared foods and frozen vegetable mixes (with meat, rice, pasta). In broad sense the market has following segments: Frozen ready meals, frozen fish/seafood, frozen meat products, frozen vegetables, frozen potato products, frozen desserts and others.

In recent years, due to the changing consumer profile, the frozen food industry has changed significantly. The major trend in consumer behavior documented over the last half century has been the increase in the number of working women and the decline in the family size. These two factors resulted in a reduction in time spent preparing food. The entry of more women into the workforce also led to improvements in kitchen appliances and increased the variability of ready-to-eat or frozen foods available in the market. Besides, the increased usage of microwave ovens, affecting food habits in general and the frozen food market in particular, as well as allowing rapid preparation of
meals and greater flexibility in meal preparation. The frozen food industry is now only limited by imagination, an output of which increases continuously to supply the increasing demand for frozen products and variability.

Overview of the Global Frozen Food Market

2005-2006

- Frozen Fruits: 1%
- Frozen Foods: 92%
- Frozen Veg: 7%

2009-2010

- Frozen Fruits: 1%
- Frozen Foods: 93%
- Frozen Veg: 6%

Total Market in Rs. ’000 Cr: 390

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<th>In Rs. ’000 Crs</th>
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<th>2009 – 2010(est)</th>
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<tr>
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<td>28</td>
<td>33</td>
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<td>Frozen Fruits</td>
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<tr>
<td>Others Frozen Foods</td>
<td>359</td>
<td>526</td>
</tr>
<tr>
<td>Total</td>
<td>390</td>
<td>563</td>
</tr>
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# Includes ready meals

Source: Technopak Research Analysis

The global frozen food market is estimated to be at around Rs. 563 thousand crores in 2010, a growth of around 45% over 2005-06.

4.2 Global Frozen Fruits and Vegetable Market Analysis

4.2.1 Market Trends

a. Frozen Fruits and Vegetables Growing in Popularity

The use of frozen fruits and vegetables in daily diets is steadily increasing, driven by shifting food preferences. Fast paced lifestyles, more number of working women, and the development of innovative freezing equipment for domestic applications are the primary
factors propelling demand for frozen fruits and vegetables. By using new freezing technologies, manufacturers are able to preserve the nutritional content present in fruits and vegetables for longer times and also reduce the material losses.

b. Frozen Fruits and Vegetables Market in the Grip of Consolidation
Leading food companies in the US are expanding and teaming with other industry counterparts to mop up potential growth opportunities. Leading cash strapped packaged food companies such as Kraft, Kellogg and Unilever are on the prowl for further acquisitions and have been feeding on smaller food companies thereby bringing niche brands into the mainstream.

c. Innovative Marketing – A Key Deciding Factor for Corporate Success
The key to effective utilization of long-term investments in frozen fruits and vegetables lie in the accuracy of marketing and branding mantras adopted to bring the acquired niche brands into the mainstream market. In the increasingly dynamic and health intense food market, innovation stands as a key deciding factor for corporate success. Driving innovation under the current market conditions is not just insight but foresight. Innovation that tinkers with a brand’s functionality is the buzzword that determines consumer value and benefits. Essential pre-requisites of winning branding strategies include strategic emphasis, focus and insight on consumer requirements and value additions. Brand extension is currently emerging as the latest in vogue among marketers. As a panacea for spiraling costs of new product development and launches, multifaceted brand extension strategies allow manufacturers to move in sync with the rapidly changing tastes, needs and attitudes of today’s consumers. Co-branding of vegetable products, under the pairing marketing strategy method, is also widely employed by marketers and processors to propel demand of frozen vegetables. The competitive climate in the food market calls for the ability to anticipate trends and lead change.

d. Frozen Vegetables: Packaging makes a difference
Customers prefer convenient packages for frozen vegetables and vegetable, which are re-sealable and ideal to be used in microwave. Further, vegetable processors offer various size packages for customer convenience and provide vegetable mixes that are easy to cook with meat for quick meal preparation. Frozen vegetables are available in dozens of varieties and mixtures with preserved freshness and taste enriched with original nutritional contents. People are favoring frozen food as against home-meal. From a marketing point of view, frozen vegetables are economical as they entail minimum cost of marketing.

e. Grazing
The modern consumers do not confine themselves to the traditional three meals a day but they are eating smaller bites at more frequent intervals, like ready-to-eat products or products requiring very little ultimate preparation: take-out foods, hamburgers, mini-pizzas, instant soups, filled croissants, candy bars, muesli bars, cheese sticks and fruit yoghurts. This in turn has increased the frozen food consumption to a large extent.

**f. Internationalization**

As the world is increasingly turning into a global village, culinary traditions from other continents tend to be more widely accepted by consumers, worldwide thereby increasing the demand for ethnic and exotic ingredients. Hence the ethnic frozen ready to eat meals category is gaining grounds.

### 4.2.2 CURRENT AND FUTURE MARKET ANALYSIS

World market for frozen fruits and vegetables was estimated to total 14 million tons in 2005, and is projected to be 15 million tons by the end of 2006. The world market for frozen fruits and vegetables is slated to reach around 17.0 million tons by 2010, reflecting a compounded annual growth rate of 3.26% for the period 2001-2010.

Europe represents the largest market for frozen fruits and vegetables, with demand estimated to total 5.5 million tons in 2005. The market is projected to grow at CAR of 2.8% for the period 2001-2010, to reach around 6 million tons by 2010. The European market is estimated to account for a worldwide share of 37.51% in 2005 while US, the second largest market, is estimated to account for a market share 33.33% in 2005.

**Overview of Global Frozen Fruits & Vegetables Market by Volume**

*Source: Technopak Research Analysis*
Europe represents the largest market for frozen fruits and vegetables with consumption of more than 5.5 million tons in 2005. The European market is projected to grow at CAGR of 2.8% for the period 2005-2010.

The US market is the second largest with consumption of almost 5 million tons in 2005. The US market is projected to grow at a CAGR of 2.9% for the period 2005-2010.

The Japanese and Asia Pacific markets are driven by fresh. FFV consumption has started only recently and it is growing steadily with a CAGR of 3.5% and 4.3% respectively.

Future Projections for the Global Frozen Fruits & Vegetables Market

The projections for FFV by Geographic Region – Percentage breakdown of Unit Sales

- Europe will remain the largest market in the world for frozen fruits and vegetables followed by the United States. The growth in the market will be driven primarily by convenience foods.

- In Japan the 80% of the demand for frozen fruits & vegetables is from the HoReCa (Hotel, Restaurant & Catering) segment. But in the future the growth in demand is going to come from Convenience food.

*Source: Technopak Research Analysis*
4.2.3 Historic Review


4.3 Major Product Segments

4.3.1 Global Frozen Vegetables Market

4.3.1.1 Current and Future Analysis

World market for frozen vegetables is portended to reach 17 million tons by 2010 as against an estimated total of 14 million tons in 2005. A compounded annual rate of 3.26% is anticipated to fuel the growth. Latin American market is projected to grow at an astounding compounded rate of 7.57% to drive the market from an estimated 956 thousand tons in 2005 and reach 1,373 thousand tons by 2010.

Europe, the US and Asia-Pacific are estimated to be the major markets for frozen vegetables, representing more than 80% of the total frozen vegetable market worldwide, in 2005. Europe is projected to grow at a compounded annual rate of 2.74% to reach 6 million tons by 2010. The European market share is projected to reach 38.14% by 2010. The US market for frozen vegetables is projected to total 5 million tons, by 2010, depicting a compounded annual growth rate of 2.99% over the 10-year analysis period 2001-2010.

4.3.1.2 Historic Review

The global market for frozen vegetables stood at 9 million tons in 1991. The market, growing at a growth rate of 2.5%, settled at 11 million tons in 2000. Europe represented the largest market with consumption of 4.0 million tons in 1991, while Latin America emerged as the fastest growing market for frozen vegetables, with a CAGR of 5.85% over the 10-year analysis period.
4.3.2 GLOBAL FROZEN FRUITS MARKET

4.3.2.1 Current and Future Analysis

The worldwide frozen fruit market was estimated to total 1,182 thousand tons in 2005, and is projected to be 1,204 thousand tons by the end of 2006. The market is forecast to grow at a compounded annual rate of about 2.16% to reach 1,278 thousand tons by 2010. The US, Japan, and Europe represented the major markets for frozen fruits in terms of market volume, in 2005.

These countries together represent over 66% of the total world market for frozen fruits. The European Frozen Fruits market represented a share of 15.4% of the global frozen fruits market in 2005 and is projected to grow at a compounded annual rate of 3.06% to reach 216 thousand tons by 2010.

4.3.2.2 Historic Review

The global market for frozen fruits reached 1,021 thousand tons in 2000, as against 862 thousand tons in 1991. The US and Japan emerged as the largest markets for frozen fruits with consumption of 294 thousand tons and 214 thousand tons respectively in 2000. Asia-Pacific was the fastest growing region flaunting an impressive CAGR of 5.62% over the 10-year analysis period 1991-2000.

4.3.3 DEHYDROFREEZING: A TECHNOLOGICAL BREAKTHROUGH

Supermarkets in Europe felt the need for a new low-temperature technology. In 1996, Niche Marketing (UK) Ltd. introduced a modified form of the process in Europe. Dehydrofreezing technology was pioneered in Australia.

Dehydrofreezing effectively preserves vegetables, reduces costs and provides more efficient usage of display space. The technique, which produces compressed non-freeze (CNF) vegetables, is also used for products that are partially dehydrated after adding low concentration of salt. Dehydration process is carried out to achieve 20-40% moisture in the product. At this stage, the product becomes flexible and dry. In the final stage of the process, the product is compressed either by external pressure or vacuum packaging.

Benefits of dehydrofreezing include:
- Low energy costs in manufacturing, packaging, distribution and storage.
- Preventing problems that are caused by freeze-thaw cycles or freezer burn.
- Preventing microbiological spoilage if product is mishandled.
- A better use of display space, since product can be packed more compactly.
- Ability to produce leafy and shredded vegetables without breakage of product units.
4.4 **FROZEN FRUITS AND VEGETABLES: PRODUCT OVERVIEW**

Frozen fruits provide excellent quality and price value to foodservice operations. The consumers consider them healthy and natural. Frozen fruits come in a variety of pack sizes and forms such as whole fruits, various cuts of fruit and fruit purees. Fruits are picked when they are ripe and have good full flavor, natural sweetness and juiciness, firmness and are of bright color. The freezing process retains all these characteristics.

Frozen vegetables are also available in breaded form. Breading refers to the final coating of breadcrumbs, cracker crumbs or other similar thin paste or similar liquid material. The usual amount of breading is 35% of the final weight of the frozen vegetable. Seasoning and spices are added to these breaded vegetables, thereby making them attractive finger food for appetizers, snacks or as accompaniments for drinks.

4.4.1 **FREEZING RETAINS NUTRITION VALUE OF VEGETABLES**

Freezing is one of the most suitable methods to retain the essential nutrients such as carotenes in vegetables, which are required to synthesize vitamin A in the body. Carotenes are sensitive to light and are damaged when exposed for longer durations. Hence, freezing enables better retention of these nutrients.

Blanching process carried out just before freezing leads to loss of about 26% of vitamin C, 9% of thiamin, and more than 24% of foliates. No significant loss of nutrient occurs during the period when vegetables are kept in the freezer. However, similar loss of nutrients is also observed during cooking of fresh vegetables. Hence, no major difference exists between the nutrient content of fresh and frozen vegetables. In addition, use of microwave cooking and steaming process ensures retention of nutrition value in both fresh and frozen vegetables.

4.4.2 **FROZEN FRUITS AND VEGETABLES: PROCESS AND METHODS OF FREEZING**

Most acceptable method to store and preserve vegetables and fruits at home is freezing. Freezing retains the nutritional value. In order to maintain the quality in foods, they must be stored at 0°F, blanched properly and must be used within the storage time.

- Immediately after harvesting vegetables, they must be frozen to prevent chemical reactions that can spoil the produce.
Fruits are treated with pure form of ascorbic acid or soaked in vinegar solution (also, coated with sugar and lemon juice) to deactivate the enzymes and prevent formation brown tinges and vitamin C loss.

Frozen products when exposed to air develop bad smell or taste. In order to prevent against such chemical reactions, the product is covered with an airtight wrapping material.

### 4.4.2.1 Freezing Process of Vegetables

The vegetables are treated with blanching and cooling processes before freezing.

1. **Blanching in Boiling Water**
   
The process of blanching of vegetables in boiling water requires one gallon of water for every pound of vegetables, except in case of leafy green vegetables, which require 2 gallons. The bag containing vegetables is put in rolling boiling water for some time and then the basket is placed in ice water vessel for similar duration of time. Thorough drying of the vegetables is done to avoid formation of ice crystals. Before freezing, the products are packed using either tray or dry pack packing methods.

2. **Blanching Process in Microwave Oven**
   
As different types of microwave ovens are available in the market, no standard procedure is specified in this type of blanching. The heat variations in the microwave oven may lead to only partial inactivation of the enzymes, resulting in shortened freezer storage time. Microwave oven blanched vegetables are frozen in ice cooled water prior to processing.

3. **Commercial Processing of Frozen Vegetables**
   
Most of the preservation and freezing plants are located near the vegetable growing areas. The vegetables are processed and arranged according to their sizes by automated machines and then dipped and washed in flowing water. Subsequently, these vegetables are transferred onto moving platforms for peeling or cutting. In order to retain the freshness, flavor, and color for longer durations, these vegetables are pre-cooked before freezing and are packed in polyethylene bags.

4. **Preventing Changes in Texture of Frozen Fruits and Vegetables**
   
The texture of fruits and vegetables deteriorates mainly due to the water content in the produce. When fruits and vegetables are frozen, ice crystals form due to the water content. These ice crystals cause cell damage and lead to changes in the texture of fruits and vegetables. The texture of defrosted fruits is generally smoother than unfrozen products. Slow freezing of the produce is safer than quick freezing process, as quick
freezing ends up in the formation of larger ice crystals that cause even more textural changes. Whenever the products lose moisture their flavor and color also changes. In order to prevent moisture from escaping, fruits and vegetables are packed in heavyweight and moisture-proof papers.

5. Threats from Microbial Growth
Before consumption of frozen fruits and vegetables, the products are tested for presence of any microbes. Even as blanching destroys most of the microorganisms, few still exist to multiply in freezers during power failure or when the door is not properly shut.

6. Ideal Shelf Life
Majority of the fruits and vegetables when stored at 0° F or lower, retain high quality for a period of 12-18 months. Fruits are also packed in sugar or sugar syrup to preserve the quality for longer duration.

4.4.2.2 Type of Freezer Containers
- Plastic film bags are also employed as effective containers for storing fruits and vegetables during freezing. These containers are usually covered with a layer of disposable cardboard freezer boxes to prevent damage.
- Plastic-coated freezer containers or high quality and thick aluminum foils are used to restrict entry of vapor and air and at the same time retain moisture in the product. These containers are flexible and strong and fastened with seal specially intended for freeze packaging.
- Freeze and cook bags are the most preferred freeze containers due to their ability to tolerate temperatures below 0° F as well as boiling point temperatures. These containers are available in various sizes and in large rolls. The containers are heat fastened to prevent exposure to moisture.

4.4.3 PACKING METHODS FOR VEGETABLES
Vegetables meant for freezing are usually packed by two methods: Dry Packing and Tray Packing.

4.4.3.1 Dry Packing
In this method, the freezer containers are tightly sealed and the air present inside the container is removed. This method of packing is ideal for drained and blanched products. In the case of broccoli, packing is done by placing heads and stems alternatively. Except for vegetables that are freely packed, a 1/2-inch of headspace is maintained before sealing the containers.
4.4.3.2 Tray Packing
Tray packing method is mainly used for packing drained and blanched beans, peas, and corn. In this method, vegetables are separated individually and placed in a thin tray. Once frozen, the vegetables are packed in freezer containers.

4.4.4 Packaging Methods for Fruits
Fruits meant for freezing are principally packaged using three methods – unsweetened packing, sugar packing, and syrup packing. Most of the fruits are packed using sugar to retain the flavor.

4.4.4.1 Unsweetened Packing
In this method, a single layer of fruit is placed in a dish and transferred to the freezer. Once frozen, the fruit is appropriately packaged and returned to the freezer. Sugar substitutes such as aspartame and saccharin can also be used in unsweetened packing.

4.4.4.2 Sugar Pack
In this method, Sugar or Sugar juice is spread on the fruit in required quantities and continuously mixed to spread the sugar evenly before packing.

4.4.4.3 Syrup Pack
In this method, a clear sugar solution is prepared by dissolving sugar in water, followed by chilling. The solution is subsequently applied on fruits for freezing in plastic bags, freezer jars and containers.

4.4.5 USDA: Quality Grades for Frozen Vegetables
US Department of Agriculture (USDA) grades the canned and frozen vegetables based on their quality. USDA also provides an inspection program to certify the quality of frozen vegetables. Highly qualified scientists are employed to examine the quality of the processed vegetables against the established US grade standards. The grades assigned to the products acts as a guide to the consumers during purchasing of canned and frozen vegetables.

1. US Grade A: Grade A vegetables are known for their softness, color, and texture. These vegetables are most juicy and highly flavored. The other name for Grade A products is “fancy” which is mentioned on the label.
2. **US Grade B**: Grade B vegetables possess superior quality but are not on par with Grade A vegetables, in terms of color and texture. These vegetables are fully-grown when compared with Grade A vegetables. Therefore they taste slightly different from Grade A type. Other name for Grade B product is “Extra Standard”.

3. **US Grade C**: Grade C vegetables are mainly used as constituents in preparing casserole or stew, and soup, as they are fully-grown. These vegetables are less flavored. Grade C products are also known as “Standard”.

### 4.5 **Frozen Fruits and Vegetables: Product Classification**

#### 4.5.1 Frozen Fruits

##### 4.5.1.1 Grades of Frozen Fruit

The USDA grading standards for frozen fruits have long been established. Under this system, numerical scores are allotted considering various factors used for grading frozen fruit, the total possible score being 100.

##### 4.5.1.2 Forms of Frozen Fruit

The product comes in various cuts ranging from whole fruit to puree. The style and form of frozen fruit depends upon the fastest way to pack ripe fruit in trucks and wagons in the processing plants.

##### 4.5.1.3 Packing Frozen Fruit

Traditionally, a 30-pound tin was used for packing all types of frozen fruits. Different ways to pack frozen fruits include:

- **IQF Style**: In this style, the fruit is individually quick frozen before it is put into the container. This style is sometimes referred to as “free flow” or “free flowing” or “dry pack”. Sugar is not used in this style of packing, but fruits may be occasionally glazed with syrup.

- **Block Style**: The fruit is put into the container and then frozen. The weight of the fruit crushes the bottom layer and becomes a combination of juice, crushed and whole fruit. Sometimes the pack is also referred to as “straight pack”. The pack may have plain fruit; dry sugar might be added; or stabilized with a combination of modified food starch, cellulose, gums and sweeteners.

- **Syrup**: In this style, sugar syrup is added to the fruit before freezing. The syrup is mixed or used to form a protective coating on top of the fruit.
• *Sugar Added (4+1)*: In this style, there are 4 parts of fruit and 1 part of sugar, packed together. Dry sugar might be mixed or added on top of the fruit to form a protective coating.

### 4.5.1.4 Types of Frozen Fruits:

1. **Apples**

   There are more than 3,000 varieties of this frozen fruit, which comes in skin colors of red, yellow and green. Jonathan, Macintosh, Northern Spy, York and Rome varieties of this fruit are popular for freezing. These apples are checked for any bruises or discolored areas, during grading. Then, they are steam blanched so as to make their natural color even and to stop the enzyme activity, which results in some browning. Sometimes, the apples are treated with antioxidants or sulfite so as to retain their natural white or creamy color and to prevent browning. The apples might be frozen in brine before freezing. They are packed in brine to assure crispiness. Some apples are packed without any such treatment. Some apples are vacuum packed to prevent browning.

   *Frozen apples are available in the following forms:*

   Slices, Blocks, 7+1, Diced, and Chips.

2. **Apple Puree**

   This category includes pureed ripe apples.

3. **Apple Topping**

   This category includes a mixture of peeled apple pieces in thick, sweetened sauce.

4. **Apricots**

   They are the “Stone” fruits that grow on trees. But, there are many “freestone” varieties, the seed of which comes out easily once when the fruit is cut into half. Grading depends upon bright yellow or yellow gold color, normal flavor and odor, ripeness, size, symmetry, and absence of defects. Grades include US Grade A, US Grade B, US Grade C and Substandard.

   *Frozen Apricots are available in the following forms:*

   Halves in IQF style, sliced in IQF style and halves in 5+1 style.

5. **Apricot Puree**

   Apricot Puree includes pureed ripe apricots. This puree comes in a plastic jar with twist-off top.
6. Berries
Berries include blackberries, boysenberries (which are a cross of blackberries and raspberries), dewberries, loganberries, nectar berries, young berries and Marion berries, which are a variety of blackberry. These berries possess pulp in sacs, which contains one seed each. These sacs known by the name drupelets surround the fleshy central core called the receptacle.

Grading depends on color, ripeness, normal flavor, odor, character, and absence of defects. Grades include US Grade A, US Grade B, and US Grade D.

Various kinds of berries include:
- Marion blackberries; Evergreen blackberries; blackberries in IQF style.
- Marion; Evergreen; blackberries in block style.
- Boysenberries in IQF style.
- Loganberries in IQF style.

7. Berry Strawberry Puree
This category includes pureed ripe berries. It comes in a plastic jar with twist-off top.

8. Blackberry Puree
This category includes pureed ripe blackberries. It comes in plastic containers. The varieties include Evergreen and Marion. Blackberry Puree comes in two forms namely puree with seeds and puree with no seeds.

9. Blackberry Topping
It contains sweetened, thickened sauce with Marion blackberries. This product comes packaged in poly bags.

10. Blueberries
These are the only available true blue food, composed of pulp and many tiny seeds inside the blue skin. There are two frozen varieties of blueberries available namely: The larger, cultivated (high bush) blueberries and the smaller, wild (low bush or native) Blue berries. These berries produce streaks in breads and muffins. The streaks produced by this fruit turn red purple on coming in contact with acids in the form of cream of tartar, orange juice and lemon juice. Addition of hard frozen blueberries to already mixed dough or batter and then stirring it slowly helps prevent streaking. Grading depends on character, firmness, color, texture, similarity of characteristics, normal flavor, odor, and absence of defects. Grades include US Grade A, US Grade B, US Grade C and US
Grade D. The varieties include the following: cultivated in IQF, free flow styles; cultivated in block style and wild in IQF and free flow styles.

11. Blueberry Puree
It contains pureed ripe blueberries. It comes in two varieties: wild and cultivated. Under the cultivated variety, it comes in two forms namely puree with seeds and puree with no seeds.

12. Blueberry Topping
It contains sweetened, thickened sauce with blueberries. This product comes packaged in poly bags.

13. Boysenberry Puree
It contains pureed ripe boysenberries. It comes in two forms namely puree with no seeds and puree with seeds. It comes packaged in plastic containers.

14. Cantaloupe
It is a melon with orange flesh and a grey-beige netted rind. Sometimes, it is called as musk melon or netted melon.

It comes in the following varieties:
Bite-size balls in IQF style; chunks in block style; and chunks in IQF style

15. Cherries
These fruits are often classified as sweet or sour. They grow on trees and are usually harvested by shaking the tree with a mechanical picker. Handpicking is also done. Sweet cherries come in a variety of colors such as Light or white cherries, which have a white or old ivory color with red blush and dark colored cherries having a bright deep red to almost black color, with tons of purple. The dark sweet cherries are often referred to as DSP, when pitted. The traditional red pie cherries come in shades of light to dark red and are sour. When pitted, these cherries are referred to as RSP or RTP. Grading for frozen sweet cherry depends upon similar varietal characteristics, normal flavor, good color & appearance and freedom from defects. Grading for red tart cherries depend upon the fruit’s uniform bright red color; good character or texture and ripeness; normal flavor; freedom from defects. Grading of Red Tart Cherries and Sweet Cherries – US Grade A, US Grade B, US Grade C and US Grade D. This frozen fruit comes in the following varieties: Red tart in pitted form; Red tart in pitted form and 5+1 sugar style; Dark sweet in pitted form and IQF style; Red tart in pitted form and 9+1 sugar style.
16. Cherry Puree
It contains pureed ripe cherries. This frozen fruit comes in two kinds namely Red tart, pitted and dark sweet pitted; Royal Anne Sweet pitted.

17. Cranberries
These fruits grow on low-growing vines, which have short branches called uprights on which these berries grow. These berries are famous for their tartness and red color of their skins, which covers an entire range of deep red to dark pink. These firm-fleshed berries have several small seeds and grow on wetlands and grow wild in bogs. Grading depends on color, size, normal flavor and odor, character, texture, appearance, and absence of defects. Grades include US Grade A, US Grade B, US Grade C and US Grade D.

18. Currants
Colonists introduced this fruit in America in the year 1629. This fruit comes in varieties, which include red and black fruits. They grow in clusters on bushes. The fruit is glossy and contains several tiny seeds. They have a rich sweet-sour taste. This fruit comes in a single variety namely black currant.

19. Feijoa
This fruit is very fragrant and sometimes called as pineapple guava. It has a bright green, bumpy skin and has a granular, cream-colored, soft flesh. Feijoa is egg-shaped when ripe and has a jellylike center. Feijoas are grown throughout New Zealand – from the Far North to the Canterbury region in the South Island. The fruit grows on small trees and is hand picked. Feijoas are ripe when slightly soft. In a freshly cut piece of fruit, this is when the jellied section is clear. When ripe, some varieties are considerably softer than others (e.g.: Apollo – a long, pale fruit). Unless refrigerated, ripe feijoas only retain their best flavour for 2 or 3 days. After this the flavour deteriorates without any change in the outward appearance of the fruit. Fresh feijoas are a good source of Vitamin C, are low in calories and are high in minerals and fiber.

20. Feijoa Puree
It contains pureed feijoa fruit. This puree is suitable for a wide range of products including beverages and jams. It is cream colored seedless feijoa puree. Taste is like that of typical ripe feijoe. It contains citric acid and ascorbic acid as antioxidants. It is packed in 1 x 20 kg plastic bags per lined Carton and frozen at -18 Degrees C.
21. Figs
These fruits are syconia, that is, a form of container for the true fruit, which grows on trees. Some varieties of this fruit require pollination, called caprification, because of the manner in which fig wasps transfer pollen. Some varieties develop fruit parthenocarpically and some other varieties produce two crops out of which one requires caprification and the other develops seedless fruitlets without pollination. The seeds of the figs are actually tiny fruitlets.

22. Fig Puree
It contains pureed ripe figs. Fig puree recipe includes dried figs, vanilla and water.

23. Fruit Bar
It contains a mixture of fruit pieces and fruit concentrate and is frozen in a rectangular mold. It is rounded on one end with wooden handle inserted on the opposite end. It contains fruits such as banana, cherry, lemon, orange, pina colada, strawberry and watermelon.

24. Gooseberries
These fruits are small round green berries and have pale stripes from stem to blossom end. The ripe fruit comes in different color ranges such as deep red to rose and from yellow bronze to silvery green. These berries are picked when they are mature but still green. They have a few tiny seeds in the center and grow on low thorny bushes and have a sour taste. This fruit comes in the IQF style.

25. Gooseberry Puree
It contains the puree of ripe gooseberries. It comes in two forms namely pureed with seeds, and pureed without seeds.

26. Grapefruit
This is a citrus fruit growing on trees and has many seeds or it can be seedless. The yellow peel of the fruit includes outer pigmented flavedo with oil glands and inner spongy, white (or pink) albedo. The eight to eighteen segments present inside the fruit are pulp-filled membranes attached to a central axis. The frozen fruit comes in peeled segments with membranes removed. The segments of this fruit are pink, red or white. The segments may be IQF or frozen in grapefruit juice or light syrup.
Grading depends on wholeness of segments; color; character; texture and juiciness; and absence of defects. It comes in the following grades: US Grade A, US Grade B; US Broken and US Grade D.

27. Grapes
This fruit is noted for its juiciness and is classified as a berry, which grows in clusters or bunches on vines. The fruit might be seedless or contain seeds. The product contains an easily removed skin (slip skin) or it might have a skin, which sticks to the pulp.

28. Grape Puree
It contains pureed ripe grapes. Following are few grape puree recipes – Frozen Grape Puree, Grape Table Syrup, Fluffy Grape Pie, Grape Aspic and Grape & Green Tomato Chutney.

29. Honeydew
It is a melon with a pale to medium green flesh and smooth ivory to cream rind having slight tones of green. The interior cavity of this fruit is filled with seeds, which are attached to spongy membrane. It has a sweet, refreshing flavor and comes in two varieties namely melon balls in IQF style and chunks in IQF style.

30. Kiwifruit
This fruit has a hairy brown outer skin with brilliant green flesh. It has central pith that is surrounded with tiny black seeds. It comes in two forms namely diced and chipped, with seeds or seedless.

31. Kiwifruit Puree
It contains pureed ripe kiwifruit. The range of Kiwifruit Puree includes Green Kiwifruit “Puree” (Unseeded), Green Kiwifruit “Puree” (Seed-In 1%), Green Kiwifruit “Puree” (Seed-In 0.5%) and ORGANIC Green Kiwifruit “Puree” (Unseeded).

32. Loganberry Puree
It contains pureed ripe loganberries. The loganberry is a hybrid produced from crossing a blackberry and a raspberry.

33. Mango
It is an oval fruit having a slightly leathery skin with a color that ranges from yellow-green to bright yellow with tones of red. The yellow pulp inside the fruit has fibers attached to the single large seed and has a delicate “tropical” flavor.
34. Mango Puree
It contains pureed mango pulp. Few of the varieties of mango puree are Alphonso puree, Kent puree, Chato Puree and Totapuri puree.

35. Melon
It contains chunks or balls of Cantaloupe and Honeydew. The mixtures of the melons might be 50% each or in 1/32/3 ratio. Grading depends on color, flavor, odor, size, shape, character or texture and tenderness, and absence of defects. It comes in the following grades – US Grade A, US Grade B, and US Grade D. It comes in the following varieties: Balls in IQF style, Balls in syrup style, and Chunks.

36. Mixed Fruit
It contains a mixture of ripe fruits, but is generally a mixture of melon, sliced fruit, grapes and/or cherries.

*It comes in the following varieties:*
- Sliced freestone peaches, honeydew and cantaloupe melon balls, and dark sweet seedless grapes. The style is IQF.
- Berries and Oregon berries. The style is IQF.
- Cantaloupe and honeydew melon balls, dark seedless grapes, sliced freestone peaches, and pineapple chunks. The style is IQF.
- Oregon fruits and Supreme mix. The style is IQF.
- Mixed, Oregon fruits and Supreme mix. The style is IQF.
- Strawberries, Marion blackberries, blueberries and raspberries. The style is block.
- Peaches, honeydew melon, white grapes, red and black cherries and pineapple. The style is syrup.
- Cantaloupe and honeydew melon balls, dark seedless grapes, sliced freestone peaches, and pineapple chunks. The style is syrup.
- Mixed. The style is syrup.
- Mixed. The style is 4+1.

37. Passion Fruit
This is an egg shaped fruit with a dark purple skin having small pits on it and has a soft golden pulp with tiny black seeds. It is famous for its lush, “tropical” aroma and sweet-sour taste.
38. Passion Fruit Puree
It contains concentrated puree of ripe passion fruit. This product comes in a plastic jar with twist-off top.

39. Peaches
Peaches come in two varieties namely cling or freestone. The pulp of the cling peach sticks itself to the seed of the fruit. Freestone peaches can be cut open from the suture from stem to blossom end and the seeds can be taken out easily, without removing the pulp. Many varieties of the fruit of each type are frozen, which includes Elberta and Rio Oso freestone. Antioxidants are added to this fruit in order to prevent darkening. The colors, for this fruit, varies from pale yellow to deep gold with pink to dark red centers around the seed. Some peaches are white having red centers around the seed.

There are five different cuts available in peaches. Peaches are peeled and have their pits removed. Halves are actually peaches cut in half along the seam line from stem to blossom end. Quarters are halved peaches cut into equal parts. Diced peaches are cubes of peaches. Sliced peaches are smaller sections of quarters. Mixed peaches are peaches cut into regular shapes.

Grading depends upon flavor, color, uniform size and symmetry, character and texture, absence of defects. Grades include US Grade A, US Grade B, US Grade C and US Grade D.

The product comes in the following varieties:
- Sliced; sliced for pie in IQF style.
- Diced
- Sliced. The variety is yellow cling peaches.
- Sliced in syrup style.
- Sliced in 4+1 style.
- Sliced in 5+1 style.
- Sliced in 7+1 style.

40. Peach Puree
It contains ripe peaches, pureed. It comes in the following varieties: Puree; Puree of white peaches in plastic jar with twist-off top; and Puree of yellow peaches in metal cans and bar mix.
41. Pears
This fruit is thin-skinned fruit of the pear tree. The fruit is famous for its sweet, fruit aroma and the “buttery” texture. The shape of the fruit varies from an oval narrowed at one end to almost globe shape. The fruit contains seeds in a “core” like that of apple.

42. Pear Puree
It contains ripe pureed pears.

43. Pineapple
It is a composite fruit made up of fruitlets growing two spiral patterns around the main core. It is crowned at the top with few stiff leaves. Each fruitlet has an “eye”. The pineapple is well trimmed, its core and crown are removed, and then it is cut and frozen.

Grading depends upon color, character and texture, uniform size and symmetry, and absence of defects. The fruit comes in the following grades: US Grade A, US Grade B, US Grade C and US Grade D. The varieties include: Chunks in IQF style; Spears in IQF style and Wedges in IQF style.

44. Pineapple Puree
It contains puree of ripe pineapple.

45. Plums
There are three types of frozen plums namely purple or blue, red and yellow-green. They might either be freestone or Cling. The fruit is packed as a whole or in halves or is crushed and broken. The whole plums mentioned above might be pitted or unpitted. They are pitted either by hand or by machine.

Grading depends upon character; degree of ripeness; color; texture and tenderness; and freedom from defects or blemishes. The fruit comes in the following grades: US Grade A, US Grade B, and US Grade D.

46. Plum Puree
It contains pureed ripe plums. It comes in the Italian purple variety.

47. Raspberries
These fruits are aggregate fruits similar to blackberries, except that when they are ripe, they separate easily from their receptacles when picked. These fruits grow on thorny
bushes called as canes. The fruit comes in colors such as red, black, purple etc. The USDA standard combines red and purple under one group and black in another.

Grading depends on color, absence of defects; character or maturity and tenderness. The fruit comes in the following grades: US Grade A, US Grade B, and US Grade D. The varieties include red in IQF style, red in 4+1 sugar style, red in 5+1 sugar style, red in IQF with syrup glaze and black in IQF style.

48. Raspberry Puree
It contains pureed ripe raspberries. It comes in two varieties namely black and red. The red variety comes in plastic jar with twist-off top and the black variety comes in plastic containers.

49. Rhubarb
The petioles, stems or leafstalks of the rhubarb plant are edible. Most of the times, the frozen rhubarb is Crimson or Crimson Red with bright rosy red stalks.

Grading depends on tenderness and texture; color; absence of defects; normal flavor and odor. The grades include: US Grade A, US Grade B, and US Grade D. It comes in the Cut form in IQF style and sliced form in 4+1 sugar with stabilizer style.

50. Strawberries
These fruits are red, juicy and cone-shaped. They belong to the rose family. The fruit contains fleshy receptacle with numerous small seeds in the form of fruitlets embedded in the skin.

Grading depends upon flavor, odor, size, color, character and texture, and absence of defects. It comes in the following grades: US Grade A, US Grade B, US Grade C and US Grade D.

This frozen fruit comes in the following varieties:

- Whole; whole sized form in IQF style.
- Whole form in block style.
- Sliced in IQF style.
- Sliced in block style.
- Sliced in 4+1 sugar and 4+1 sugar with stabilizer styles.
- Whole; whole in syrup styles.
- Whole with sugar.
Whole 5/8 to 1 1/4 inch diameter in 4+1 sugar style.

4.5.2 FROZEN VEGETABLES

The frozen vegetable production may be split in two sections: potato byproducts; and vegetables such as green peas, green beans, cauliflowers, cabbages, sweet corns, spinach, sweet peppers, mushrooms, and carrots.

4.5.2.1 Grades of Frozen Vegetables

Grading of vegetables is done by the USDA, using standards, which encompasses many factors. These factors are given a score for most of the vegetables. The final USDA grade is based on the judged factors and the numerical scores are added to them. The total possible point for grading vegetables is 100.

4.5.2.2 Breading

Two breaded vegetables namely frozen onion rings and frozen breaded mushrooms have grade standards established by USDA.

4.5.2.3 Packing

Frozen vegetables are available in wet pack sometimes known as solid pack and also in IQF. Generally, small amounts of about 1 to 6 pounds of IQF frozen vegetables are packed in polythene bags. The same amounts of wet pack products are packed in white board cartons, with or without a waxed paper over wrap. Wet pack leafy greens might be packed in chubs, which is a poly tube with a metal clamp at each end. Some exceptions are asparagus spears, broccoli spears, whole green beans, which are usually hand packed in cartons. Hands packed vegetables are individually glazed.

The pack is similar to that of IQF with the difference that there are neither truly individually frozen pieces nor a solid block. Bulk pack vegetables such as cut green beans may be IQF or wet pack in poly lined corrugated cartons. Generally, these poly lined cartons hold about 12 to 40 pounds of frozen vegetables.

Some processors use a “barrier pack” which is a combination of two or more different packing materials. The poly liner or poly bag in a corrugated carton is generally considered a barrier pack because the paper plus poly act as barriers to air as well as moisture, gas or vapor.
4.5.2.4 Types of Frozen Vegetables

1. Artichoke Hearts
This vegetable is a tender bud of a variety of thistle plant, known as globe artichoke. The product is sorted, trimmed, washed and blanched before it is frozen. This vegetable comes in quartered heart and heart forms in buttery sauce style.

2. Breaded Artichoke Hearts
This consists of quartered hearts of artichoke coated with seasoned batter. This product comes in quartered heart and heart forms in tempura batter and seasoned batter styles.

3. Asparagus
This is a succulent shoot of the Asparagus plant, which is harvested before the plant flowers. The plant is grown in sandy soil and is harvested by hand. It comes in many colors, out of which Green asparagus is most common. The stalks of the plant may show slight shades of dark purple at the tip or lavender at the base. White asparagus is creamy white in color and might have a hint or color near the base of the stalk or at the tip. Generally, larger the stalk, more tender the vegetable. Very thin stalks are often referred to as “pencil” size. The vegetable is sorted, trimmed, washed and blanched before freezing. Packing of the vegetable is usually done by hand. Grading depends on uniformity of length, similar varietal characteristics, good eating quality, flavor and odor, absence of slit or grit and loose vegetable material. The grades include US Grade A, US Grade B or and Substandard. The vegetable comes in the forms of whole stalks, tips and cuts, and cuts in no tips style.

4. Breaded Asparagus
It consists of stalks or portions of stalks of asparagus, which are coated with breading or batter. Can be deep fried. It comes in the form of short stalks in battered style.

5. Black-Eye Peas
They are mature seeds of black-eye pea plants. Many varieties of Southern peas such as black-eye peas, pink-eye peas and purple hull peas in the category of field peas are combined by USDA for grading purposes. Peas are removed from the pods, or shelled, then sorted, washed, blanched and drained.

Grading depends on character or maturity and tenderness when cooked, good flavor and odor, full development, freedom from grit and defects, and bright overall appearance. The product comes in the following grades – US Grade A, US Grade B, and Substandard.
The vegetable comes in the following colors:

- Light beige skin, dark eye
- Off-white skin, pink eye

6. Broccoli
These are stalks with buds attached and are harvested before maturing. Firm thick stalks having tight green buds are desired the most. As Broccoli matures, the heads loosen and separate thereby allowing the buds to bloom into a full yellow flower. The color changes to a bright green with a yellow tinge, when the head matures. When immature Broccoli is cooked, it turns into an even, bright green. Mature Broccoli shows some shades of yellow green, sometimes, when cooked. The stalks become more fibrous as the plant matures. Harvesting is generally done by hand.

Freshly harvested Broccoli is trimmed, cut, washed, blanched, sorted and drained before it is frozen. Most of the packing is done by hand. Grades depend on similar varietal characteristics, flavor and odor, freedom from grit, overall brightness, and development of the head. Grades include US Grade A, US Grade B and Substandard.

The vegetable comes in the following forms: Spears; Florets and Short spears; Cuts and Cut spears with 25% head material, to grade specification; and Chopped with 25% head material, to grade specification.

7. Breaded Broccoli
It contains Broccoli florets coated with seasoned breading or batter. It may be fried partially so that it can be deep fried or finished in hot oven.

It comes in the following forms:

- Florets in Breaded and breading with cheese styles
- Battered

8. Brussels Sprouts
The heads of the Brussels sprout plant, which grows up and down the stalk, are harvested when they are fully formed, but still tender. They are called little cabbages. The product is trimmed, washed, blanched and drained before freezing. These sprouts have pink colored center when they are not fully blanched.
Grades depend on good flavor and odor, similarity or varietal characteristics, typical green color, trim and brightness, freedom from grit or slit, absence of harmless extraneous vegetable matter (HEVM) or loose leaves and small pieces, tightly formed heads, and minimal blemishes. It comes in the whole form.

9. Carrots
It is a root vegetable noted for its bright orange color and is harvested when it is fully formed and tender. It is washed, sorted, trimmed and peeled, cut, blanched and drained before freezing. Multi-blanch process may be used on some cuts of carrots. This process is similar to regular processing.

Only difference is that the vegetable is heated for a longer time at a slightly higher temperature. Thus, the product will need a shorter cooking time when it is prepared for service. Grades depend on similar varietal characteristics, normal flavor and odor, color, uniformity of size and shape, texture, and absence of defects. Grades include US Grade A, US Grade B and Substandard.

Forms include Baby whole, Petite tips, Whole in buttery sauce style, Diced, Shoestring 5/32 X 1 1/2 inches, Sliced in plain or straight cut and crinkle cut slices styles, and Crisscross slices.

10. Breaded Carrots
The carrots are mixed with binder and are then extruded and coated with batter.
- Preformed rings in batter
- Preformed sticks in batter

11. Cauliflower
Immature flower heads and minimal amount of stalk from the cauliflower plant are creamy white in color. They are sometimes tinged with light green or purple color. These shades are typical of a cauliflower and disappear during cooking. A popular variety of this vegetable is snowball, which is noted for its pleasing white color. Sometimes, the cauliflower might get “sunburn” that is, it shows some discoloration on its surface. But, this usually disappears after cooking. As the vegetable matures, the heads become less compact and the tiny individual stalks develop a rice-like appearance.

Harvested heads of cauliflower are at first trimmed, washed, and blanched. The wet pack product is packed in cartons and then it is frozen. IQF product is frozen first, and then it is
packed in cartons or poly bags. Large amounts of the vegetable are bulk packed in poly lined cartons.

Grades depend on similar varietal characteristics, normal flavor and odor, color, absence of defects, and character including firm compact clusters of buds. Grades include US Grade A, US Grade B and Substandard. This vegetable comes in the form of florets 1 to 2 1/2 inch; and 1 1/2 x 1 1/2 inch.

12. Breaded Cauliflower
Florets of the vegetable are coated with seasoned breading or batter, or cauliflower is mixed with binder and is extruded and then coated with batter. It might also be parfried, so that it is ready to be either deep fried or finished in hot oven.

The vegetable comes in the following varieties:
• Buds, florets in batter with cheddar cheese, batter, and tempura batter styles.
• Florets in Cheddar cheese batter with Japanese crumbs style.
• Buds in breaded and cheese with breading styles.
• Preformed rings in batter style.

13. Celery
The stalks of this plant are harvested when they are mature. The product is first sorted, trimmed, cut, washed, blanched and drained before freezing. The vegetable comes in three forms namely cut, sliced and diced.

14. Breaded Celery
Celery mixed with binder is extruded as rings and then coated with batter.

15. Collards
The tender leaves and stems of the collard plant are harvested. The product is generally sorted and trimmed in the field, and then it is inspected, washed, blanched and drained. Collards can be cut or chopped before freezing.

Sometimes, they are called collard greens. They are generally packed in a wet pack and packaging may be paperboard cartons or poly chubs. Grades depend on similarity of varietal characteristics; good overall brightness; normal flavor and odor; good character and some toughness when cooked; proportion of stem material; absence of blemishes
and defects. The vegetable comes in the grades of US Grade A, US Grade B and Substandard. The vegetable comes in the chopped form of 1/4 x 1/2 inch cuts.

16. Corn
The ears of sweet corn have immature but fully formed seeds on the cob, which is surrounded with silk, and husk. The color of corn kernels ranges from white to cream or yellow to golden, depending on the variety of corn. Sweetness of the corn also depends on the variety as well as maturity at harvest.

Silk and husk are removed from the ears of corn, then they are sorted, trimmed, washed and blanched. For the whole kernel corn, the kernels are usually cut from the cob. In case if corn-on-the-cob, the ears areorted by size or trimmed to size. The portion, where the cob was attached to the stalk of the plant may be either trimmed or sliced off. Sometimes, harmless vegetable material, bits of silk or cob, are mixed with whole kernel corn. Grades depend on similar varietal characteristics, good flavor and odor, color, uniformity of size, absence of defects, kernel development, tenderness and maturity. Grade designations differ for whole kernel and corn-on-the-cob.

US Grade A, US Grade B, US Grade C and Substandard are the grades established for whole kernel corn. US Grade A, US Grade B and Substandard are the grades for Corn-on-the-cob or cob corn.
Varieties include:
- Whole kernel; Cut. The color is White shoe peg; Yellow; golden.
- Whole kernel; cut in buttery sauce.
- Corn-on-the-cob; Cob corn in no salt and regular styles.

17. Cream Style Corn
The kernels are scrapped off the cob, and then it is slightly cooked to produce a mixture of kernels in a creamy thickened sauce. This product comes in cream-style form.

18. Breaded Corn
Cut corn that is mixed with binder is extruded as sticks and then coated with batter. Breaded corn nuggets with a crispy, Italian seasoning can be baked or deep fried. It is ideal for all types of restaurants. It is available for both food service and retail packaging.

19. Breaded Corn-on-the-Cob
Corn-on-the-Cob is coated with batter.
20. Crowder Peas
They are mature seeds of crowded pea plants. This peas fall under the category of field peas for grading purposes. Some succulent pods containing immature seeds may be used as a garnish. The peas are removed from the pods, or shelled, and then they are sorted, washed, blanched and drained.

The shape of Crowder pea is round with blunt ends. Grades that are established by USDA depend on character or maturity and tenderness when cooked; good flavor and odor; full development; freedom from grit and defects; bright overall appearance. Grades are US Grade A, US Grade B and Substandard. The vegetable comes in colors of silver with medium brown eyes and medium brown with light brown eyes.

21. Breaded Eggplant
The slices or sticks of peeled eggplant are coated with seasoned breading or batter. They may be par fried and ready to be deep-fried or finished in hot oven. This product comes in cutlet and round slice forms in breaded and battered styles.

22. Field Peas
It includes the mature seeds of various field pea plants including black-eye peas, cream peas, Crowder peas and pink-eye purple hull peas. They are often called as Southern peas. These vegetables are used in old fashioned long; slow cooking with seasonings of bacon or ham. “Eyes” mean the area where the pea is attached to the pod. Cream peas are either white or pale cream in color. Some cream peas may have a slight shade of green. These peas do not have eyes.

23. Garlic
The head of this vegetable is a cluster of cloves (modified storage leaves) around the base of the stem, which has developed into a basal plate. The bulbils are produced on the scape at the top of the main stem after flowering. This vegetable comes in chopped form.

24. Green Beans
These vegetables are succulent seed pods of the bean plant, which contain immature but formed seeds. These beans are called snap beans because of the sound it makes when it is broken.
There are many varieties included in this designation such as round beans, which include green beans, such as the Blue Lake variety, Wax beans (which are also round beans),
Romano or Italian green beans, which are flat beans having a width about 1.5 times larger than the thickness of the bean.

The stems of the beans are removed and the beans are then washed, blanched, sorted and drained. Many kinds of pack are used which includes regular process, multi-blanch process and special pack.

Cut green beans may possess a straight-across cut or a slant cut. The regular cut length is 3/4 inch to 2 3/4 inch. Short cut green beans have a length of less than 3/4 inch.

Lengthwise sliced green beans are known by various names such as French cut, French sliced, French style, Julienne and shoestring. Mixed green beans consist of a mixture of two or more styles, which include cut, short cut and whole beans. Grades depend on similarity of varietal characteristics, good flavor and odor, piece size for cut product, when cooked pods are tender and seeds are not mealy, bright color, freedom from blemishes and defects. Grades include US Grade A, US Grade B, US Grade C and Substandard.

The vegetable comes in whole, cut, cut in buttery sauce, mixed cut, French cut, French style, and julienne forms.

25. Breaded Green Beans
They are green beans mixed with binder and are then extruded and coated with batter. They come in the following varieties:
- Preformed rings in batter style
- Preformed sticks in batter style

26. Italian Green Beans
They are succulent, flat seedpods of the bean plant, which have immature but formed seeds. They have a width of about 1.5 times greater than the thickness of the bean.

Their stems are removed and they are then washed, blanched, sorted and drained. Many kinds of pack such as regular process, multi-blanch process and special packs are used.

Grades depend on similarity of varietal characteristics, good flavor and odor, tender pods when cooked, bright color, freedom from blemishes and defects. Grades include US Grade A, US Grade B, US Grade C and Substandard grades. This vegetable comes in the cut form.
27. Hominy
Hominy, a starchy vegetable, is made from Kernels of sweet corn. These kernels are immersed in water, moderately pre-cooked, and the hard surface layer is peeled off. The produce is packed in plastic bags with jelly or brine.

28. Kale
These are succulent leaves of the kale plant. The vegetable is sorted, trimmed, inspected, washed, blanched and drained. Kale is either chopped or cut before freezing. This vegetable comes under the category of “leafy greens”. Grading established by USDA depend on similarity of varietal characteristics, good overall brightness, normal flavor and odor, good character and reasonable tenderness when cooked, proportion of stem material, and absence of blemishes and defects. The vegetable comes in chopped form and under grades US Grade A, US Grade B and Substandard.

29. Leafy Greens
The leaves and stems of plants such as beet greens, dandelion greens, endive, mustard greens, Swiss chard and any other market accepted leafy green such as collards; kale and turnip greens are included under this category. The greens are usually sorted and trimmed in the field itself. They, then are brought into the plant and are inspected, washed, blanched and drained. Except spinach, most greens are cut or chopped before freezing. A wet pack is used usually. The packaging may be paperboard cartons or poly chubs. Grading standards established by USDA depend on similarity of varietal characteristics, good overall brightness, normal flavor and odor, good character and reasonable tenderness when cooked, proportion of stem material, absence of blemishes and defects. The grades are US Grade A, US Grade B and Substandard.

The two varieties are mustard greens in 1/2 x 1/4 inch cuts; and chopped forms. The style is to grade specification and with 20% less stem material. The other variety is Swiss chard in the chopped form.

30. Leeks and Celery Puree
It is a combination of leeks and celery, pureed.

31. Lima Beans
They are fully formed immature seeds of the Lima bean plant. The product is shelled, washed, blanched and drained before freezing. The product may be blanched by the regular process or through multi-blanch process. There are three types of Lima beans thin-seeded such as Henderson Bush and Thorogreen varieties; thin-seeded Baby Potato
including Baby Potato and Baby Ford hook varieties; thick-seeded including Ford hook variety. Grades depend on similarity of varietal characteristics, good flavor, and percentage of green and similar bright color after cooking, tenderness, full development, and absence of defects. The grades for this vegetable are US Grade A, US Grade B, US Grade C and Substandard.

32. Mixed Vegetables
It contains a mixture of at least three of the five basic vegetables namely short cut green beans or wax beans; diced carrots 3/8 to 1/2 inch; golden or yellow whole kernel corn. There is also an optional garnish of sweet red or green peppers. These vegetables are trimmed, washed, blanched and drained before freezing.

Grading depends on color brightness and green of Lima beans; absence of defects in cutting and integrity of pieces; tenderness when cooked; absence of blemishes. The grades are US Grade A, US Grade B, US Grade C and Substandard.

The varieties include:
- Mixed vegetables
- 4 vegetable mix; 4 way mix
- 5 vegetable mix; 5 way mix. This variety contains 28% each cut corn and diced carrots. 17% each peas and green beans, 10% Lima beans. Carrots, corn, peas, green beans, Lima beans.
- 5 vegetable mix in buttery sauce.

33. Mushrooms
This refers to the cap and stem of a fungus. The vegetable is usually referred to as cultivated mushrooms. The forms in which this vegetable is available include whole button, whole button in buttery sauce, sliced and sautéed.

34. Mushroom and Pecan Puree
It consists of pureed mushrooms with ground pecans. This puree comes in plastic jar with twist-off top.

35. Breaded Mushrooms
These are whole cultivated mushrooms coated with seasoned batter or breading. Sometimes, it may be double coated. It might be fried partially or it might be raw or precooked. It is ready to be either deep fried or finished in hot oven.
The varieties include:

- Whole button in tempura batter, beer batter, seasoned batter, butter-flavored breading, plain breading, seasoned breading and double coated styles.
- Cut form in battered style.

36. Okra

The fleshy green pods of this vegetable consist of fully formed but immature seeds and a mucilaginous, which is a thick and sticky substance used for thickening soups and stews. The product is trimmed, washed, blanched and drained before freezing.

Grades depend on similarity of varietal characteristics, good flavor and odor, color, character including tenderness and absence of fiber when cooked, absence of defects and blemishes. The grades include US Grade A, US Grade B and Substandard. It comes in the Whole form in the IQF style and in the Cut form in the IQF style.

37. Breaded Okra

It consists of crosscut slices of Okra coated with seasoned breading or batter. It may be par fried. It may be prepared in deep fryer or oven. This product comes in the form of pieces and slices in the breaded and battered styles.

38. Onions

The bulb of the onion plant is formed of leaves growing up from a basal plate. The roots descend from the basal plate. This vegetable comes in chopped; diced; 3/8-inch dice forms and in the whole form in the small style.

39. Breaded Onion Rings

The slices of this vegetable, separated into rings, are coated with seasoned batter. It may be double coated with batter or breading and either raw or par fried.

Grades depend on similarity of varietal characteristics, good flavor and color, absence of defects and blemishes, absence of imperfect rings and dark carbon specks. The grades include US Grade A, US Grade B and Substandard.

The styles include batter, tempura batter, beer batter, hot and spicy batter, seasoned batter, Japanese style breading, seasoned breading, home style breading, and plain breading.
40. Breaded Onions
Small whole onions are coated with plain or seasoned breading batter. The pieces are coated with batter or breading or consist of chopped or diced onions that are mixed with a binder and extruded as rings. These rings are then coated with either plain or seasoned breading or batter.

Varieties include:
- Whole pearl onions in breaded style.
- Onion chips; pieces in battered style.
- Preformed rings in breaded style.
- Batter.
- Preformed sticks.

41. Pea Pods
It consists of succulent, edible pods having immature peas inside. It comes in two varieties namely Chinese pea pods and Sugar Snap. The former, also known as snow peas, have very immature, barely formed peas, which are noted for their crisp texture and delicate flavor. These are usually flat and are of lengths 1 1/2 to 3 1/2 inches. The latter has well formed peas inside that are plump and rounded. Varieties include Pea pods, Chinese pea pods, Snow peas, and Sugar snap peas.

42. Peas
They are succulent, fully formed, immature seeds of the garden pea vine. The peas are taken from the pods and are then washed, blanched, sorted and drained before freezing.

Grades depend on similarity of varietal characteristics; overall appearance and color; good flavor; tenderness; freedom from defects and blemishes. The grades include US Grade A, US Grade B, US Grade C and Substandard.

Styles include:
- With salt, no salt.
- Peas in buttery sauce

43. Peas and Carrots
It consists of peas and cubes of carrots that are blanched and drained before freezing. According to grading standards, the peas must form at least 50% of the total weight of
the product and carrots must comprise at least a quarter of the weight. Diced carrots must form at least half the volume of the specified size dice.

Grades depend on similarity of varietal characteristics of each vegetable, percentages of each vegetable, size of carrot pieces, color, good character including tenderness of vegetables after cooking, good flavor, and free from defects and blemishes. The grades include US Grade A, US Grade B and Substandard. This product comes in the form of peas and diced carrots.

44. Peppers
This refers to the succulent fruit or seed pod of the pepper plant. There are several frozen kinds of this vegetable namely yellow, red and green sweet bell peppers; green chili peppers; and hot green jalapeno peppers.

Varieties include:
- Sweet green bell peppers; mixed sweet green and red bell peppers in diced, sliced and 3/8 inch strips forms.
- Green chili peppers in whole with stem.
- Hot green chili peppers; mild green chili peppers in the chopped form.

45. Pepper Puree
It contains the puree of sweet peppers. It comes in the form of roasted red peppers and roasted yellow peppers. The product comes in a plastic jar with twist-off top.

46. Breaded Peppers
It consists of whole sweet green bell peppers, which usually have their seeds removed. Then, they are cut into strips or crosswise into rings and then coated with a seasoned breading or batter. They are mixed with binder, extruded as rings and coated with batter. It might be either raw or par fried. It is then ready to be deep fried or finished in a hot oven.

Varieties include:
- Hot green jalapeno peppers in the form of strips in the breaded style.
- Sweet green bell pepper in the form of rings in the breaded and batter coated styles, preformed rings that are batter coated and strips in the breaded style.
47. Rutabagas
These are large rounded yellow root of the rutabaga plant. They come in a diced form. This vegetable is native to Sweden, and was introduced into Scotland. From there, it spread to the rest of Britain and to North America. The rutabaga is very similar to the turnip except that it generally has yellowish flesh, a denser root with more side shoots and they are usually harvested at a larger size. Unlike the turnip, the rutabaga has smooth, waxy leaves. If stored between 32 to 35 degrees F. and at humidity near 90 percent, rutabagas will keep for four to six months. Waxed roots will keep under refrigerator conditions for one to two months.

48. Sauerkraut
Sauerkraut is prepared through fermentation using salt water. Subsequently, it is added with flavors such as tomatoes, pimentos and peppers. These products are packed either in refrigerated containers or in cans. Sauerkraut is a processed form of cabbage.

49. Speckled Butter Beans
These are succulent seeds of the speckled butter bean or Lima bean. The skins of the seed or beans are pigmented with variegated dots of green, pink, red, lavender and purple. The product is shelled, washed, blanched and drained before freezing. Grades depend on good flavor and color, freedom from defects, character including tenderness and texture. Grades include US Grade A, US Grade B and Substandard.

50. Spinach
This refers to the succulent leaves of the spinach plant. The leaves are sorted, trimmed, washed, blanched and drained before freezing. This falls into the category of “leafy greens”. The grades depend on similarity of varietal characteristics, good overall brightness, normal flavor and odor, good character and reasonable tenderness when cooked, proportion of stem material, and absence of blemishes and defects. US Grade A leaf spinach might also include up to 20% stem material. Grades include US Grade A, US Grade B and Substandard. The various forms are leaf, chopped, sliced, 1/2x1/2 inch pieces, 1/4 inch pieces, 2 inch pieces and cut form.

51. Squash
This is often called winter squash or cooked squash. This is a mature fruit with a hard rind. The fruit is washed, cut and cleaned, steamed and reduced to pulp. The seeds and fiber of this fruit are removed before it is frozen. Some fruits may be cut rather than pureed or reduced to a pulp.
Grades for the pulped product depend on consistency, color, finish including texture and freedom from hard particles, and absence of defects. Grades include US Grade A, US Grade B and Substandard. Cooked puree and cut form are the two different forms of squash.

52. Succotash
It is a mixture of corn and beans. They are succulent, whole kernel white or golden corn and immature seeds of Lima beans or vegetable soybeans or cut or short cut green beans or wax beans. The clean product is then mixed and drained before freezing. According to the grade standards, recommended percentages are corn 50-75%; Lima beans 25-50% or vegetable soybeans 25-50% or green or wax beans 25-50%. Grades depend on similarity of varietal characteristics of each vegetable, good flavor and odor, color, tenderness, and absence of defects. Grades include US Grade A, US Grade B or US Grade C.

There are two varieties:
- Yellow cut corn and Lima beans; 70% cut corn and 30% baby Lima beans; 65% cut corn and 35% baby Lima beans.
- Cut corn with wax beans.

53. Summer Squash
This is a thin-skinned tender fruit of the squash plant and is known by many names such as summer squash, yellow squash, and yellow crookneck. It is noted for its mild flavor and edible skin. There are two styles of frozen squash namely sliced and cut, according to trading standards. Grades depend upon brightness of color, absence of defects character including tenderness and development of seeds, total possible score for these factors comes to 100. Flavor and odor are not scored. Grades include US Grade A, US Grade B and Substandard. The product comes in the form of straight cut slice and crinkle cut slice. Varieties include Gold Bar and Yellow crookneck.

54. Breaded Summer Squash
It consists of yellow Summer squash that is coated with breading or batter. It comes in the form of slices in the breaded and battered styles.

55. Sweet Potatoes
This refers to the tuberous root of the sweet potato vine. The product is prepared by washing, sorting, trimming, peeling, cutting and draining before freezing. It comes in colors such as golden, yellow and mixed. Grades depend upon normal flavor and odor,
color, similarity of varietal characteristics, character, absence of defects, and uniformity of size unless mashed or mixed. Grades include US Grade A and US Grade B. The various forms are sliced, center cut, ripple slice and mashed.

56. Breaded Sweet Potatoes
It contains sweet potatoes that are cut into sticks and then coated with batter. It consists of sweet potatoes that are shaped and are then coated with batter. This product comes in the forms of sticks in batter and nuggets in the batter.

57. Turnip Greens
These are succulent leaves of the turnip plant. The product generally, is trimmed and sorted in the field; then brought into the plant and inspected. It is then washed, blanched, drained, and cut or chopped before freezing.

Grading depend on similarity of varietal characteristics, good overall brightness, normal flavor and odor, good character and some toughness when cooked, proportion of stem material, absence of blemishes and defects. The two grades are US Grade A and US Grade B.

There are three styles namely:
- Minimum stems
- To grade specifications; stems removed
- Diced

58. Vegetable Blends
It consists of a variety of vegetables that are blended or mixed. The product offers color contrasts and variety on the plate. There are some mixtures, which have become standardized in the industry and are known by the name of blend. There is variation in terms of cut and content from one area to another and from one packer to another. Small amounts might be packed in poly bags, paper board cartons or poly chubs. Packing of larger amounts is done in a poly lined corrugated carton. The product usually is IQF, but sometimes comes in wet pack or block frozen.

Some of the select vegetable blend varieties include:
- Beans Parisian – Contains julienne sliced green beans and red pepper bits.
- Beans Supreme – Contains kidney beans, cut green and wax beans, chopped onion and green pepper bits.
• Broccoli Normandy – Contains broccoli spears, crinkle cut carrots, cauliflower florets. Another variety by the same name contains broccoli cut spears, julienne carrots and cauliflower florets.
• California blend – Contains cut broccoli, cauliflower florets and crinkle cut carrots.
• Capri Mix – Contains 25% each sliced zucchini and summer squash, sliced carrots, and French cut green beans. Another blend contains julienne carrots, slant or bias cut green beans, sliced quartered yellow squash, and crinkle cut zucchini.
• Carrots and Potatoes – Contains carrots and potatoes in 50:50 ratio.
• Cauisalata – Contains cauliflower florets, green pepper strips, diced red pepper.
• Chili vegetables.
• Chuck Wagon and Chuck Wagon Corn – Contains 76% cut golden corn, 14% chopped red and green peppers and 10% sliced and pieces of onion.
• Corn Monterey – Contains 75% cut corn, 15% cut celery and 10% diced onion.

59. Vegetable Blends in Buttery Sauce
It refers to a mixture of vegetables with buttery sauce. Some of the vegetable blends in buttery sauce include:
• Beans Parisian – Contains julienne sliced green beans and red pepper bits in buttery sauce.
• Broccoli Normandy – Contains broccoli, cauliflower and carrots in buttery sauce.
• California Blend – Contains cut brocolli, cauliflower florets and julienne carrots in buttery sauce.

60. Breaded Vegetable Assortments
It consists of various combinations of breaded or battered vegetables. It comes in the form of:
• Various vegetables, whole or slices or sticks or florets, packed as an assortment in the battered style, crunchy breading and tempura batter styles.
• Asparagus stalks, broccoli florets, cauliflower florets; Broccoli florets with cheese, baby carrots, sliced zucchini in battered and tempura battered styles.
• Chopped and formed green beans, corn, green pepper, onion, carrots combined with “matrix” or a special batter, and packed as an assortment in the breaded style.

61. Wax Beans
This refers to the succulent seed pods of the bean plant, which contain fully formed but immature seeds. They have been known by the name “snap beans” for many years because of the sound a crisp bean makes when it is broken. There are many varieties
included. “Round beans” which includes green beans such as Blue Lake variety beans and wax beans; “Flat beans” the width of which is 1.5 times greater than the thickness of the bean. The stems of the beans are removed and then washed, blanched, sorted and drained. Regular process, multi-blanch process and special pack are used to pack this vegetable. Grades depend upon similarity of varietal characteristics, good flavor and odor, tender pods when cooked, bright color, freedom from blemishes and defects. Grades include US Grade A, US Grade B, US Grade C and Substandard. It comes in cut form.

62. Zucchini
These are thin-skinned, tender fruit of the squash plant, which are sometimes known by the name of summer squash. It is noted for its mild flavor and tender edible skin. Many varieties of this fruit come with medium to dark green colored skin. There are also some yellow skin varieties available.

The grades are US Grade A, US Grade B and Substandard. Various forms include crinkle cut, sliced, cut and quartered.

63. Breaded Zucchini
The sticks or slices of this fruit are coated with seasoned breading or batter. It may be par fried. It is ready to be deep fried or finished in hot oven.

The various forms are slices, 3/8 inch slices, ovals and wafers in seasoned batter, tempura batter styles, and beer batter style, breaded and breaded with cheese styles and double coated style. The other forms are sticks and strips in seasoned batter, tempura batter, breaded, breaded with cheese and double coated styles.

64. Breaded Zucchini Rings
These are yellow Zucchini mixed with binder, extruded as rings, and are coated with seasoned batter or breading. This product comes in Italian flavored style

65. Frozen Potatoes
Potatoes are star performers in the frozen vegetable market. White or Irish potatoes refer to the starchy tubers of the potato plant. Russet is the most favored potato for French fries.
4.6 FFV: PRODUCTION, CONSUMPTION AND IMPORT, EXPORT TRENDS

4.6.1 FFV: PRODUCTION, CONSUMPTION TRENDS

Today frozen fruits constitute a large and important food group. The quality demanded in frozen fruit products is mostly based on the intended use of the product. If the fruit is to be eaten without any further processing after thawing, texture characteristics are more important when compared to use as a raw material in other industries. In general, conventional methods of freezing tend to destroy the turgidity of living cells in fruit tissue. Different from vegetables, fruits do not have a fibrous structure that can resist this destructive effect. Additionally, fruits to be frozen are harvested in a fully ripe state and are soft in texture.

On the contrary, a great number of vegetables are frozen in an immature state. Fruits have delicate flavours that are easily damaged or changed by heat, indicating they are best eaten when raw and decrease in quality with processing. In the same way, attractive color is important for frozen fruits. Chemical treatments or additives are often used to inactivate the deteriorative enzymes in fruits. The characteristics of raw materials are of primary importance in determining the quality of the frozen product. These characteristics include several factors such as genetic makeup, climate of the growing area, type of fertilization, and maturity of harvest.

The ability to withstand rough handling, resistance to virus diseases, molds, uniformity in ripening, and yield are some of the important characteristics of fruits in terms of economical aspects considered in production. The use of mechanical harvesting generally causes bruising of fruits and results in a wide range of maturity levels for fruits. In contrast, hand-picking provides gentler handling and maturity sorting of fruits. However in most cases, it is non-economical compared to mechanical harvesting due to high labor cost.

As a rule, harvesting of fruits at an optimum level for commercial use is difficult. Simple tests like pressure tests are applied to determine when a fruit has reached optimum maturity for harvest. Colour is also one of the characteristics used in determining maturity since increased maturation causes a darker colour in fruits. A combination of colour and pressure tests is a better way to assess maturity level for harvesting.

Controlled atmosphere storage is a common method of storage for some fruits prior to freezing. In principle, a controlled atmosphere high in carbon dioxide and low in oxygen content slows down the rate of respiration, which may extend shelf life of any respiring
fruit during storage. Due to the fact that these fruits do not ripen appreciably after picking, most fruits are picked as near to eating-ripe maturity as possible.

4.6.2 **GLOBAL FROZEN FRUITS AND VEGETABLES IMPORT/EXPORT TRENDS**

The following 11 frozen product categories (covered by APEDA) were taken into account for the analysis:

1. Potatoes
2. Legumes
3. Spinach
4. Sweet corn
5. Peas
6. Beans
7. Mix Vegetables
8. Other Frozen vegetables
9. Strawberries
10. Raspberries
11. Frozen fruits and nuts

4.6.2.1 **CATEGORY WISE ANALYSIS OF GLOBAL FFV IMPORT AND EXPORTS**

(*SOURCE: FAOSTAT, COMTRADE, EUROSTAT*)

4.6.2.1.6 **FROZEN POTATOES**

Export Trends for Frozen Potatoes

![Bar chart showing export trends for frozen potatoes from 2003 to 2005 for different countries.](chart)
The top 5 exporters of frozen potatoes to the global market are; Saudi Arabia, UK, Belgium, USA and Spain

Saudi Arabia is the largest exporter of frozen potatoes in the world, both in terms of value and volume, followed by UK

USA has the highest UVR amongst all exporting nations, followed by Belgium

Saudi Arabia has the lowest UVR (average price) and that is a major reason for it being the largest exporter
Import trends for frozen potatoes

**Import Value (USD Mns)**

- 2003: 48.4, 16.0
- 2004: 49.8, 21.9
- 2005: 61.4, 23.1

**Import Volume (‘000 tons)**

- 2003: 56.9, 22.9
- 2004: 63.5, 29.1
- 2005: 76.7, 31.1

Legend:
- United Kingdom
- Spain
- Malaysia
- Ireland
- Greece
• The top 5 importers of frozen potatoes to the global market are; UK, Spain, Malaysia, Ireland and Greece

• United Kingdom is the largest importer of frozen potatoes in the world, both in terms of value and volume, followed by Spain

• Besides being the largest importer, UK also has the highest UVR amongst all importing nations, this indicates the high potential that UK market has to offer for frozen potato exports

4.6.2.1.6 FROZEN LEGUMES

Export trends for frozen legumes
The top 5 exporters of frozen legumes to the global market are; China, Thailand, Poland, Belgium, UK

China is the largest exporter of frozen legumes in the world, both in terms of value and volume, followed by Thailand.

Thailand has the highest UVR and is still one of the large exporters, indicating that its products are high on quality.
Import Trends for Frozen Legumes

**Import Value (USD Mns)**

2003: 102.6
2004: 116.6
2005: 114.8

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**Import Volume ('000 Tons)**

2003: 74.4
2004: 64.4
2005: 73.7

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<td>3.7</td>
<td>2.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Spain</td>
<td>3.7</td>
<td>2.9</td>
<td>3.8</td>
</tr>
</tbody>
</table>
• The top 5 importers of frozen legumes to the global market are; Japan, USA, UK, France and Spain

• Japan is the largest importer of frozen legumes in the world, both in terms of value and volume, followed by USA

• Besides being the largest importer, Japan also has the highest UVR amongst all importing nations, this indicates the high potential that Japan market has to offer for frozen legumes exports

4.6.2.1.6 FROZEN SPINACH

Export Trends of Frozen Spinach
The top 5 exporters of frozen spinach to the global market are; Belgium, France, China, Netherlands, Spain

Belgium is the largest exporter of frozen spinach in the world, both in terms of value and volume, followed by Netherlands

France has the highest UVR amongst the other exporting countries
Import trends of Frozen Spinach

**Import Value (USD Mns)**

- 2003: Germany 17.8, Japan 10.3, France 11.5, USA 7.1, Italy 4.3
- 2004: Germany 20.9, Japan 17.2, France 7.7, USA 8.3, Italy 15.0
- 2005: Germany 22.4, Japan 12.7, France 17.2, USA 10.8, Italy 9.9

**Import Volume (’000 Tons)**

- 2003: Germany 21.3, Japan 8.4, France 16.8, USA 5.7, Italy 8.4
- 2004: Germany 22.6, Japan 15.0, France 21.7, USA 9.9, Italy 9.6
- 2005: Germany 25.8, Japan 17.2, France 21.8, USA 13.3, Italy 11.8
• The top 5 importers of frozen spinach to the global market are; Germany, Japan, France, USA, Italy

• Japan is the largest importer of frozen spinach in the world, in terms of value and Germany in terms of volume

• Besides being the largest importers, Japan and Germany also have the highest UVR amongst all importing nations, this indicates the high potential that Japan and Germany market has to offer for frozen spinach exports

4.6.2.1.6 FROZEN SWEET CORN

Export trends of Frozen Sweet Corn
• The top 5 exporters of frozen sweet corn to the global market are; USA, Hungary, New Zealand, Belgium, France

• USA is the largest exporter of frozen sweet corn in the world, both in terms of value and volume, followed by Hungary

• Belgium and New Zealand have the highest UVR amongst the other exporting countries
Import trends of Frozen Sweet Corn

Import Value (USD Mns)

<table>
<thead>
<tr>
<th>Year</th>
<th>United Kingdom</th>
<th>Japan</th>
<th>Belgium</th>
<th>China</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>45.2</td>
<td>21.2</td>
<td>16.4</td>
<td>17.0</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>39.4</td>
<td>17.8</td>
<td>17.2</td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>39.2</td>
<td>18.3</td>
<td>15.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Import Volume ('000 Tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>United Kingdom</th>
<th>Japan</th>
<th>Belgium</th>
<th>China</th>
<th>USA</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>1002.6</td>
<td>46.4</td>
<td>29.5</td>
<td>18.4</td>
<td>18.4</td>
</tr>
<tr>
<td>2004</td>
<td>181.6</td>
<td>47.0</td>
<td>22.0</td>
<td>18.8</td>
<td>15.4</td>
</tr>
<tr>
<td>2005</td>
<td>50.1</td>
<td>45.2</td>
<td>32.4</td>
<td>19.5</td>
<td>15.7</td>
</tr>
</tbody>
</table>
• The top 5 importers of frozen sweet corn to the global market are; UK, Japan, Belgium, China, USA

• Japan is the largest importer of frozen sweet corn in the world, in terms of value and UK in terms of volume

• Besides being the largest importer, Japan also has the highest UVR amongst all importing nations, this indicates the high potential that Japan market has to offer for frozen sweet corn exports

4.6.2.1.6 FROZEN PEAS

Export trends of Frozen Peas
• The top 5 exporters of frozen peas to the global market are: Belgium, New Zealand, Sweden, France, UK

• Belgium is the largest exporter of frozen peas in the world, both in terms of value and volume

• UK has the highest UVR amongst the other exporting countries
- The top 5 importers of frozen peas to the global market are; Italy, UK, Germany, USA, Japan

- Italy is the largest importer of frozen peas in the world, both in terms of value and volume

- Japan has the highest UVR amongst all importing nations

### 4.6.2.1.6 FROZEN BEANS

**Export trends of Frozen Beans**

<table>
<thead>
<tr>
<th>Year</th>
<th>Belgium</th>
<th>France</th>
<th>Poland</th>
<th>Thailand</th>
<th>Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>92.4</td>
<td>42.6</td>
<td>12.3</td>
<td>14.7</td>
<td>9.2</td>
</tr>
<tr>
<td>2004</td>
<td>103.8</td>
<td>48.4</td>
<td>12.4</td>
<td>19.6</td>
<td>12.7</td>
</tr>
<tr>
<td>2005</td>
<td>104.7</td>
<td>45.1</td>
<td>13.4</td>
<td>18.8</td>
<td>13.7</td>
</tr>
</tbody>
</table>
• The top 5 exporters of frozen beans to the global market are; Belgium, France, Poland, Thailand, Canada

• Belgium is the largest exporter of frozen beans in the world, both in terms of value and volume

• Thailand has the highest UVR amongst the other exporting countries
• The top 5 importers of frozen beans to the global market are; France, Japan, USA, Germany, Belgium

• France is the largest importer of frozen beans in the world, both in terms of value and volume

• USA has the highest UVR amongst all importing nations

4.6.2.1.7 FROZEN MIX VEGETABLES

Export trends of Frozen Mix Vegetables
- The top 5 exporters of frozen mix vegetables to the global market are; Belgium, Poland, China, Mexico, France

- Belgium is the largest exporter of frozen mix vegetables in the world, both in terms of value and volume

- France has the highest UVR amongst the other exporting countries
Import trends of Frozen Mix Vegetables

Import Value (USD Mns)

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>France</th>
<th>USA</th>
<th>Japan</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>63.4</td>
<td>47.8</td>
<td>45.5</td>
<td>43.7</td>
<td>22.2</td>
</tr>
<tr>
<td>2004</td>
<td>80.3</td>
<td>56.4</td>
<td>50.9</td>
<td>54.3</td>
<td>22.2</td>
</tr>
<tr>
<td>2005</td>
<td>66.2</td>
<td>66.1</td>
<td>54.3</td>
<td>48.3</td>
<td>22.2</td>
</tr>
</tbody>
</table>

Import Volume ('000 Tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>France</th>
<th>USA</th>
<th>Japan</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>64.0</td>
<td>52.3</td>
<td>44.1</td>
<td>28.8</td>
<td>102.6</td>
</tr>
<tr>
<td>2004</td>
<td>75.6</td>
<td>54.7</td>
<td>45.1</td>
<td>32.7</td>
<td>73.7</td>
</tr>
<tr>
<td>2005</td>
<td>64.3</td>
<td>62.6</td>
<td>49.7</td>
<td>31.7</td>
<td>18.7</td>
</tr>
</tbody>
</table>
• The top 5 importers of frozen mix vegetables to the global market are; Germany, France, USA, Japan, UK

• Germany is the largest importer of frozen mix vegetables in the world, both in terms of value and volume

• UK imports of frozen mix vegetables have decreased drastically

• Japan has the highest UVR amongst all importing nations

4.6.2.1.8 OTHER FROZEN VEGETABLES

Export trends of Other Frozen Vegetables
The top 5 exporters of other frozen vegetables to the global market are; China, Belgium, Mexico, Poland, Spain.

China is the largest exporter of other frozen vegetables in the world, both in terms of value and volume.

Poland and Spain have the highest UVR amongst the other exporting countries.

Import trends of Other Frozen Vegetables
The top 5 importers of other frozen vegetables to the global market are: USA, UK, Germany, France, Belgium

USA is the largest importer of other frozen vegetables in the world, both in terms of value and volume

Besides being a large importer of other frozen vegetables USA also has high UVR indicating that the USA market of imports of other frozen vegetables has very high potential

4.6.2.1.9 FROZEN STRAWBERRIES

Export trends of Frozen Strawberries

Export Value (USD Mns)
• The top 5 exporters of frozen strawberries to the global market are; Poland, China, Mexico, Morocco, Spain

• Poland is the largest exporter of frozen strawberries in the world, both in terms of value and volume

• Besides being the largest exporter, Poland also has the highest UVR amongst the other exporting countries indicating the high quality of its products
Import trends of Frozen Strawberries

Import Value (USD Mns)

2003: Germany 63.7, USA 47.1, France 41.9, Japan 19.8, Netherlands 11.8
2004: Germany 62.3, USA 48.3, France 39.8, Japan 15.8, Netherlands 11.8
2005: Germany 68.2, USA 75.6, France 36.3, Japan 20.2, Netherlands 11.8

Import Volume ('000 Tons)

2003: Germany 55.8, USA 39.9, France 29.4, Japan 17.5, Netherlands 11.8
2004: Germany 57.0, USA 43.1, France 28.4, Japan 16.1, Netherlands 11.8
2005: Germany 76.5, USA 73.3, France 38.0, Japan 27.3, Netherlands 25.8
• The top 5 importers of frozen strawberries to the global market are; Germany, USA, France, Japan, Netherlands

• Germany and USA are the largest importers of frozen strawberries in the world, both in terms of value and volume

• Japan has the highest UVR

4.6.2.1.10 FROZEN RASPBERRIES

Export trends of Frozen Raspberries
• The top 5 exporters of frozen raspberries to the global market are; Poland, Chile, Belgium, Netherlands, China

• Chile is the largest exporter of frozen raspberries in terms of value and Poland in terms of volume
Import trends of Frozen Raspberries

Import Value (USD Mns)

- 2003: 121.2 USD Mns
- 2004: 105.3 USD Mns
- 2005: 90.1 USD Mns

Import Volume ('000 Tons)

- 2003: 86.7 '000 Tons
- 2004: 73.7 '000 Tons
- 2005: 69.6 '000 Tons

Countries: Germany, USA, France, Belgium, United Kingdom
• The top 5 importers of frozen raspberries to the global market are: Germany, USA, France, Belgium, UK.

• Germany is the largest importer of frozen raspberries in the world, both in terms of value and volume, it has also maintained a high UVR indicating the high potential of its market.

4.6.2.1.11 FROZEN FRUITS & NUTS

Export trends of Frozen Fruits & Nuts
The top 5 exporters of frozen fruits & nuts to the global market are; Poland, Canada, China, USA, Netherlands, Belgium

Canada is the largest exporter of frozen fruits & nuts both in terms of value and volume

Besides being the largest exporter Canada also has the highest UVR indicating the high quality of its products
Import trends of Frozen Fruits & Nuts

Import Value (USD Mns)

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>USA</th>
<th>Netherlands</th>
<th>France</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>187.4</td>
<td>122.7</td>
<td>79.1</td>
<td>80.9</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>190.6</td>
<td>140.1</td>
<td>85.4</td>
<td>99.2</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>190.5</td>
<td>177.9</td>
<td>65.0</td>
<td>80.3</td>
<td>113.6</td>
</tr>
</tbody>
</table>

Import Volume ('000 Tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Germany</th>
<th>USA</th>
<th>Netherlands</th>
<th>France</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>190.5</td>
<td>177.9</td>
<td>113.6</td>
<td>93.3</td>
<td>49.4</td>
</tr>
<tr>
<td>2004</td>
<td>158.6</td>
<td>93.3</td>
<td>49.7</td>
<td>34.2</td>
<td>49.7</td>
</tr>
<tr>
<td>2005</td>
<td>152.2</td>
<td>95.4</td>
<td>49.4</td>
<td>38.2</td>
<td>39.5</td>
</tr>
</tbody>
</table>
• The top 5 importers of frozen fruits & nuts to the global market are; Germany, USA, France, Belgium, UK

• Germany is the largest importer of frozen fruits & nuts in the world, both in terms of value and volume, closely followed by USA

• Japan has shown a significant increase in the UVR

4.6.2.2 SUMMARY OF CATEGORY WISE ANALYSIS OF GLOBAL FFV IMPORT AND EXPORTS

The Import/Export Universe for frozen fruits & vegetables

<table>
<thead>
<tr>
<th>Import Universe</th>
<th>Export Universe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Belgium</td>
</tr>
<tr>
<td>China</td>
<td>Canada</td>
</tr>
<tr>
<td>France</td>
<td>Chile</td>
</tr>
<tr>
<td>Germany</td>
<td>China</td>
</tr>
<tr>
<td>Greece</td>
<td>France</td>
</tr>
<tr>
<td>Ireland</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Italy</td>
<td>Kenya</td>
</tr>
<tr>
<td>Japan</td>
<td>Mexico</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Morocco</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Netherlands</td>
</tr>
<tr>
<td>Spain</td>
<td>Poland Sweden</td>
</tr>
<tr>
<td>UK</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>USA</td>
<td>Spain</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
</tr>
<tr>
<td></td>
<td>Thailand</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>USA</td>
</tr>
</tbody>
</table>
4.7 **GLOBAL MARKET PERSPECTIVE**

<table>
<thead>
<tr>
<th>Region/Country</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>%CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>4684.5</td>
<td>4814.85</td>
<td>4973.62</td>
<td>5135.79</td>
<td>5280.75</td>
<td>5448.19</td>
<td>5595.92</td>
<td>2.84</td>
</tr>
<tr>
<td>Canada</td>
<td>434.32</td>
<td>444.2</td>
<td>453.1</td>
<td>461.08</td>
<td>467.32</td>
<td>472.23</td>
<td>477.13</td>
<td>2.1</td>
</tr>
<tr>
<td>Japan</td>
<td>1115.42</td>
<td>1153.47</td>
<td>1189.21</td>
<td>1225.92</td>
<td>1260.16</td>
<td>1291.55</td>
<td>1324.21</td>
<td>3.44</td>
</tr>
<tr>
<td>Europe</td>
<td>5278.21</td>
<td>5419.55</td>
<td>5567.6</td>
<td>5722.34</td>
<td>5887.77</td>
<td>6064.16</td>
<td>6252.17</td>
<td>2.75</td>
</tr>
<tr>
<td>Latin America</td>
<td>1022.35</td>
<td>1101.04</td>
<td>1163.62</td>
<td>1241.5</td>
<td>1323.01</td>
<td>1410.02</td>
<td>1528.2</td>
<td>6.76</td>
</tr>
<tr>
<td>Rest of World</td>
<td>447.02</td>
<td>455.85</td>
<td>474.18</td>
<td>486.01</td>
<td>535</td>
<td>580.7</td>
<td>639.63</td>
<td>3.76</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13998.53</td>
<td>14444.85</td>
<td>14918.61</td>
<td>15422.13</td>
<td>15952.93</td>
<td>16530.03</td>
<td>17108.89</td>
<td>3.26</td>
</tr>
</tbody>
</table>

*Technopak Research Estimates*

Table 1: World Recent Past, Current & Future Analysis for Frozen Fruits and Vegetables by Geographic Region – USA, Canada, Japan, Europe, Latin America, and Rest of World Markets Independently Analyzed with Annual Sales Figures in '000 Tons for Years 2001 through 2010. USA %CAGR is 2.84 and also its performance for last 3 years and the forecast is estimated to be around 5595.92 in 2010. Following Canada forecast is estimated to be around 477.13 and 2.1% CAGR at present and rest of the countries are mentioned clearly.

**World 20-Year Perspective for Frozen Fruits and Vegetables by Geographic Region-Percentage Breakdown of Unit Sales for USA, Canada, Japan, Europe, Asia Pacific (excluding Japan), Latin America, and Rest of World Markets for years 1991, 1995, 2005 & 2010**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>34.38</td>
<td>34.6</td>
<td>33.33</td>
<td>32.71</td>
</tr>
<tr>
<td>Canada</td>
<td>3.26</td>
<td>3.14</td>
<td>3.08</td>
<td>2.79</td>
</tr>
<tr>
<td>Japan</td>
<td>7.27</td>
<td>7.39</td>
<td>7.99</td>
<td>7.74</td>
</tr>
<tr>
<td>Europe</td>
<td>39.29</td>
<td>38.75</td>
<td>37.51</td>
<td>36.54</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>7.09</td>
<td>6.93</td>
<td>7.31</td>
<td>7.55</td>
</tr>
<tr>
<td>Latin America</td>
<td>4.92</td>
<td>5.44</td>
<td>7.62</td>
<td>8.93</td>
</tr>
<tr>
<td>Rest of World</td>
<td>3.79</td>
<td>3.75</td>
<td>3.16</td>
<td>3.74</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
In the year 1991, Europe had highest 39.29 unit sales followed by US 34.38 unit sales and consequently followed by Japan 7.27 unit sales and the other countries.

In the year 1995, Europe accounted for 38.75 unit sales followed by USA accounting for 34.6 unit sales, consequently followed by 7.39 unit sales in JAPAN.
In the year 2005, Europe accounted for 37.51 unit sales followed by USA accounted for 33.33 unit sales and followed by 7.99 unit sales by Japan.

In 2010, Europe unit sales is estimated around 36.54 followed by USA accounting for 32.71 unit sales followed by Japan accounting for 7.74 unit sales and so followed by other countries.
4.8 **GLOBAL PLAYERS IN THE MARKET**

### 4.8.1 DEL MONTE FOODS INC.

**About the Company:** Del Monte Foods Company and its consolidated subsidiaries (“Del Monte,” or the “Company”) is one of the country’s largest producers, distributors and marketers of premium quality, branded food and pet products for the U.S. retail market, generating $3.0 billion in net sales in fiscal 2006 and headquartered in San Francisco. Their leading food brands include Del Monte, Star-Kist, Contadina, S&W, College Inn and other brand names, and their pet food and pet snacks brands include 9Lives, Kibbles ‘n Bits, Pup-Peroni, Sausages, Pounce and other brand names.

**Product categories:** Del Monte Brands operating segment includes products such as: vegetables, including cut green beans, French-style green beans, whole kernel and cream-style corn, peas, mixed vegetables, spinach, carrots, potatoes, asparagus, zucchini, lima beans and wax beans; fruit, including cling peaches, pears, fruit cocktail/mixed fruits, apricots, freestone and sliced peaches, mandarin oranges, cherries, grapefruit, pineapples and tropical mixed fruit; tomato products, including stewed, crushed, diced, chunky, wedges, and puree products, as well as ketchup, tomato sauce, tomato paste, spaghetti and pizza sauces; and College Inn broth products.

**Key Numbers:**
- Employees – 16,700
- 1 year net income growth – 44.1%
- 1 year sales growth – (5.7%)

**Infrastructure:** The Company operates 17 production facilities and 18 strategically located distribution centers in North America and state-of-the-art food and pet food research facilities in Walnut Creek and Terminal Island, California. Additionally, Del Monte has operating facilities and distribution centers in American Samoa, Ecuador and Venezuela.

### 4.8.2 BIRDS EYES FOODS INC.

**About the Company:** Birds Eye Foods Inc., (formerly Agrilink Foods), is the America’s leading frozen vegetable processor. Incorporated in 1961 and based in Rochester, New York, are a producer and marketer of processed food products. Pro-Fac Cooperative, a farmer cooperative, owns majority share in Birds Eye Foods. Pro-Fac is major supplier of
raw materials to Birds Eye Foods. Birds Eye Foods markets its brand frozen vegetable products under the names Birds Eye, Birds Eye Steamfresh, Birds Eye Voila!, C&W, Freshlike and McKenzie’s. In addition, Birds Eye Foods produces branded dry products, including fruit fillings and toppings (Comstock and Wilderness), chili and chili ingredients (Nalley and Brooks), salad dressings (Bernstein’s and Nalley), and snacks (Tim’s, Snyder of Berlin and Husman). The Company's brand products are sold to customers such as Wal-Mart/Sam’s, C&S Wholesale Grocers, Inc., Publix Super Markets, Inc., Kroger, Food Lion, Albertsons, Safeway, and Wakefern Foods. The company acquired Agripac Inc.’s frozen vegetable business that contributes significant part towards the company’s overall revenues. Birds Eye Foods attributes its evolution to a series of strategic acquisitions and deals that enabled the company double its focus on core operations and tailor its product offerings with remarkable precision.

**Product categories:** Major product lines include - canned vegetables, chili and chili ingredients, fillings and toppings, snacks and salad dressings. The company offers a wide range of products for the private label, industrial and food service markets. Birds Eye Foods has been adopting a focused and visionary approach towards expanding its operations and market presence. In line with this strategy, Birds Eye Foods pulled the plug on few of its non-core businesses including the private label canned vegetable business and Adam's Peanut Butter.

**Key numbers:**
- Net sales (2006) – 927.8 Million USD
- Employees – 2,660
- 1 year net income growth – (21.1%)
- 1 year sales growth – 8.1%

**4.8.3 H.J. Heinz (USA)**

**About the Company:** H.J. Heinz is a leading branded food company engaged in manufacture and marketing of a wide range of processed food products around the globe. Heinz® is the global leader in Condiments, Ketchup and Sauces markets. The company’s well-balanced portfolio of food products encompasses frozen food, pet food, soups, meal enhancers, beans and pasta meals, tuna and other seafood products, infant foods, and a host of other processed food products. Heinz is well renowned for its Ore-Ida brand of frozen potatoes. Ore-Ida ranks as America's most popular and widely consumed brand of frozen potato products. Other major brands of Heinz include: ABC® soy sauce in Indonesia, the second leading brand across the globe; Orlando® range in
Spain; the UK’s Salad Cream; Banquette® Line in Costa Rica; and Philippines’ UFC®
banana Ketchup. In addition, the company also offers popular brands such as HAK®
vegetables, Honig® dry soup, Heinz® ketchup, Heinz 57® Sauce, Smart Ones®, Star-
Kist canned tuna, Delimex® Tacquitos,

Key numbers:
Net sales (2006) – 8.64 Billion USD
Employees (2006) –36,000
1 year net income growth – (14.2%)
1 year sales growth – (3.0%)

4.8.4 Ardovries N.V. (Belgium)
Ardovries N.V. currently ranks as one of the Europe’s largest processors of frozen fruits
and vegetables. The company is mainly engaged in sowing, growing, harvesting,
processing and packaging fruits and vegetables. The company offers high quality frozen
vegetables, precooked vegetables, rice/vegetables mixes and dried fruits. Ardovries
offers nearly 150 different varieties of vegetables and fruits, which are picked and frozen
down to -18°C within 5-10 minutes.

Latest product line includes the Bio range, comprising of vegetables for soup; spinach
leaves, peas and green beans offered in 450-600gms packs. These products are mainly
targeted at the health conscious consumers. The company also offers precooked
vegetables, and vegetables under the Ardo Plus brand, that are extensively used in the
salad bars. Other major product lines include: frozen loose spinach leaves, wild
mushroom mixes and purees, frozen cooked rice, local and exotic range of frozen herbs,
delicious fruit salad in passion fruit juice, and black forest fruit mixture. Ardovries
incorporates HACCP standard quality controls in the production processes.

4.8.5 Bekescsaba Deepfrozen Foods (Hungary)
Bekescsaba Deepfrozen Foods is one of the Hungary’s largest suppliers of frozen
vegetables and ranks as a distinguished, pioneering, and innovative frozen food
processor among major industry counterparts. Incorporated in the year 1963,
Bekescsaba Deepfrozen Foods operated principally as an agent for Findus Foods.
Pursuant to Nestlé’s takeover of Findus Foods, Bekescsaba Deepfrozen Foods emerged
as an independent manufacturer of processed frozen vegetables. The company steadily
transformed itself into one of the largest producer of green peas, green and yellow beans,
Romanian beans, red, yellow and green paprika, onions, tomatoes, asparagus,
cauliflowers, root crops and host of vegetable mix combinations. The company exports 65% of its domestic produce to foreign markets, including Austria, Croatia, Slovenia, Sweden, and England.

4.8.6 **Bonduelle Italia (France)**

Bonduelle Italia, a subsidiary of French-based Bonduelle Group, is the market leader in processing of vegetables worldwide. The company is engaged in the manufacture and sales of tinned and frozen vegetables. Bonduelle Italia’s main products include canned foods, canned fruits, canned sauces, canned soup, canned vegetables, dried foods, dried fruit, frozen foods, frozen vegetables, jams and preserves, bottled vegetables, spices, herbs, condiments, and salt.

An ISO 9002 certified company; Bonduelle Italia’s plants incorporate quality control measures in the complete production process, starting from sowing seeds to the final processing of vegetables.

These control measures include both bacteriological as well as chemical analysis tests. The quality control measures are engaged in crop identification, selection of quality seeds, testing vegetable maturity as well as physical and chemical properties, recipes, production processes, and packaging operations. The company operates in nearly 80 countries across the globe and employs around 5,000 people.

4.8.7 **Christian Salvesen (Scotland)**

Christian Salvesen, PLC is among the leading frozen vegetable processors in Scotland and the UK. The company corners a significant share of the frozen vegetable market, selling frozen vegetables of its own label. The company also accounts for a major share in the frozen foods distribution business in Belgium. The Food Services division of the Scottish company mainly offers processed vegetables, food service, chilled, frozen and ambient foods, grocery, recycling services and marketing. The company provides an entire range of freezing, cold storage, packing and other associated services to the United Kingdom frozen food industry. Christian Salvesen owns 400,000Sqm. of warehouse space, employs in excess of 12,750 people, and operates through more than 190 sites spread out in UK, Belgium, France, Italy, Netherlands, Ireland, Spain and Portugal.

Christian Salvesen is also a major logistics company in Europe and supplies frozen food, consumer as well as industrial goods. Other products offerings from Christian Salvesen include: clothing and textiles, white and brown goods, reverse logistics, automotive,
agricultural, packed chemicals, packed lubricants, and building materials. Major clients of the company include Asda, Birds Eye Walls, CWS, Dumeco, Morrisons, Snowking, Agrovic, Carrefour, Heinz, PizzaExpress, Unilever, United Biscuits, Albert Heijn, Delhaize, McCain, PepsiCo, Tesco, Marks & Spencer, Mars, Nestlé, Pilsbury, Ross Young, Somerfield Kwik Save and Unisabi.

4.8.8 Dean Foods (USA)
Dean Foods, through the Larsen and Big Stone operations, processes and markets canned and frozen vegetables such as corn, peas, green beans, carrots, beets, spinach, green lima beans, potatoes, celery, and various mixed vegetables, under the brand names of Veg-All, Freshlike, Larsen, Micro-Quick, Rancho, Fiesta, and Shaw. The company is one of the largest processor and supplier of dairy products such as milk, organic milk, soymilk and other organic foods. Dean Foods operates four divisions - White Wave Foods division, Specialty Foods Group, Dean Dairy Group and International. White Wave Foods division is engaged in the production of organic milk, soymilk and other organic foods while Specialty Foods Group is the largest producer of pickles and other specialty products. At present the company has a workforce of about 30,000 and operates in nearly 125 facilities spread across the US, the UK, Spain and Portugal.
In December 2001, Suiza Foods Corporation acquired Dean Foods Company. Subsequent to the acquisition, Suiza Foods renamed itself as ‘Dean Foods Company’

4.8.9 Frigodan (Denmark)
Frigodan is Danisco’s frozen food company specializing in production and sales of frozen vegetables to the catering segment, retail sector, and food manufacturers. Frigodan’s other products include value-added vegetable mixes with rice and pasta. The company’s main vegetable is pea, which accounts for 35-40% of the total volume of frozen vegetables processed by Frigodan. This company produces about 50% of Danish quality peas. This in turn, represents about 60% of the total quality production of Europe. Frigodan was formed from a number of small acquisitions, primarily in Denmark, while one acquisition was effected in Spain. The main acquisitions were Svendborg and Frigodan.

4.8.10 Froza (Greece)
Froza, a subsidiary of Delta Dairy headquartered in Greece, is engaged in the production of frozen vegetables. Froza produces 18 different products of frozen vegetables and ranks as a pioneering company cornering a significant chunk of the Grecian food market. Following the company’s acquisition by Delta Dairy in the year 1988, Froza underwent a complete reorganization and transformation to enable more competent operation in the
currently challenging marketplace. Froza's product portfolio includes Greek pastry
doughs, Greek vegetables, Greek pies and other lip smacking Greek delicacies. The
company markets its products under the brands – Froza and Stathis.

4.8.11 Frudesa (Spain)
Frudesa is primarily a food manufacturer. Main products of the company include:
convenience foods, ready meals, frozen foods, frozen fish, frozen shellfish, frozen fruits,
juices and vegetables. Frudesa operates through two production plants located in Spain.
Bonduelle Grand Public holds the management of Frudesa’s operations including the
group’s frozen and canned food brands in the Western Europe.

4.8.12 Geest (UK)
Geest is a leading prepared foods company with a well-balanced and diversified portfolio
of fresh, chilled and frozen foods. In the fresh produce segment, the company imports
and supplies fruits and vegetables, and prepared salads to the major retailers in the U.K.
Under chilled convenience, the company offers non-M&S recipe dishes, frozen and
chilled pizzas. The company also operates in a whole series of niche areas and holds a
leading position in chilled dips, chilled soups and sauces, dressed salads and fresh
pasta. The company attributes its continued success to its unceasing emphasis on
innovative and creative product developments. This ideology is mirrored in Geest’s
unabated efforts to maintain lucrative relationships with leading counterparts. The
company employs a workforce of nearly 11,000 and markets its products across Spain,
France, Belgium and South Africa.

4.8.13 Gelagri Bretagne (France)
Gelagri Bretagne, a subsidiary of Coopagri, holds second position in the French frozen
vegetables market. The company markets the Paysan Breton range, la Compagme
Generale de Surgelation Geant Vert, Paysan Breton, and Royal Champignon. Gelagri
Bretagne recently expanded its product portfolio with the introduction of Les Conserves
Pratiques, a brand of canned vegetables that can be stored for more than two years.
Carrefour Group would market the range in France under Gelagri Bretagne’s brands -
Champion and Grand Jury.

4.8.14 Green Giant (USA)
Green Giant is a leading producer of branded vegetables in the United States. The
company also accounts for second major position in the Canadian market. Green Giant’s
product portfolio encompasses canned vegetables, Classic Frozen Vegetables, Specialty
canned vegetables, Create a meal, Complete Skillet Meal, and Frozen Side dishes.
4.8.15 Hajdufreeze (Hungary)
Hajdufreeze, Hungary’s leading food-processing company is well renowned for its portfolio of high quality quick-frozen fruit and vegetables products. Incorporated and floated in the year 1990 as a joint venture company by Hungarian MDV Bank, Hajdufreeze currently has an annual processing and storage capacity of 11,000 tones and 7,200 metric tons per annum respectively. Hajdufreeze maintains a well-equipped vegetable and food-processing plant in Debrecen, Hungary. The company’s leading product category includes quick-frozen sweet corn and peas that conventionally rakes in about a 50% share in the total sales turnover. The fastest moving product categories in terms of annual sales volume include green peas, tomatoes, peppers, courgettes, onions, cauliflower, broccoli, plums, carrots, parsnips, kohlrabi, brussels sprouts and paprika. Hajdufreeze’s principle strategic area of focus comprises the extensive range the Quick-frozen vegetables and vegetable mixes, which traditionally makes in a lion’s share of 90% of total sales turnover. The quick-frozen fruits category receives a comparatively lesser degree of strategic focus with fruits such as cherries, raspberries, apricots, gooseberries, blackberries and currants conventionally accounting for the meager 10% of the company’s total sales turnover. Key export markets of the company include Germany, Austria, France, the UK, and the Benelux countries, which together consumes approximately 85% of the company’s total produce. Hajdufreeze’s processing and distribution operation comply with HACCP and EN ISO 9001:2000 norms.

4.8.16 Merko (Turkey)
Merko, established in 1982, ranks as the second-largest tomato paste trader worldwide. The company principally produces frozen fruits and vegetables, and fruit juice concentrates. Merko enjoys a good reputation in the export as well as domestic markets. The company accounted for about 15% of the total Turkish exports of tomato paste for several years. Initially, the company commenced operations by trading in frozen fruits and vegetables. Merko is ahead of its competitors in terms of cold storage capacity and owns the largest freezing capacity in Turkey. Company’s key export markets for frozen fruits and vegetables include: Germany, France, England, Belgium, and Denmark. Konfrut; Frumiks and Sultaniye; and Merser are the companies operating under Merko group.

4.8.17 Mirsa Refrigerating Industrial (Hungary)
Mirsa Refrigerating Industrial ranks among the key players in the Hungarian frozen vegetables and fruits market. The company’s key products include: sweet corn kernels and corn cobs, green peas, spinach, root vegetables (carrot, celeriac, parsnip, kohlrabi),
various mixed vegetables, plum, blackberries, gooseberries, peach, fruit and vegetable croquettes, cut green beans, cut wax beans, cauliflower, onion, apple, redcurrants, sour cherry, apricot, plum, apricot and sour cherry dumplings. The company currently owns capacity to produce over 14,800 tones of finished frozen produce annually. Frozen vegetables constitute Mirsa's pivotal area of focus accounting for around 86% of the company's total production. Frozen fruits receive a comparatively lesser degree of focus accounting for a meager 11% of the annual production while pastries contribute the remaining share. The company's incorporates the ISO 9001 and HACCP standards in the production process.

4.8.18 NG Fung Hong Limited (Hong Kong)
NG Fung Hong Limited is the largest and leading public company engaged in the manufacture and supply of frozen food products in Hong Kong. Established in 1951, the company is an indirect subsidiary of China Resources (Holdings) Co., Ltd. The group distributes foodstuffs such as livestock, frozen meats, frozen poultry, fruits, vegetables and aquatic products, rice, sugar, peanuts, ham and Chinese wines. The main products of China Resources Holdings are livestock, frozen meat and frozen poultry.

4.8.19 Simplot Australia Pty Ltd. (Australia)
Simplot Australia Pty Ltd. (Simplot) is the Australian market leader in the frozen vegetables. The company is also a leading manufacturer and supplier of frozen and canned products. Simplot offers over 50 categories of products and leads the market in more than seven of its product categories. The frozen vegetables offered by the company include potatoes, beans, onions, peas, corn, carrots, cauliflower, broccoli, and tomatoes. Major vegetable brands of the company include Birds Eye, Leggo and Edgell. Simplot specializes in frozen potatoes, canned vegetables, tomato paste, meals, snacks and frozen seafood, apart from frozen vegetables. Other major brands of the company include I&J and Sealord. Simplot’s Birds Eye has a significant presence in the frozen vegetables range. The company’s products reach consumers through the sales channels such as supermarkets, convenience stores and other retail outlets such as restaurants, schools, cafes, caterers and fast food chains. Major export destinations of the company include New Zealand and Japan.

4.8.20 Simplot Food Group (USA)
Simplot Food Group is one of the America’s largest processed vegetables and fruits companies. Its well-assorted product portfolio ranges from processed frozen potatoes to frozen fruits and vegetables. The company has 14 domestic processing plants in the United States alone, the largest being operated in Pasco, Washington. The company’s
Pasco plant, ingrained with latest technology marvels, owns the capacity to process 150 million pounds of vegetables per annum.

4.8.21 **Unifrost (Belgium)**

Unifrost, incorporated in 1974, is a leading European food company, engaged in production and sales of frozen food products. Unilever is the holding company of Unifrost. Eskimo-Iglo GmbH. Is a principal subsidiary of Unifrost and functions as the marketing arm for the company’s products. The main products of the company include: frozen foods; frozen bakery products; frozen fish and shell fish; frozen pizzas; frozen ready meals; frozen vegetables such as beans, carrots, spinach, sprouts, cauliflowers, peas; ice creams, and other frozen foods. Unifrost also produces Sauces, pickles and dressings, and pasta sauces. Icefresh markets Unifrost’s products in the United Kingdom. Unifrost attributes its continued corporate success to emphasis on flexibility and innovation in providing a wide range of vegetables tailored to customers’ unique cuisine specifications and taste. Unifrost ranks as a pioneering company of its kind with production processes, facilities, and recipes to meet the localized tastes habits of specific clusters of consumers.

4.9 **VALUE CHAIN ANALYSIS**

4.9.1 **KEY PLAYERS IN THE FFV VALUE CHAIN**

The following major business partners can be distinguished for exporters of most preserved fruit and vegetables.

**Agents** - Agents are intermediaries executing the buying and selling orders of a customer against commission (between 2 and 5 percent of the purchasing price). The agents never actually take possession of a shipment. Moreover, the products do not pass physically through the agents’ hands and often not even through their countries of operation. Two types of agents can be distinguished: buying agents and selling agents. The former represents the buyers, such as the food processing industry, compound houses or re-exporters. The latter represents the sellers, mainly exporters. Agents are usually well informed about the current market trends, prices and users.

**Importers** - Importers buy and sell preserved fruit and vegetables on their own account, mainly to the food processing industry and for re-export. Importers take ‘long’ or ‘short’ positions in the market depending on their expectations of future price trends. If an importer sells ‘short’, he is contracting to sell products, which he does not yet possess, while taking a ‘long’ position means that he has unsold products in his trading account.
Processing industry (processing importer) - Processing manufacturers/processing importers buy raw materials and semi-finished products to process them further, with the goal of selling these to the end-product manufacturers. For example, in the case of dried vegetables the processing importers clean, grade, reduce the humidity content and bacteria count before selling to the food industry. The processing manufacturers purchase preserved fruit and vegetables either directly or from importers or through the services of an agent. Specialized fruit processing industries supply semi-manufactured products to the bakery, dairy and ice-cream industry. Cargill and the compound houses are examples of leading processing importers in The Netherlands. The compound houses supply their compounds in the first place to the beverage industry, the dairy industry and the ice cream industry.

End-product manufacturers - Some end-product manufacturers who need large quantities (on a regular basis) of ingredients purchase their ingredients directly from producers abroad, such as the beverage industry in the case of fruit juice and fruit juice concentrate. Another example is the jam industry, which buys substantial amounts of fruit pulp and frozen fruit directly from producers abroad. Leading importing manufacturers in EU countries are Unilever, Cadbury Schweppes and Danone. Many end-product manufacturers use processing importers or agents, as these offers a reference point situated within their own country.

Retail and food service organizations - Retailers carry out the final stage of selling preserved fruit and vegetables to consumers, accounting for a very large share of the total sales. The retail sectors hardly ever import directly, but buy from wholesalers or importers. In the case of jam and canned vegetables, retailers have a strong negotiating position due to the many sourcing possibilities between products and suppliers, as well as the practice of private labeling. In the EU, large supermarket buying groups are Ahold (The Netherlands), Carrefour (France), Metro (Germany), Tesco (United Kingdom) and Aldi (Germany). Because of their much smaller size, the food service sectors do not usually import directly from source.

Packers - These organizations pack goods in standard packs for the European market. The (re) packers keep the goods on stock in their warehouse, at their own risk, and sometimes under their own brand or the private label of a customer. These packers sometimes function as importers as well. More or less the same trade structure applies to all the products discussed in this survey. Many importers, agents,
or re-packers are specialized in more than one product group. For example, Cats Int. is specialized in dried fruit and frozen fruit and vegetables. Some importers also act as an agent. Moreover, most importers trade in preserved fruit and vegetables in consumer packs and catering packs, but also in preserved fruit and vegetables for industrial use.

4.9.2 **Value Chain Analysis: EU**

A large part of the preserved fruit and vegetables used in the EU food industry is imported, often as ingredients. These products are then repacked or processed for re-export. The trade of preserved fruit and vegetables is pan-European and the trade channels in the different EU countries do not differ greatly. Preserved fruit and vegetables can reach their final destination by passing through different trade channels. The selection of the trade channel and the trade partner depends on the requirements of the final customer, usually the food processing industry. By selecting one specific channel and trade partner, other trade partners are often automatically included.
More or less the similar trade structure applies to the other product groups also. The type of food industry and the importance of the different channels, however, can differ. The soup industry (dried vegetables), the sauce industry (sterilized vegetables), the pickles industry (semi-worked pickles), the frozen food industry and other large food manufacturers mostly import directly from source. Some, mostly smaller food manufacturers, are served by intermediaries, who may or may not repack or reprocess (cleaning, grading, reducing the humidity content and bacteria count for dried products) the products. Often they pack the fruit and vegetables under their manufacturer’s brand or a private label. Mostly, they function as importer, wholesaler and exporter at the same time.

**Distribution channels for other preserved fruit and vegetables**

The distribution channel for fruit & vegetables has relatively less number of intermediaries then that of fruit juice concentrate. This nature of channel becomes more important on the basis of type of production and sourcing locations.

Trade partners in the different product groups can be described as follows:

1) **Fruit juices/concentrates**
   - Large, international operating importers
   - Specialized
APEDA (Agricultural and Processed Food Products Exports Development Authority)

- Require large volumes

2) Frozen fruit and vegetables
- Large importers

3) Dried fruit and vegetables
- Smaller importers
- Re packers

4) Canned fruit and vegetables
- Large, multinational companies (Delmonte, Dole)
- Importing retailers
- Specialized importers for the food service segment.

4.9.3 Frozen Fruits and Vegetables Value Chain in US

The margins earned by the retailers in the US are quite high, which they charge on their customers. At the wholesale level, the margins are quite low at around 3-5%, this is a result of large retailers having great bargaining power in the market and as a result being able to get huge volume discounts from their suppliers. Commercial food services such as the restaurants who add value to the food product as well are able to charge margins as high as 50% on the food product. The treatment of the wholesellers is the same irrespective of what the channels is.
4.9.4 **FROZEN FRUITS AND VEGETABLES VALUE CHAIN IN JAPAN**

The margins charged at the retail market in Japan are much lower than in the western world. The figure stands at a much lower 15%, but the wholesalers in Japan have a greater bargaining power since, they are able to charge margins as high as 20% which is again very uncommon in the western world. This can be attributed to lack of alternatives for retailers. Over the years there has been a rise in the net margin charged on food products as more and more processed foods are being introduced in the market. The growth has been steep over the last few years.

4.10 **EU MARKET ACCESS REQUIREMENTS**

4.10.1 **NON TARIFF TRADE BARRIERS**

4.10.1.1 **Product Legislation**

The quality of the product is the key to successful penetration of the European Union market. Following the harmonization of legislation in the EU since January 1993, uniform quality legislation applies EU-wide.

4.10.1.2 **General Food law**
During the last few years, a number of food scandals erupted in the EU: from mad cow’s disease to dioxin in chicken meat. In order to reassure consumers and restore confidence in food products, legislation on food products has become more stringent and increasingly complex. In 2002, regulation EC 178/2002 has been adopted, laying down the general principles and requirements of food legislation, establishing the European Food Safety Authority and laying down procedures in matters of food safety. The regulation is commonly known as the General Food Law, and also includes provisions on the traceability of food. The core aspects of the General Food Law have taken force in January 2005.

Food, Food Law, Food Business, Feed, Retail, Placing on the market, Hazard, Traceability, Stages of Production etc. are few terms defined under General Food Law and the law is described into the following sections:

- General Principle of Food law
- Principle of Transparency
- General Obligations of Food Trade
- General Requirements of Food Law

### 4.10.1.3 EU Marketing Standards

The marketing standards for quality and labeling of fruit and vegetables are laid down in basic regulation EC 2200/96 (of 28 October 1996), in the framework of the Common Agricultural Policy (CAP). Products which do not comply with these standards are barred from the market. Besides EU legislation, importers of frozen fruit and vegetables have their own quality standards. The EU requirements must therefore be seen as indicative for the quality that is demanded by the European importers. The care and handling between harvest and delivery to the country of import is often one of the weakest points in the relationship between producer and importer. The UN standards apply in the case of a product, which is not covered by the EU quality standards. The Standards organizations are able to inform the quality standards that apply to the various products.

### 4.10.1.4 Certificate of Conformity

In June 2001, the EU Commission adopted regulation EC 1148/2001. Under this regulation, all import consignments of frozen fruit and vegetables from countries outside the EU and subject to the EC Marketing Standards will require a recognized Certificate of Conformity before they are allowed to enter the EU market. Products covered by EU marketing standards, which are intended for processing, require a Certificate of Industrial use but are not subject to conformity.
4.10.1.5 Maximum Residue Limits
Imports of fresh fruit and vegetables to the EU have to comply with the legislation for Maximum Residue Limits (MRL’s) of a large number of pesticides. The maximum limits for pesticide residues in and on certain products of plant origin, including fruit and vegetables, are laid down in directive 90/642/EEC.

4.10.1.6 Phytosanitary Regulations and Plant Protection
In general terms, the international standard for phytosanitary measures was set up by the International Plant Protection Committee (IPPC) in order to protect the import of agricultural goods which might have or carry with them plant diseases or insects. In the EU these rules are laid down in the regulation EC 2002/89. With respect to fruits and vegetables, the main object of this directive is to prevent the EU crops from contact with phytosanitary harmful organisms from imported consignments.

Article 13 is the crux of the directive and authorizes the Plant Protection Service to inspect a large number of fruit and vegetables upon arrival in the EU. The annex specifies these plant products, while excluding the following products from inspection: strawberry, grape, melon, kiwi, onion, garlic and avocado. The inspection consists of a physical examination of the consignment on phytosanitary risk, identification and validity of the covering phytosanitary certificate. The phytosanitary certificate is an official document that certifies that the products described have been inspected according to appropriate procedures, are considered to be free from quarantine pests and conform to the current regulations of the importing country. If the imports of fruit and vegetables do not comply with the requirements, these consignments may not enter the EU market.

Requirements of the phytosanitary certificates:
- Shall bear the official text in conformity with the FAO model.
- Shall be drawn up in one of the official languages of the European Community.
- Shall be filled in completely, and either entirely in capital letters or entirely in typescript; if an annex is used, the phytosanitary certificate shall bear the words: “see annex” and the annex shall bear the words: “annex to phytosanitary certificate number” and the annex must be authorized by stamp of the organization and signature.
- Shall be stamped and signed by an authorized officer of the Plant Protection Service.
• Shall be issued not more than 14 days before leaving the country.
• Shall indicate the origin and the destination of the plants or plant products.
• Shall indicate, besides the name of the produce, the botanical names of the plants number and description of packages; net weight; authenticated copies or duplicates of the phytosanitary certificate shall only be issued with the indication of “COPY” or “DUPLICATE”. A photocopy or fax copy or e-mail copy is not acceptable.

4.10.1.7 Market Requirements
The following deals with issues which are non-mandatory for exporters in developing countries and give a marketing edge over the competition.

Environmental, social, health and safety aspects of products and production have become major issues in Europe. Depending on the product group in question, these aspects may play a vital role in preparing for exports to the European market. Exporters of frozen fruit and vegetables to the EU must be aware of the food safety, health and environmental considerations of European customers and try to satisfy these customer needs by offering products which comply with both legislative and market requirements.

Exporters should consider some of these instruments as a management and marketing instrument to create a distinct profile for them, in order to improve their market position. The proliferation of labeling and certification schemes contributes to market opportunities for exporters in developing countries.

4.10.1.8 Social Market Requirements
With the rise of socially responsible consumerism, all actors in the product chain from primary producers to final consumers are in need of market based tools to address social accountability.

Social Accountability 8000 (SA8000) is a universal management system for companies seeking to guarantee the basic rights of their workers. The standard is applicable to all industries and is based on the international accepted ILO Conventions. Starting with certification of many toy manufacturers, manufacturers of garments, manufacturers of plastics and manufacturers of pharmaceuticals, at present (measured 31 October 2004) it has 492 facilities certified, 51 industries represented and 40 countries involved.

To certify business conformance with SA8000, qualified auditors visit factories and assess performance on a wide range of issues: child labor, health and safety, freedom of
association and the right to collective bargaining, disciplinary practices, working hours and compensation. SA8000 Signatory program can be considered a tool to demonstrate a real and credible commitment to achieving decent working conditions in their supply chains. The program is set up to assist companies who are working towards certification. Applying codes of practice in Europe is not without its problems, but in developing countries, their implementation will be even harder for exporters and growers. Companies will be controlled once a year. Subcontractors are required to follow SA8000, but are not necessarily audited.

4.10.1.9 Environmental Market Requirements

Environmental aspects of products have become an issue in Europe. The concept of sustainable development represents the philosophy that economic development should automatically take into account the issue of the environment, recognizing the fact that polluting activities now will have great (negative) impacts on the way future generations can live. In this respect all parties, including the general public but also manufacturers, are asked to accept their social responsibility and minimize the environmental impact of their activities.

Besides governmental actions (legislation), the major retailers in the EU also play an important role in tackling environmental issues. Moreover, a strong consumer movement is noticeable especially in the northern parts of the EU (Scandinavia, Germany and The Netherlands). It is the objective of this section to briefly highlight several aspects which currently play an important role in the EU.

In recent years, issues such as (environmental) Life Cycle Assessment of products, Cleaner Production (CP) and Eco-design have all become important tools for companies to improve on the environmental performance of their products and production processes (by analyzing where the environmental impacts are the largest and how a company may improve on these points). This can lead to both internal (improved efficiency) and external (perceived image) advantages.

4.10.1.10 Organic Production, Ecolabels and Fair Trade Labels

Results of applying the above tools can be company-internal improvements in environmental performance. However, in order to be able to use a company’s environmentally sound approach to its products and production processes, ‘green’ marketing tools such as environmental management standards (for the whole organisation, such as ISO 14001 and EUREPGAP) and ecolabels have been created both by governments and private parties. The demand for environmentally sound
products is increasing, especially in the area of consumer goods. Consumers and traders demand products which are easily recognizable as such and are labeled according to legal stipulations. Ecolabels are voluntary and give a marketing edge over the competition. Examples are the EU Ecolabel, the Netherlands Milieukeur, the German Blue Angel and the Scandinavian White Swan.

Labels referring to the organic production of fruit and vegetables could also be considered ecolabels. The EKO quality label is the label in The Netherlands that guarantees the organic origin and quality of agricultural products.

In a further attempt to foster organic production and to have a common EU label across the EU, the EU Commission has recently adopted EU label to identify food produced according to the EU organic standards. EU standards for organic food production and labeling are laid down in regulation EEC 2092/91. This regulation and subsequent amendments establish the main principles for organic production at farm level and the rules that must be followed for the processing, sale and import of organic products from third (non-EU) countries.

Besides the product-oriented labels, there are also so-called fair trade labels, like the labels of the Max Havelaar Foundation and TransFair International. In 2003, Max Havelaar reached agreement with all international Fair Trade organizations part of the FLO (Fairtrade Labeling Organization) to use one logo. This will help consumers to recognise the Fair Trade products more easily. Fair trade labels exist for fresh fruit products like bananas (including organic bananas). Oké is the brand for several fair trade products and is connected to the Max Havelaar or TransFair label. At present, an increasing number of Oké tropical fruit products are coming at the market, including citrus, pineapple and mangoes.

4.10.1.11 Consumer Health and Safety Requirements

Consumer health and safety is very important in the whole food chain, starting from farming to processing to the shelves in the EU supermarkets. There are a number of safety initiatives in Europe, including the EUREPGAP on Good Agricultural Practices (GAP) that is being developed by the main European retailers. There is also an international management system based on the system of HACCP which can be independently certified.

4.10.1.12 EUREPGAP
A code for fruit and vegetables which is gaining ground in Europe is EurepGap. The Euro-Retailer Produce Working Group (EUREP) has developed the Good Agricultural Practice standards. The Working Group has responded to increasing consumer interest in food safety and environmental issues. The framework of EurepGap requires companies to have a good management system in place to deal with quality, hygiene and environmental matters. Although EurepGap standards are yet not common practice in all the EU member states, it is expected that they will be increasingly accepted and applied in the future, particularly by the large supermarket chains.

4.10.1.13 Management Systems

The need for good quality management takes on increasing importance. Two systems to demonstrate reliability of quality control system are:

- HACCP
- ISO 9000.

Although not directly an obligatory standard for producers of fresh fruit and vegetables yet, exporters must be aware of the fact that in the field of processed fruit and vegetables, HACCP and ISO 9000 are strongly increasing in importance in Europe.

The Hazard Analysis Critical Control Point (HACCP) system is applicable to companies that process, treat, pack, transport, distribute or trade foodstuffs. At present the legislation as laid down in Directive 93/43/EEC applies to producers within the EU, although European importers may in turn require it from their non-EU producers.

In addition, a new Regulation (EC) 852/2004 has been passed that will enforce the same requirements for food imported into the EU as for food produced within the EU. The applications under the new Regulation will come into force on 1 January 2006 at the earliest. This means that HACCP will also be obligatory for developing country exporters dealing with EU member states. The ISO 9000 standards provide a framework for standardizing procedures and working methods, not only with regard to quality control but also to the entire organization. This means that quality, health, safety and environmental management programmes become strongly interwoven with the overall ISO management plan. ISO 9000 does not specifically address product safety and quality, but it is a guarantee that you always do things the same way. One has to bear in mind that the decision to become ISO 9000 certified means a firm commitment, which will draw on the company's human and financial resources and which unavoidably will continuously add procedures and paperwork.
Nevertheless, manufacturers, which have obtained an ISO 9000 series certificate, possess an important asset. The certification may be a vital factor in the selection process applied by trade partners in Europe.

4.10.1.14 Occupational Health and Safety

The growing social awareness in the EU will have implications for companies in developing countries in their capacity, as trading partners. The issue is essential to get better motivated personnel with respect to productivity, product quality, and therefore, a stronger position on the trade market. The prime health and safety concern in this sector is the use of pesticides. Not only can the use of pesticides cause immediate and long term health and safety problems at the production site, but they can negatively influence the competitiveness of the products on the EU market as well.

Other important issues in this respect are good housekeeping, working with machinery and tools, noise and vibrations, and physical strain (ergonomics). Concerning working conditions, the best method is of course not to work with pesticides. If this cannot be avoided, the employee should have access to facilities to take a shower after working with the pesticides. While spraying, a mask with a clean mouth-filter should be worn. Furthermore, it is important that employees do not drink, smoke or eat during working with pesticides and that they wear appropriate protection equipment. The instructions on the can should be read or explained and the cans should be handled carefully (difficult movements, such as climbing onto a tractor, should not be made). The mixture should be made outside, out of the wind, using suitable specific instruments.

4.10.1.15 Packaging, Marking and Labeling

Requirement in terms of packaging and labeling are subject to the marketing standards established by the European Union. General provisions on the labeling, presentation and advertising of foodstuffs marketed in the EU are laid down in European Parliament. It applies not only to foodstuffs intended for sale to the ultimate consumer but also for supply to restaurants and other mass caterers. Container sizes have been prescribed for frozen fruits and vegetables products sold in metal containers. European Parliament and Council Regulation specify the main requirements for materials that come into contact with foodstuffs, including active and intelligent packaging. It also sets out labeling & traceability requirements and the procedure for the authorization of substances through the European Food Safety Authority.

- Packaging

Packaging is used to protect the produce against mechanical damage and to create a more favorable microclimate. It is another essential factor in determining the product’s
quality, since it both represents the product and protects it. Special transport packaging is necessary to ensure that frozen fruit and vegetables arrive in perfect condition at their destination. Packaging plays an important role in the retail presentation of the product, but in trading circles packaging has a technical function as well.

- **Size**
Where the sizes of the packaging are concerned, the general standards, which are common in practice, should be taken into account. One should adapt to the generally accepted sizes of the cartons: 60 by 40 cm; and 40 by 30 cm

The preference for these sizes has to do with the size of pallets and roll containers, which are used for the distribution of the multifarious vegetable and fruit assortment to the supermarkets.

- **Food contact materials**
The European Union has laid down rules for materials and articles coming into contact with food. These rules should prevent circumstances in which certain materials and articles may endanger human health or bring about an unacceptable change in the composition of the foodstuffs.

Regulation EC 1935/2004 replaces and repeals Directive 89/109/EEC and serves as the framework Regulation that lays down the common principles and rules for food contact materials. Besides the general requirements, it also lists certain specific materials and articles coming into contact with food, which may be regulated by additional Directives.

- **Packaging Waste**
The European Commission presented the Export Packaging Note in October 1992, in line with the effort of the European Union to harmonise national measures concerning the management of packaging and packaging waste. The packaging note was followed by a directive in December 1994 (94/62/EC). The directive emphasizes the recycling of packaging material. No later than 30 June 2001, the member states (excluding Ireland, Portugal and Greece) were required to reprocess between 50 and 65 percent of the packaging waste. Member states are allowed to set higher percentages as objectives, as long as intra-EU trade is not hampered.

Exporters in developing countries targeting the European market have to be aware of these agreements and take appropriate measures in order to become or remain interesting trade partners for European businesses. The environmental requirements will
be transposed to the exporter. That means that packaging (transport packaging, surrounding packaging and sales packaging) materials should be limited and be reusable or recyclable. Otherwise, the importer will be confronted with additional costs, thus reducing the competitiveness of the exporter.

Since changes in the environmental policy follow each other at a rapid pace, exporters are advised to ask the importer about the latest regulations or requirements related to packaging.

- **Labeling**
As a result of several food scares (BSE / mad cow disease, dioxin) consumers increasingly pose questions on the production process and demand open, honest, and informative labeling. This has resulted in a discussion in the fruit and vegetable industry about “tracking and tracing”. With good chain management and control within the chain, distributors are able to supervise all kinds of aspects of fresh fruit and vegetables such as plant material, growth, harvest, storage, distribution and processing. The fruit and vegetable industry is increasingly paying attention to chain management and labeling systems with which products can be traced back to the producer.

### 4.10.2 Tariffs and Quotas
Access for fruit and vegetables to the European market is regulated through the EU basic regulation EC 2200/96, this regulation covers amongst other things:
- A list of products to which quality standards apply;
- The entry-price system;
- Duties.

#### 4.10.2.1 Custom Duties
In general, all goods, including frozen fruit and vegetables, entering the EU are subject to import duties. External trade conditions in the European Union are mostly determined by EU regulations. The level of the tariffs depends on:
- The country of origin
- The product

In order to support exports from developing countries, the EU operates the Generalized System of Preferences (GSP). Under the GSP scheme of the EU, imports from a number of developing countries are admitted at a reduced tariff and imports from a group of least developed countries at a zero tariff.
Based on the outcome of the Uruguay Round, and the general trend towards liberalization of world trade, it was felt necessary to reconsider the GSP. A general lowering of trade barriers would mean erosion of the relative advantage of the preferences received by developing countries. A renewed GSP was therefore required. The renewed preferential scheme was introduced on 1 January 1995.

Import duties specified are applicable for a number of developing countries. A form A or EUR I form has to be provided, in case a tariff is applicable and the exporter in a developing country wants to take advantage of the GSP tariff.

4.10.2.2 Entry Price System

In principle, the price setting of products in a free market is established on the basis of demand and supply. However, in the EU the price setting for imported fruit and vegetables is regulated following the so-called entry-price system, which became operational as from 1995. The entry-price system establishes an EU entry (i.e. minimum) price. If a product’s import price lies under this entry price, a duty is imposed (depending on the difference between the two prices). It is possible for an importer to clear a shipment through Customs using either the invoice value or a set value. The entry-price system applies to tomatoes, cucumbers, courgettes, apples and lemons the entire year and to other products (artichokes, other citrus fruit, table grapes, pears, apricots, cherries, peaches, nectarines and plums) during certain periods.

Following the entry-price system, the value of every imported ‘party’ (the terminology used in the official documents) must in principle conform to the entry price. If a ‘party’ is imported at a price under the entry price, an extra agricultural duty will be applied in addition to the Customs duty. With this agricultural duty the price ranges between 100 and 102 percent of the entry price. The agricultural duty is applied as follows:

- When the value of the imported party is between 92 and 94 percent of the entry price, 8 percent of the entry price will be added to the normal Customs duty;
- When the value of the imported party is between 94 and 96 percent of the entry price, 6 percent of the entry price will be added to the normal Customs duty;
- When the value of the imported party is between 96 and 98 percent of the entry price, 4 percent of the entry price will be added to the normal Customs duty;
- When the value of the imported party is between 98 and 100 percent of the entry price, 2 percent of the entry price will be added to the normal Customs duty.
• Parties, which are imported at less than 92 percent of the entry-price, will be penalized by an extra levy, known as the maximum tariff equivalent.

4.10.2.3 Value Added Tax (VAT)
Although fiscal borders between EU countries were, in theory, eliminated from 1 January 1993 onwards, in practice, harmonization of VAT (tax levied at consumer sales’ level) rates has not yet been achieved. The Table below summarizes the VAT rates applied in the different EU member states for foodstuffs in general. Regarding frozen fruit and vegetables, mostly the reduced rate applies.

Table: VAT rates (in %) applied to foodstuffs in the EU as per 1 September 2004

<table>
<thead>
<tr>
<th>Country</th>
<th>Super Reduced Rate</th>
<th>Reduced Rate</th>
<th>Standard Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>-</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Belgium</td>
<td>-</td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Cyprus</td>
<td>-</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>-</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>Denmark</td>
<td>-</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>Estonia</td>
<td>-</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Finland</td>
<td>-</td>
<td>8/17</td>
<td>22</td>
</tr>
<tr>
<td>France</td>
<td>2.1</td>
<td>5.5</td>
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</tr>
<tr>
<td>Germany</td>
<td>-</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Greece</td>
<td>4</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Hungary</td>
<td>-</td>
<td>5/15</td>
<td>25</td>
</tr>
<tr>
<td>Ireland</td>
<td>0</td>
<td>4.4</td>
<td>13.5</td>
</tr>
<tr>
<td>Italy</td>
<td>4</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>Latvia</td>
<td>-</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Lithuania</td>
<td>-</td>
<td>5/9</td>
<td>18</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>3</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Malta</td>
<td>-</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Poland</td>
<td>3</td>
<td>7</td>
<td>22</td>
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<tr>
<td>Portugal</td>
<td>-</td>
<td>5/12</td>
<td>19</td>
</tr>
<tr>
<td>Slovakia</td>
<td>-</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td>Slovenia</td>
<td>-</td>
<td>8.5</td>
<td>20</td>
</tr>
<tr>
<td>Spain</td>
<td>4</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Sweden</td>
<td>-</td>
<td>6/12</td>
<td>25</td>
</tr>
<tr>
<td>Netherlands</td>
<td>-</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-</td>
<td>5</td>
<td>17.5</td>
</tr>
</tbody>
</table>

Source: European Commission 2005. Directorate General, Taxation & Customs Union,
Tax Policy, VAT and other turnover taxes

4.10.3 IMPORT PROCEDURE

The food hygiene conditions for food imports are laid down in several parts of Community law. The main elements are included in the following:

Compliance or equivalence (Article 11 of Regulation (EC) No 178/2002) Food imported into the Community for placing on the market within the Community shall comply with:

- The relevant requirements of food law, or
- Conditions recognized by the Community to be at least equivalent thereto, or
- Where a specific agreement exists between the Community and the exporting country, with requirements contained therein.

Responsibilities of food importers (Article 19 of Regulation (EC) No 178/2002) If a food business operator considers or has reason to believe that a food which it has imported is not in compliance with the food safety requirements, it shall immediately initiate procedures to withdraw the food in question from the market where the food has left the immediate control of that initial food business operator and inform the competent authorities thereof.

Imported food and feed products have to meet EU food safety standards, including the hygiene rules. The import of products of animal origin is only allowed from countries and establishments placed on an EU list managed by the European Commission.

The import procedures for food and feed of animal origin do not change significantly. However, a new aspect of the legislation provides for the introduction of a more harmonized approach to controls on imports of food and feed of non-animal origin from third countries, such as fruit and vegetables or cereals. The frequency of controls on these imports will be based on risk. In addition, provision is made for drawing up a list of products of non-animal origin which are known to potentially pose serious risks to human or animal health, e.g. products which can be contaminated with aflatoxins. It is proposed that these products should be subject to stricter scrutiny and checking at the point of entry, as is the case for products of animal origin.

4.11 USA MARKET ACCESS REQUIREMENTS

4.11.1 NON TARIFF TRADE BARRIERS

4.11.1.1 General Food Law
The United States is a founding member of the World Trade Organization (WTO) formally the General Agreement on Tariffs and Trade (GATT) and subscribes to its underlying principle of most-favored-nation (MFN) or equal market access for virtually all countries.Imports are generally subject only to relatively low and transparent import duties; quality and grade standards on certain fresh horticultural products; and to those restrictions necessary to protect human, animal, and plant health.

In the U.S. food safety is a shared responsibility, several departments of the United States government share jurisdiction over ensuring the safety of the American food supply. With only a few exceptions, these agencies do not approve, license or issue permits for either domestic products shipped in interstate commerce or international trade. However, the United States Government has instituted several laws and procedures to ensure food safety. In addition to strict regulations, safety and wholesomeness of U.S. food products are safeguarded through pre market clearances, mandatory production practices, inspections and random, ongoing sampling. The food safety standards that apply to domestically produced foods also apply to imported foods.

4.11.1.2 United States Marketing Standards
The Agricultural Marketing Service (AMS) carries out a wide range of programs aimed at facilitating the marketing of agricultural products, assuring consumers of a quality food supply, and assuring ensuring fair trading practices. AMS offers voluntary grading service to provide the industry with an impartial, third-party certification of quality and condition of any fresh or processed product. This certification can help to provide a basis for assuring a quality product, verify compliance with contract terms as an aid to selling, and/or help settle claims for damage incurred in transit or storage. The Agricultural Marketing Service (AMS) provides the following services: (a) Quality Standards: In cooperation with industry, AMS develops and maintains quality standards for hundreds of products. Products include: fresh fruits, vegetables, and specialty crops, processed fruits and vegetables, milk and other dairy products, cattle, hogs, and sheep, poultry and eggs, cotton, tobacco, organic products; (b) Grading and Certification: Quality grading (a user-fee service) based on the standards developed for each product. Grading services are often operated cooperatively with state departments of agriculture.

Fruits, Vegetables, and Nuts, certain agricultural commodities (including fresh tomatoes, avocados, mangoes, limes, oranges, grapefruit, green peppers, Irish potatoes, cucumbers, eggplants, dry onions, walnuts and filberts, processed dates, prunes, raisins, and olives in tins) must meet United States import requirements relating to grade, size,
quality, and maturity (7U.S.C. 608(e)). These commodities are inspected and an
inspection certificate must be issued by the AMS to indicate import compliance.

4.11.1.3 Plant Product Imports
Plant Protection and Quarantine requires permits for the importation, transit, and
domestic movement of plant pests and the importation and transit of plants and plant
products under regulatory authorities. APHIS, Plant Protection and Quarantine (PPQ) is
responsible for ensuring that healthy seeds, plants, bulbs, timber, flowers, vegetables,
fruits, and a multitude of other agricultural commodities can be exported without risk to
agriculture and natural resources. APHIS’ Veterinary Services (VS) unit ensures that
animals and animal products, such as semen and embryos, can be exported from this
country without threatening the animal health in their countries of destination. PPQ issues
two kinds of phytosanitary certificates–those for domestic plants and plant products, and
those for foreign plants and plant products offered for re-export.

User Fees for Plant Exporters: Under direction from Congress, PPQ charges a user fee
for issuing phytosanitary certificates. These fees cover the costs of providing certification
services, and exporters must pay at the time the certificate is issued.

4.11.1.4 Phytosanitary Regulations and Plant Protection
Plant Protection and Quarantine (PPQ) serves as the National Plant Protection
Organization (NPPO) of the United States Government. In this capacity PPQ assumes
the international responsibilities delegated by the International Plant Protection
Convention and the Sanitary and Phytosanitary Agreement of the World Trade
Organization. In accordance with these agreements, the Phytosanitary Issues
Management staff of PPQ has primary responsibility to manage, address, and resolve
technical phytosanitary issues.

In this regard, PIM represents PPQ at technical bilateral meetings with trading partners to
establish risk management requirements for the safe movement of imported and
exported plants and plant products. PIM also manages an internationally accepted
system of phytosanitary certification in accordance with international standards, and
manages PPQ’s international standard development and accreditation programs.

Consistent with its responsibilities as the NPPO, PIM does the following:

- Serves as primary USDA resource for resolving technical barriers to trade.
• Coordinates the development of and negotiates agreements on risk management work plans that serve as the technical basis for regulations allowing importation and exportation of plant and plant products.
• Maintains a phytosanitary certification system for exported U.S. agricultural commodities.
• Ensures appropriate U.S. preparation and representation and participation in regional and global phytosanitary standard setting activities.
• Develops standards for accrediting private entities to perform phytosanitary support activities and manages the accreditation program.
• Provides authoritative technical expertise to government, industry, and foreign officials, on the intent, scope and applicability of plant health work plan requirements for agricultural commodities imported into the U.S. or exported to foreign trading partners.
• Represents PPQ, APHIS and USDA at meetings and conferences with foreign countries, U.S. agencies, States, industries, and organizations.
• Maintains open communication with foreign plant protection counterparts, APHIS Agricultural Attaches, USDA Foreign Agricultural Service, and the public sector on changes to import and export programs, and to U.S and foreign laws and regulations.

4.11.1.5 International Phytosanitary Standards
The IPPC is a multilateral convention adopted in 1952 for the purpose of securing common and effective action to prevent the spread and introduction of pests of plants and plant products and to promote appropriate measures for their control. Under the IPPC, the understanding of plant protection has been, and continues to be, broad, encompassing the protection of both cultivated and non-cultivated plants from direct or indirect injury by plant pests. Activities addressed by the IPPC include the development and establishment of international plant health standards, the harmonization of phytosanitary activities through emerging standards, the facilitation of the exchange of official and scientific information among countries, and the furnishing of technical assistance to developing countries that are signatories to the IPPC.

The IPPC is placed under the authority of the FAO, and the members of the Secretariat of the IPPC are appointed by the FAO. The IPPC is implemented by national plant protection organizations in cooperation with regional plant protection organizations, the Interim Commission on Phytosanitary Measures (ICPM), and the Secretariat of the IPPC.
The United States plays a major role in all standard-setting activities under the IPPC and has representation on FAO’s highest governing body, the FAO Conference.

The United States became a contracting party to the IPPC in 1972 and has been actively involved in furthering the work of the IPPC ever since. The IPPC was amended in 1979, and the amended version entered into force in 1991 after two-thirds of the contracting countries accepted the amendment. More recently, in 1997, contracting parties completed negotiations on further amendments that were approved by the FAO Conference and submitted to the parties for acceptance. This 1997 amendment updated phytosanitary concepts and formalized the standard-setting structure within the IPPC.

The 1997 amended version of the IPPC will enter into force on the thirtieth day after two-thirds of the current contracting parties notify the Director General of FAO of their acceptance of the amendment. As of September 2, 2005, the amended version was adopted. The U.S. Senate gave its advice and consent to acceptance of the newly revised IPPC on October 18, 2000. The President submitted the official letter of acceptance to the FAO Director General on October 4, 2001.

The IPPC has been, and continues to be, administered at the national level by plant quarantine officials whose primary objective is to safeguard plant resources from injurious pests. In the United States, the national plant protection organization is APHIS’ Plant Protection and Quarantine (PPQ) program.

4.11.1.6 Environmental Market Requirements
EPA coordinates governmental action on behalf of the environment through integrating research, monitoring, standard setting, and enforcement activities. Among its many duties, EPA regulates pesticides. Through the Office of Pesticide Programs (OPP) EPA determines the safety of new pesticide products, sets tolerance levels for pesticide residues in foods, which FDA then enforces, and publishes directions for the safe use of pesticides. EPA also establishes water quality standards, including the chemical content of drinking water. These standards are used by FDA as guides in its regulation of bottled water sold in interstate commerce for human use.

4.11.1.7 Labeling requirements
According to the Federal Food, Drug, and Cosmetic Act (FD&C Act), a food label must contain specified information, displayed conspicuously and in terms that the ordinary consumer is likely to read and understand under ordinary conditions of purchase and use
Details concerning type sizes, location, etc., of required label information are contained in FDA Regulations (21 CFR 101), which cover the requirements of the Federal Food, Drug, and cosmetic Act and the Fair Packaging and Labeling Act.

U.S. food labeling requirements are summarized as follows:

- If the label of a food bears representations in a foreign language, the label must bear all of the required statements in the foreign language, as well as in English, (Note--The Tariff Act of 1930 requires all imported articles to be marked with the English name of the country of origin)

- If the food is packaged, the following mandatory statements must appear on the label in the English language:
  - **Name of the Food**: The common or usual name of the food must appear on the principal display panel, in bold type and in lines generally parallel to the base of the package as it is displayed. The form of the product must also be included--@sliced, @Awhole, or Achopped (or other style) -- unless shown by a picture or unless the product is visible through the container. If there is a standard for the food, the complete name designated in the standard must be used and limitations must be labeled as such.
  - **Net Quantity of Contents**: An accurate statement of the net amount of food in the package. The required units of measure are the avoirdupois pound and the U.S. gallon but metric system measurements may also be used, if desired, in addition to the required declaration in A English units. The quantity of contents declaration must appear on the principal display panel of the label in lines generally parallel to the base of the package when displayed for sale. If the area of the principal display panel of the package is larger than 5 square inches, the quantity of contents must appear within the lower 30 percent of the label. The declaration must be in a type size based upon the area of the principal display panel of the package and must be separated for the other information

  - **Net weight on packages** containing 1 pound (avoirdupois) or more, and less than 4 pounds must be declared first in total avoirdupois ounces followed by a second statement in parentheses ( ) in terms of pounds and ounces, or pounds and common or decimal fractions of the pound. (Example: Net Wt. 24 ounces (1 2 pounds) or net Wt. 24 oz. (1.5 lb.).) The contents of packages containing less than 1 pound must be expressed as total ounces. Drained weight rather than net weight is required on some products packed in a liquid that is not consumed as food, such as olives in brine
- **Net volume of liquid products** in packages containing 1 pint or more and less than 1 U.S. gallon must be declared first in total fluid ounces followed by a statement in parentheses () in terms of quarts, pints, and fluid ounces or fractions of the pint or quart. (Example: 40 fluid ounces (1.25 quarts) or 40 fluid ounces (1 1/4 quarts).) Volume of packages containing less than 1 pint must be declared in fluid ounces. Packages 4 pounds or larger or 1 gallon or larger need not have their contents expressed in terms of total ounces; however, for such packages the contents must be stated in the largest unit weight or measure, with any remainder in ounces or common or decimal fractions of the pound; or in the case of gallons, the remainder in quarts, pints, and fluid ounces, or decimal fractions of the gallon. If the label of any food package also represents the contents in terms of the number of servings, the size of each serving must be indicated.

- **The name, street address, city, state and zip code of the manufacturer, packer, or distributor:** This information must be placed on either the principal display panel or the information panel. The street address may be omitted by a firm listed in a current city or telephone directory. Imported product labels may omit the zip code. However, if the food is not manufactured by the person or company whose name appears on the label, the name must be qualified A Manufactured for, A Distributed by, A or similar expression.

- **Statement of Ingredients:** The ingredients in a food must be listed by their common names in order of their predominance by weight unless the food is standardized, in which case the label must include only those ingredients which the standard makes optional. Most ingredients in standardized foods are optional and therefore must be listed on the label. The word ingredients do not refer to the chemical composition, but means the individual food components of a mixed food. If a certain ingredient is the characterizing one in a food (e.g., shrimp in shrimp cocktail) the percent of that ingredient may be required as part of the name of the food. Food Additives and Colors are required to be listed as ingredients, but the law exempts butter, cheese, and ice cream from having to show the use of color. Spices, flavors and color may be listed as such, without naming the specific materials, but any artificial colors or flavors must be identified as such, and certain coal-tar colors must be names specifically (403(l) and 403(k)).

- **Nutrition Information:** The Nutrition Labeling and Education Act (NL&E Act), signed into law on Nov. 8, 1990, represents the first comprehensive revision of the food labeling requirements of the FD&C Act. Under the NL&E Act, nutrition labeling must appear on the food label or in accompanying labeling. FDA has
specified a uniform format which must include the serving size, the number of servings per container and the nutrition content of the food per serving, including the amount of each of 11 nutrients specified in the statute, such as calories, sugars, and sodium. The law adds a new section to the FD&C Act which requires nutrition labeling for virtually all food products, replacing the existing FDA nutrition labeling regulations.

4.11.1.8 Food Additive Requirements

Pre-market approval is required for food additives. Food additives are defined as substances whose intended use results or may reasonably be expected to result, directly or indirectly, either in their becoming a component of food or otherwise affecting the characteristics of food. Before marketing a food or color additive in the U.S. a manufacturer must petition FDA for its approval. The Office of Pre-market Approval provides a centralized focal point for food additive review. Regulations governing food additives, including petition regulations, are outlined in the 21CFR Part 170-199. Approximately 100 new food and color additive petitions are submitted to FDA annually.

A food or color additive petition must provide convincing evidence that the proposed additive performs as it is intended. Animal studies using large doses of the additive for long periods are often necessary to show that the substance would not cause harmful effects at expected levels of human consumption. Studies of the additive in humans also may be submitted to FDA.

In deciding whether an additive should be approved, the agency considers the composition and properties of the substance, the amount likely to be consumed, its probable long-term effects and various safety factors. Absolute safety can never be proven. Therefore FDA must determine if the additive is safe under the proposed conditions of use, based on the best scientific knowledge available.

If an additive is approved, FDA issues regulations that may include the types of foods in which it can be used, the maximum amounts to be used, and how it should be identified on food labels. Additives proposed for use in meat and poultry products also must receive specific authorization from USDA. Federal officials monitor Americans’ consumption of the new additive and results of any new research on its safety to assure its use continues to be within safe limits.

4.11.1.9 Custom Duties
THE U.S. CUSTOMS SERVICE cooperates with a number of other Federal agencies, and a license or permit from the responsible agency is necessary to import the following products:

- Alcoholic beverages;
- Animals and animal products;
- Certain drugs;
- Firearms and ammunition;
- Fruits, nuts;
- Meat and meat products;
- Milk, dairy, and cheese products;
- Plants and plant products;
- Poultry and poultry products;
- Petroleum and petroleum products;
- Trademarked articles;
- Vegetables.

4.11.1.10 Bio Terrorism Act

As a part of The Bioterrorism Act 2002, The U.S. Food and Drug Administration (FDA) have the following rules that require registration of domestic and foreign food facilities and prior electronic notice of food imports. Registration with FDA is required for all the food articles shipped to the US; also they need to provide the required Prior Notice data for each shipment. Affected food articles shipping to the U.S. without this information are subject to service delay and possible refusal by the FDA.

Definition of Food in the Bio-terrorism Act of 2002

“Articles used for food or drink for consumption by humans or animals”

Affected Food Commodities

- All food as defined by FDA, “being imported or offered for import into the US”
- Food stored or distributed in the U.S.
- Gifts, trade, and quality assurance/control samples
- Transshipments through the U.S. to another country
- Food imported for future export
- Food admitted into a U.S. Foreign Trade Zone (FTZ)
- Food Commodities Excluded
- Personal use food accompanying a traveler
- Food immediately exported, without leaving the port of arrival
• Meat, poultry, and egg products exclusively regulated by the U.S. Department of Agriculture
• Homemade goods sent as a gift to an individual

Foreign Food Facilities
Foreign food facilities that manufacture, process, pack or hold food are required to have a U.S. agent to register with FDA. It can be any person that resides or maintains a place of business in the U.S. and is physically present in the U.S. The designated U.S. agent acts as a communications liaison between FDA and the facility for both routine and emergency communications.

If a foreign food facility that manufactures, processes, packs or holds food sends it to another foreign food facility for further manufacturing, processing or packing before the food is exported to the U.S., only the last foreign facility is required to register, except if the subsequent facility is conducting the activities such as labeling. In such cases, both facilities must register.

Exemption
The following entities are exempted from the registration requirement:
• Private residences of individuals
• Non-bottled water and drinking water collection & distribution establishments
• Transport vehicles that hold food only in the usual course of their business as carriers
• Farms
• Restaurants
• Retail food establishments
• Non-profit food establishments
• Fishing vessels
• Facilities regulated exclusively by USDA

Registration Method
Electronic registration and Paper registration is accepted

Prior Notice
A set of required data elements on food imports must be filed electronically with the FDA before shipment arrival, using either the Automated Broker Interface or the FDA website.
Prior Notice data for each shipment must be provided before shipping the food articles to the U.S. Affected food articles shipping to the U.S. without this information are subject to service delay and possible refusal by the FDA.

**Required Submission Timeframe**

The specific timeframe for Prior Notice submission is determined by mode of transportation.

- **2 hours before arrival by land by road**
- **4 hours before arrival by air or by land by rail**
- **8 hours before arrival by water**

**Information Change after Submission**

A new Prior Notice must be submitted if changes are made after Prior Notice confirmation has been received. When changes are submitted, the clock for Prior Notice submission will be reset.

**Required Data Elements**

The following information is required for Prior Notice:

- **Submitter details** (name of individual, individual's phone number, name and address of submitting firm)
- **Transmitter, if different than submitter**
- **Entry type**
- **CBP entry identifier**
- **The identity of the article of food as follows**
  - The complete FDA product code
  - Common or usual name or market name
  - Estimated quantity described from the largest container to the smallest package size and
  - The lot or code numbers or other identifier of the food
  - Manufacturer (for food no longer in its natural state). This includes the name, address and registration number
  - Grower, if known
  - FDA country of production
  - Shipper (including name, address and registration number)
  - The country from which the article is shipped
APEDA (Agricultural and Processed Food Products Exports Development Authority)

- Anticipated arrival information (port of arrival and crossing location within that port, date and time)
- Name and address of the importer, owner, and ultimate consignee
- Mode of transportation
- Carrier's Standard Carrier Abbreviation Code (SCAC) or International Air Transport Association Code (IATA)
- Planned shipment information including the 6-digit Harmonized Tariff System (HTS) code

4.11.1.11 Other Specific Standards

FDA operates an oversight compliance program for Low-Acid Canned Food (LACF), which is based on the Hazard Analysis Critical Control Point (HACCP) concept, and is focused on thermally processed, commercially sterile foods, including seafood such as canned tuna and salmon.

Low-Acid Canned Food and Acidified Foods Regulations: The U.S. FDA regulations require that all commercial processors of thermally processed low-acid foods (LACF) packaged in hermetically sealed containers, or of acidified foods (AF) register each processing plant. In addition, each production process for LACF or AF must be submitted to FDA and accepted for filing by FDA before the product can be distributed.

LACF regulations require that each hermetically sealed container of a low-acid processed food must be marked with an identifying code that must be permanently visible to the naked eye. The required identification must identify, in code, the establishment where the product is packed, the product contained therein, the year and day of the pack, and the period during the day when the product was packed. There is no requirement that a product be shipped within the United States within a stipulated period. If a LACF is properly processed, it will not require any special shipping or storage conditions.

FDA regulations require that scheduled processes for low-acid foods must also be established by qualified persons having expert knowledge of thermal processing requirements for low-acid food in hermetically sealed containers and having adequate facilities for making such determinations. All factors critical to the process are required to be specified by the processing authority in the scheduled process.
4.11.2 **IMPORT PROCEDURE**

Imported goods may not be entered into the U.S. legally until the shipment has arrived within the limits of the port of entry and delivery of the merchandise has been authorized by the U.S. Customs Service, U.S. Treasury Department. This is normally accomplished by filing the appropriate documents, either by the importer or by their agent. Customs entry papers may be presented before the merchandise arrives.

The Customs Service does not notify the importer of the arrival of a shipment. Notification is usually made by the carrier of the goods. The importer should make their own arrangements to be sure they or their agent is informed immediately so that the entry can be filed and delays in obtaining the goods are avoided. If documentation is not filed within 30 days of arrival the goods are sent to a general order warehouse to be held as unclaimed. The importer is responsible for storage charges which are incurred during the period the merchandise is being held in the warehouse. After one year it is sold.

Entry of goods is made at the first port of arrival unless other arrangements are made prior to shipment from the country of origin for Air-bound shipment to a further port or to a bonded warehouse. If the importer is not able to be there to prepare and file the entry, commercial brokers, known as customs brokers and licensed by the Customs Service, may act as the agent. Such brokers charge a fee for their services. A list of customs brokers may be obtained from a local customs office or the telephone directory.

4.11.2.1 **Documentation and Merchandise Entry**

The U.S. believes that facilitating the release of legitimate imported merchandise is equal to the responsibility for collecting the proper import duties and enforcing its laws against illegal merchandise. The documents required by U.S. Customs are:

- Customs Entry form 3461
- Evidence of right to make entry, e.g. bill of lading. (Merchandise may be entered only by the owner, purchaser, or a licensed customhouse broker.
- A Commercial Invoice or Pro-Forma Invoice if a commercial invoice cannot be produced.
- Packing List if appropriate
- Other necessary documents to determine merchandise admissibility.
- A bond which is normally posted with Customs to cover any potential duties, taxes, and penalties the may accrue after release of the cargo.

4.11.2.2 **Organic Production, Ecolabels and Fair Trade Labels**
Since 2002, the United States has had an official label for organic farming production. Organic-certified production prohibits GMO's and irradiation as well as the use of pesticides and sewage sludge. In order to become certified, farmers must confirm they’ve foregone these products for at least three years. Organic farmers also promote soil health by employing soil-building and conservation practices, manure management, and crop rotation. Organic livestock must only eat organic feed and have outdoor access and pasture for livestock. All certified organic farms are required to keep detailed production records and submit to ongoing monitoring.

**Organic**

To be labeled as "organic," 95% of the ingredients must be organically grown and the remaining 5% must come from non-organic ingredients that have been approved on the National List. These products can also display the USDA organic logo and/or the certifier’s logo.

**100% Organic**

According to USDA's national organic standard, products labeled as "100 percent organic" can only contain organically produced ingredients. Products containing 100% organic ingredients can display the USDA Organic logo and/or the certifying agent's logo.

**Fair-Trade Certified**

This fair-trade certified seal confirms that producers were guaranteed a fair floor price, similar to our minimum wage, for their product. Fair-trade-certified products provide farmers economic security and an essential source of income. Fair trade started in Europe in the 1980s, and in 1999, the United States began its own certification process. In just over five years, fair trade products bought in the United States have helped channel more than $55 million in additional income to more than 800,000 farmers and their families in more than 50 countries. You can now find fair trade coffee, tea, fruit, chocolate, rice, and sugar, and if you don’t see it in your local stores, ask for it.

**4.12 JAPAN MARKET ACCESS REQUIREMENTS**

**4.12.1 NON TARIFF TRADE BARRIERS**

**4.12.1.1 Product Legislation**

The quality of the product plays an important role for the successful penetration in the Japanese market. Japan Agricultural Standard (JAS) law is the one to specify labeling of
agricultural products and other related regulation governed by the Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF).

4.12.1.2 General Food Law

There are three major laws pertaining to food safety and standards; the Food Safety Law, Food Sanitation Law and Japan Agricultural Standards Law. The Food Safety Basic Law sets the principles for developing a food safety regime and the role of the Food Safety Commission, a food related risk assessment body (JA3029). The Food Sanitation Law ensures the safety and sanitation of foods by the Ministry of Health, Labor and Welfare (MHLW), a food risk management agency. The law prohibits the sale of foods containing poisonous or harmful substances. It also prescribes the standards for foods, additives, food apparatus and container packages, and certain toys.

The general requirements and standards are set by the Japanese Ministry of Health, Labor, and Welfare (MHLW) and apply to all types of foods including imported foods. Imported foods that do not meet these requirements will not be allowed entry. These requirements and standards place primary emphasis on component requirements and manufacturing standards. It is strongly recommended that in the event that a product label does not clearly indicate additives, preservatives, coloring material, spices or flavorings, that a certificate with detailed descriptions of the ingredients (i.e., the names of chemical compounds, chemical names and international index numbers on the colors) be attached to each shipment in order to expedite import procedures.

The Ministry of Agriculture, Forestry and Fisheries (MAFF) is also involved in food risk management, mainly in the area of food labeling, through the Japan Agricultural Standards (JAS) Law, and animal and plant health protection, through a series of quarantine laws. MAFF is also responsible for organic food production standards through the JAS Law.

4.12.1.3 Maximum Residue Limit

In establishing MRL’s, MHLW obtains the data necessary for pesticides registered for use in Japan through MAFF, based on Article 7-2 of the Food Sanitation Law. As for pesticides registered in other countries, MHLW collects data by directly requesting information from the pesticide manufacturers abroad. Data needed for evaluation usually includes data on acute toxicity, sub-acute toxicity, chronic toxicity, carcinogenicity, reproductive toxicity, teratogenicity, mutagenicity, pharmacokinetic and general
pharmacological parameters, animal metabolism, and plant metabolism as well as residue data (for commodities treated with target pesticides).

MHLW maintains a list of MRL’s for pesticides. As of May 2003, there were about 9,000 MRL’s established for 229 pesticides on about 130 commodities. Each year, MHLW reviews a number of substances for the purposes of establishing an MRL. Currently, unlike MHLW’s regulatory approach to food additives, crops containing pesticides without MRL’s may be distributed in Japan unless they pose a health hazard. To be regarded as such, products without a MRL listed in the present list, residue levels must be safe, usually meaning that the residue levels are below either Codex or the exporting country standards – whichever is stricter.

4.12.1.4 Plant Protection

Plants prescribed by ministerial ordinance which are forwarded from areas prescribed by ministerial ordinance or via relevant areas, should not be imported.

Imported plants and their packing material or container must have phytosanitary certificates issued by the relevant government organizations of the respective exporting countries or copies of the same attached to them.

When a plant is imported, it must be inspected without delay by a Plant Quarantine Inspector to determine if a phytosanitary certificate issued by the government organization of the exporting country or its copy is attached, if it is a plant for which importation is prohibited, and if any quarantine pests accompany it.

For seedlings prescribed by ministerial ordinance (such as fruit tree seedlings, potatoes, flower bulbs), as a result of inspection, when deemed necessary in order to judge whether or not quarantine pests exist, isolated cultivation is implemented.

4.12.2 IMPORT PROCEDURE

Firms interested in importing food, food additives, container-packages or apparatus to Japan must submit a “Notification Form of Food Importation” to the Food Sanitation Inspection Section of the Quarantine Station, Ministry of Health, Labor, and Welfare. The Quarantine Station will examine the product to determine if it conforms to the Japanese Food Sanitation Law, upon notification. Foods that are required to be examined will be inspected on the spot at the designated bonded warehouse. Samples will be taken and forwarded for laboratory analysis. The food is allowed entry into Japan once it is examined and found to be in compliance with Japanese food regulations. The Notification
Form is stamped if the food requires no examination and is found to be in compliance with the Japanese Food Sanitation Law.

4.12.2.1 Copyright/Trademark laws
International trademarks are not protected in Japan. Trademarks must be registered at the Patents, Trademarks and Licensing Office in Japan. The first applicant for a trademark is entitled to its registration.

4.12.2.2 Other Specific Standards
Frozen fruits and Vegetables that are permitted entry
Those frozen fruits and vegetables which are permitted entry by the Japanese government in their fresh form (not heated prior to freezing) may be self-certified by the processor, exporter or state department of agriculture. Self-certification requires the following information to be placed on the shipper’s invoice which will accompany the product:

- Date of product freezing;
- Temperature of freezing (at least zero degrees Fahrenheit);
- Name and signature of responsible company official or representative;
- Title of company;
- Date of signature;
- Name of company;
- Product description;
- Quantity of product being shipped.

4.12.2.3 Other Regulations and Requirements
Import documents required for entry into Japan are as follows:

- Import Notification - Two copies required.
- Required Health Certificate
- Results of Examination
- Documents showing the materials, additives and manufacturer process (Manufacturer Certification).

Cargos found in violation of the Food Sanitation Law are re-exported, destroyed or otherwise disposed of. In addition, the following must also be presented upon importation where appropriate:
Other Documents - Processed foods imported for the first time must contain additional documents with more detailed information, including on raw materials and ingredients, manufacturing process, than those stated in the import notification.

4.12.2.4 Regulations and Procedural Requirements at the Time of Importation

The importation of pre-cooked frozen foods is subject to provisions of the Food Sanitation Law. In addition, pre-cooked frozen foods containing beef, pork, or chicken are subject to provisions of the Domestic Animal Infectious Diseases Control Law. Imports of frozen rice content of 30% or greater may be subject to provisions of the Foodstuff Law.

4.12.2.4.1 Domestic Animal Infectious Diseases Control Law

In order to prevent infectious disease of livestock from being brought into the country, pre-cooked frozen foods containing meat of hoofed animals (designated quarantine goods) are subject to inspections mandated by the Domestic Animal Infectious Diseases Control Law. An "Inspection Certificate" issued by the competent government agency of the exporting country to the Animal Quarantine Service of Japan must accompany imports of pre-cooked frozen foods.

The importer must submit an application for import quarantine inspection along with an Inspection Certificates issued by the competent government agency of the exporting country to Animal Quarantine Service of Japan at the port of entry. Note that animal inspections can only be performed at ports of entry with facilities to carry out required processes. If the pre-cooked frozen food passes inspection, an import quarantine certificate is issued. If it fails inspection, an order will be issued to destruct, bury, or return to the shipper, depending on the product and the nature of the violation. Applicants may utilize the Animal Quarantine Inspection Procedure Automated System (ANIPAS), and may request simultaneous handling with the food sanitation inspection.

4.12.2.4.2 Food Sanitation Law

Under provisions of the Food Sanitation Law, an import notification is required for pre-cooked frozen foods being imported for the purpose of sale or for other commercial purposes. Importers are required to submit the completed “Notification Form for Importation of Foods, etc.,” along with other required documents (production process chart, ingredient composition sheet, etc. for processed food), to the Quarantine Station at the port of entry. A determination is made based on the document examination whether or not an inspection at the bonded area is required.

4.12.3 LABELING REQUIREMENTS

Labeling Required by Ministry of Health, Labor and Welfare
All food products must be in perfect condition from a food sanitation standpoint. The following information must appear on the product label in Japanese.

The minimum size of type is approximately 8 point for all characters. It is recommended that the importer double-check the labels to ensure conformity.

The label should include the following information:

- Name of the product;
- Country of origin;
- Name of the importer;
- Ingredients, other than additives, in descending order of weight percentage;
- Food additives in descending order of weight on a separate line from other ingredients;
- The net weight in metric units only. A system of average net weight tolerances of packages or certain commodities are set by the Ministry of Health, Labor, and Welfare;
- “Best-before date” or “Expiry of consumption” on products whose quality changes rapidly;
- Method of use, storage instructions, or preparation, when established by the Minister of Health, Labor, and Welfare (MHLW) for the product or when its absence could cause confusion.
- Labeling of biotechnology ingredients (limited to 30 foods made from corn, soybeans and potato, where the genetically modified content of the labeled ingredient exceeds 5 percent.

Labeling Required by Ministry of Agriculture, Forestry and Fisheries (MAFF)

- Separate from labeling requirements under the MHLW Food Sanitation Law, MAFF requires manufacturers to label their products in accordance with quality labeling standards established under the Standardized Quality Labeling System of the Japan Agricultural Standards (JAS) Law.
- The JAS Law was revised in 2000. The revised JAS Law requires labeling of:
  - Place of origin for all perishable foods (produce, meat, seafood, dairy)
  - Ingredients derived from biotechnology- limited to 30 foods made from corn, soybeans and potato where the genetically modified content of the labeled ingredient exceeds 5 percent
  - Organic labeling, including mandatory third party certification for products labeled as “organic”
• **Labeling required for frozen vegetables**
  o When selling frozen vegetables sealed in wrapping or containers, following items must be listed all together on the label, under provisions of the Food Sanitation Law, the Processed Food Product Quality Labeling Standards and Vegetable Frozen Food Quality Labeling Standards under the JAS Law, and the Measurement Law.
  o Labeling items to be listed all together
    - Product name
    - List of ingredients and food additives, if any
    - Producing area of raw material (other than imports)
    - Net contents
    - Best-before date
    - Preservation method
    - Cooking Requirement, if any
    - Pre-heat-treatment indication (only for products requiring cooking)
    - Country of origin
    - Importer's name and address
  o Based on the Vegetable Frozen Food Quality Labeling Standards (adopted August 2002), frozen vegetables domestically produced or processed as of March 2003 are required to list the place(s) of origin for the main ingredient materials (top three vegetables in percentage order by weight, for those with a percentage of 5% or greater) in percentage order by weight. If the place of origin is Japan, there shall be an indication to this effect (or in the name listed of a prefecture, a city, or some other readily identifiable place name), and if the place of origin is a foreign country, then the name of the foreign country shall appear, with the ingredients from that country listed in percentage order by weight in parentheses. Labeling may be omitted when the container packaging has a total area of under 30 cm²

### 4.12.4 PACKAGING AND CONTAINER REGULATIONS

In accordance with the MHLW Food Sanitation Law, no person shall sell, manufacture or import with the intent to sell, or use in business, any apparatus or container/package which contains or bears toxic or injurious substances and may injure human health, or, any apparatus or container/package which may injure human health by having harmful influence on foods and additives through contact therewith. To prevent the use of harmful apparatuses, containers/packages, MHLW may establish standards for methods of
manufacturing apparatuses, containers/packages. MHLW has established specifications for synthetic resins, metal cans, and containers/packages made of glass, ceramic, enamel, or rubber.

In April 2000, Japan implemented a new **Package Recycling Law** that requires paper and plastic packaging to be appropriately labeled and recycled. Private industry is being required to pay all costs associated with this recycling. For imported products, the cost will be born by importers. However, it is possible that Japanese importers will begin to take recycling costs into account when choosing the goods they import, and some Japanese importers may ask their suppliers overseas to cooperate in supplying the additional labeling.

Importers will be responsible for making sure that there are appropriate labels on all packaging and containers used for imported goods. Specifically, the law requires that paper packaging be labeled as per Form 1 (for printing) or Form 2 (for stamping), and that plastic packaging materials be labeled as per Form 3 (for printing) or Form 4 (for stamping).

### 4.12.5 QUALITY

Regarding the quality of processed foods, the matters to be labeled collectively by manufacturers, processor/packers or importers (distributors if the distributors are in a position to make the quality labeling on behalf of the manufacturers or processor/packers with the latter’s agreement to it. Referred to as the “manufacturer, etc.” hereinafter) on the container or package of the processed foods shall be as shown below. However, this provision shall not apply to the case that any persons manufacture or process foods and sell them to general consumers directly or provides the facilities to have them eat or drink those foods.

- Name
- Names of ingredients
- Net contents
- Best-before date (Date of minimum durability)
- Instruction for storage
- Name or trade name and address of manufacturer, etc.

With regard to the products where liquid packing media are added to solid products and then the final products are sealed in cans or bottles (except those in which the drained weight is difficult to control), the drained weight and the total quantity of contents shall be labeled on the cans or the bottles by the manufacturer, etc. However, this provision shall
not apply to the case that the drained weight and the total quantity of contents are nearly
the same or the purpose of adding liquid packing medium is only to protect the contents.

4.12.6 REGULATIONS AND PROCEDURAL REQUIREMENTS AT THE TIME OF SALE

The sale of pre-cooked frozen foods is subject to the Food Sanitation Law, the JAS Law,
the Measurement Law, and the Health Promotion Law. Containers and packaging may
also be subject to identifier labeling provisions of the Law for Promotion of Effective
Utilization of Resources, and recycling provisions of the Containers and Packaging
Recycling Law.

4.12.6.1 Food Sanitation Law

The Food Sanitation Law prohibits the sale of foods containing toxic or harmful
substances and foods that are unsafe for human health. When selling packaged pre-
cooked frozen foods, they must be labeled in accordance with provisions of the Food
Sanitation Law. In addition, a legal obligation was added for labeling standards for
genetically modified foods and for the foods containing allergens (for example egg, milk
and wheat, etc.)

4.12.6.2 JAS Law

It is the Law Concerning Standardization and Proper Labeling of Agricultural and Forestry
Products. The JAS Law establishes quality labeling standard for all food and beverage
products sold to ordinary consumers. Pre-cooked frozen foods are subject to the
Processed Food Quality Labeling Standards. In addition, the following products are
subject to the Pre-Cooked Frozen Food Quality Labeling Standards. Furthermore, a legal
obligation was added for labeling standards for genetically modified foods.

<table>
<thead>
<tr>
<th>Products subject to the Pre-Cooked Frozen Food Quality Labeling Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen “shao mai” dumplings, frozen “gyoza” dumplings, frozen spring rolls,</td>
</tr>
<tr>
<td>frozen hamburger steaks, frozen meatballs, frozen fish hamburger, frozen fish</td>
</tr>
<tr>
<td>balls, frozen fried foods (frozen fried fish, frozen fried shrimp, frozen fried</td>
</tr>
<tr>
<td>squid, frozen fried oysters, frozen croquettes, frozen cutlets, other frozen fried</td>
</tr>
<tr>
<td>foods), frozen rice, frozen noodles.</td>
</tr>
</tbody>
</table>

4.12.6.3 Measurement Law

Pre-cooked frozen foods sealed in wrapping or containers are required the labeling of the
net content to certain accuracy. Direct Purpose of this law is to establish standards for
measurements and ensuring implementation of appropriate structure of measurement.
Following are the approaches followed under this law:
• Unifications of the units of measurement
• Supply of measurement standards
• Supply of accurate measuring instruments
• Implementation of appropriate measurement
• Promotion of autonomous measurement administration
• Accurate and fair execution of law

4.12.6.4 Health Promotion Law (former Nutrition Improvement Law)

The Health Promotion Law was adopted in August of 2002 (and went into effect in May of 2003). The former Nutrition Improvement Law was repealed, and the regulatory system in effect under the former Law continues in force under the new Law. When employing labeling for nutritional ingredients or calories, labeling must be in accordance with the requirements under the Law.

4.12.7 Key Considerations for entering the Japanese Market

Frozen foods require consistent temperature control (-18 Degree C or below) and sanitary handling at every stage from storage to transport, delivery and resale (wholesale and retail). The frozen food handling industry has adopted voluntary standards for frozen food handling. These include detailed standards for handling at manufacturing plants (equipment, operator, production process and packaging standards), as well as refrigeration equipment and handling standards at the wholesale stage, handling standards during shipment and delivery and equipment and handling standards at retail stores. New market entrants must secure distribution routes that possess adequate freezer equipment and strictly adhere to handling standards.

Moreover, market entrants should keep in mind the various costs entailed by the nature of frozen foods, including the cost of freezer storage, sorting and packaging. Recent times have seen greater importance placed on traceability systems that extend to the ingredients, seasonings and food additives of frozen foods as a way of assuring food safety. Even in the commercial and institutional market, leading restaurant chains are increasingly demanding safety certificates from food suppliers, and suppliers have to respond appropriately.

4.12.8 Distribution Channels

In the case of frozen vegetables, almost nothing is sold through the wholesale markets. The most common distribution method is for a trading company to provide the frozen vegetables to a Japanese frozen food maker, which repackages the vegetables and sells them through wholesalers to retailers or commercial users along with Japanese-made
frozen vegetables and other frozen food products. Sometimes imported frozen vegetables go directly from the trading company to a processed food maker for use in making processed food products. Recent years have witnessed the rise of newer distribution methods that bypass the intermediate stages of the usual distribution process, such as contract production overseas for large food services companies and direct imports by mass merchandisers. Consequently, the increase in frozen vegetables imports has meant a smaller role for the wholesale markets in vegetable distribution as a whole. This represents one reason why wholesaler’s intermediary wholesalers have been experiencing financial difficulties.

4.12.9 Policies related to imports of vegetables & related products

Japan's policies in the vegetable sector support producers’ incomes while keeping market prices stable. If market prices for vegetables fall below a historical average price, farmers receive compensation for most of the price decline. In return, farmers are expected not to exceed target planting areas. Government subsidies are available for farmers to divert land out of rice production and into vegetables, and farmers raising vegetables in greenhouses benefit from subsidized insurance premiums. Border measures and quality differences make Japan’s vegetable prices high by international standards. At the border, the most important factor has been Japan’s phytosanitary rules, which block imports of some important fresh vegetables and require fumigation in some other cases. Tariffs on vegetables are under 13 percent, except on imports of dried beans outside a tariff-rate quota. Growing imports led to a temporary safeguard action against two vegetables in 2001.

Japan is one of the leading agricultural importing nations in the world. Japan's policies protect and regulate its agricultural markets. Japan is a large market for fresh and processed vegetables—the wholesale value of the market in 2000 was about 3 trillion yen ($23 billion). The high value of Japan’s vegetable consumption reflects, both high consumption per person and high prices for vegetables. While Japan imports a large share of its supplies of frozen, canned, and other processed vegetables, domestic production still satisfies most of the country’s fresh vegetable demand.

Japan’s policies concerning the vegetable sector can be divided into two categories: policies oriented toward domestic producers and consumers and policies applied at the border. An overview of the policies is given in the box below:

<table>
<thead>
<tr>
<th>Policy</th>
<th>Goal</th>
<th>Commodity coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic policies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Japanese foodservice and food processing sectors are heavy users of vegetables, purchasing approximately 55 percent of the nation’s total vegetable consumption. Foodservice operators (e.g., restaurant chains), processors, and retailers demand stable vegetable supply, quality, and price. Partly in response to price volatility in the Japanese vegetable market, food manufacturers and foodservice operators have increased their purchases of imported vegetables which are available at relatively lower prices. The 2002 Reform Measure aims to encourage the Japanese foodservice and food processing sectors to use more domestic vegetables.

4.12.9.1 BORDER MEASURES

Imports related measures
Japan’s measures affecting vegetable imports include tariffs, a variable duty on onions, a tariff-rate quota (TRQ) on pulses, and phytosanitary requirements on many vegetables. Japan has applied safeguard TRQ’s to two vegetables using the Uruguay Round (UR) Agreement on Safeguards. In 2000, about 18 percent of Japan’s vegetable supply was imported.

Tariffs
Tariffs on most vegetables are 3 percent of the import value for fresh imports, 6 percent for frozen imports, and 9 percent for provisionally preserved and dried imports. Higher tariffs apply to potatoes and sweet potatoes, sweet corn, taro, some mushrooms, frozen and preserved burdock, and frozen peas and beans. The highest tariff is 12.8 percent. Aside from dried beans and peas, there are no TRQ’s.

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Fresh</th>
<th>Frozen</th>
<th>Provisionally preserved</th>
<th>Dried</th>
<th>Preferential Tariffs 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artichokes</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>Y</td>
</tr>
<tr>
<td>Asparagus</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>Y</td>
</tr>
<tr>
<td>Avocados</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>Y</td>
</tr>
<tr>
<td>Burdock</td>
<td>2.5</td>
<td>12</td>
<td>12</td>
<td>9</td>
<td>Y</td>
</tr>
<tr>
<td>Cabbage &amp; broccoli</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>Y</td>
</tr>
<tr>
<td>Carrots &amp; turnips</td>
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<tr>
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</tr>
<tr>
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<td>3</td>
<td>6</td>
<td>9</td>
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</tr>
</tbody>
</table>

This is not an authoritative source for Japan’s tariffs. For that, refer to Custom Tariff Schedules of Japan.

1 Y means that a preferential tariff of 0 percent applies to imports of dried vegetables from least-developed countries.
2 Tariff is 0 for developing countries.
3 Tariff is 0 when import unit value is over 73.7 yen/kg.
4 For dried beans and peas. Japan reserves the right to use the special safeguard mechanism of the UR Agreement on Agriculture and maintains a tariff-rate quota. The within-quota tariff is 10 percent and the over-quota tariff is 354 yen/kg.

5 Tariff is 6 percent for eggplants weighing less than 20g per piece.

6 Tariff is 10 percent for developing countries (0 for least-developed countries).


These tariffs generally apply to both developed and developing countries. Dried vegetables are an exception: tariffs are 0 for the least-developed countries, except for sweet corn, taro, shiitake mushrooms, and sweet potatoes. Two fresh vegetables, matsutake mushrooms and burdock, have no tariff for all developing countries.

Variable duties on onions
Fresh onions are subject to a gate price system, under which importers of onions arriving with an import unit value below the gate price must pay the difference between the gate price (73.7 yen/kg) and the import unit value. If the import unit value is low enough (below 67 yen/kg), however, a simple tariff (8.5 percent) is applied. If the import unit value is above the gate price, no tariff is applied. The system is designed to protect Japan’s onions from competition from similarly priced imported onions, but not from premium onion imports.23 the gate price was fixed at 73.7 yen/kg in the UR.

The dried bean tariff-rate quota
Japan has administered a quota on imports of dried beans and peas (except chickpeas and lentils) for many years. Within the TRQ, a tariff of 10 percent applies. Outside the quota (which is 120,000 tons per year) the tariff is 354 yen/kg (over $3,300 per ton in 2000). The TRQ protects domestic production, primarily of Azuki and kidney beans. If over quota imports were to grow rapidly, Japan reserves the right to raise over-quota tariffs on pulses to a rate of 417 yen/kg, using the special safeguard provision of the UR Agreement on Agriculture. The TRQ was over 95 percent filled in 2000, the last year for which information is available, with imports at 115,054 tons, this is an indication that imports might grow further, if the over-quota tariff were reduced or the TRQ abolished entirely.

Temporary safeguard on imports of two vegetables
In 2001, Japan invoked the UR Agreement on Safeguards because of growing imports of Welsh onions (which resemble leeks—in Japanese, negi), and fresh shiitake mushrooms. Without the safeguards, tariffs on these vegetables are quite low—4.3 percent for shiitake mushrooms and 3 percent for Welsh onions. The safeguard measures were applied April 23- November 8, 2001, and involved a TRQ for each of the two vegetables that kept the quota volume at the average level of trade for the past 3 years and applied a tariff of 266
percent for shiitake mushrooms and 256 percent for Welsh onions imported outside the quota. Imports within the quota limits continued to be taxed at the pre-safeguard tariff levels.

Growing shipments from China triggered the action, and China reacted to the safeguard by increasing tariffs on certain manufactured products from Japan. At the expiration of the quota on November 8, Japan considered extending a quota system for a period of several years, as outlined in the Agreement on Safeguards. However, after consultations with China, the quota was not extended (decision announced on December 21, 2001).

**Phytosanitary rules**

Phytosanitary barriers strongly affect imports of fresh vegetables. Imports of some fresh vegetables are banned from most countries, including the United States, because of plant disease restrictions. Fresh peppers, cucumbers, eggplants, potatoes, and other important vegetables are not imported in large quantities because of these restrictions.

Other vegetables are affected by **fumigation requirements**, designed to kill insects and other pests at the arrival port in Japan. Fumigation can seriously damage the quality of imported vegetables, especially if they are soft or light-colored. Lettuce and cauliflower have been particularly affected. Japan’s officials fumigate whenever they see insects in a shipment, even if the insect is already endemic in Japan. In general, phytosanitary rules do not inhibit imports of dried, frozen, and other processed vegetables. Over half of Japan's vegetable imports are dried, frozen, or otherwise processed, both in value and in volume.

**4.12.9.2 Policy Implications**

**Prices**

Japan's vegetable prices are well above those in neighboring countries or the United States. Since the quality of vegetables marketed in Japan is very high, part of the reason for the high relative prices may be a quality premium. However, border measures imposed by Japan’s Government are another major factor—otherwise, high quality vegetables could be imported relatively soon after picking from nearby countries where prices are much lower. Phytosanitary rules have a major impact on vegetable trade. Japan’s tariffs are not particularly high, but Japan has used voluntary export restraint agreements with exporting countries in the past, and recently has employed safeguard measures to increase tariff protection above temporary quota limits. At the farm gate, a comparison of Japanese producer prices and U.S. fob shipping prices for five comparable vegetables shows that Japan’s farmers receive prices that are 2 to 4 times
higher than prices U.S. farmers get. The highest price ratio in 2000 was for cucumbers, a commodity for which a phytosanitary rule bars virtually all imports. The lowest price ratios were for carrots and onions, which are usually not subject to phytosanitary restrictions.

At the retail level, price ratios in 1998-2000 for three comparable vegetables ranged from 1.7 to 3.2 times higher in Japan than in the United States (fig. 4). These ratios are higher than those for bananas, which are about 1.65—i.e., prices in Japan are about 65 percent above U.S. prices, at the retail level. Bananas are a perishable commodity marketed at retail in the same stores as fresh vegetables. Because the same kind of bananas are imported into both Japan and the United States, with no important phytosanitary barriers, they offer a way to compare prices of a product that is likely to be the same quality and just as fresh in both markets.

While Japan imposes a 10-percent tariff on banana imports (versus 0 in the United States), most of the 65-percent price difference reflects other factors, which may be assumed to be characteristics of Japanese retail marketing, rather than characteristics of the bananas (like quality or freshness). Thus, a price margin of about 55 percent may separate Japan’s produce prices from U.S. prices at retail, 26 and be unrelated to produce import barriers or to produce quality. If that is the case, then Japan’s high prices for potatoes, tomatoes, and lettuce (200 percent, 85 percent, and 185 percent higher than in the United States, respectively) reflect extra impacts of border protection, or premiums for quality and freshness, or both, to the extent they exceed the 55 percent margin for bananas.

Comparisons with vegetable prices in China also show that Japan’s prices are relatively high. In March 2001, as Japan considered imposing extra barriers on the trade in Welsh
onions, it was reported that domestic wholesale prices were 206 yen/kg, in contrast with a price for imports from China of 91 yen/kg.

![Retail vegetable price ratio, Japan vs. U.S.](image)

**Gains and losses**

Japan’s farmers gain from policies that provide more than half the cost of packing and marketing facilities, subsidize insurance against hazards, compensate for price drops, and restrict foreign competition. But this system can stifle entrepreneurial producers wishing to expand their operations. The ability of individual farmers to compete freely is undermined by the need to show discipline in production for each vegetable covered by the supply stabilization schemes. If the total level of production is fixed at a target level that will maintain market prices at a desired level, then all producers are expected to restrain their production in proportion to the national or regional target.

This makes it more difficult for an individual farmer to expand the size of a vegetable operation in order to achieve economies of size. However, the system raises the total value of production for producers as a group by raising prices.

Consumers pay higher prices for vegetables—for instance, lettuce prices that are 185 percent above those in the United States—to the extent that policies reduce competition in the marketplace by constraining imports. Free markets can adjust prices to lower levels, as competition among producers rewards those with lower costs and pushes those with higher costs out of the market. This price competition is also inhibited when the government intervenes to stabilize prices by limiting supplies when prices are falling. Consumers pay the price—their consumption of vegetables is reduced and they spend more for vegetables that they do buy.
If Japan were to end its policies in support of vegetable farming, some farmers would produce less or exit vegetable farming. Other farmers would expand operations to take their place, and imports would be likely to increase as well. If phytosanitary standards were changed, or if foreign producers could meet Japan’s standards, imports of some major fresh vegetables would begin. Greater competition from imports would drive prices for those vegetables lower, benefiting consumers. An end to the TRQ on dried beans would also benefit consumers, because the over-quota tariff is so high that it effectively excludes imports, and thus reduces potential competition. Current negotiations about a new multilateral agreement on agricultural trade in the WTO are likely to focus on tariffs and TRQ’s and on domestic support, and may lead to significant changes in Japan’s vegetable policy regime.

4.13  WTO COMMITMENTS

4.13.1  EU’S WTO AGRICULTURAL COMMITMENTS

EU agricultural policy is formulated within the constraints of the commitments which it undertook as part of the Agreement on Agriculture at the conclusion of the Uruguay Round. These commitments cover the three main areas of market access, domestic support and export subsidies.

4.13.1.1 EU’S MARKET ACCESS COMMITMENTS

The Agreement on Agriculture required the EU to replace its previous system of variable levies used to protect the domestic market from lower-priced imports, by fixed tariffs which are bound, i.e. which cannot be exceeded. These bound tariffs were reduced by 36% on average, with a minimum tariff line cut of 15%. In addition, minimum access had to be granted, for specific groups of commodities, so as to leave 5% of the total consumption open to competition from imports.

The new tariff levels have not proved problematic for the EU, because of the relatively high reference levels that could be used from which to make the reductions, and because of the flexibility to allocate higher tariff cuts to less sensitive products. In some cases, e.g. sugar, the EU has used the special agricultural safeguard to provide additional protection. Only in a few sectors has there been an increase in imports (high value beef cuts from Latin America, some cheese, and wheat when Russia and Ukraine exported at very low prices in the early 2000s). Now, however, the margins that existed have been exhausted, and future tariff cuts will lead to increased market access.
Tariff rate quotas have been opened so as to reach the minimum access commitments but, in many cases, these obligations were filled by existing imports, in particular those under existing agreements with developing or transition countries.

4.13.1.2 EU'S DOMESTIC SUPPORT COMMITMENTS

The Uruguay Round Agreement on Agriculture classified the various forms of farm support (administrative prices, direct payments, input subsidies, etc.) according to their impact on production. No discipline was imposed on support that had minimal effect on the quantities produced, and therefore did not affect other countries, such as environmental payments, social payments, or direct payments not linked to production. Other forms of support, such as higher institutional prices, or payments which are a function of the quantities produced, are now subject to a strict ceiling (the Total Aggregate Measure of Support) and had to be reduced over the 1995-2000 period. The ceiling for these trade-distorting payments for the EU-15 is €67 billion, which is now aggregated with the ceiling for the ten new Members which amounts to less than €4 billion.

The direct consequences of this domestic support discipline for the EU have been very limited. Most of the EU's direct payments are exempt from any reduction commitment, because they are conditional on production-limiting clauses (set aside obligations for arable land payments, quotas for dairy support). Such payments are classified as "Blue Box" and are not counted towards the Total Aggregate Measure of Support. As a result, the EU’s actual Aggregate Measure of Support has been well below the maximum ceiling (€39 billion for the EU-15 in the latest notification for 2001/2002).

4.13.1.3 EU'S EXPORT SUBSIDIES

The Agreement on Agriculture capped expenditure on export subsidies and required a reduction both in the value of the subsidies (36%) and the quantities (21%) that were subsidised over the 1995-2000 period. This discipline has been the most constraining WTO provision for the CAP. The EU has used between 50 and 82 percent of its budgetary commitment and from 65 to 107 percent of its volume commitment in recent years, depending on world prices. Export subsidies have been particularly binding in the sugar, dairy and poultry sectors.

4.13.1.4 EFFECTS OF EU'S WTO COMMITMENTS

While the EU's WTO commitments to date have not required any major adjustment to EU agricultural policy, they have undoubtedly influenced the direction of CAP reform. In the late 1990s, the prospect of increasing intervention stocks that could no longer be
exported with subsidies played a major role in the decision to lower intervention prices under the Agenda 2000 reform. The constraints on support that is even remotely linked to the quantities produced has shaped an entire new framework for CAP reform. The Agenda 2000 reform introduced a shift from traditional support to production towards payments to environmental or rural development measures, the so-called "second pillar". The 2003 Luxembourg Agreement has shifted farm support towards a "single farm payment" which is no longer linked to the quantities produced or the surface harvested, and which should escape reduction commitments. The WTO framework has thus had a considerable influence in shaping the direction of CAP reform. While these changes will make it easier for the EU to meet additional disciplines on domestic support arising from the Doha Round, another round of tariff cuts and the elimination of export subsidies will undoubtedly require further reform of the CAP to ensure compliance.

4.13.2 THE US WTO COMMITMENTS

The WTO has laid down fixed guideline for setting the tariff on all agricultural produce. These bound tariffs were reduced by 36% on average, with a minimum tariff line cut of 15%. In addition, minimum access had to be granted, for specific groups of commodities, so as to leave 5% of the total consumption open to competition from imports.

Many WTO member countries maintain sophisticated tariff schedules for fruits and vegetables, where tariffs for narrowly defined products depend on such factors as date of entry, entry price, and degree of processing. One example is the use of seasonal tariffs by the United States. These tariffs have potentially large impacts for trade in fresh produce, as they discriminate according to when a product arrives, with larger tariffs corresponding to periods when domestic production is at its highest levels. The comparable average tariff rate for fruits is 55 percent. These average rates include the ad valorem tariff rates and ad valorem equivalents (AVE) of specific tariffs (unit of currency per unit of weight) from the schedules of 129 WTO members. In some cases AVEs, the values of which depend on current prices, were very high, reflecting a general lack of transparency associated with specific tariffs. The average rates include only the over-quota tariffs in TRQ regimes, since over-quota rates represent the marginal, binding constraint on additional trade.

Average over-quota rates for the EU, U.S., Japan, and South Korea are more than double their average MFN tariff rates. Most non-industrial countries have average over-quota rates near, or in a few cases lower than, their average MFN tariff rates.
Export Subsidies are the most trade distorting government policies. A country’s products become cheaper and therefore more competitive in the world market due to the existence of subsidies and this can affect the exports of the other nations. US has in the past provided a lot of support to its farmers but not as much as the EU. Lately the support from the US has been rising and is expected to reach a figure of $20 billion very soon. The US provides support in the form of direct government payments that it makes to all of the agricultural and food producers in the country. This is a major barrier for exporters from other nations.

4.13.3 **JAPAN’S WTO COMMITMENTS**

The average applied MFN (Most Favored Nation) tariff (MFN is the tariff level that a member of the GATT/WTO charges on a good to other members) for agriculture is 17.7%, compared with an overall average of 6.3%; 15.3% of duties applied to agricultural goods are non-ad valorem. Some of the average tariffs for the sub-sectors may be underestimated, owing to the lack of estimates for AVEs of some specific duties (which tend to conceal relatively high tariffs).

Tariff quotas apply mainly to agricultural products; they cover some 1.6% of all tariff lines. The extent to which tariff quotas are filled varies by product. Eligibility for quota allocations sometimes requires prior approval by the MAFF. The procedure for MAFF approval tends to be intricate; it may require various end-use restrictions, the opinions of other organizations, such as industry associations, and many documents, such as accounts and business plans. The support received by Japan's farmers and consumer prices of agricultural products remain above the OECD average. Japan's net producer support estimates (PSE) and consumer support estimates (CSE) for 2003 have been provisionally estimated at 58% and 53%, while the OECD averages are 32% and 24%, respectively.

The level of support that Japan offers to its farmers in terms of subsidies is very high, but this does not necessarily translate into Japan’s trade being distorted since Japan is not a big exporter of agricultural products. In terms of the duties that Japan applies on imports that is a very low figure.

4.13.4 **INDIA’S WTO COMMITMENTS**

India has made all attempts to incorporate most of the agreements that were reached in the successful Uruguay round of WTO. Still, there remain certain aspects that the Indian government needs to look into, with respect to the liberalization of the economy. The support provided to agriculture is much lower now.
India bound its agricultural tariffs at ceiling rates ranging from 0 to 300 per cent. In reality, applied rates are considerably lower, averaging 26 per cent for the sector, with a peak of 45 per cent. This is however likely to change as India tariffs its present licensing restrictions; in this context, India is currently renegotiating its tariff bindings on some zero- or low-duty products. Progress in changing the structure of agricultural incentives and subsidies is likely to remain constrained by the Government's policy of providing support prices to farmers and ensuring low cost supplies to the population through the public distribution system.

Import licensing remains India's main non-tariff barrier, although reforms to the system of restrictive import licensing have moved ahead steadily. Last year India presented a phase-out programme for the remaining restrictions to its trading partners. Agreement was reached with all major partners except the United States, with which India is currently in dispute settlement proceedings over its remaining restrictions.

Reforms in tariffs and non-tariff barriers have not been accompanied by similar reforms on export subsidies and incentives. India continues to maintain a large number of incentive programmes for exports. These include income tax exemptions, subsidized credit, export insurances and guarantees.

Agriculture has benefited from the price realignments resulting from manufacturing sector trade reforms. Some progress has also been made in the removal of state controls on the inter-state movement of certain grains and of administered prices; however, controls on the export and import of certain products through licensing policies remain.

**4.13.4.1 WTO COMMITMENTS IN INDIAN FOOD PROCESSING**

Although tariff reforms have resulted in average duties in the food sector being halved since 1993 (currently around 29 per cent for food products and 134 per cent for beverages), industrial and import licensing restrictions continue to be maintained for a number of industries. In addition, a number of products are reserved for production by the small scale sector. Production by the food manufacturing sector has grown rapidly, especially following increased foreign investment where up to 51 and 100 per cent of participation is allowed automatically for foreigners and non-resident Indians, except for products reserved for the small scale sector.
4.13.5 Effects of WTO Commitments on Indian Exports

The WTO Agreement on Agriculture (AoA) is based on 3 pillars, namely; Market Access, Domestic Support, and Export Subsidies. The AoA sought to make the competitive landscape fairer for all the nations. The developed nations which were resorting to these 3 measures in order to protect their farmers were asked to reduce the support in a systematic manner. The agreed norms set boundaries on the tariffs that a nation could charge. It also sought for reduction of support provided to the farmers.

US and EU have not lived up to all of their WTO obligations that have led to the failure of the subsequent WTO meetings. EU provides a lot of support to its farmers, who therefore become more competitive in the world market as compared to the Indian farmers. Market access to the EU is hindered due to their quality regime. They have stringent laws on the quality of the food products that enter the market. US on the other hand has many bilateral tie-up’s using which they are able to work around their WTO commitments. They give preferential access to several countries that depend on US aid or have a formal agreement with them. Nevertheless, WTO has resulted in creating greater opportunity for market access; it has reduced tariff related barriers, which existed earlier. Export subsidies have been reduced for several products, but still the horticultural products are exempt from the list of products that are not covered by subsidies.

The WTO has made an attempt towards making the competitive scenario fairer, but it is still a long way off from reaching its objective. From the perspective of Indian exporters and farmers, there still has to be considerable reduction that has to come through from the EU for it to become a fair playground.
Chapter 5: UNITED KINGDOM MARKET

5.1 UK FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

5.1.1 CURRENT AND FUTURE ANALYSIS
Frozen fruits and vegetables market in the UK was close to 1,455 thousand tons in 2005, and is projected to be 1,492 thousand tons by the end of current fiscal year 2006. The market is projected to grow at a rate of 2.48% to reach 1,648 thousand tons by 2010. The UK frozen vegetable segment accounted for a share of 99.08% in 2005. Frozen vegetable market is projected to register relatively slow growth and reach 1,632 thousand tons by 2010, at a CAGR of rate 2.48%.

5.1.2 HISTORIC REVIEW
Frozen fruits and vegetables market in the UK stood at 1,050 thousand tons in 1991. The market witnessed a compounded growth rate of 2.3% over the period 1991-2000 and reached 1,289 thousand tons in 2000.

5.1.3 MARKET OVERVIEW
In the UK, Unilever, United Biscuits and McCain are the leading companies in the frozen vegetable segment including frozen potatoes. The frozen fruits segment is the fastest growing sector in the frozen food market. Frozen chips traditionally represented the largest sector in the frozen vegetable market, accounting for more than 40% of the sales in terms of volume.

5.2 CONSUMPTION TRENDS
Food Consumption trends in UK are conventionally driven by consumer led changes in lifestyle and attitudes towards health and beauty issues. Demographics statistics reveal growing number of consumers shifting from high fat meat products to low fat and high protein vegetables and fruits. As healthy eating and food safety concerns gain immense precedence, vegetarians are currently a growing customer base for frozen vegetables and fruits in the United Kingdom. Also joining the natural diet bandwagon are meat-eaters who in recent years are increasingly resorting to vegetarian foods. The frozen vegetables market in the UK is expected to emerge with the best prospects for growth in the next 5-8 years.

Given the increasing market clamor about the benefits of natural vegetable consumption, the frozen vegetables category is expected to show conducive market conditions in the
coming years. The frozen food industry in the United Kingdom currently ranks as the most specialized and the frozen food industry in the United Kingdom ranks as the most specialized and developed market in Europe. In the UK, frozen vegetables constitute a comparatively niche segment in the total vegetable market, accounting for approximately 10% of the total market. Fresh vegetables are the largest category accounting for more than 70% of the total vegetables market. Fresh vegetables are the largest category accounting for more than 70% of the total vegetables market. Consumption of frozen vegetables in the UK is portended to grow at a moderate pace of 2.48% over the ten-year analysis period 2001-2010.

Conventionally like their American counterparts vegetables rake in an insignificant share in the diets of European consumers especially in the UK. A major factor that underpins the current lethargic consumption of frozen vegetables is the growing controversy of genetically modified foods and the general perception of frozen foods as being less nutritious than the fresh and chilled counterparts. The category is forecast to witness continued and unabated product development and innovations. The key drivers in the UK frozen vegetables market include convenience and value addition. An increasing number of consumers are opting for products that considerably reduce the time involved in conventional preparation of unprocessed vegetables.

5.3 IMPORT TRENDS

The UK supplies a large percentage of its own frozen vegetable requirements but the poor weather of recent years — notably the mild but wet winters and spring — have reduced output and increased prices. The number of vegetable growers is falling. The fruit market, in contrast, depends heavily on imports and many cheaper imports helped to limit price increases in this sub sector in 2000. Bananas and apples are the most popular fruits with consumers, and the repacked banana market is a strong growth area.

5.3.1 CATEGORY WISE ANALYSIS OF IMPORTS OF UK (*SOURCE: EUROSTAT, COMTRADE, FAOSTAT*)

5.3.1.1 Frozen Peas

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
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</table>
• Belgium is the largest exporter of frozen peas to UK, followed by France
• India has started exporting frozen peas to UK in 2005 and there is a lot of potential in the market that can be capitalized

5.3.1.2 Frozen Beans

<table>
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<tr>
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<th>Import Value (Million USD)</th>
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<th>Import Qty (Tonnes)</th>
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<th>UVR (USD/Kg)</th>
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</tr>
<tr>
<td>Guatemala</td>
<td>0.15</td>
<td>0.17</td>
<td>0.16</td>
<td>-6%</td>
<td>101</td>
<td>122</td>
</tr>
<tr>
<td>China</td>
<td>0.17</td>
<td>0.10</td>
<td>0.13</td>
<td>25%</td>
<td>162</td>
<td>112</td>
</tr>
<tr>
<td>India</td>
<td>0.01</td>
<td>0.02</td>
<td>0.01</td>
<td>-70%</td>
<td>8</td>
<td>14</td>
</tr>
</tbody>
</table>

• Belgium is the largest exporter of frozen beans to UK, followed by Netherlands
• Exports of frozen beans from China to UK are increasing as well as their UVR is increasing at a very high rate, thereby
• Indian exports are not doing well so here the market trends in general are pointing downwards, India needs product differentiation and better quality to make sales.

5.3.1.3 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>13.45</td>
<td>14.85</td>
<td>10.95</td>
<td>-26%</td>
<td>95190</td>
<td>65303</td>
</tr>
<tr>
<td>Germany</td>
<td>4.02</td>
<td>4.71</td>
<td>3.59</td>
<td>-24%</td>
<td>1812</td>
<td>2884</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.67</td>
<td>1.89</td>
<td>3.26</td>
<td>73%</td>
<td>913</td>
<td>3050</td>
</tr>
<tr>
<td>Ireland</td>
<td>3.57</td>
<td>1.38</td>
<td>1.14</td>
<td>-17%</td>
<td>1421</td>
<td>808</td>
</tr>
<tr>
<td>China</td>
<td>0.66</td>
<td>0.49</td>
<td>0.50</td>
<td>2%</td>
<td>529</td>
<td>504</td>
</tr>
<tr>
<td>India</td>
<td>0.04</td>
<td>0.07</td>
<td>0.06</td>
<td>-24%</td>
<td>25</td>
<td>47</td>
</tr>
</tbody>
</table>

• Belgium is the largest exporter of frozen mix vegetables to UK, followed by Germany
• Exports of frozen mix vegetables from Netherlands to UK are increasing as well as their UVR is increasing at a very high rate, thereby
• Indian exports are not doing well so here lies an opportunity for Indian Govt. to review our operations, policies and try and increase the exports
5.3.1.4 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>40.56</td>
<td>40.94</td>
<td>41.72</td>
<td>2%</td>
<td>62886</td>
<td>112549</td>
</tr>
<tr>
<td>Spain</td>
<td>19.72</td>
<td>17.96</td>
<td>21.36</td>
<td>19%</td>
<td>21128</td>
<td>22041</td>
</tr>
<tr>
<td>France</td>
<td>6.47</td>
<td>7.46</td>
<td>5.25</td>
<td>-30%</td>
<td>5468</td>
<td>6248</td>
</tr>
<tr>
<td>Poland</td>
<td>7.45</td>
<td>7.80</td>
<td>12.75</td>
<td>63%</td>
<td>14998</td>
<td>16313</td>
</tr>
<tr>
<td>China</td>
<td>3.48</td>
<td>5.63</td>
<td>11.51</td>
<td>104%</td>
<td>3850</td>
<td>7171</td>
</tr>
<tr>
<td>India</td>
<td>0.87</td>
<td>1.71</td>
<td>1.32</td>
<td>-23%</td>
<td>672</td>
<td>1065</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of other frozen vegetables to UK, followed by Spain
- Exports of other frozen vegetables from China to UK are increasing
- Indian exports are not doing well and it has the highest UVR also, so here lies an opportunity for Indian Govt. to review our operations, policies and try and increase the exports

5.3.1.5 Frozen Fruits & Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>3.85</td>
<td>2.36</td>
<td>4.24</td>
<td>80%</td>
<td>2616</td>
<td>1324</td>
</tr>
<tr>
<td>Canada</td>
<td>5.46</td>
<td>6.69</td>
<td>7.68</td>
<td>15%</td>
<td>2464</td>
<td>2986</td>
</tr>
<tr>
<td>Poland</td>
<td>1.15</td>
<td>3.01</td>
<td>4.07</td>
<td>35%</td>
<td>920</td>
<td>2625</td>
</tr>
<tr>
<td>Germany</td>
<td>2.17</td>
<td>2.79</td>
<td>3.67</td>
<td>32%</td>
<td>1354</td>
<td>1942</td>
</tr>
<tr>
<td>United States</td>
<td>1.80</td>
<td>2.04</td>
<td>2.98</td>
<td>46%</td>
<td>1487</td>
<td>1405</td>
</tr>
<tr>
<td>India</td>
<td>0.03</td>
<td>0.06</td>
<td>0.02</td>
<td>-70%</td>
<td>19</td>
<td>40</td>
</tr>
</tbody>
</table>

- Netherlands is the largest exporter of frozen fruits & nuts to UK, followed by Canada
- Canada also has the highest UVR
- Indian exports are not doing well, so here lies an opportunity for Indian Govt. to review our operations, policies and try and increase the exports

5.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>3.96</td>
<td>4.72</td>
<td>4.47</td>
<td>-5%</td>
<td>2262</td>
<td>2977</td>
</tr>
<tr>
<td>Chile</td>
<td>4.63</td>
<td>5.19</td>
<td>4.44</td>
<td>-14%</td>
<td>2988</td>
<td>2852</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.43</td>
<td>4.64</td>
<td>3.71</td>
<td>-20%</td>
<td>2019</td>
<td>2618</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.10</td>
<td>5.13</td>
<td>2.32</td>
<td>-55%</td>
<td>650</td>
<td>3773</td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>0.00</td>
<td>4.15</td>
<td>2.01</td>
<td>-52%</td>
<td>0</td>
<td>2351</td>
</tr>
</tbody>
</table>
• Poland is the largest exporter of frozen raspberry to UK, followed by Chile
• India does not export frozen raspberries to UK and it is a market that is on the decline with most of the exporters being from EU. Thus it would not be advisable to enter this market.

5.3.1.7 Frozen Strawberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>7.44</td>
<td>4.96</td>
<td>5.96</td>
<td>20%</td>
<td>3736</td>
<td>3638</td>
</tr>
<tr>
<td>Turkey</td>
<td>10.91</td>
<td>6.32</td>
<td>4.52</td>
<td>-29%</td>
<td>5618</td>
<td>3736</td>
</tr>
<tr>
<td>China</td>
<td>2.08</td>
<td>1.41</td>
<td>1.47</td>
<td>4%</td>
<td>2318</td>
<td>1767</td>
</tr>
<tr>
<td>Spain</td>
<td>1.82</td>
<td>1.79</td>
<td>2.49</td>
<td>39%</td>
<td>1458</td>
<td>1242</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.42</td>
<td>3.04</td>
<td>2.06</td>
<td>-32%</td>
<td>881</td>
<td>1880</td>
</tr>
<tr>
<td>India</td>
<td>0.002</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

• Poland is the largest exporter of frozen strawberry to UK, followed by Turkey
• India has started exporting frozen raspberries in 2005 to UK, it should try and increase its share in this high potential market

5.3.1.8 Frozen Sweet corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>8.02</td>
<td>7.40</td>
<td>10.16</td>
<td>37%</td>
<td>44627</td>
<td>27365</td>
</tr>
<tr>
<td>Hungary</td>
<td>9.57</td>
<td>8.61</td>
<td>7.90</td>
<td>-8%</td>
<td>11325</td>
<td>12727</td>
</tr>
<tr>
<td>Israel</td>
<td>6.77</td>
<td>7.80</td>
<td>8.06</td>
<td>3%</td>
<td>5388</td>
<td>6354</td>
</tr>
<tr>
<td>Spain</td>
<td>2.03</td>
<td>1.97</td>
<td>0.87</td>
<td>-56%</td>
<td>3362</td>
<td>2734</td>
</tr>
<tr>
<td>France</td>
<td>13.93</td>
<td>7.31</td>
<td>5.94</td>
<td>-19%</td>
<td>936558</td>
<td>136168</td>
</tr>
</tbody>
</table>

• Belgium is the largest exporter of frozen sweet corn to UK, followed by Hungary
• Belgium also has a very high UVR as it is a major re-exporter in EU and thus its value added products have a high average price
• India does not export frozen sweet corn to UK and, the state of the industry does not support an Indian entry into the market.
### 5.3.1.9 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.93</td>
<td>5.90</td>
<td>5.69</td>
<td>-3%</td>
<td>6401</td>
<td>7282</td>
</tr>
<tr>
<td>France</td>
<td>3.04</td>
<td>2.40</td>
<td>1.76</td>
<td>-27%</td>
<td>3574</td>
<td>2758</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.50</td>
<td>0.91</td>
<td>0.79</td>
<td>-14%</td>
<td>368</td>
<td>619</td>
</tr>
<tr>
<td>Spain</td>
<td>1.17</td>
<td>0.91</td>
<td>0.83</td>
<td>-9%</td>
<td>678</td>
<td>544</td>
</tr>
<tr>
<td>Italy</td>
<td>0.19</td>
<td>0.23</td>
<td>0.17</td>
<td>-26%</td>
<td>95</td>
<td>122</td>
</tr>
</tbody>
</table>

- Belgium is the highest exporter of frozen spinach to UK, followed by France.
- India does not have presence in this category export and it is not performing too well either so it is not advisable to enter this market.

### 5.3.1.10 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.89</td>
<td>5.44</td>
<td>3.95</td>
<td>-28%</td>
<td>5865</td>
<td>6029</td>
</tr>
<tr>
<td>France</td>
<td>0.29</td>
<td>0.48</td>
<td>0.85</td>
<td>79%</td>
<td>379</td>
<td>421</td>
</tr>
<tr>
<td>China</td>
<td>0.70</td>
<td>0.44</td>
<td>0.77</td>
<td>74%</td>
<td>737</td>
<td>456</td>
</tr>
<tr>
<td>Spain</td>
<td>0.13</td>
<td>0.21</td>
<td>0.36</td>
<td>74%</td>
<td>152</td>
<td>218</td>
</tr>
<tr>
<td>India</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
<td>-33%</td>
<td>29</td>
<td>18</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of frozen legumes to UK, followed by France.
- Indian exports are not doing well, so here lies an opportunity for Indian Govt. to review our competitive advantages as exports have been on the rise.

### 5.3.1.11 Frozen Potatoes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>36.06</td>
<td>37.79</td>
<td>41.50</td>
<td>10%</td>
<td>36133</td>
<td>38094</td>
</tr>
<tr>
<td>Belgium</td>
<td>12.02</td>
<td>14.38</td>
<td>12.79</td>
<td>-11%</td>
<td>18123</td>
<td>21777</td>
</tr>
<tr>
<td>France</td>
<td>0.33</td>
<td>2.05</td>
<td>2.89</td>
<td>41%</td>
<td>436</td>
<td>2306</td>
</tr>
<tr>
<td>Germany</td>
<td>0.89</td>
<td>0.17</td>
<td>1.09</td>
<td>529%</td>
<td>934</td>
<td>85</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.12</td>
<td>0.54</td>
<td>0.60</td>
<td>11%</td>
<td>178</td>
<td>504</td>
</tr>
<tr>
<td>India</td>
<td>0.01</td>
<td>18</td>
<td>0.76</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Netherlands is the largest exporter of frozen potatoes to UK, followed by Belgium.
- India has started exporting frozen potatoes in 2005 to UK, it should try and increase its share in this high potential market.
5.4 **OVERVIEW OF ORGANIZED FOOD AND GROCERY RETAILING IN UK**

5.4.1 **United Kingdom Retail Market Size and Structure**

The size of the grocery market in the UK is worth €176 billion. The UK grocery market accounts for approximately 57% of all retail expenditure (excluding the retail sale of cars) in the UK. Growth in the grocery market has slowed over recent years. This is due to a number of factors including a reduction in general inflation; increased competitiveness of the market; consumer/media pressure on prices and arguably retail saturation and a shortage of sites.

The proportions of grocery spend accounted for by ‘food and drink’ is an estimated 68% (€119.3 billion). Therefore the ‘non-food’ element of the grocery market is 32% (€56.7 billion) which represents not only the clothing and electrical goods sold through grocery stores, but also the household goods, toiletries and other ‘non-food’ elements of the ‘traditional’ grocery offer.

### Number of Retail Outlets by Store Size

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Grocery Stores</td>
<td>131,762</td>
<td>129,390</td>
<td>124,450</td>
<td>118,950</td>
<td>114,399</td>
<td>108,376</td>
<td>105,962</td>
</tr>
<tr>
<td>Total Superstores &gt; 25,000 sq. ft</td>
<td>902</td>
<td>999</td>
<td>1,045</td>
<td>1,072</td>
<td>1,109</td>
<td>1,191</td>
<td>1,205</td>
</tr>
<tr>
<td>Large Supermarkets &lt; 25,000 sq. ft</td>
<td>3,519</td>
<td>3,381</td>
<td>3,357</td>
<td>3,361</td>
<td>3,369</td>
<td>3,111</td>
<td>3,099</td>
</tr>
<tr>
<td>All Co-operatives</td>
<td>2,330</td>
<td>2,253</td>
<td>2,229</td>
<td>2,239</td>
<td>2,241</td>
<td>2,331</td>
<td>2,865</td>
</tr>
<tr>
<td>Other Grocery</td>
<td>125,011</td>
<td>122,757</td>
<td>117,825</td>
<td>112,278</td>
<td>107,680</td>
<td>101,743</td>
<td>98,793</td>
</tr>
</tbody>
</table>

* Source: IGD Research & Estimates/IGD Stores Database

### Key Importers in UK
- Unilever
- United Biscuits
- McCain
- GEEST

### Key Logistics Providers in UK
- Eagle Global Logistics
- Maersk
- Seabrex/Ebrex
- Soonius Transport B.V.
Major Retailers in the UK

<table>
<thead>
<tr>
<th>Company</th>
<th>Grocery outlets</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tesco</td>
<td>Tesco</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Tesco Express, Tesco Metro, T&amp;S</td>
<td>Convenience/Neighborhood</td>
</tr>
<tr>
<td>Tesco Extra</td>
<td></td>
<td>Hypermarket</td>
</tr>
<tr>
<td>J Sainsbury</td>
<td>Supermarket</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Convenience/Neighborhood</td>
<td>Neighborhood</td>
</tr>
<tr>
<td></td>
<td>Hypermart</td>
<td>Convenience</td>
</tr>
<tr>
<td>Asda/Wal-mart</td>
<td>Asda</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Asda/Wal-Mart Supercentre</td>
<td>Hypermarket</td>
</tr>
<tr>
<td>Safeway</td>
<td>Safeway</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Safeway BP</td>
<td>Convenience</td>
</tr>
<tr>
<td>Somerfield</td>
<td>Somerfield</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Kwik Save</td>
<td>Discount</td>
</tr>
<tr>
<td>Wm Morrisons</td>
<td>Morrisons</td>
<td>Supermarket</td>
</tr>
<tr>
<td>Marks &amp; Spencer</td>
<td>Marks &amp; Spencer</td>
<td>Department Store</td>
</tr>
<tr>
<td></td>
<td>Simply Food</td>
<td>Convenience</td>
</tr>
<tr>
<td>Waitrose</td>
<td>Waitrose</td>
<td>Waitrose</td>
</tr>
<tr>
<td>Iceland</td>
<td>Iceland</td>
<td>Freezer Centre</td>
</tr>
<tr>
<td>Aldi</td>
<td>Aldi</td>
<td>Discount</td>
</tr>
<tr>
<td>Metro</td>
<td>Makro</td>
<td>Cash &amp; Carry</td>
</tr>
<tr>
<td>Lidl</td>
<td>Lidl</td>
<td>Discount</td>
</tr>
<tr>
<td>Dansk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supermarked</td>
<td>Netto</td>
<td>Discount</td>
</tr>
<tr>
<td>Migros</td>
<td>Office World</td>
<td>Non-Food</td>
</tr>
</tbody>
</table>

The UK has the third largest grocery retail market in Europe, characterized by a dominance of indigenous retailers. At the start of the 1990’s a number of foreign hard discounters entered the UK market. Of these Aldi, Lidl and Netto are still present, although they have not secured a significant market share. However, they did encourage the major multiples to develop a credible value own label offer in response to the threat. In 1998, Asda the third largest UK retailer was purchased by Wal-Mart which was the most significant event in UK in recent years. Smaller retailers and the Co-operative movement were in decline throughout much of the last decade. However, towards the end of the 1990’s there were indications that gains in market share by the major multiples at the expense of these other retailers had slowed almost to a standstill. The reasons for
this include a large improvement in the convenience store offer; a refocus by the co-
operatives on their traditional roots of neighborhood shopping; and a tightening of
planning regulations restricting the expansion of the major multiples. The UK market has
one of the best grocery supply chains in the world. Retailers such as Tesco have led this
improvement through championing such initiatives as Efficient Consumer Response,
Category Management and most recently Continuous Replenishment. As a result,
retailers from outside the UK without such knowledge and experience may not find the
UK market an easy one to enter. Tesco has made the most significant international
expansion of UK retailers, with operations in Far East Asia, Central Europe and in the US
through a joint-venture with Safeway Inc. Sainsbury’s and Iceland also have limited
international exposure, but with the exception of Asda/Wal-Mart the other major retailers
are wholly UK based.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Fruits</td>
<td>1.06</td>
<td>1.01</td>
<td>0.92</td>
<td>0.97</td>
</tr>
<tr>
<td>Frozen Vegetables</td>
<td>98.94</td>
<td>98.99</td>
<td>99.08</td>
<td>99.03</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Technopak Research Estimates

5.5 Market Analytics

UK 20-Year Perspective for Frozen Fruits and Vegetables by Product Segments –
Percentage Breakdown of Unit Sales for Frozen Fruits and Frozen Vegetables for Years

*Technopak Research Analysis
UK Recent Past, Current & Future Analysis for Frozen Fruits and Vegetables by Product Segments - Frozen Fruits and Frozen Vegetables Independently Analyzed with Annual Sales Figures in '000 Tons for Years 2001 through 2010

*Technopak Research Estimates


*Technopak Research Analysis
Chapter 6: BELGIUM MARKET

6.1 BELGIUM FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

6.1.1 CURRENT AND FUTURE ANALYSIS

The market for frozen fruits and vegetables in Belgium was close to 1,092 thousand tons in 2005, and is projected to be 1,128 thousand tons by the end of current fiscal year 2006. The market is projected to grow at a compounded annual rate of 3.21% to reach 1,313 thousands tons by 2010.

Frozen vegetables, the largest market segment, is projected to wax at a rate of 3.2% over the years 2001-2010 to reach the 1,248 thousand tons by 2010 as against a 1,039 thousand tons in 2005. The market share for the frozen vegetables is projected to reach 95.08% by 2010.

Frozen product segment is projected to grow at a CAGR of about 3.52% during 2001-2010. The market for frozen fruits is projected to reach 65 thousand tons by 2010.

6.1.2 HISTORIC REVIEW

The Belgian frozen food market reached a value of $785 billion in 2003, having grown with a compound annual growth rate (CAGR) of 5.4% in the 1999-2003 periods. This growth was noticeably stronger than that of the European market itself, leading to the Belgian market’s regional share increasing by 0.1 percentage points during 1999-2003, accounting for 1.8% of the European market by the end of this period. The leading revenue source for the Belgian frozen food market in 2003 was the frozen meat, fish and seafood sector, which accounted for almost 45% of the market’s value. In value terms this sector was worth $353 million in 2003, an increase of 23.6% since 1999. The fastest-growing sector of the market was frozen bakery products, which grew by an astounding 76.9% over the analyzed period.

6.1.3 MARKET OVERVIEW

The frozen food market in Belgium is fairly small by Western European standards, being only half the size of the depressed Italian market and less than an eighth the size of the German market. Having said that, the market has been experiencing some of the strongest growth in Europe, indeed in the world, in recent years, and this strong growth is set to continue, if a little dampened slightly.
6.2 CONSUMPTION TRENDS

Fast paced life styles with little time to cook fresh vegetables, changing food preferences arising more and more employed women, and development of latest freezing equipment for household applications, is spurring the consumption of frozen fruits and vegetables in the Belgium is relatively underdeveloped and promises a rapid growth in coming years.

6.3 IMPORT TRENDS

During the next five years, the market is expected to experience strong but gradually decelerating growth rates. By 2008, the market is forecast to reach a value of $979 million, which equates to a CAGR of 4.5% in the 2003-2008 periods, higher than the European market. Indeed, it is expected that the Belgian market will be the strongest performing frozen food market in Western Europe in the next five years, heavily outpacing the larger markets of France, Germany and the UK.

6.3.1 CATEGORY WISE ANALYSIS OF BELGIUM FFV IMPORTS (*SOURCE: EUROSTAT, COMTRADE, FAOSTAT*)

6.3.1.1 Frozen Peas

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>6.6</td>
<td>5.0</td>
<td>5.6</td>
<td>11%</td>
<td>7581</td>
<td>5838</td>
</tr>
<tr>
<td>China</td>
<td>1.6</td>
<td>1.9</td>
<td>3.0</td>
<td>58%</td>
<td>1492</td>
<td>2072</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.6</td>
<td>1.8</td>
<td>1.8</td>
<td>-4%</td>
<td>693</td>
<td>3802</td>
</tr>
<tr>
<td>Germany</td>
<td>3.1</td>
<td>2.1</td>
<td>1.3</td>
<td>-36%</td>
<td>2908</td>
<td>3542</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.6</td>
<td>0.0</td>
<td>0.8</td>
<td>3908%</td>
<td>846</td>
<td>22</td>
</tr>
</tbody>
</table>

- France is the largest exporter of frozen peas to Belgium, followed by China
- China also has the highest UVR, indicating the high quality of its products
- India at present does not export frozen peas to Belgium, since China is an exporter and there is an opportunity for India to cash upon

6.3.1.2 Frozen Beans

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>18.1</td>
<td>20.4</td>
<td>16.1</td>
<td>-21%</td>
<td>19340</td>
<td>21903</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.7</td>
<td>0.2</td>
<td>0.9</td>
<td>385%</td>
<td>963</td>
<td>268</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.0</td>
<td>1.7</td>
<td>0.9</td>
<td>-48%</td>
<td>3391</td>
<td>3213</td>
</tr>
<tr>
<td>Poland</td>
<td>0.6</td>
<td>0.7</td>
<td>0.7</td>
<td>3%</td>
<td>868</td>
<td>961</td>
</tr>
<tr>
<td>Germany</td>
<td>2.1</td>
<td>0.8</td>
<td>0.6</td>
<td>-23%</td>
<td>2971</td>
<td>1003</td>
</tr>
</tbody>
</table>
• France is the largest exporter of frozen beans to Belgium, followed by UK
• France also has the highest UVR, indicating the high quality of its products
• India at present does not export frozen beans to Belgium, but considering the size of the market and the players present it is not advisable to enter.

6.3.1.3 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>34</td>
<td>30</td>
<td>38</td>
<td>28%</td>
<td>35990</td>
<td>28962</td>
</tr>
<tr>
<td>Spain</td>
<td>31</td>
<td>33</td>
<td>38</td>
<td>16%</td>
<td>29601</td>
<td>32182</td>
</tr>
<tr>
<td>Netherlands</td>
<td>20</td>
<td>19</td>
<td>24</td>
<td>26%</td>
<td>24122</td>
<td>23844</td>
</tr>
<tr>
<td>Poland</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>30%</td>
<td>8839</td>
<td>10328</td>
</tr>
<tr>
<td>Turkey</td>
<td>8</td>
<td>11</td>
<td>10</td>
<td>-2%</td>
<td>11224</td>
<td>13960</td>
</tr>
</tbody>
</table>

• France is the largest exporter of other frozen vegetables to Belgium, followed by Spain
• Spain also has the highest UVR, indicating the high quality of its products
• India at present does not export other frozen vegetables to Belgium, hence there is an opportunity for India probably the only cause for concern would be the lack of non-EU players in the market.

6.3.1.4 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>8.4</td>
<td>9.0</td>
<td>7.1</td>
<td>-21%</td>
<td>5853</td>
<td>6861</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5.8</td>
<td>6.7</td>
<td>6.7</td>
<td>1%</td>
<td>3452</td>
<td>3327</td>
</tr>
<tr>
<td>Germany</td>
<td>4.8</td>
<td>3.2</td>
<td>3.0</td>
<td>-7%</td>
<td>2671</td>
<td>1832</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.5</td>
<td>1.4</td>
<td>0.8</td>
<td>-42%</td>
<td>491</td>
<td>1656</td>
</tr>
<tr>
<td>Spain</td>
<td>1.8</td>
<td>2.0</td>
<td>1.3</td>
<td>-37%</td>
<td>1116</td>
<td>1361</td>
</tr>
</tbody>
</table>

• France is the largest exporter of frozen mix vegetables to Belgium, followed by Netherlands
• Netherlands also has the highest UVR, indicating the high quality of its products
• India at present does not export frozen mix vegetables to Belgium, but considering the nature of the players and poor growth it would not be advisable to enter this market.
### 6.3.1.5 Frozen Strawberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morocco</td>
<td>8.4</td>
<td>9.2</td>
<td>7.2</td>
<td>-21%</td>
<td>6312</td>
<td>8446</td>
</tr>
<tr>
<td>Poland</td>
<td>2.3</td>
<td>4.9</td>
<td>3.6</td>
<td>-27%</td>
<td>1302</td>
<td>4065</td>
</tr>
<tr>
<td>China</td>
<td>2.3</td>
<td>1.0</td>
<td>1.6</td>
<td>57%</td>
<td>2375</td>
<td>1316</td>
</tr>
<tr>
<td>Germany</td>
<td>1.0</td>
<td>1.1</td>
<td>1.2</td>
<td>9%</td>
<td>622</td>
<td>842</td>
</tr>
<tr>
<td>Spain</td>
<td>1.9</td>
<td>0.8</td>
<td>1.2</td>
<td>51%</td>
<td>1733</td>
<td>501</td>
</tr>
</tbody>
</table>

- Morocco is the largest exporter of frozen strawberry to Belgium
- Exports from China have shown a sharp increase
- India at present does not export frozen strawberry to Belgium, hence there is an opportunity for India to cash upon

### 6.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>3.8</td>
<td>5.6</td>
<td>7.1</td>
<td>26%</td>
<td>2499</td>
<td>5398</td>
</tr>
<tr>
<td>Serbia</td>
<td>5.9</td>
<td></td>
<td></td>
<td></td>
<td>3587</td>
<td></td>
</tr>
<tr>
<td>Serbia &amp; Montenegro</td>
<td>11.6</td>
<td>11.9</td>
<td>2.5</td>
<td>-79%</td>
<td>6752</td>
<td>7064</td>
</tr>
<tr>
<td>Germany</td>
<td>1.5</td>
<td>1.6</td>
<td>2.1</td>
<td>29%</td>
<td>949</td>
<td>1072</td>
</tr>
<tr>
<td>Chile</td>
<td>1.7</td>
<td>2.6</td>
<td>2.1</td>
<td>-17%</td>
<td>1016</td>
<td>1401</td>
</tr>
</tbody>
</table>

- Poland is the largest exporter of frozen raspberry to Belgium
- Poland also has shown an increase in the UVR indicating the high quality of its products
- India at present does not export frozen raspberry to Belgium, but with predominant EU export and low growth it would not be a favorable market to enter.

### 6.3.1.7 Frozen Potatoes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>0.560</td>
<td>0.446</td>
<td>1.047</td>
<td>135%</td>
<td>1105</td>
<td>847</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.787</td>
<td>0.900</td>
<td>1.052</td>
<td>17%</td>
<td>759</td>
<td>898</td>
</tr>
<tr>
<td>Germany</td>
<td>0.107</td>
<td>0.100</td>
<td>0.114</td>
<td>14%</td>
<td>171</td>
<td>213</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.001</td>
<td>0.040</td>
<td>7416%</td>
<td></td>
<td>0.1</td>
<td>98</td>
</tr>
<tr>
<td>China</td>
<td>0.004</td>
<td>0.042</td>
<td>951%</td>
<td></td>
<td>11</td>
<td>83</td>
</tr>
</tbody>
</table>
• France is the largest exporter of frozen potatoes to Belgium, followed by Netherlands
• France has also shown an increase in the UVR indicating the high quality of its products
• India at present does not export frozen potatoes to Belgium, and the fact that China exports means that there is an opportunity for India to cash upon

6.3.1.8 Frozen Fruits and Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>4.6</td>
<td>4.1</td>
<td>7.5</td>
<td>82%</td>
<td>4004</td>
<td>4290</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5.2</td>
<td>4.8</td>
<td>5.5</td>
<td>15%</td>
<td>3814</td>
<td>3428</td>
</tr>
<tr>
<td>Greece</td>
<td>4.2</td>
<td>2.5</td>
<td>3.3</td>
<td>35%</td>
<td>2596</td>
<td>1813</td>
</tr>
<tr>
<td>France</td>
<td>3.2</td>
<td>3.0</td>
<td>3.8</td>
<td>28%</td>
<td>1653</td>
<td>1490</td>
</tr>
<tr>
<td>Canada</td>
<td>2.1</td>
<td>3.3</td>
<td>4.0</td>
<td>22%</td>
<td>1389</td>
<td>1738</td>
</tr>
<tr>
<td>India</td>
<td>0.22</td>
<td>0.13</td>
<td>0.20</td>
<td>52%</td>
<td>189</td>
<td>109</td>
</tr>
</tbody>
</table>

• Poland is the largest exporter of frozen fruits & nuts to Belgium, followed by Netherlands
• Canada has the highest UVR
• Indian exports of frozen fruits and nuts to Belgium have been growing along with this the market on the whole has been growing as well. We certainly need to capitalize on this

6.3.1.9 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>0.22</td>
<td>0.27</td>
<td>0.22</td>
<td>-18%</td>
<td>118</td>
<td>163</td>
</tr>
<tr>
<td>France</td>
<td>0.15</td>
<td>0.18</td>
<td>0.16</td>
<td>-8%</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.30</td>
<td>0.11</td>
<td>0.07</td>
<td>-39%</td>
<td>495</td>
<td>140</td>
</tr>
<tr>
<td>China</td>
<td>0.33</td>
<td>0.12</td>
<td>0.02</td>
<td>-80%</td>
<td>274</td>
<td>126</td>
</tr>
<tr>
<td>Germany</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
<td>-40%</td>
<td>57</td>
<td>20</td>
</tr>
</tbody>
</table>

• Spain is the largest exporter of frozen legumes to Belgium, followed by France
• Spain also has the highest UVR indicting the high quality of its products
• Indian at present does not export frozen legumes to Belgium but this category has been posting poor growth along with the size of exports being very small. The only positive is the fact that China is amongst the top exporter to the country.
6.3.1.10 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>2.96</td>
<td>3.60</td>
<td>3.90</td>
<td>8%</td>
<td>4708</td>
<td>6080</td>
</tr>
<tr>
<td>France</td>
<td>3.15</td>
<td>3.80</td>
<td>4.00</td>
<td>5%</td>
<td>3739</td>
<td>4344</td>
</tr>
<tr>
<td>Germany</td>
<td>1.68</td>
<td>1.40</td>
<td>1.38</td>
<td>-2%</td>
<td>1860</td>
<td>1601</td>
</tr>
<tr>
<td>Spain</td>
<td>0.38</td>
<td>0.36</td>
<td>0.35</td>
<td>-5%</td>
<td>398</td>
<td>356</td>
</tr>
<tr>
<td>Austria</td>
<td>0.02</td>
<td>0.09</td>
<td>0.11</td>
<td>413%</td>
<td>24</td>
<td>135</td>
</tr>
</tbody>
</table>

- Netherlands is the largest exporter of frozen spinach to Belgium, followed by France
- Netherlands has also seen the highest UVR growth over the past three years indicating the high quality of its products
- Indian at present does not export frozen spinach to Belgium and considering the fact that all the players in the market are European who by the way are not posting much growth, it would not be advisable to enter this market.

6.3.1.11 Frozen Sweet Corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>12.00</td>
<td>9.30</td>
<td>14.34</td>
<td>54%</td>
<td>17179</td>
<td>11533</td>
</tr>
<tr>
<td>Hungary</td>
<td>5.28</td>
<td>3.82</td>
<td>5.26</td>
<td>38%</td>
<td>6838</td>
<td>5553</td>
</tr>
<tr>
<td>Slovakia</td>
<td>0.03</td>
<td>0.04</td>
<td>0.70</td>
<td>1498%</td>
<td>43</td>
<td>65</td>
</tr>
<tr>
<td>Germany</td>
<td>0.24</td>
<td>0.37</td>
<td>0.64</td>
<td>74%</td>
<td>265</td>
<td>516</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1.96</td>
<td>1.06</td>
<td>0.81</td>
<td>-23%</td>
<td>2136</td>
<td>1361</td>
</tr>
</tbody>
</table>

- France is the largest exporter of frozen sweet corn to Belgium, followed by Hungary
- Netherlands has seen the highest UVR growth over the past three years
- Indian at present does not export frozen sweet corn to Belgium and hence it can be an opportunity for it to cash upon, the only problem being that all the exporters are from the EU.

Thus, with respect to Indian exports to Belgium the only category currently being exported is frozen fruits and nuts, but one can see large potential in other FFV categories as well.
6.4 OVERVIEW OF ORGANIZED FOOD AND GROCERY RETAILING IN BELGIUM

6.4.1 Belgium Retail Market Size and Structure

The Belgian grocery retail market is worth €31.3 billion and although this is one of the smallest markets in Western Europe, spend per capita is high at €3,044. Grocery sales account for 67% of total retail sales and within grocery, food and drink accounts for an estimated €22.2 billion. The associated non-food element is therefore €9.1 billion. The total number of grocery stores has declined by 29.1% between 1995 and 2002. Although the importance of small independent retailers has reduced over the period, the number of smaller outlets (except traditional grocers) has remained fairly stable. This is due to the larger multiples increasing their market share as they expand their operations through franchise contracts. Planning permission for hypermarkets is rarely granted and consequently the importance of larger stores is low in comparison to the rest of Europe. Indeed hypermarket numbers have fallen during 1995-2002. Conversely, the importance of supermarkets in Belgium is very high in comparison with other Western European markets although planning restrictions will now prevent any significant increase in total numbers.

Number of Retail Outlets by Store Size

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Grocery Stores</td>
<td>12,966</td>
<td>12,952</td>
<td>12,694</td>
<td>12,244</td>
<td>11,520</td>
<td>10,676</td>
<td>9,891</td>
<td>9,192</td>
</tr>
<tr>
<td>Total Hypermarkets</td>
<td>81</td>
<td>81</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>78</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td>Large Supermarkets 1000-2500 m2</td>
<td>607</td>
<td>620</td>
<td>620</td>
<td>651</td>
<td>665</td>
<td>671</td>
<td>1,919</td>
<td>641</td>
</tr>
<tr>
<td>Small Supermarkets 400-1000 m2</td>
<td>1,406</td>
<td>1,411</td>
<td>1,394</td>
<td>1,397</td>
<td>1,359</td>
<td>1,339</td>
<td>-</td>
<td>1,321</td>
</tr>
<tr>
<td>Superettes 100-400 m2</td>
<td>2,630</td>
<td>2,647</td>
<td>2,767</td>
<td>2,789</td>
<td>2,785</td>
<td>2,743</td>
<td>2,642</td>
<td>2,441</td>
</tr>
<tr>
<td>Traditional Grocers &lt;100 m2</td>
<td>8,248</td>
<td>8,193</td>
<td>7,832</td>
<td>7,326</td>
<td>6,833</td>
<td>5,841</td>
<td>5,252</td>
<td>4,715</td>
</tr>
</tbody>
</table>

*Source: AC Nielsen

Key Importers in Belgium

- Unilever
- McCain
- Findus

Key Logistics Providers in Belgium

- Soonius transport B.V.
- Seabrex/Ebrex
- Maersk
## Major Retailers in Belgium

<table>
<thead>
<tr>
<th>Company</th>
<th>Fascias</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrefour</td>
<td>Carrefour</td>
<td>Hypermarket</td>
</tr>
<tr>
<td>Champion</td>
<td></td>
<td>Supermarket</td>
</tr>
<tr>
<td>GB</td>
<td></td>
<td>Convenience</td>
</tr>
<tr>
<td>Delhaize</td>
<td>Le Lion, AD</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Proxy, Superette, City, Shop 'n Go,</td>
<td>Convenience</td>
</tr>
<tr>
<td></td>
<td>Bio Square</td>
<td></td>
</tr>
<tr>
<td>Di,Tom &amp; Co</td>
<td></td>
<td>Non-Food</td>
</tr>
<tr>
<td>Colruyt</td>
<td>Bio Planet</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Colruyt</td>
<td>Discount</td>
</tr>
<tr>
<td></td>
<td>Okay</td>
<td>Convenience</td>
</tr>
<tr>
<td></td>
<td>DreamLand, DreamBaby</td>
<td>Non-Food</td>
</tr>
<tr>
<td>Aldi</td>
<td>Aldi</td>
<td>Discount</td>
</tr>
<tr>
<td>Metro</td>
<td>Makro</td>
<td>Cash &amp; Carry</td>
</tr>
<tr>
<td></td>
<td>Media-Markt</td>
<td>Electricals</td>
</tr>
<tr>
<td></td>
<td>Kaufhof / INNO</td>
<td>Department store</td>
</tr>
<tr>
<td>Cora-Louis</td>
<td>Cora</td>
<td>Hypermarket</td>
</tr>
<tr>
<td>Delhaize</td>
<td>Match</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Profi</td>
<td>Discount</td>
</tr>
<tr>
<td>Laurus</td>
<td>Battard</td>
<td>Supermarket</td>
</tr>
<tr>
<td></td>
<td>Central Cash</td>
<td></td>
</tr>
<tr>
<td>Lidl</td>
<td>Lidl</td>
<td>Discount</td>
</tr>
<tr>
<td>Intermarché</td>
<td>Intermarché, Ecomarché</td>
<td>Supermarket</td>
</tr>
</tbody>
</table>

*Source: IGD Research*
Belgium is a relatively small domestic market in Europe. Therefore, from an early stage, grocery manufacturers and retailers have exported and expanded abroad, initially into the confined economic area which forms the Benelux community, and increasingly into wider international markets. Delhaize, for example, generated over 83% of sales outside of its home market in 2002. Colruyt has operations in France, which comprise retail and foodservice.

*Technopak Research Analysis*
Chapter 7: FRANCE MARKET

7.1 FRANCE FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

7.1.1 CURRENT AND FUTURE ANALYSIS

French frozen fruit and vegetable market was 962 thousand tons in 2005, and is projected to be 986 thousand tons by the end of 2006. The market is projected to grow at a compounded annual rate of 2.56% to reach 1,088 thousand tons by 2010.

Frozen vegetables segment is estimated to hold a lion's share in the total French Frozen fruits and Vegetables market in 2005. Demand for frozen vegetables is projected to reach 1,077 thousand tons by 2010, at a compounded annual growth rate of 2.54%.

Frozen fruit market is projected to grow at a compounded annual rate of 4.17% over the 10-year analysis period 2001-2010. French frozen fruit market is projected to reach 11 thousand tons by 2010 from an estimated 9 thousand tons in 2005.

7.1.2 HISTORIC REVIEW

France represented one of the fastest growing markets for frozen fruits and vegetables among the major European countries. Frozen fruits and vegetables market in France stood at 687 thousand tons in 1991. Growing at a compounded rate of 2.32% per annum, the market registered 845 thousand tons in 2000.

7.1.3 MARKET OVERVIEW

Nestle holds a strong position in the market for frozen vegetables in France. Other major brands operating in the French fruits and vegetables market include Iglo (Unilever), Gorcy, Marie and Vivagel (Danone), McCain and Bonduelle.

7.2 CONSUMPTION TRENDS

Frozen vegetables account for a significant part of the total production of frozen food. In France, the food products that are preserved by freezing and intended for immediate consumption come under two categories namely - quick frozen food (surgeles) and other frozen food or chilled food (congeles). In quick-frozen food, the food is in perfect condition at the time of freezing and is stabilized by suddenly lowering the temperature. These products are then kept at temperatures below 18°C before they reach the consumer. Frozen foods (congeles) are generally frozen meat and fish kept below 18°C.
until they reach the consumer. A third category is used for industrial processing in agro-food industries, particularly in preserved meats, preserved fruit and fish. France accounts for 80% of sweet corn production in Europe. About 9,200 tons of sweet corn is packed as frozen corn each year.

7.3 **IMPORT TRENDS**

The largest and fastest growing imports are exotic and tropical fruits, including citrus, fish and seafood, horsemeat, pork and frozen foods, including ready-to-eat meals and items such as pizza and ice cream. Opportunities also exist for wines, fruit juices, soft drinks, and canned fruits. France’s retail distribution system is diverse and sophisticated, a network very similar to that of the United States. French food retailers can be grouped into six principal formats: hypermarkets, supermarkets, hard discounters, city center stores, department stores and traditional outlets, including cash-and-carry.

7.3.1 **CATEGORY WISE ANALYSIS OF FRANCE FFV IMPORTS** (*SOURCE: EUROSTAT, COMTRADE, FAOSTAT*)

7.3.1.1 **Frozen Peas**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>12.65</td>
<td>12.80</td>
<td>11.43</td>
<td>-11%</td>
<td>14316</td>
<td>15364</td>
</tr>
<tr>
<td>Spain</td>
<td>0.39</td>
<td>0.83</td>
<td>0.61</td>
<td>-26%</td>
<td>423</td>
<td>853</td>
</tr>
<tr>
<td>Germany</td>
<td>0.31</td>
<td>0.47</td>
<td>0.48</td>
<td>4%</td>
<td>164</td>
<td>333</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.44</td>
<td>0.41</td>
<td>0.35</td>
<td>-13%</td>
<td>418</td>
<td>420</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>0.43</td>
<td>0.31</td>
<td>0.26</td>
<td>-15%</td>
<td>419</td>
<td>325</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of frozen peas to France, followed by Spain. The high trade can also be attributed to re-export
- Germany also has the highest UVR, indicating the high quality of its products
- India at present does not export frozen peas to France, this market is dominated by Belgium and has been posting poor growth rates, therefore India should not consider entering this market.
### 7.3.1.2 Frozen Beans

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>12.65</td>
<td>12.80</td>
<td>11.43</td>
<td>-11%</td>
<td>14316</td>
<td>15364</td>
</tr>
<tr>
<td>Spain</td>
<td>0.39</td>
<td>0.83</td>
<td>0.61</td>
<td>-26%</td>
<td>423</td>
<td>853</td>
</tr>
<tr>
<td>Germany</td>
<td>0.31</td>
<td>0.47</td>
<td>0.48</td>
<td>4%</td>
<td>164</td>
<td>333</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.44</td>
<td>0.41</td>
<td>0.35</td>
<td>-13%</td>
<td>418</td>
<td>420</td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>0.43</td>
<td>0.31</td>
<td>0.26</td>
<td>-15%</td>
<td>419</td>
<td>325</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of frozen beans to France, followed by Spain.
- Germany also has the highest UVR, indicating the high quality of its products.
- India at present does not export frozen beans to France, the market is dominated by Belgium re-export which has also been falling over the years.

### 7.3.1.3 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>97.9</td>
<td>90.6</td>
<td>91.0</td>
<td>0%</td>
<td>134999</td>
<td>127251</td>
</tr>
<tr>
<td>Spain</td>
<td>32.2</td>
<td>35.1</td>
<td>31.3</td>
<td>-11%</td>
<td>33991</td>
<td>37134</td>
</tr>
<tr>
<td>Poland</td>
<td>5.2</td>
<td>9.2</td>
<td>11.4</td>
<td>25%</td>
<td>4646</td>
<td>12879</td>
</tr>
<tr>
<td>Netherlands</td>
<td>16.0</td>
<td>11.4</td>
<td>11.8</td>
<td>4%</td>
<td>14845</td>
<td>12186</td>
</tr>
<tr>
<td>Portugal</td>
<td>6.4</td>
<td>9.4</td>
<td>8.5</td>
<td>-9%</td>
<td>9168</td>
<td>13379</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of other frozen vegetables to France, followed by Spain.
- Spain has the highest UVR, indicating the high quality of its products.
- India at present does not export this category to France, the market has huge volumes but exports to it is not supported by the nature of the markets.

### 7.3.1.4 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>42.01</td>
<td>43.88</td>
<td>47.05</td>
<td>7%</td>
<td>46105</td>
<td>48172</td>
</tr>
<tr>
<td>Spain</td>
<td>4.92</td>
<td>4.47</td>
<td>6.72</td>
<td>50%</td>
<td>3579</td>
<td>2943</td>
</tr>
<tr>
<td>Germany</td>
<td>1.27</td>
<td>4.44</td>
<td>5.70</td>
<td>28%</td>
<td>719</td>
<td>2305</td>
</tr>
<tr>
<td>Italy</td>
<td>2.38</td>
<td>3.27</td>
<td>2.73</td>
<td>-17%</td>
<td>1236</td>
<td>1433</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.70</td>
<td>0.54</td>
<td>0.41</td>
<td>-25%</td>
<td>1023</td>
<td>693</td>
</tr>
</tbody>
</table>
• Belgium is the largest exporter of frozen mix vegetables to France, followed by Spain
• Germany also has the highest UVR, indicating the high quality of its products
• India at present does not export frozen mix vegetables to France, but the sector is heavily dominated by Belgium and the nature of competitors does not hugely support India’s entry into the market.

7.3.1.5 Frozen Strawberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>11.29 11.33 13.22 17% 11930 12854 10022 -22% 0.95 0.88 1.32 50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>5.50 5.84 6.15 5% 3388 5267 6933 32% 1.62 1.11 0.89 -20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>6.11 4.51 9.28 106% 3963 3015 6617 119% 1.54 1.50 1.40 -6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>10.19 12.16 5.05 -58% 8275 10899 5937 -46% 1.23 1.12 0.85 -24%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>People’s Republic of China</td>
<td>2.13 3.05 2.40 -21% 2308 3841 4491 17% 0.92 0.79 0.53 -33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Spain is the largest exporter of frozen strawberry to France.
• Exports from Netherlands have shown a sharp increase and have the highest UVR as well which can be attributed to better quality.
• India at present does not export frozen strawberry to France, the nature of the market right now is conducive for entry given that China is one of the leading exporters.

7.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serbia</td>
<td>10.92 7.127 1.53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>10.83 12.25 10.14 -17% 5978 5782 5158 -11% 1.81 2.12 1.97 -7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>20.55 20.09 6.82 -66% 10803 11172 4331 -61% 1.90 1.80 1.58 -12%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>5.16 7.18 7.05 -2% 2437 3460 3681 6% 2.12 2.07 1.92 -8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>7.54 5.99 6.44 7% 4342 3740 3335 -11% 1.74 1.60 1.93 20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Serbia is the largest exporter of frozen raspberry to France.
• Chile has the highest UVR but has shown a decrease over 2004. The product has high UVR in general.
• India at present does not export frozen raspberry to France, the poor growth rate coupled with an all EU export list presents a challenge for entry.
7.3.1.7 Frozen Potatoes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>4.33 3.49 3.11 -11%</td>
<td>6688 5313 5474 3%</td>
<td>0.65 0.66 0.57 -14%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>4.24 3.34 2.07 -38%</td>
<td>5695 3975 3074 -23%</td>
<td>0.74 0.84 0.67 -20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>0.46 0.35 0.41 16%</td>
<td>434 553 687 24%</td>
<td>1.06 0.63 0.59 -7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>0.59 0.73 0.33 -55%</td>
<td>901 1039 474 -54%</td>
<td>0.66 0.71 0.69 -2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>0.08 0.11 0.13 16%</td>
<td>75 87 106 22%</td>
<td>1.08 1.27 1.20 -5%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of frozen potatoes to France, followed by Netherlands
- Italy has also shown an increase in the UVR indicating the high quality of its products
- India at present does not export frozen potatoes to France, but with poor growth and predominant EU export it is not encouraging.

7.3.1.8 Frozen Fruits and Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>7.65 7.34 12.80 75%</td>
<td>5030 4616 8605 86%</td>
<td>1.52 1.59 1.49 -6%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>16.58 18.40 12.29 -33%</td>
<td>3957 3729 5571 49%</td>
<td>2.11 2.25 2.00 -11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>8.36 8.39 11.16 33%</td>
<td>301 1097 473 -54%</td>
<td>1.06 0.63 0.59 -7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>2.96 8.61 8.26 -4%</td>
<td>2157 6904 5428 -21%</td>
<td>1.37 1.25 1.52 22%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>2.80 4.17 3.97 -5%</td>
<td>2425 4112 3899 -5%</td>
<td>1.16 1.02 1.02 0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Netherlands is the largest exporter of frozen fruits & nuts to France, followed by Italy. Netherlands has also posted the highest growth rate.
- Belgium has the highest UVR, very closely followed by Italy
- India does not export frozen fruits and nuts to France this is a sector that India must look at since it has a good growth rate and good volumes.

7.1.3.9 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>0.86 1.11 1.51 36%</td>
<td>935 1153 1532 33%</td>
<td>0.92 0.96 0.99 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>0.31 0.47 1.04 119%</td>
<td>190 311 663 113%</td>
<td>1.64 1.52 1.56 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>0.77 0.66 0.68 4%</td>
<td>570 499 518 4%</td>
<td>1.35 1.32 1.32 0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>0.46 0.56 0.53 -5%</td>
<td>367 444 407 -8%</td>
<td>1.25 1.26 1.30 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egypt</td>
<td>0.05 0.22 0.64 196%</td>
<td>49 124 390 214%</td>
<td>0.93 1.74 1.64 -6%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Belgium is the largest exporter of frozen legumes to France, followed by China, which has also shown a high growth rate.

China also has the highest UVR indicating the high quality of its products.

Indian at present does not export frozen legumes to France especially since it is a growth sector and China has been able to make its presence felt here, India should explore entering the market.

### 7.3.1.10 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>9.10 9.98 9.92 -1%</td>
<td></td>
<td>13181 15720 14289 -9%</td>
<td>0.69 0.63 0.69 9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>1.10 2.75 1.49 -46%</td>
<td></td>
<td>1997 3235 2627 -19%</td>
<td>0.55 0.85 0.57 -33%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>0.30 0.59 99%</td>
<td></td>
<td>76 232 204%</td>
<td>3.87 2.53 -35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>1.60 3.53 0.18 -95%</td>
<td></td>
<td>1041 2499 196 -92%</td>
<td>1.54 1.41 0.91 -36%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>0.22 0.11 0.11 5%</td>
<td></td>
<td>377 85 81 -4%</td>
<td>0.58 1.27 1.39 9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Belgium is the largest exporter of frozen spinach to France, followed by Spain.

Austria has also seen the highest UVR growth over the past two years indicating the high quality of its products.

Indian at present does not export frozen spinach to France, it is a market dominated by Belgium which has been posting poor growth.

### 7.3.1.11 Frozen Sweet Corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2.26 2.32 1.68 -28%</td>
<td></td>
<td>1718 2183 1704 -22%</td>
<td>1.31 1.06 0.99 -7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>1.63 0.80 0.55 -30%</td>
<td></td>
<td>1806 969 852 -12%</td>
<td>0.90 0.82 0.65 -21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>1.13 0.73 0.31 -57%</td>
<td></td>
<td>1420 884 446 -50%</td>
<td>0.79 0.83 0.70 -15%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>0.18 0.16 0.20 23%</td>
<td></td>
<td>240 220 253 15%</td>
<td>0.74 0.73 0.78 7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>0.24 0.18 0.33 82%</td>
<td></td>
<td>131 110 207 89%</td>
<td>1.82 1.64 1.58 -3%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Belgium is the largest exporter of frozen sweet corn to France, followed by Germany.

United Kingdom has seen the highest UVR growth over the past three years.

Indian at present does not export frozen sweet corn to France and given the decline & EU domination does not favor of India exporting this product.

Thus, with respect to Indian exports to France not a single category currently is being exported. There does exist opportunities which can be explored.
7.4 OVERVIEW OF ORGANIZED FOOD AND GROCERY RETAILING IN FRANCE

7.4.1 France Retail Market Size and Structure

The French grocery retail market is estimated to be worth approximately €191.5 billion. Sales of food and drink account for 64% of the total. Over the last few years, store development in the French market has been severely restricted due to planning legislation, which has prevented the opening of large format stores, in particular. This has meant that hypermarket retailers have had to seek growth either in international markets, by refurbishing existing stores, or introducing new concept stores. This helps to explain why the store numbers for both hypermarkets and large supermarkets have only seen small increases. As in many Western European markets, the number of traditional grocery stores in France is in decline, although the trend here is not as marked as in some countries. By far the biggest increase in store numbers in 2002 has been the discount format and this can partly be explained by the fact that discount store operators do not face the same planning constraints as large store operators. The discount operators have also succeeded in reducing the price gap between the hypermarkets and the other formats.

Number of Retail Outlets by Store Size

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Grocery Stores</td>
<td>41,957</td>
<td>41,635</td>
<td>39,479</td>
<td>38,937</td>
<td>38,460</td>
<td>37,864</td>
<td>37,637</td>
<td>37,559</td>
</tr>
<tr>
<td>Total Hypermarkets</td>
<td>997</td>
<td>1,030</td>
<td>1,056</td>
<td>1,074</td>
<td>1,090</td>
<td>1,105</td>
<td>1,133</td>
<td>1,164</td>
</tr>
<tr>
<td>Large Supermarkets 2500-1200 m²</td>
<td>2,771</td>
<td>2,784</td>
<td>2,806</td>
<td>2,818</td>
<td>2,831</td>
<td>2,861</td>
<td>2,906</td>
<td>2,939</td>
</tr>
<tr>
<td>Small Supermarkets 400-1200 m²</td>
<td>4,054</td>
<td>3,887</td>
<td>3,615</td>
<td>3,539</td>
<td>3,399</td>
<td>3,210</td>
<td>3,121</td>
<td>3,009</td>
</tr>
<tr>
<td>Superettes + Traditional &lt;100 m²</td>
<td>32,688</td>
<td>32,139</td>
<td>30,060</td>
<td>29,419</td>
<td>28,754</td>
<td>28,155</td>
<td>27,826</td>
<td>27,589</td>
</tr>
<tr>
<td>Hard Discounters</td>
<td>1,447</td>
<td>1,795</td>
<td>1,942</td>
<td>2,07</td>
<td>2,386</td>
<td>2,533</td>
<td>2,651</td>
<td>2,858</td>
</tr>
</tbody>
</table>

*Source: AC Nielsen

Key Importers in France

- Nestle
- Unilever
- McCain
- Danone

Key Logistics Providers in France

- Soonius Transport B.V.
- Seabrex/Ebrex
- Maersk
The merger between Carrefour and Promodès in 1999 had a significant impact on the French retail market. Following the merger, Carrefour became the leading French retailer ahead of co-operative groups Intermarché and Leclerc. Although Carrefour is still the number one retailer in the French market in terms of market share, the group lost ground to some of its competitors during the lengthy merger integration process. Co-operative retailer Leclerc, in particular, was a key beneficiary of this market share loss and used promotional mechanisms such as the ‘Ticket Leclerc’, comprising of money-off vouchers issued at the checkout, to leverage this advantage. In May 2003, Carrefour launched its
own money-off vouchers with the aim of regaining market share and reinforcing its price positioning in the market. The discount concept has also begun to take a hold in the market and is having a considerable impact on the strategies of the mainstream multiples. Several French retailers such as Carrefour (with Ed) and Casino (with Leader Price) have developed their own discount format, and Casino’s Leader Price fascia is arguably responsible for a large proportion of the market share gains of the discounters over the last year. These retailers operate a ‘softer’ version of the discount format than that used by German operators, with in-store merchandising designed in a more customer-friendly manner and with products displayed on shelves rather than stacked on pallets. Another important development in the French market was the formation of a joint purchasing alliance, IRTS, between Auchan and Casino. Buying alliances between major retailers are common in France and in 1999; Leclerc and Système U formed the Lucie alliance. In 2002 Intermarché (ITM) announced it would be creating a new purchasing alliance with Eroski, the second largest grocery retailer in Spain.

In 2005

*Technopak research analysis

### 7.5 Market Analytics


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Fruits</td>
<td>1.08</td>
<td>1.03</td>
<td>0.89</td>
<td>0.99</td>
</tr>
<tr>
<td>Frozen Vegetables</td>
<td>98.92</td>
<td>98.97</td>
<td>99.11</td>
<td>99.01</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Technopak research estimates
APEDA (Agricultural and Processed Food Products Exports Development Authority)

French Recent Past, Current & Future Analysis for Frozen Fruits and Vegetables by Product Segments - Frozen Fruits and Frozen Vegetables Independently Analyzed with Annual Sales Figures in '000 Tons for Years 2001 through 2010

*Technopak research estimates


*Technopak research estimates
Chapter 8: UNITED STATES MARKET

8.1 USA FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

8.1.1 CURRENT AND FUTURE ANALYSIS
The US market for frozen fruits and vegetables was 5 million tons in 2005. Growing at a compounded annual rate of 2.84%, the market is projected to reach 6 million tons by 2010.

The market for frozen vegetables is projected to grow at a compounded annual rate of nearly 2.99% to reach 5 million tons by 2010. During this period, the market share for the frozen vegetables segment is projected to 94.10%. Some of the leading vegetable processors in the country include Green Giant, Del Monte, Birds Eye, Larsen (Freshlike) and Stokely.

The market for frozen fruits in the US is projected to grow at a relatively sedate compounded annual rate of 0.65% during the period 2001-2010. By 2010, the segment is projected to reach 352 thousand tons from an estimated 330 thousand tons in 2005.

8.1.2 HISTORIC REVIEW
The United States represented the second largest market worldwide for frozen fruits and vegetables during the 90s, next to Europe, accounting for a market share of over 34.38% in 1991. The US market for frozen fruits and vegetables was estimated at 3 million tons in 1991 and reached 4 million tons in 2000, reflecting a CAGR of 2.3% over the analysis period 1991-2000.

8.1.3 MARKET OVERVIEW
As frozen foods are available round the year and convenient to cook, the demand for frozen produce is witnessing an upsurge. Increase in consumption is influencing the growth for both frozen vegetables as well as frozen fruits. Frozen Foods save cooking time, as they are available in ready to cook processed form. Frozen vegetables hold much wider market compared to fruits due their extensive usage, either as major part of meals or as complimentary food.

8.2 CONSUMPTION TRENDS
As frozen foods are available round the year and convenient to cook, the demand for frozen produce is witnessing an upsurge. Increase in consumption is influencing the growth for both frozen vegetables as well as frozen fruits. Frozen Foods save cooking time, as they are available in ready to cook processed form. Frozen vegetables hold
much wider market compared to fruits due to their extensive usage, either as major part of meals or as complimentary food.

Frozen food consumption in the United States was up again last year, but instead of fancy entrees, chicken was the hot ticket at both retail and foodservice. Most of the growth on the retail side, moreover, seems to have been at Wal-Mart, Bentonville, Arkansas. With the largest retailer in the US opening more and more super centers that include grocery sections the size of the average supermarket, Wal-Mart is taking an increasing share of the overall grocery market, and some categories that seem to be losing elsewhere may actually be gaining.

Information Resources, Inc. (IRI), Chicago, Illinois, shows a 1.8% increase in dollar volume of frozen foods to $20.8 billion, up only slightly from $20.4 billion in 2003 (excluding ice cream). That is nearly all for supermarkets but includes a few discount chains other than Wal-Mart, which won't allow its sales to be reported.

United States per capita consumption of fruits and vegetables increased 6.6 percent from 1989 to 1998. Fruit consumption was up just 1.2 percent while vegetables increased 10.6 percent during the same time period.

While overall fruit consumption (fresh and processed) experienced very little growth, United States consumers increased their fresh fruit consumption by 7.2 percent from 1989 to 1998. United States consumption of canned and dried fruits declined during this period, 18.4 percent and 3.0 percent respectively. United States vegetable consumption was up 10.6 percent during the same period, led by the increased consumption of frozen vegetables, up 22.1 percent during this period. Fresh vegetables represented 44.6 percent of all vegetables consumed and increased 8.3 percent from 1989. Frozen vegetables grew 22.1 percent during this time. Canned vegetables continue to be the second largest variety of vegetable consumption even though this segment grew slower than any other vegetable sector.

8.3 IMPORT TRENDS

Dramatic growth in import share of vegetables occurred since 1985. For fresh and frozen vegetables as a group, the share doubled from 8 percent to 17 percent in 2001. Tomatoes' import share reached 36 percent in 2001, up from only 21 percent in 1990. Asparagus' share almost quadrupled from 16 percent to 60 percent. For olives (processed), the respective shares are 43 to 60 percent. And for artichokes and spices, the corresponding estimates more than doubled. These overall rising trends in import
shares of major foods are largely demand-driven, by both per capita U.S. income growth and the appreciation of the dollar over the past decade.

8.3.1 **Category Wise Analysis of USA FFV Imports** (*Source: Eurostat, Comtrade, FAOSTAT*)

### 8.3.1.1 Frozen Peas

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>10.86</td>
<td>11.11</td>
<td>11.28</td>
<td>2%</td>
<td>12406</td>
<td>12128</td>
</tr>
<tr>
<td>China</td>
<td>5.20</td>
<td>6.33</td>
<td>5.55</td>
<td>-12%</td>
<td>5085</td>
<td>6267</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1.47</td>
<td>2.06</td>
<td>2.18</td>
<td>6%</td>
<td>1078</td>
<td>1509</td>
</tr>
<tr>
<td>Poland</td>
<td>2.93</td>
<td>2.22</td>
<td>0.74</td>
<td>-66%</td>
<td>4151</td>
<td>3114</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.71</td>
<td>1.37</td>
<td>0.78</td>
<td>-43%</td>
<td>1676</td>
<td>1481</td>
</tr>
<tr>
<td>India</td>
<td>0.05</td>
<td>0.06</td>
<td>0.15</td>
<td>164%</td>
<td>36</td>
<td>40</td>
</tr>
</tbody>
</table>

- Canada is the largest exporter of frozen peas to US, followed by China. Canada's high trade is a result of NAFTA and the geographical proximity.
- India has the highest UVR, but the trade volumes are very low.
- India presently exports frozen peas to the USA, but the trade volumes are very low, hence there is an opportunity for India.

### 8.3.1.2 Frozen Beans

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>8.98</td>
<td>12.59</td>
<td>13.53</td>
<td>7%</td>
<td>8920</td>
<td>13076</td>
</tr>
<tr>
<td>China</td>
<td>2.73</td>
<td>7.63</td>
<td>7.03</td>
<td>-8%</td>
<td>2786</td>
<td>7831</td>
</tr>
<tr>
<td>Belgium-Luxemburg</td>
<td>2.84</td>
<td>3.39</td>
<td>4.61</td>
<td>36%</td>
<td>3262</td>
<td>3472</td>
</tr>
<tr>
<td>France</td>
<td>5.76</td>
<td>5.96</td>
<td>1.76</td>
<td>-70%</td>
<td>4538</td>
<td>4191</td>
</tr>
<tr>
<td>Poland</td>
<td>1.45</td>
<td>1.59</td>
<td>0.74</td>
<td>-54%</td>
<td>2340</td>
<td>2522</td>
</tr>
<tr>
<td>India</td>
<td>0.07</td>
<td>0.25</td>
<td>0.19</td>
<td>-23%</td>
<td>44</td>
<td>147</td>
</tr>
</tbody>
</table>

- Canada is the largest exporter of frozen beans to the USA, followed by China. Again the large exports from Canada can be attributed to the NAFTA.
- France has the highest UVR, but the volumes have been falling very rapidly.
- India at present exports frozen beans to the USA, there exists an opportunity for India although one must note that there has been a decline in the volumes.
8.3.1.3 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>149.36 170.38 187.98 10%</td>
<td>174820 203827 217947 7%</td>
<td>0.85 0.84 0.86 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>22.78 32.48 30.00 -8%</td>
<td>41866 56630 50282 -11%</td>
<td>0.54 0.57 0.60 4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>41.25 47.45 40.14 -15%</td>
<td>48266 57153 47687 -17%</td>
<td>0.85 0.83 0.84 1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>12.33 18.22 21.69 19%</td>
<td>12292 18039 21692 20%</td>
<td>1.00 1.01 1.00 -1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecuador</td>
<td>13.46 14.90 15.66 5%</td>
<td>12621 14120 13826 -2%</td>
<td>1.07 1.06 1.13 7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.78 1.45 1.34 -8%</td>
<td>405 973 761 -22%</td>
<td>1.92 1.49 1.76 18%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Mexico is the largest exporter of other frozen vegetables to the USA, followed by Canada, both of whom are a part of the NAFTA.
- India also has the highest UVR, but very low export volumes.
- India at present exports other frozen vegetables to the USA, but the low volumes and high UVR may be a cause for concern. Opportunities do exist for expansion.

8.3.1.4 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>22.71 22.22 25.75 16%</td>
<td>22275 20885 22674 9%</td>
<td>1.02 1.06 1.14 7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>13.93 15.61 17.56 13%</td>
<td>14073 16633 19529 17%</td>
<td>0.99 0.94 0.90 -4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>2.27 2.14 2.19 3%</td>
<td>2252 2125 2124 0%</td>
<td>1.01 1.00 1.03 3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>0.92 1.23 2.04 65%</td>
<td>898 1190 1830 54%</td>
<td>1.02 1.04 1.11 7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>2.21 2.95 2.31 -22%</td>
<td>960 1286 985 -23%</td>
<td>2.30 2.30 2.35 2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.01 0.10 0.09 -1%</td>
<td>9 51 57 11%</td>
<td>1.45 1.86 1.67 -10%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Mexico is the largest exporter of frozen mix vegetables to the USA, followed by Canada
- Chile also has the highest UVR, indicating the high quality of its products
- India at present does export frozen mix vegetables to the US, there is excellent opportunity for India if it concentrates on volumes.
### 8.3.1.5 Frozen Strawberry

<table>
<thead>
<tr>
<th></th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Ton)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>43.84</td>
<td>39.79</td>
<td>43.06</td>
<td>8%</td>
<td>40144</td>
<td>37599</td>
</tr>
<tr>
<td>China</td>
<td>2.03</td>
<td>4.64</td>
<td>10.41</td>
<td>125%</td>
<td>2372</td>
<td>5380</td>
</tr>
<tr>
<td>Argentina</td>
<td>2.17</td>
<td>3.22</td>
<td>8.01</td>
<td>148%</td>
<td>2453</td>
<td>3266</td>
</tr>
<tr>
<td>Chile</td>
<td>8.94</td>
<td>10.46</td>
<td>8.71</td>
<td>-17%</td>
<td>6176</td>
<td>7254</td>
</tr>
<tr>
<td>Ecuador</td>
<td>3.24</td>
<td>2.52</td>
<td>2.47</td>
<td>-2%</td>
<td>3020</td>
<td>2328</td>
</tr>
</tbody>
</table>

- Mexico is the largest exporter of frozen strawberry to the USA.
- Exports from China and Argentina have shown a sharp increase. Even the UVR in the case of Argentina.
- Chile has the highest UVR.
- India at present does not export frozen strawberry to the USA, hence there is an opportunity for India, especially when one looks at the high growth as well as the volumes of the sector.

### 8.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th></th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Ton)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>15.76</td>
<td>23.39</td>
<td>35.20</td>
<td>50%</td>
<td>9040</td>
<td>11729</td>
</tr>
<tr>
<td>Canada</td>
<td>8.63</td>
<td>6.30</td>
<td>8.80</td>
<td>40%</td>
<td>5845</td>
<td>3269</td>
</tr>
<tr>
<td>China</td>
<td>0.34</td>
<td>0.94</td>
<td>2.74</td>
<td>190%</td>
<td>400</td>
<td>892</td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>0.44</td>
<td>3.79</td>
<td>4.16</td>
<td>10%</td>
<td>406</td>
<td>2554</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.72</td>
<td>1.77</td>
<td>2.08</td>
<td>17%</td>
<td>673</td>
<td>1629</td>
</tr>
<tr>
<td>India</td>
<td>0.00</td>
<td>0.01</td>
<td>-100%</td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

- Chile is the largest exporter of frozen raspberry to the USA. The next highest is Canada, the rest are just marginal exporters.
- Canada has the highest UVR and Chile has a UVR which is very close to the Canada.
- India at present does not export frozen raspberry to the USA, but it has done so in the past and for sure there is an opportunity for India to explore.
8.3.1.7 Frozen Potatoes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>3.21</td>
<td>0.32</td>
<td>0.26</td>
<td>-17%</td>
<td>5142</td>
<td>319</td>
</tr>
<tr>
<td>Colombia</td>
<td>0.14</td>
<td>0.18</td>
<td>0.43</td>
<td>134%</td>
<td>79</td>
<td>95</td>
</tr>
<tr>
<td>India</td>
<td>0.29</td>
<td>0.16</td>
<td>0.09</td>
<td>-48%</td>
<td>471</td>
<td>250</td>
</tr>
<tr>
<td>France</td>
<td>0.07</td>
<td>0.03</td>
<td>0.01</td>
<td>-67%</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Belgium-Luxemburg</td>
<td>0.02</td>
<td>0.00</td>
<td>15</td>
<td>4</td>
<td>1.03</td>
<td>0.74</td>
</tr>
</tbody>
</table>

- Canada is the largest exporter of frozen potatoes to the USA, followed by Colombia. But Colombia has posted strong growth year on year.
- France has also shown an increase in the UVR indicating the high quality of its products.
- India at present does export frozen potatoes to the USA, but exports have been falling over the years.

8.3.1.8 Frozen Fruits and Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>61.25</td>
<td>74.39</td>
<td>101.00</td>
<td>36%</td>
<td>36622</td>
<td>35126</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>13.16</td>
<td>14.54</td>
<td>17.23</td>
<td>18%</td>
<td>13643</td>
<td>17894</td>
</tr>
<tr>
<td>Mexico</td>
<td>14.64</td>
<td>13.03</td>
<td>13.20</td>
<td>1%</td>
<td>14445</td>
<td>12586</td>
</tr>
<tr>
<td>Ecuador</td>
<td>4.42</td>
<td>6.36</td>
<td>5.87</td>
<td>-8%</td>
<td>4677</td>
<td>6621</td>
</tr>
<tr>
<td>Thailand</td>
<td>7.92</td>
<td>5.61</td>
<td>6.48</td>
<td>16%</td>
<td>7686</td>
<td>5100</td>
</tr>
<tr>
<td>India</td>
<td>0.08</td>
<td>0.22</td>
<td>0.12</td>
<td>-46%</td>
<td>57</td>
<td>146</td>
</tr>
</tbody>
</table>

- Canada is the largest exporter of frozen fruits & nuts to the USA, followed by Costa Rica. Canada has also posted the highest growth rate.
- Canada has the highest UVR that coupled with the highest volumes is an indication of quality of Canadian products. It can concentrate efforts to expand.
- Indian exports of frozen fruits and nuts to the USA but has been registering a decline.
8.1.3.9 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1.41</td>
<td>2.10</td>
<td>2.49</td>
<td>15%</td>
<td>1.09</td>
<td>1.04</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1.35</td>
<td>1.76</td>
<td>2.80</td>
<td>59%</td>
<td>1.39</td>
<td>1.38</td>
</tr>
<tr>
<td>El Salvador</td>
<td>0.23</td>
<td>0.66</td>
<td>1.50</td>
<td>126%</td>
<td>1.51</td>
<td>1.47</td>
</tr>
<tr>
<td>India</td>
<td>0.27</td>
<td>0.61</td>
<td>0.28</td>
<td>-55%</td>
<td>0.76</td>
<td>0.97</td>
</tr>
<tr>
<td>Canada</td>
<td>0.02</td>
<td>0.17</td>
<td>0.59</td>
<td>241%</td>
<td>225</td>
<td>455</td>
</tr>
<tr>
<td>Peru</td>
<td>0.44</td>
<td>0.92</td>
<td>1.31</td>
<td>42%</td>
<td>1.97</td>
<td>2.02</td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen legumes to the US, followed by Ecuador, which has also shown a high growth rate. Canada has been posting strong growth as well.
- Ecuador has the highest UVR indicating the high quality of its products.
- Indian at present does export frozen legumes to the US and should look at consolidating on their position, its an opportunity to cash upon, especially considering that China is doing well.

8.3.1.10 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>3.45</td>
<td>5.21</td>
<td>6.67</td>
<td>28%</td>
<td>4550</td>
<td>6864</td>
</tr>
<tr>
<td>China</td>
<td>0.41</td>
<td>2.12</td>
<td>3.76</td>
<td>77%</td>
<td>481</td>
<td>2605</td>
</tr>
<tr>
<td>Belgium-Luxemburg</td>
<td>0.32</td>
<td>0.27</td>
<td>0.33</td>
<td>22%</td>
<td>493</td>
<td>359</td>
</tr>
<tr>
<td>Egypt</td>
<td>0.03</td>
<td>0.01</td>
<td>0.02</td>
<td>178%</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>Germany</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>0.03</td>
<td>0.06</td>
<td>0.03</td>
<td>-51%</td>
<td>0.42</td>
<td>1.39</td>
</tr>
</tbody>
</table>

- Mexico is the largest exporter of frozen spinach to the US, followed by China; which has shown huge growth.
- India has also seen the highest UVR growth over the past two years but a decline in the sales volume has been seen there could be a problem with pricing issues.
- Indian at present does export frozen spinach to the US but we need to look at why the volumes have been consistently declining and use this as an opportunity market.
8.3.1.11 Frozen Sweet Corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>15.25</td>
<td>12.80</td>
<td>13.08</td>
<td>2%</td>
<td>16897</td>
<td>14033</td>
</tr>
<tr>
<td>Peru</td>
<td>0.59</td>
<td>0.89</td>
<td>1.60</td>
<td>79%</td>
<td>304</td>
<td>567</td>
</tr>
<tr>
<td>Vietnam</td>
<td>0.35</td>
<td>0.34</td>
<td>0.33</td>
<td>-2%</td>
<td>498</td>
<td>406</td>
</tr>
<tr>
<td>China</td>
<td>0.20</td>
<td>0.13</td>
<td>0.21</td>
<td>69%</td>
<td>219</td>
<td>113</td>
</tr>
<tr>
<td>El Salvador</td>
<td>0.23</td>
<td>0.23</td>
<td>0.39</td>
<td>69%</td>
<td>77</td>
<td>84</td>
</tr>
</tbody>
</table>

- Canada is the largest exporter of frozen sweet corn to the US, followed by Peru.
- El Salvador has seen the highest UVR growth over the past three years, but that has been constantly declining along with the increase in volumes.
- Indian at present does not export frozen sweet corn to the US but surely it is an opportunity for it to cash upon.

Thus, with respect to Indian exports to USA there are nine categories currently being exported. Given the increase in overall co-operation between the 2 nations huge opportunities exist to increase FFV exports to the US.

8.4 Overview of Organized Food & Grocery Retailing in US

8.4.1 History of food and grocery retail in US

At the beginning of the 20th century, grocery stores in the United States were full-service. A customer would ask a clerk behind the counter for specific items and the clerk would package the items, which were limited to dry goods. These grocery stores usually carried only one brand of each good. There were early chain stores, such as the A&P Stores, but these were all entirely full-service.

In 1916, a paradigm shift in grocery store science occurred. Clarence Saunders invented the self-service grocery store. The first Piggly Wiggly opened on September 9, 1916 in Memphis, Tennessee. The concept of the “Self-Serving Store” was patented by Saunders in 1917.

Customers entered the revolutionary store through turnstiles and walked through a narrow maze of shelves containing groceries on the walls. They selected their goods as they continued through the maze to a cashier. Instantly, packaging and brand recognition became important to companies and consumers. The Piggly Wiggly phenomenon grew
rapidly; at the end of the 1930s, there were over 2,600 stores nationwide. Other independent and chain grocery stores changed to self-service through the 1930s.

Grocery stores also began to offer products beyond the normal scope of the dry-good grocery store. They added meat, dairy, fruit and vegetables, and breads to their offerings (which had formerly been offered by individual stores such as butchers, bakeries, and the “milk man.”) The addition of these products signaled the birth of the “supermarket.”

Over the decades, the supermarket has evolved even further. Now, one sees warehouse-style supermarkets and super-supermarkets that offer greeting cards, flowers, video rental, fast food, child care, and much more! It’s likely that these one-stop stores will continue to evolve and the behavior of consumers will change with it.

8.4.2 Current Scenario

Food and grocery constitute the largest segment of retailing in US where the total organised retail segment constitutes about 80% of the total market.

The US food retail sector is much denser, in terms of total floor space, than any other developed market. Excluding smaller stores (less than 5,000 sq. ft or 500 sq. m), the US modern food retail industry totals approximately 1,300m sq. ft or 5 sq. ft per inhabitant. This is substantially higher than most developed markets.

As general merchants have begun to sell more food, conventional supermarkets have fought back by expanding their offering of general merchandise, making them look more like super centers. The net result is a blurring of the food retail channels.

A super center, defined by the Food Marketing Institute, is a large food, drug, and general merchandise combination store that averages more than 170,000 square feet and typically devotes up to 40 percent of floor space to grocery items.

Key Importers in USA

- Birds Eye Foods Inc.
- ConAgra Foods Inc.
- Dean Foods Company
- Del Monte Foods
- H.J. Heinz
- Lamb Weston Inc.
• McCain Foods Inc.
• Green Giant
• Kraft Foods Inc.

Key Logistics Providers in USA
• Maersk
• C.H. Robinson

Major Retailers in USA

<table>
<thead>
<tr>
<th>Company</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wal-Mart</td>
<td>Discount Store</td>
</tr>
<tr>
<td></td>
<td>Grocery Store</td>
</tr>
<tr>
<td></td>
<td>Hypermarkets</td>
</tr>
<tr>
<td>Kroger</td>
<td>Hypermarkets</td>
</tr>
<tr>
<td></td>
<td>Supermarkets</td>
</tr>
<tr>
<td></td>
<td>Department Stores</td>
</tr>
<tr>
<td></td>
<td>Convenience Stores</td>
</tr>
<tr>
<td>Home Depot</td>
<td>Box Format Stores</td>
</tr>
<tr>
<td>Sears, Roebuck &amp; Company</td>
<td>Box Format Stores</td>
</tr>
<tr>
<td>Albertson</td>
<td>Supermarkets</td>
</tr>
<tr>
<td>Target</td>
<td>Discount Department Store</td>
</tr>
<tr>
<td>JC Penny</td>
<td>Department Store</td>
</tr>
<tr>
<td>Costco</td>
<td>Discount Wholesaler to Members only</td>
</tr>
</tbody>
</table>

*Source: Technopak Research*
8.5 Market Analytics


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Fruits</td>
<td>7.96</td>
<td>7.36</td>
<td>7.32</td>
<td>5.90</td>
</tr>
<tr>
<td>Frozen Vegetables</td>
<td>92.04</td>
<td>92.64</td>
<td>92.68</td>
<td>94.10</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Source: Technopak Research Estimates


*Source: Technopak Research Estimates


*Source: Technopak Research Analysis*
Chapter 9: GERMANY MARKET

9.1 GERMANY FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

9.1.1 CURRENT AND FUTURE ANALYSIS

German market for frozen fruits and vegetables was 886 thousand tons in 2005, and is projected to be 906 thousand tons by the end of 2006. The market is projected to grow at a moderate rate of 2.49% over the analysis period 2001-2010 to reach 999 thousand tons by 2010.

Frozen vegetables segment is projected to account for a share of 90.43% of the German frozen fruits and vegetables market in 2005. The market is projected to reach 902 thousand tons by 2010, at a CAGR of 2.47%.

The market for frozen fruits is projected to grow at a compounded annual rate of about 2.64% to reach 97 thousand tons by 2010. This segment is projected to experience a market share gain over the period 2001-2010, to represent 9.67% of the total market by 2010.

9.1.2 HISTORIC REVIEW

German market for frozen fruits and vegetables reached 779 thousand tons in 2000 as against 627 thousand tons in 1991, reflecting a CAGR of 2.43%, over the ten-year analysis period from 1991-2000.

9.1.3 MARKET OVERVIEW

Unilever, Bofrost and Eismann are the top three companies in the German frozen vegetable market, while McCain is the market leader in the frozen potato market. The frozen vegetables and ready meals constitute the most profitable product segments, in the frozen food market. Over the years, frozen vegetables segment has garnered market share away from vegetable preserves segment, thereby compelling preserve makers in Germany to enter the frozen vegetable business.
9.2 **Consumption Trends**

Heavy bread, pork, beef, lamb, potatoes are staples of German dining. Fish contributes to a larger part of the northern diet as it is more abundant in the north. Meals in general trend to be heavier in the south, while grilled meat and more generous helping of potatoes are popular in the east. The average German beer is thicker and maltier than other types of beer hence its German name “Flussiges Brot” which translates to “liquid bread”.

Growing price sensitivity has led to the strengthening of discounters, which have seen phenomenal growth over the review period. The demographic trend in Germany is clearly towards an older population and more single-person households. This has led to the decline of traditional family meals and the need for single-portion products.

Germans are slowly adopting healthier eating trends as almost one in three Germans are obese. Although there is concern, a survey among four nations illustrates that 42% of Germans consider their diet to be healthy and only 45% feel they should do a lot more about the health.

Fast fixes such as skipping meals seem to be the most popular form of weight control instead of a more slow and healthy approach; 23% of adults, 20% of Germans aged 15-19 and 19% of consumers over 65 admit to often skipping meals to keep their weight down. Over 80% of German soil is utilized by agriculture and forestry related activities while employing 2.8% of the population. Germany’s primary agricultural products include: milk, potatoes, wheat, barley, maize, oil seed and sugar beets. Wine, fruits, vegetables and other horticultural products play an important part in some regions as well. Overall, production levels are increasing slightly in Germany. German farmers are, alongside the French, the biggest agricultural producers in the European Union (EU15) — in recent years producing up to 24% of the community’s milk. In 2003, 55% of farms were ‘part-time’, responsible for farming 26% of land used for agriculture.

In recent decades economic pressure has had an increasing impact on farmers and experts predict that the structural change will lead to bigger farm sizes and stronger specialization. There is a clear trend towards larger farms and higher milk yields and overall decrease in number of dairy cows.
9.3 IMPORT TRENDS

Germany is the largest importer of fresh fruit and vegetables in Europe. Around 80 per cent of all fresh produce is sold via supermarkets and retail outlets, and 10 per cent through specialty shops and weekly street markets.

In general, there is a growing trend for pre-packed produce, ready for the retail outlet shelves, cooling counters and freezers. Exporters to Germany are supplying more value-added products such as pre-packed produce in small, attractive consumer packages such as baby vegetables, and double packs of 2 x 125 grams of tropical fruit salad. Germany’s agriculture ministry is currently in the process of introducing a Europe-wide eco-certification scheme that will complement the recent developments and rapid growth in the bio and eco sector.

9.3.1 CATEGORY WISE ANALYSIS OF GERMANY FFV IMPORTS (*SOURCE: EUROSTAT, COMTRADE, FAOSTAT)

9.3.1.1 Frozen Peas

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>15.72</td>
<td>14.78</td>
<td>14.65</td>
<td>-1%</td>
<td>16843</td>
<td>16568</td>
</tr>
<tr>
<td>Ecuador</td>
<td>4.53</td>
<td>2.92</td>
<td>3.78</td>
<td>30%</td>
<td>5055</td>
<td>3266</td>
</tr>
<tr>
<td>USA</td>
<td>1.44</td>
<td>2.06</td>
<td>1.79</td>
<td>-13%</td>
<td>1220</td>
<td>2124</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1.43</td>
<td>0.61</td>
<td>0.74</td>
<td>22%</td>
<td>2003</td>
<td>837</td>
</tr>
<tr>
<td>Mexico</td>
<td>3.74</td>
<td>2.10</td>
<td>1.31</td>
<td>-37%</td>
<td>3301</td>
<td>1833</td>
</tr>
<tr>
<td>India</td>
<td>0.001</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen peas to Germany, followed by Ecuador.
- India has started exporting Frozen Peas to Germany in 2005 and we must explore the opportunities the market has to offer

9.3.1.2 Frozen Beans

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>13.68</td>
<td>13.15</td>
<td>13.60</td>
<td>3%</td>
<td>15447</td>
<td>14785</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4.09</td>
<td>3.99</td>
<td>4.22</td>
<td>6%</td>
<td>4674</td>
<td>4306</td>
</tr>
<tr>
<td>France</td>
<td>3.50</td>
<td>3.42</td>
<td>3.77</td>
<td>10%</td>
<td>2974</td>
<td>2950</td>
</tr>
<tr>
<td>Poland</td>
<td>5.50</td>
<td>3.54</td>
<td>1.05</td>
<td>-70%</td>
<td>9922</td>
<td>5995</td>
</tr>
<tr>
<td>China</td>
<td>0.63</td>
<td>0.61</td>
<td>0.62</td>
<td>2%</td>
<td>638</td>
<td>669</td>
</tr>
</tbody>
</table>
• Belgium is the largest exporter of frozen beans to Germany, followed by Netherlands

• France also has the highest UVR, indicating the high quality of its products

• India at present does not export frozen beans to Germany, and there does not seem to exist much potential with declining growth.

9.3.1.3 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>75.64</td>
<td>67.86</td>
<td>64.76</td>
<td>-5%</td>
<td>87514</td>
<td>78960</td>
</tr>
<tr>
<td>Poland</td>
<td>60.93</td>
<td>48.71</td>
<td>34.62</td>
<td>-29%</td>
<td>111480</td>
<td>94856</td>
</tr>
<tr>
<td>Netherlands</td>
<td>37.89</td>
<td>39.15</td>
<td>37.49</td>
<td>-4%</td>
<td>31458</td>
<td>32960</td>
</tr>
<tr>
<td>China</td>
<td>19.46</td>
<td>17.00</td>
<td>22.76</td>
<td>34%</td>
<td>15889</td>
<td>17218</td>
</tr>
<tr>
<td>Spain</td>
<td>27.18</td>
<td>24.39</td>
<td>23.17</td>
<td>-5%</td>
<td>27655</td>
<td>24229</td>
</tr>
<tr>
<td>India</td>
<td>0.14</td>
<td>0.14</td>
<td>0.05</td>
<td>-66%</td>
<td>82</td>
<td>93</td>
</tr>
</tbody>
</table>

• Belgium is the largest exporter of other frozen vegetables to Germany, followed by Poland

• India also has the highest UVR, but there is a very low sales volume, which we have to work on.

• India at present does exports other frozen vegetables to Germany, but sales have decreased over the past year. This can be improved upon

9.3.1.4 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>54.47</td>
<td>53.17</td>
<td>45.14</td>
<td>-15%</td>
<td>58077</td>
<td>53281</td>
</tr>
<tr>
<td>Netherlands</td>
<td>10.22</td>
<td>8.76</td>
<td>7.45</td>
<td>-15%</td>
<td>9610</td>
<td>8869</td>
</tr>
<tr>
<td>France</td>
<td>5.13</td>
<td>6.02</td>
<td>5.59</td>
<td>-7%</td>
<td>3523</td>
<td>4979</td>
</tr>
<tr>
<td>France</td>
<td>5.13</td>
<td>6.02</td>
<td>5.59</td>
<td>-7%</td>
<td>3523</td>
<td>4979</td>
</tr>
<tr>
<td>Denmark</td>
<td>1.75</td>
<td>2.30</td>
<td>2.30</td>
<td>0%</td>
<td>1078</td>
<td>1501</td>
</tr>
<tr>
<td>India</td>
<td>0.00</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• Belgium is the largest exporter of frozen mix vegetables to Germany, followed by Netherlands

• Denmark has the highest UVR, indicating the high quality of its products

• India at present does not export frozen mix vegetables to Germany. There are large volumes in the market though this category has been posting negative growth.
9.3.1.5 Frozen Strawberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>88.23 36.82 30.36 -18%</td>
<td>49493 28850 38160 32%</td>
<td>1.78 1.28 0.80 -38%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>20.26 7.95 6.69 -16%</td>
<td>23845 11474 13568 18%</td>
<td>0.85 0.69 0.49 -29%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>10.59 7.91 7.77 -2%</td>
<td>6237 5891 7837 33%</td>
<td>1.70 1.34 0.99 -26%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>4.62 4.81 4.95 3%</td>
<td>3201 2969 3971 34%</td>
<td>1.44 1.62 1.25 -23%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>1.20 1.87 3.00 61%</td>
<td>677 1181 2752 133%</td>
<td>1.77 1.58 1.09 -31%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Poland is the largest exporter of frozen strawberry to Germany and Chinese sales are fast growing.
- Exports from France have shown a sharp increase and Belgium has the highest UVR as well which can be attributed to better quality.
- India at present does not export frozen strawberry to Germany and there seems opportunity to export but great competition as well.

9.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>38.68 22.98 18.74 -18%</td>
<td>29079 21650 20582 -5%</td>
<td>1.33 1.06 0.91 -14%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serbia</td>
<td>20.46 15540 15460 2%</td>
<td>1.32 1.32 1.32 1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>50.66 36.87 13.68 -63%</td>
<td>34269 25576 10769 -58%</td>
<td>1.48 1.44 1.28 -11%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chile</td>
<td>7.15 11.32 7.11 -37%</td>
<td>4565 6552 4256 -35%</td>
<td>1.57 1.73 1.67 -3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>5.75 5.08 5.98 18%</td>
<td>3121 3026 4009 32%</td>
<td>1.84 1.68 1.49 -11%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Poland is the largest exporter of frozen raspberry to Germany which can be attributed to its proximity
- Chile has the highest UVR but has shown a decrease over 2005. The product has high UVR in general.
- India at present does not export frozen raspberry to Germany, and with the market slowing down there does not seem to be much opportunity.

9.3.1.7 Frozen Potatoes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>5.84 4.88 5.70 17%</td>
<td>6673 6036 9912 64%</td>
<td>0.88 0.81 0.57 -29%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td>0.67 2.76 1.77 -36%</td>
<td>676 2561 1632 -36%</td>
<td>0.99 1.08 1.08 1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>0.34 0.45 0.54 20%</td>
<td>463 592 704 19%</td>
<td>0.75 0.77 0.77 1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>0.72 0.36 0.41 14%</td>
<td>727 581 572 -2%</td>
<td>0.99 0.61 0.71 16%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austria</td>
<td>0.00 0.38 0.42 11%</td>
<td>7 324 569 76%</td>
<td>0.74 1.16 0.74 -37%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Netherlands is the largest exporter of frozen potatoes to Germany, followed by Denmark
• Denmark has also shown an increase in the UVR indicating the high quality of its products
• India at present does not export frozen potatoes to Germany, hence there is an opportunity for India to cash upon

9.3.1.8 Frozen Fruits and Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>63.64</td>
<td>41.98</td>
<td>35.46</td>
<td>-16%</td>
<td>56523</td>
<td>42682</td>
</tr>
<tr>
<td>Netherlands</td>
<td>14.20</td>
<td>15.60</td>
<td>15.98</td>
<td>2%</td>
<td>10138</td>
<td>11642</td>
</tr>
<tr>
<td>Serbia</td>
<td>10.58</td>
<td>10.63</td>
<td>12.01</td>
<td>13%</td>
<td>12220</td>
<td>12682</td>
</tr>
<tr>
<td>Greece</td>
<td>16.41</td>
<td>10.63</td>
<td>12.01</td>
<td>13%</td>
<td>10375</td>
<td>7216</td>
</tr>
<tr>
<td>China</td>
<td>6.10</td>
<td>8.30</td>
<td>9.01</td>
<td>9%</td>
<td>6329</td>
<td>8735</td>
</tr>
<tr>
<td>India</td>
<td>0.63</td>
<td>0.52</td>
<td>0.53</td>
<td>4%</td>
<td>543</td>
<td>465</td>
</tr>
</tbody>
</table>

• Poland is the largest exporter of frozen fruits & nuts to Germany, followed by Netherlands.
• India and Greece have the highest UVR, very closely followed by Netherlands
• India does export frozen fruits and nuts to Germany and it is a very lucrative sector and must be looked at for entry

9.1.3.9 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>0.93</td>
<td>0.79</td>
<td>0.71</td>
<td>-10%</td>
<td>1187</td>
<td>1125</td>
</tr>
<tr>
<td>Belgium</td>
<td>2.58</td>
<td>2.67</td>
<td>1.00</td>
<td>-63%</td>
<td>2826</td>
<td>2885</td>
</tr>
<tr>
<td>Poland</td>
<td>0.05</td>
<td>0.14</td>
<td>0.37</td>
<td>159%</td>
<td>90</td>
<td>184</td>
</tr>
<tr>
<td>China</td>
<td>0.12</td>
<td>0.27</td>
<td>0.37</td>
<td>35%</td>
<td>121</td>
<td>308</td>
</tr>
<tr>
<td>Italy</td>
<td>0.26</td>
<td>0.28</td>
<td>0.13</td>
<td>-54%</td>
<td>295</td>
<td>394</td>
</tr>
</tbody>
</table>

• Netherlands is the largest exporter of frozen legumes to Germany, followed by Belgium; Poland has been showing a high growth rate.
• Belgium has the highest UVR indicating the high quality of its products
• Indian at present does not export frozen legumes to Germany. The growth rate has been declining and so it might be difficult for entry.
9.3.1.10 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>10.17</td>
<td>9.03</td>
<td>9.84</td>
<td>9%</td>
<td>13322</td>
<td>12007</td>
</tr>
<tr>
<td>France</td>
<td>1.18</td>
<td>1.11</td>
<td>3.86</td>
<td>246%</td>
<td>1090</td>
<td>972</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.02</td>
<td>1.56</td>
<td>2.89</td>
<td>86%</td>
<td>2325</td>
<td>1907</td>
</tr>
<tr>
<td>Spain</td>
<td>4.36</td>
<td>6.33</td>
<td>4.20</td>
<td>-34%</td>
<td>4230</td>
<td>5937</td>
</tr>
<tr>
<td>China</td>
<td>1.24</td>
<td>0.61</td>
<td>0.43</td>
<td>-30%</td>
<td>1053</td>
<td>602</td>
</tr>
</tbody>
</table>

- Belgium is the largest exporter of frozen spinach to Germany, followed by France with huge sales growth.
- France and China has also seen the highest UVR indicating the high quality of its products.
- Indian at present does not export frozen spinach to Germany, again a market that is not growing and is dominated by EU exporters.

9.3.1.11 Frozen Sweet Corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Kg)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>8.10</td>
<td>5.07</td>
<td>3.56</td>
<td>-30%</td>
<td>10716</td>
<td>7629</td>
</tr>
<tr>
<td>Belgium</td>
<td>2.47</td>
<td>2.10</td>
<td>2.41</td>
<td>15%</td>
<td>1947</td>
<td>1681</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.16</td>
<td>0.99</td>
<td>0.68</td>
<td>-31%</td>
<td>1663</td>
<td>795</td>
</tr>
<tr>
<td>France</td>
<td>0.88</td>
<td>0.65</td>
<td>0.52</td>
<td>-20%</td>
<td>910</td>
<td>589</td>
</tr>
<tr>
<td>Poland</td>
<td>0.09</td>
<td>0.19</td>
<td>0.31</td>
<td>67%</td>
<td>153</td>
<td>255</td>
</tr>
</tbody>
</table>

- Hungary is the largest exporter of frozen sweet corn to Germany, followed by Belgium
- Netherlands has seen the highest UVR growth over the past three years
- India at present does not export frozen sweet corn to Germany and considering the geographical proximity of the players and the lack of growth of the market, it would be difficult to enter

Thus, with respect to Indian exports to Germany there are 4 categories where currently India is exporting. But one can see large potential in other FFV categories as well.
9.4 **OVERVIEW OF ORGANIZED FOOD AND GROCERY RETAILING IN GERMANY**

9.4.1 **Germany Retail Market Size and Structure**

The German grocery retail market is worth €222.3 billion and as such is the largest in Europe. Grocery sales account for 52% of total retail sales and within grocery, food and drink sales account for an estimated €156.3 billion. The non-food element is therefore €66 billion. The total number of grocery outlets in Germany has declined by 18.5% between 1995 and 2002. The decline in traditional grocers (35.9%) has been offset by an increase in all formats larger than 400 sq.m. Small supermarkets have increased by 23.7%, often operated by independent retailers. Despite strict planning restrictions applying to stores over 700 sq.m., hypermarkets have increased by 25.5% since 1995.

### Number of Retail Outlets by Store Size

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Grocery Stores</td>
<td>76,400</td>
<td>74,300</td>
<td>72,300</td>
<td>70,400</td>
<td>68,400</td>
<td>66,400</td>
<td>64,200</td>
<td>62,230</td>
</tr>
<tr>
<td>Total Hypermarkets</td>
<td>1,273</td>
<td>1,351</td>
<td>1,408</td>
<td>1,422</td>
<td>1,476</td>
<td>1,544</td>
<td>1,566</td>
<td>1,598</td>
</tr>
<tr>
<td>Large Supermarkets 1000-2500 m²</td>
<td>2,996</td>
<td>3,051</td>
<td>3,174</td>
<td>3,246</td>
<td>3,370</td>
<td>3,373</td>
<td>3,412</td>
<td>3,505</td>
</tr>
<tr>
<td>Small Supermarkets 400-1000 m²</td>
<td>11,717</td>
<td>12,569</td>
<td>13,155</td>
<td>13,740</td>
<td>14,622</td>
<td>14,414</td>
<td>14,313</td>
<td>14,496</td>
</tr>
<tr>
<td>Superettes 100-400 m²</td>
<td>19,030</td>
<td>19,546</td>
<td>19,325</td>
<td>19,362</td>
<td>17,769</td>
<td>17,341</td>
<td>16,762</td>
<td>16,094</td>
</tr>
<tr>
<td>Traditional Grocers &lt;100 m²</td>
<td>41,384</td>
<td>37,783</td>
<td>35,238</td>
<td>32,630</td>
<td>31,163</td>
<td>29,728</td>
<td>28,147</td>
<td>26,537</td>
</tr>
</tbody>
</table>

*Source: AC Nielsen

**Key Importers in Germany**
- Unilever
- Bofrost
- Eismann
- McCain

**Key Logistics Providers in Germany**
- Soonius transport B.V.
- Seabrex/Ebrex
- Maersk
Of the domestic players, Metro has expanded by far the widest internationally. It has operations in 25 international markets across Europe and Asia. Its formats for expansion are principally Cash & Carry and Consumer Electronics. Rewe and Edeka both operate on a European level in 12 and 5 markets respectively. Tengelmann has significant presence in the States, which accounted for 44% of sales in 2002. Of the German discount operators, Aldi operates in Europe, the US and Australia. Lidl & Schwarz’s
international operations are extensive across Europe with presence in 15 international markets.

In 2005

![Market Share of the Key Players (Grocery Sales)](image)

*Technopak Research Analysis

9.5 **Market Analytics**


<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Vegetables</td>
<td>90.24</td>
<td>90.29</td>
<td>90.43</td>
<td>90.33</td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Technopak Research Estimates
APEDA (Agricultural and Processed Food Products Exports Development Authority)

*German Recent Past, Current & Future Analysis for Frozen Fruits and Vegetables by Product Segments-Frozen Fruits and Frozen Vegetables Independently Analyzed with Annual Sales Figures in '000 Tons for Years 2001 through 2010*

*Technopak Research Estimates

*German Historic Review for Frozen Fruits and Vegetables by Product Segments-Frozen Fruits and Frozen Vegetables Independently Analyzed with Annual Sales Figures in '000 Tons for Years 1991 through 2000*

*Technopak Research Analysis*
Chapter 10: JAPAN MARKET

10.1 JAPAN FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

10.1.1 CURRENT AND FUTURE ANALYSIS

The Japanese market for frozen fruits and vegetables was 1,153 thousand tons in 2005, and is projected to be 1,189 thousand tons by the end of 2006. The market is projected to grow at a compounded annual rate of about 3.44%, to reach 1,324 thousand tons by 2010.

The market for frozen vegetables was 907 thousand tons in 2005. The segment garnered more than three-fourths of the total frozen fruit and vegetable market, at 78.61% in 2005. Further, the market is projected to experience a CAGR of 3.75% to reach 1,056 thousand tons by 2010. Over the period 2001-2010, the market share of the frozen vegetable segment is projected to grow to 79.77% by the end of the forecast period.

The Japanese frozen fruits market was 247 thousand tons in 2005, and is projected to grow at a CAGR of 2.31% to reach 268 thousand tons by 2010. The frozen fruit segment is projected to experience a decline in market share through the ten-year period and account for 20.23% of the total market by 2010.

10.1.2 HISTORIC REVIEW

Frozen fruits and vegetables market in Japan increased from 730 thousand tons in 1991 to 957 thousand tons in 2000 at a CAGR of 3.06%.

10.1.3 MARKET OVERVIEW

Frozen vegetables that are in demand throughout the year in Japan include French potatoes, corn, Chinese vegetables, and green soybeans. These vegetables are not subject to seasonal price changes as the fresh vegetables. Private label brands - Green Giant, Birds Eye and Pictsweet are some of the important brands in the Japanese market. Potato products and corn products enjoy a very good market share among all the frozen vegetables.
10.2 CONSUMPTION TRENDS

Frozen vegetables that are consumed throughout the year include French potatoes, corn, Chinese vegetables, and green soybeans. These vegetables are not subject to seasonal price changes, usually associated with fresh vegetables.

![Composition of Consumption Volume by Category in Japan in 2005](image)

*Technopak Research Analysis

10.3 IMPORT TRENDS

The imports of frozen vegetables in Japan have rapidly grown in past few years, barring the decline in 2002 due to presence of pesticide residues in Chinese frozen spinach. Japanese imports principally depend on prices of domestically grown produce and the environmental conditions for production. Currently, imported frozen vegetables are witnessing increased demand irrespective of local production leading to availability of
superior quality and more product varieties in the market. Labor shortages are also pushing imports of processed frozen products, precooked food, frozen pizza, single servings, and processed frozen stir-fry meals. In addition, low prices in overseas market, high value of yen, strong demand from food service industry, and penetration of microwave ovens and other electronics is also propelling the import market. Major imported frozen vegetables include potatoes, taro, green soybeans, strawberries, sweet corn, broccoli, green peas, kidney beans, burdock, spinach and Chinese yams. Key suppliers of frozen vegetables to Japan are China, the United States, Taiwan, New Zealand, and Thailand. The United States represents the leading market for imports of frozen potatoes, mixed vegetables and sweet corn in Japan while kidney beans, spinach, soybeans, taros, and green peas are principally sourced from China.

10.3.1 CATEGORY WISE ANALYSIS OF JAPAN FFV IMPORTS (*SOURCE: COMTRADE, FAOSTAT*)

10.3.1.1 Frozen Peas

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.35</td>
<td>7.65</td>
<td>9.41</td>
<td>23%</td>
<td>7006</td>
<td>6686</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5.93</td>
<td>5.34</td>
<td>5.17</td>
<td>-3%</td>
<td>6214</td>
<td>5530</td>
</tr>
<tr>
<td>USA</td>
<td>5.20</td>
<td>4.30</td>
<td>4.80</td>
<td>12%</td>
<td>4582</td>
<td>3742</td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen peas to Japan, followed by New Zealand.
- China also has the highest UVR, which along with the high volumes indicates the high quality of its products
- India at present does not export frozen peas to Japan, with Chinese sales growing there is an opportunity for India.

10.3.1.2 Frozen Beans

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>17.35</td>
<td>18.74</td>
<td>18.77</td>
<td>0%</td>
<td>19124</td>
<td>20512</td>
</tr>
<tr>
<td>Thailand</td>
<td>9.25</td>
<td>10.64</td>
<td>9.04</td>
<td>-15%</td>
<td>8272</td>
<td>9239</td>
</tr>
<tr>
<td>USA</td>
<td>2.02</td>
<td>0.88</td>
<td>1.26</td>
<td>44%</td>
<td>1728</td>
<td>871</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.10</td>
<td>0.08</td>
<td>0.09</td>
<td>3%</td>
<td>86</td>
<td>65</td>
</tr>
<tr>
<td>Spain</td>
<td>0.02</td>
<td>0.11</td>
<td>0.08</td>
<td>-23%</td>
<td>10</td>
<td>53</td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen beans to Japan, followed by Thailand
- Spain also has the highest UVR, indicating the high quality of its products
India at present does not export frozen beans to Japan, The growth posted in this sector is not very high and it is dominated by China, so there is doubt on the opportunities in this sector.

### 10.3.1.3 Other Frozen Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>125.01</td>
<td>150.86</td>
<td>162.65</td>
<td>8%</td>
<td>108658</td>
<td>131641</td>
</tr>
<tr>
<td>Ecuador</td>
<td>9.55</td>
<td>10.03</td>
<td>10.34</td>
<td>3%</td>
<td>4926</td>
<td>5419</td>
</tr>
<tr>
<td>USA</td>
<td>5.51</td>
<td>4.15</td>
<td>4.32</td>
<td>4%</td>
<td>4378</td>
<td>3545</td>
</tr>
<tr>
<td>New Zealand</td>
<td>7.98</td>
<td>7.16</td>
<td>6.33</td>
<td>-12%</td>
<td>3934</td>
<td>2974</td>
</tr>
<tr>
<td>Mexico</td>
<td>7.25</td>
<td>5.32</td>
<td>4.70</td>
<td>-12%</td>
<td>4305</td>
<td>3212</td>
</tr>
<tr>
<td>India</td>
<td>0.02</td>
<td>0.004</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

China is the largest exporter of other frozen vegetables to Japan, followed by Ecuador. New Zealand also has the highest UVR, indicating the high quality of its products. India at present does export other frozen vegetables to Japan, but intermittently and the volumes have been very low.

### 10.3.1.4 Frozen Mix Vegetables

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>24.74</td>
<td>31.39</td>
<td>29.78</td>
<td>-5%</td>
<td>13578</td>
<td>17305</td>
</tr>
<tr>
<td>USA</td>
<td>12.17</td>
<td>12.62</td>
<td>12.06</td>
<td>-4%</td>
<td>9195</td>
<td>9352</td>
</tr>
<tr>
<td>New Zealand</td>
<td>5.73</td>
<td>5.75</td>
<td>5.75</td>
<td>0%</td>
<td>5356</td>
<td>5358</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.46</td>
<td>0.33</td>
<td>0.29</td>
<td>-12%</td>
<td>296</td>
<td>206</td>
</tr>
<tr>
<td>Thailand</td>
<td>0.18</td>
<td>0.25</td>
<td>0.17</td>
<td>-29%</td>
<td>132</td>
<td>176</td>
</tr>
</tbody>
</table>

China is the largest exporter of frozen mix veg. to Japan, followed by USA. China also has the highest UVR, indicating the high quality of its products. India at present does not export frozen mix vegetables to Japan and the market has not been growing so it is not really conducive for entry.
### 10.3.1.5 Frozen Strawberry

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>17.62</td>
<td>16.46</td>
<td>19.40</td>
<td>18%</td>
<td>16650</td>
<td>16569</td>
<td>18630</td>
<td>12%</td>
<td>1.06</td>
</tr>
<tr>
<td>USA</td>
<td>16.57</td>
<td>16.73</td>
<td>10.98</td>
<td>-34%</td>
<td>7816</td>
<td>7944</td>
<td>5226</td>
<td>-34%</td>
<td>2.12</td>
</tr>
<tr>
<td>Chile</td>
<td>1.65</td>
<td>1.92</td>
<td>2.12</td>
<td>10%</td>
<td>1197</td>
<td>1194</td>
<td>1312</td>
<td>10%</td>
<td>1.38</td>
</tr>
<tr>
<td>Rep. of Korea</td>
<td>2.64</td>
<td>2.00</td>
<td>1.56</td>
<td>-22%</td>
<td>1713</td>
<td>1077</td>
<td>733</td>
<td>-32%</td>
<td>1.54</td>
</tr>
<tr>
<td>Poland</td>
<td>0.83</td>
<td>0.50</td>
<td>0.67</td>
<td>34%</td>
<td>373</td>
<td>226</td>
<td>378</td>
<td>68%</td>
<td>2.23</td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen strawberry to Japan, and it has been giving USA a lot of competition.
- Exports from Korea and USA have the highest UVR as well which can be attributed to better quality. But one must note that both of them have a negative growth rate.
- India at present does not export frozen strawberry to Japan, hence there is an opportunity for India to cash upon

### 10.3.1.6 Frozen Raspberry

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chile</td>
<td>1.83</td>
<td>1.71</td>
<td>2.11</td>
<td>23%</td>
<td>631</td>
<td>447</td>
<td>553</td>
<td>24%</td>
<td>3.91</td>
</tr>
<tr>
<td>USA</td>
<td>1.76</td>
<td>2.03</td>
<td>1.67</td>
<td>-18%</td>
<td>547</td>
<td>653</td>
<td>521</td>
<td>-20%</td>
<td>3.21</td>
</tr>
<tr>
<td>France</td>
<td>2.46</td>
<td>2.49</td>
<td>2.74</td>
<td>10%</td>
<td>410</td>
<td>394</td>
<td>417</td>
<td>6%</td>
<td>6.01</td>
</tr>
<tr>
<td>Poland</td>
<td>0.51</td>
<td>0.73</td>
<td>0.23</td>
<td>-68%</td>
<td>384</td>
<td>476</td>
<td>102</td>
<td>-79%</td>
<td>1.32</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.31</td>
<td>101</td>
<td>3.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Chile is the largest exporter of frozen raspberry to Japan; closely followed by USA and France.
- France has the highest UVR but has shown an increase over 2004. The product has high UVR in general, but France is exceptionally high.
- India at present does not export frozen raspberry to Japan and the category is on the decline and should not be entered.

### 10.3.1.7 Frozen Potatoes

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>3.56</td>
<td>4.05</td>
<td>4.73</td>
<td>17%</td>
<td>4909</td>
<td>5511</td>
<td>6185</td>
<td>12%</td>
<td>0.72</td>
</tr>
<tr>
<td>USA</td>
<td>0.26</td>
<td>0.18</td>
<td>0.38</td>
<td>111%</td>
<td>260</td>
<td>190</td>
<td>363</td>
<td>91%</td>
<td>1.01</td>
</tr>
<tr>
<td>Colombia</td>
<td>0.34</td>
<td>0.60</td>
<td>0.39</td>
<td>-35%</td>
<td>183</td>
<td>297</td>
<td>181</td>
<td>-39%</td>
<td>1.85</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>0.12</td>
<td>0.10</td>
<td>0.13</td>
<td>30%</td>
<td>116</td>
<td>126</td>
<td>147</td>
<td>17%</td>
<td>1.02</td>
</tr>
<tr>
<td>Canada</td>
<td>0.21</td>
<td>0.25</td>
<td>0.11</td>
<td>-56%</td>
<td>277</td>
<td>321</td>
<td>123</td>
<td>-62%</td>
<td>0.74</td>
</tr>
</tbody>
</table>
• China is the largest exporter of frozen potatoes to Japan, followed by the US.
• Colombia has the highest UVR indicating the high quality of its products
• India at present does not export frozen potatoes to Japan, the market does not shown any signs of great growth therefore there is doubt over we can exploit this market.

10.3.1.8 Frozen Fruits and Nuts

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>24.17</td>
<td>28.11</td>
<td>33.43</td>
<td>19%</td>
<td>9435</td>
<td>10004</td>
</tr>
<tr>
<td>China</td>
<td>13.22</td>
<td>14.94</td>
<td>17.82</td>
<td>19%</td>
<td>7698</td>
<td>8999</td>
</tr>
<tr>
<td>USA</td>
<td>16.60</td>
<td>19.82</td>
<td>21.55</td>
<td>9%</td>
<td>6517</td>
<td>7080</td>
</tr>
<tr>
<td>Thailand</td>
<td>3.83</td>
<td>6.77</td>
<td>7.79</td>
<td>15%</td>
<td>1438</td>
<td>2409</td>
</tr>
<tr>
<td>Italy</td>
<td>6.18</td>
<td>7.16</td>
<td>6.79</td>
<td>-5%</td>
<td>908</td>
<td>926</td>
</tr>
<tr>
<td>India</td>
<td>0.02</td>
<td>0.06</td>
<td>0.31</td>
<td>405%</td>
<td>10</td>
<td>6</td>
</tr>
</tbody>
</table>

• Canada is the largest exporter of frozen fruits & nuts to Japan, followed by China. India has posted the highest growth rate but it has low volumes.
• Italy has the highest UVR, the UVR for this product category is generally high.
• India does export frozen fruits and nuts to Japan and has potential for the future.

10.1.3.9 Frozen Legumes

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>33.37</td>
<td>45.21</td>
<td>47.92</td>
<td>6%</td>
<td>24004</td>
<td>33210</td>
</tr>
<tr>
<td>Other Asian countries</td>
<td>46.39</td>
<td>48.56</td>
<td>42.82</td>
<td>-12%</td>
<td>26015</td>
<td>27103</td>
</tr>
<tr>
<td>Thailand</td>
<td>18.00</td>
<td>18.34</td>
<td>18.04</td>
<td>-2%</td>
<td>11305</td>
<td>11215</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4.26</td>
<td>3.73</td>
<td>4.55</td>
<td>22%</td>
<td>2719</td>
<td>2405</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>0.08</td>
<td>0.08</td>
<td>1.01</td>
<td>1244%</td>
<td>58</td>
<td>57</td>
</tr>
<tr>
<td>India</td>
<td>0.02</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

• China is the largest exporter of frozen legumes to Japan, followed by other Asian countries, Vietnam has posted a high growth rate.
• Asian countries have highest UVR indicating the high quality of its products
• Indian at present does not export frozen legumes to Japan, but earlier it used to and they should explore the possibility as this category is growing.
### 10.3.1.10 Frozen Spinach

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>4.70</td>
<td>7.15</td>
<td>15.30</td>
<td>114%</td>
<td>4552</td>
<td>5193</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>2.57</td>
<td>6.24</td>
<td>7.84</td>
<td>26%</td>
<td>1639</td>
<td>4974</td>
</tr>
<tr>
<td>Other Asian countries</td>
<td>1.42</td>
<td>4.82</td>
<td>4.25</td>
<td>-12%</td>
<td>1069</td>
<td>2847</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.49</td>
<td>1.25</td>
<td>0.84</td>
<td>-32%</td>
<td>396</td>
<td>969</td>
</tr>
<tr>
<td>Chile</td>
<td>0.45</td>
<td>0.93</td>
<td>0.81</td>
<td>-13%</td>
<td>246</td>
<td>538</td>
</tr>
<tr>
<td>India</td>
<td>0.004</td>
<td>4</td>
<td>1.19</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- China is the largest exporter of frozen spinach to Japan, followed by Vietnam
- Chile has also seen the highest UVR, but they have very low volumes and a negative growth.
- Indian exports frozen spinach to Japan and has just started in 2005 and must be capitalized upon since growth in the sector is high.

### 10.3.1.11 Frozen Sweet Corn

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Import Value (Million USD)</th>
<th>Growth Rate</th>
<th>Import Qty (Tonnes)</th>
<th>Growth Rate</th>
<th>UVR (USD/Tonne)</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>41.42</td>
<td>38.62</td>
<td>36.20</td>
<td>-6%</td>
<td>32800</td>
<td>31020</td>
</tr>
<tr>
<td>New Zealand</td>
<td>12.97</td>
<td>14.76</td>
<td>13.35</td>
<td>-10%</td>
<td>11456</td>
<td>12864</td>
</tr>
<tr>
<td>Thailand</td>
<td>3.16</td>
<td>1.81</td>
<td>3.16</td>
<td>74%</td>
<td>2994</td>
<td>1733</td>
</tr>
<tr>
<td>China</td>
<td>0.66</td>
<td>0.92</td>
<td>1.24</td>
<td>35%</td>
<td>477</td>
<td>765</td>
</tr>
<tr>
<td>Canada</td>
<td>0.27</td>
<td>0.40</td>
<td>0.30</td>
<td>-25%</td>
<td>222</td>
<td>404</td>
</tr>
</tbody>
</table>

- USA is the largest exporter of frozen sweet corn to Japan, followed by New Zealand
- USA has seen the highest UVR over the past three years, which certainly is a sign of superior quality.
- Indian at present does not export frozen sweet corn to Japan and hence it can be an opportunity for it to cash upon.

Thus, with respect to Indian exports to Japan; India exports under four categories currently. But one can see large potential in other FFV categories as well.

### 10.4 Overview of Organized Food and Grocery Retailing in Japan

Japan enjoys an active spot on the retailers’ map. The leaders in sales are Ito-Yokado, Aeon, Daiei, Takashimaya, and Uny, in that order. Several retailers, however, have made recent improvements in their warehousing and distribution technologies to make their
presence felt in the Japanese market. Convenience stores, which are small and suitable in a country where land is very expensive, continue to do well. Food, in fact, has been one of the few sectors that have experienced growth over the last several years. A period of shake up in the industry is likely now that Wal-Mart has entered Japan. Numerous smaller, less efficient retailers may become takeover targets. The entire Japanese retail sector will likely undergo some form of restructuring over the next decade as a result of overcapacity, dismal profits and the Wal-Mart factor.

The Japanese grocery retail market is dominated by large conglomerates operating a multitude of retail formats. The retail infrastructure is diverse and static, with supermarkets and superstores the largest segment, accounting for around 38 per cent of the market. In recent years, the fastest growing segment has been the discount and convenience store sectors, to the detriment of food specialists.

In 2005

**Japan: Retail food sales by formats**

- **Department stores** 5%
- **Convenience stores** 9%
- **Small & midscale supermarkets** 37%
- **Large scale supermarkets** 15%
- **Other Speciality stores** 34%

*Technopak Research Analysis*
10.4.1 Historic Overview

In 1999, the Japanese retail market consisted of more than 1.4 million outlets with sales of nearly $2 trillion. Unlike North America or Europe, where large retailers account for a significant share of total sales; Japanese sales are distributed over a far greater number of retailers with more than one million small, local stores accounting for over 70% of total retail sales. In fact, the top ten retailers accounted for only 7.4% of total sales, while the top 100 companies accounted for less than 20% of sales.

Sales through Japanese supermarkets and hypermarkets have been steadily declining in recent years. According to the Japan Chain Stores Association (JCSA), 2000 marked the fourth straight year that sales declined through these distribution channels. Sales decreased by 5.1% from 1999 to $224.4 billion in 2000. This represents the largest decrease in sales since 1977, when the JCSA began collecting sales data for these outlets. Food sales, approximately 50% of total supermarket sales, decreased by 3.6% in 2000 to $116.2 billion.

Department stores have also been subject to declining sales in recent years. In 2000, sales decreased (also for the fourth consecutive year) by 1.8% to $121.7 billion. Food sales account for slightly less than one quarter of total department store sales. In 2000, food sales totaled $28.3 billion, down 1.0% from the previous year.

While most retail sectors have experienced declining sales in recent years, convenience stores represent an exception to this trend. Convenience store chains have been
expanding in both the number of outlets they run and in the volume of sales that they conduct.

In recent years, large Japanese retailers have faced increased competition from relatively new, smaller retail chains. These smaller retailers have benefited from lower real estate rates and rising consumer demand for less expensive, good-quality foods to expand their businesses.

According to the JCSA, there are currently more than 7000 chain stores in Japan, 111 of which have a national presence. The number of chain stores decreased by approximately 175 over the previous year, while the number of national chains decreased by eight over the same period. Total sales through national chains were $222.8 billion.

In an effort to increase sales, supermarket operators have begun renting out portions of their floor-space to specialty retailers, fast food outlets, and entertainment companies. Supermarkets profit not only from the rent paid by other businesses but also from the fact that these other businesses attract clientele which may decide to make purchases at the supermarket because it is convenient for them. For example, Ito-Yokado Co. is renting out a portion of one of their new supermarkets to Tokyu Recreation Co., which operates an eight-screen cinema in the rented space. Also, McDonald's and Daiei Inc. have come to an agreement that will see 30 McDonald's outlets open in Daiei-owned stores before the end of 2001. McDonald's is also running outlets in stores owned by Jusco Co., among others. Agreements between supermarket outlets and clothing retailers are also becoming more common.

10.4.2 Deregulation

Over the last 25 years, strict regulations governing the retail industry have been one of the greatest factors influencing retail development in Japan. The Large-scale Retail Store Law, introduced in 1974, allowed the Japanese government to maintain close control of all aspects relating to a new, large store opening. Store size, location, and business hours were just a few of the factors affected. This law was created to provide good opportunities for small and medium-sized retailers by controlling the activities of larger retailers. Not surprisingly, small retailers flourished while a relatively small number of large retail stores were opened between 1974 and 1990.

During the 1990s, the Japanese government passed a number of revisions to the Large-scale Retail Store Law. These amendments served to make it easier for large scale retailers to open new outlets by instituting changes such as:
Increasing the number of hours retailers were allowed to be open each day;
• Changing the number of compulsory closing days from four per month to 44 per year (this enabled retailers to stay open on Sundays during holiday periods);
• Increasing the minimum store size regulated by this legislation; and
• Reducing the amount of time and number of agencies that had to review new store applications.

In 2000, the Large-scale Retail Store Law was replaced by the Large-scale Retail Store Location Law. The main difference between these two pieces of legislation is that the new law focuses on the effects of a new store from a standpoint of minimizing noise pollution, environmental pollution while maintaining the visual appeal of the area, whereas the old law served to protect small and medium-sized businesses. In addition, the responsibility for enforcing the new legislation is held mainly by the local governments instead of the central government.

Key Importers in Japan
• Nichirei
• Ajinomoto
• Nichiro Gyogyo
• Snow Brand

Key Logistics Providers in Japan
• NY Logistics
• OIA Logistics

Major Retailers in Japan
• U&Y Stores
• Aeon
• Daiei
• Takashimaya

10.5 **Market Analytics**


|-----------------|------|------|------|------|

219
Frozen Fruits | 23.90 | 23.23 | 21.39 | 20.23  
Frozen Vegetables | 76.10 | 76.77 | 78.61 | 79.77  
Total | 100.00 | 100.00 | 100.00 | 100.00  

*Technopak Research Estimates


*Technopak Research Estimates


*Technopak Research Analysis
Chapter 11: INDIAN MARKET

11.1 INDIAN FROZEN FRUITS AND VEGETABLES MARKET ANALYSIS

11.1.1 CURRENT ANALYSIS
The domestic market for frozen fruits and vegetables is limited though steadily expanding. The market for frozen food in India increased in the period 1999-2004, growing at an average annual rate of 11.2%. Frozen fruits and vegetables rank among the major products exported to key markets such as the US, Russia, the UK, Germany and the Middle East. India currently ranks as the world's second largest producer of a wide spectrum of tropical and temperate fruits and vegetables.

11.1.2 HISTORIC REVIEW
Historically, the industry has been witnessing rapid double-digit growth patterns. Growth in the overall fruit and vegetables processing industry in India is fraught with infrastructural, managerial and processing inadequacies. A major portion of the processed fruits and vegetables market is intensely export oriented given the limited potential for domestic demand.

11.1.3 MARKET OVERVIEW
Hind Agro Industries Ltd holds a strong position in the market for frozen vegetables in India. The second-largest player was EMKE Group, with Amalgam Enterprises in third place.

11.2 PRODUCTION AND CONSUMPTION TRENDS
India with its current production of around 32 million MT, accounts for about 8% of the world’s fruit production. With the diverse agro climatic zones, the climate makes it possible to grow almost all varieties of fruits and vegetables in India. The TIFAC study has dealt in details the current status in post harvesting technologies including processing and packaging for export markets for eight major varieties of fruits in India. These are mango, banana, citrus fruits, apple, guava, papaya, pineapple and grapes. Although India is the largest producer of fruits in the world, the production per capital is only about 100 gm per day. However, it is estimated that more than 20-22% of the total production of fruits is lost due to spoilage at various post harvest stages. Thus the per capita availability of fruits is further reduced to around 80 Gms per day which is almost half the requirement for a balanced diet.
The total production of fruits and vegetables in the world is around 370 MT. India ranks first in the world with an annual output of 32 MT. While there are almost 180 families of fruits that are grown all over the world, citrus fruits constitute around 20% of world’s total fruit production. Major Indian fruits consist of mango, banana, citrus fruits, apple, guava, papaya, pineapple and grapes.

Export of processed vegetables has registered a compounded annual growth rate of 16% in volume and 25% in value in recent times. Onions account for about 93% (in volume) of the total export of fresh vegetables from India. The other major items of export are potato, tomato, brinjal, beans, carrots, chillies, capsicum etc. The major export markets are Gulf Countries, UK, Sri Lanka, Malaysia and Singapore. Though India ranks second in the vegetable production in the world, the average yield for various vegetables are low compared to those experienced in other countries of the world.

The share of sectoral consumption for processed fruits and vegetables in the long term would be as follows:

- Domestic-30%
- Institutions -40% (including defense)
- Exports - 30%

While the small scale processing units would dominate in the short term, an advent of large/medium scale units is likely in the long term.

### 11.3 IMPORT/EXPORT TRENDS

Rising living standards and the expanding number of middle-class consumers are expected to increase imports as consumers demand more variety and greater quality of food products. Horticultural imports have risen since the lifting of restrictions, and the increase is expected to continue. Apples, pears, table grapes, frozen potato fries, dried fruits have the highest import potential.
Over the past three years, the volume of the Indian Frozen Fruits & Vegetables exports has increased, but the UVR has witnessed a marginal decline.

India’s Export Performance in 11 FFV products (over the past 3 years)

<table>
<thead>
<tr>
<th>Category</th>
<th>Value Growth %</th>
<th>Volume Growth %</th>
<th>UVR %</th>
<th>Key Suppliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potatoes</td>
<td>-63</td>
<td>-43</td>
<td>-35</td>
<td>Nepal, Sri Lanka, Maldives</td>
</tr>
<tr>
<td>Peas</td>
<td>1362</td>
<td>1104</td>
<td>21</td>
<td>UAE, Saudi Arabia, Kuwait</td>
</tr>
<tr>
<td>Beans</td>
<td>68</td>
<td>268</td>
<td>-54</td>
<td>UAE, Malaysia, Russia</td>
</tr>
<tr>
<td>Legumes</td>
<td>1272</td>
<td>3149</td>
<td>-58</td>
<td>USA, UAE, UK</td>
</tr>
<tr>
<td>Spinach</td>
<td>10375</td>
<td>7500</td>
<td>38</td>
<td>UAE, USA, Nepal</td>
</tr>
<tr>
<td>Sweet Corn</td>
<td>163</td>
<td>247</td>
<td>-24</td>
<td>Germany, UAE, USA</td>
</tr>
<tr>
<td>Vegetables – Others</td>
<td>-36</td>
<td>-25</td>
<td>-14</td>
<td>USA, UK, Netherlands</td>
</tr>
<tr>
<td>Vegetable Mix</td>
<td>22</td>
<td>16</td>
<td>5</td>
<td>UAE, Saudi Arabia, UK</td>
</tr>
<tr>
<td>Strawberries</td>
<td>-9</td>
<td>46</td>
<td>-37</td>
<td>USA, Chinese Taipai, UAE</td>
</tr>
<tr>
<td>Raspberries</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>USA, Taiwan, Saudi Arabia</td>
</tr>
<tr>
<td>Fruits &amp; nuts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>USA, UK, UAE</td>
</tr>
</tbody>
</table>

Most of the categories have witnessed volume growth, except, potatoes & other vegetables. A positive trend in the UVR of peas, spinach and mixed vegetables has been seen over the past three years. (*Source: Technopak research analysis & Comtrade)
Over the past 3 years Indian exports to France have decreased. The UVR has shown a marginal increase.

Exports to Germany had risen in the year 2003-04 but have shown a major decline in the year 2004-05.
Exports to Belgium had declined to a major extent in the year 2003-04 but have shown some positive signs in 2004-05.

Exports to UK, over the past three years have shown positive growth signs; the UVR however has marginally declined.
Exports to Japan have decreased over the past 3 years; the UVR has also sharply declined.

Exports to USA have shown an increase over the past three years, however the UVR has declined.
Thus, the Indian exports of frozen fruits and vegetables have shown signs of growth only for UK and USA. France also has also been a major importer of Indian FFV products but has recently shown decline. Japan has shown a major decrease in Indian exports.

## 11.4 Government Policies, Export/Import Schemes, Incentives and Subsidies

Exports of agricultural products are dependant on several factors such as domestic production and consumption, exportable surpluses, consumer preferences, varieties traded, quality, domestic and international prices and availability of infrastructure facilities for storage, post harvest handling, etc. Having regard to the social and economic importance of the agricultural sector, the export strategy of the Government is based on the premise that foreign earnings from this sector should be enhanced thereby leading to higher income to farmers, while taking care to make agricultural products available at reasonable prices to the domestic consumers.

In order to boost export of agro products, the Government provides various incentives through Commodity Boards/Council for infrastructure development, quality and quality control, market development and promotion, packaging, publicity, information dissemination etc.

Export of processed fruits and vegetables is another thrust area for encouraging export of value added products. A number of large national and multinational companies have now entered processed fruit industries with a thrust on exports. Some of the new products which have been introduced in the market are tomato paste in bulk aseptic packs, button mushrooms, freeze dried and Instant Quick Frozen fruits and vegetables and gherkins. Exports of processed fruits and vegetables increased from USD 73.33Mn in 1994-95 to USD 250.18Mn in 2003-04.

The Central Govt. Department of Commerce is responsible for framing policies for the promotion of and assistance for exports and imports. The main functions of the Department are promoting exports and organizing, developing and regulating the foreign trade. The function of the Directorate General of Foreign Trade (DGFT), the executive arm of the Department, is implementation of the foreign trade polices laid down by the Government. This Division also caters to the requirements of State Governments, autonomous bodies, statutory corporations and Government companies on their request. The Special Economic Zones, set up as enclaves separated from the Domestic Tariff Area by fiscal barriers, are intended to provide an internationally competitive duty free
environment for export production at low costs. This enables the products to be competitive on quality and price-, in international markets. India has seven Special Economic Zones at Kandla (Gujarat), Santacruz (Mumbai), Falta (West Bengal), Noida (U.P.), Kochi (Kerala), Chennai (Tamilnadu) and Visakhapatnam (Andhra Pradesh). For handling the canalized imports and exports of commodities, undertaking development of exports generally, and for providing assistance and services to the export trade, the following Corporations/organizations are functioning:

- The State Trading Corporation of India Ltd.
- The Projects and Equipment Corporation of India Ltd.
- The Minerals and Metals Trading Corporation of India Ltd. including Mica Trading Corporation Ltd.
- The Export Credit and Guarantee Corporation Ltd.
- India Trade Promotion Organization.

11.4.1 Export Promotion programmes

A range of interventions/activities are carried out by the Department of Commerce as well as organizations under its jurisdiction within the overall objective of export promotion. Some of the prominent programmes are explained below:

**A. Marketing Development Assistance (MDA)**

The Government of India had set up the “Marketing Development Fund” in the year 1963, to undertake various measures for stimulating and diversifying export trade. The MDA is utilized for assisting: (a) Individual exporters for export promotion activities abroad. (b) Export Promotion Councils (EPC’s) to undertake export promotion activities for their products and commodities. (c) Approved organizations/trade bodies in undertaking limited exclusive nonrecurring innovative activities connected with export promotion efforts for their members. (d) EPC’s to contest Countervailing duty/Anti dumping cases initiated abroad. (e) Focus export promotion programmes in specific regions abroad like Focus (LAC), Focus (Africa), Focus (CIS) and Focus (ASEAN+2) and also (f) Supporting residual essential activities connected with marketing promotion efforts abroad.

**B. Market Access Initiative – Export Studies**

The Market Access Initiative Scheme was launched to identify and address major issues relating to market access that Indian exporters face in various overseas markets. MAI scheme is designed on country product focus approach. The selection of products and target countries for the purpose of this scheme is on the basis of the findings of market studies/survey conducted through reputed marketing consultants, appointed in a transparent manner. These study reports ideally include:
• Market studies on country product focus.
• Feasibility of Setting up of common showrooms under one roof and warehousing facility in the identified centers abroad.
• Feasibility sales promotion campaigns through international departmental stores.
• Studies on international trade fairs, seminars, and buyer-seller meets, publicity campaigns for launching identified products in select markets.
• Studies on Assistance to cottage and handicraft sectors to enhance their competitiveness.
• Studies on Market initiative facility to recognized associations in industry clusters for marketing abroad.

The MAI scheme helps in tapping potential markets for specific products where the country has a competitive edge to achieve additional market access in focused and project approach manner, to make quantum jump in total volume of exports in the next 5 year’s period. Under MAI scheme, display/marketing of potential products in the potential market can be had through impressive India pavilions, participated by select top companies, products-wise, having world class branded quality products associated with sustained publicity campaigns, seminars, Buyer-Seller meets etc. Potential activities can be undertaken like opening of showrooms, warehousing facility and display of products in leading departmental stores by leading Indian companies to have physical presence of India label and “Made in India” products in the potential markets.

C. India Brand Equity Foundation

India Brand Equity Foundation (IBEF, formerly India Brand Equity Fund) Trust was established on 11th July, 1996 with one time Government budgetary support of Rs. 50 crores. The mandate of IBEF is now “Building Positive Economic Perceptions for India Globally. Its activities are as follows:

1. Conception of a Business Brand for India to be used in building positive economic perceptions globally. “India –Fastest Growing Free Market Democracy” has been conceived by the IBEF and a supporting logo has been developed.

2. Establishing a fully functional “India Resource Centre which interalia provides the following eservices:
   • E-newsletter to over 20,000 subscribers;
   • Daily news alerts;
   • Weekly profiling of success stories;
• Downloadable reports, presentations and research;
• Analysis of Govt. Policy

3. A brand communication toolkit containing an India Brochure, Presentation, Film, and other communication contents packaged in a multi-purpose folder, along with an information Kiosk and several Posters on Brand India has been prepared. These will be used to proliferate the business brand and the key positioning statement at conferences, exhibition and other strategic events abroad. Moving forward, Brand India kiosks will be placed at major global events with an aim to consistently promote the image of India.

4. An operational partnership with the Ministries of External Affairs and Tourism is being established to drive synergies for promoting Brand India as a business, tourism and a media brand.

5. Networking with international agencies is a recent priority. A visit to the US was recently undertaken to participate in the Annual Convention of the South Asian Journalists Association. A partnership is being established with this strong network of media professionals spread across the USA to allow better penetration of Brand India in the US media. Considering the top US business schools as with “Hubs of Opinion Generation” like negotiations have been initiated to establish relationship. The IBEF has already made deep inroads at Harvard Business School and MIT Sloan School of Management, and initiated relationship with several other leading institutions like Wharton, Berkeley, and others.

6. The facilitation of inward visits by journalists and business leaders under a branded “Experience India Programme” has been initiated. Negotiations to arrange more frequent visits by journalists representing global media houses, potential investors and leading opinion makers are being undertaken by IBEF management and its partner organizations. As result IBEF is being used as resource Centre by companies, individuals and institutions looking to develop a better understanding of India. Several studies and publications in co-operation with leading professional agencies have been commissioned. Perceptions Research of brand India has been an ongoing activity and about which regular reports are made available to stake holders.

7. The IBEF’s Brand Ambassador Network focusing on building economic perceptions in the local media and business communities through their influence networks has been successfully launched in 2005. IBEF has established links in this regard with several influential individuals who will be formally engaged under the Brand Ambassador Network
to help build the India Brand. Such Ambassadors would also help build the larger network of IBEF, under the “Friends of India”. These people will regularly receive customized information from IBEF on the good news and success stories about India.

8. IBEF is negotiating with several global event organizers to bring leading international business events into the country, with an overall purpose of drawing attention to the rapid economic change the country has seen in the past decade. Media campaigns are being prepared for key global markets and are aimed at driving traffic onto the “India Resource Centre” to bridge the information gap on India abroad. The overall effort of the IBEF has been to drive a holistic approach to building a strong global brand for India.

11.4.2 ASIDE- AN INTRODUCTION

ASIDE stands for Assistance to States for Development of Export Infrastructure and other Activities. The responsibility for promotion of exports and creating the necessary infrastructure has largely been undertaken by the Central Government so far, it is increasingly felt that the states have to play an equally important role in this endeavor. The role of the State Governments is critical from the point of view of boosting production of exportable surplus, providing the infrastructural facilities such as land, power, water, roads, connectivity, pollution control measures and a conducive environment for production. It is felt that coordinated efforts by Central Government in cooperation with the State Governments are necessary for development of infrastructure for exports promotion.

Prior to the launch of ASIDE scheme, the Deptt. of Commerce had been implementing a number of schemes viz. the Export Promotion Industrial Park Scheme (EPIP) Export Promotion Zones Scheme (EPZ) and the Critical Infrastructure Balancing Scheme (CIB) and the Export Development Fund for the North East and Sikkim, in order to develop infrastructure for promotion of exports. With a view to optimize the utilisation of resources, to achieve the objectives of export growth through co-ordinated efforts and also to ensure greater participation from the States in export promotion, a scheme by the name of Assistance to States for Development of Export Infrastructure and other Activities (ASIDE) was formulated by merging the above mentioned schemes and launched in March, 2002.

The objective of the scheme is to involve the states in the export effort by providing assistance to the State Governments for creating appropriate infrastructure for the development and growth of exports.
11.4.2.1 Purposes for the scheme

The activities aimed at development of infrastructure for exports can be funded from the scheme, provided such activities have an overwhelming export content and their linkage with exports is fully established. The specific purposes for which the funds allocated under the Scheme can be sanctioned and utilized are as follows:

- Creation of new export promotion industrial parks/zones (including SEZs/Agri-Business Zones) and augmenting facilities in the existing ones.
- Setting up of electronic and other related infrastructure in export conclave.
- Equity participation in infrastructure projects including the setting up of SEZ's.
- Meeting requirements of capital outlay of EPIP’s/SEZ’s/SEZ’s.
- Development of complementary infrastructure such as roads connecting the production centers with the ports, setting up of container depots and container freight stations.
- Stabilizing power supply through additional transformers and islanding of export production centers etc.
- Development of minor ports and jetties of a particular specification to serve export purpose.
- Assistance for setting up common effluent treatment facilities subject to modalities of assistance being worked out.
- Projects of national and regional importance.
- Activities permitted as per EDF in relation to North East and Sikkim.

11.4.2.2 Allocation of Funds

The outlay of scheme will have two components. 80% of the funds (State component) shall be earmarked for allocation to the States, to be utilized for the approved purposes. The balance 20% (central component), and amounts equivalent to un-utilized portion of the funds allocated to the States in the past year(s), if any, shall be retained at the central level for the specified purposes, especially the requirements of capital outlays of SEZ’s, activities relating to promotion of exports from NER as per the existing guidelines, requirement of backward States needing specific attention and any other activity considered important by the Central Government from the regional or national perspective.

11.4.2.3 Criteria for State-wise allocation

The State Component will be allocated to the States in two tranches of 50% each. The inter-se allocation of the first tranche of 50% to the State shall be made on the basis of
export performance. This will be calculated on the basis of the share of the state in the total weighted average of exports. The second tranche of the remaining 50% will be allocated inter-se on the basis of share of the states in the weighted average of the total growth of exports over the previous year. The allocation will be based on the date of export of goods alone and the export of services will not be taken into account. 10% of the outlay for the scheme shall be earmarked for expenditure in the North East and Sikkim. Allocation to the Export Development Fund for NER & Sikkim shall be made out of the earmarked outlay for the NER. The export performance and growth of exports from the state will be assessed on the basis of the information available from the office of the DGCIS. The office of the DGCIS will compile the State – wise data of exports from the Shipping Bill submitted by the exporter.

11.4.2.4 Approval of Projects and Implementation

There shall be a State Level Export Promotion Committee (SLEPC) headed by the Chief Secretary of the State and consisting of the Secretaries of concerned Departments at the State level, a representative of the State cell of the Department of Commerce and the Joint Director General of Foreign Trade posted in the State/region and the Development Commissioner of the SEZ/SEZ in the State as Members. The SLEPC will scrutinize and approve specific projects and oversee the implementation of the Scheme.

11.4.2.5 Eligible Agencies

Under the scheme, funds for the approved projects may be sanctioned to:-
1. Public Sector undertakings of Central/State Governments
2. Other agencies of Central/State Governments
3. Export Promotion Councils/Commodity Boards
4. Apex Trade bodies recognized under the EXIM policy of Government of India and other apex bodies recognized for this purpose by the Empowered Committee set up
5. Individual Production/Service Units dedicated to exports

11.4.3 Special Economic Zones

The Special Economic Zones (SEZ’s) set up as enclaves, separated from the Domestic Tariff Area by fiscal barriers, are intended to provide a duty free environment for export production. There are seven SEZ’s set up by the Government.

11.4.3.1 Kandla Special Economic Zone(KSEZ)

This zone was set up on 700 acres of area with the objective of increasing exports and earning foreign exchange besides industrializing the backward region of Kutch and
assisting in better utilization of the cargo handling facilities developed at Kandla Port.

With 139 units currently operating, the total exports from 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>550</td>
<td>527.89</td>
</tr>
<tr>
<td>2001-02</td>
<td>650</td>
<td>540.26</td>
</tr>
<tr>
<td>2002-03</td>
<td>550</td>
<td>729.29</td>
</tr>
<tr>
<td>2003-04</td>
<td>1020</td>
<td>1018.82</td>
</tr>
<tr>
<td>2004-05</td>
<td>1275.00</td>
<td>710.75</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

11.4.3.2 Santacruz Special Economic Zone (SSEZ)

Santacruz Special Economic Zone was set up in Sept., 1974 in 100 acres of land 179 units are in operation in the Zone. The total export during the year from 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td>5193.74</td>
<td></td>
</tr>
<tr>
<td>2001-2002</td>
<td>5000</td>
<td>5225.60</td>
</tr>
<tr>
<td>2002-2003</td>
<td>5850</td>
<td>6083.02</td>
</tr>
<tr>
<td>2003-2004</td>
<td>7600</td>
<td>7832.81</td>
</tr>
<tr>
<td>2004-05</td>
<td>9790</td>
<td>6589.81</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

11.4.3.3 Noida Special Economic Zone (NSEZ)

The Zone has been set up in 1985 in Noida (U.P.) near Delhi. NSEZ has been developed in a phased manner on 310 acres of land in which an area of 260 acres has been fully developed. At present, there are 142 units in operation. The exports from the zone during the years from 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>1043.20</td>
<td></td>
</tr>
<tr>
<td>2001-02</td>
<td>992.38</td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td>1100</td>
<td>1001.17</td>
</tr>
<tr>
<td>2003-04</td>
<td>1400</td>
<td>1534.17</td>
</tr>
<tr>
<td>2004-05</td>
<td>1920</td>
<td>2479.00</td>
</tr>
</tbody>
</table>

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11.4.3.4 Madras Special Economic Zone (MSEZ)

The MSEZ was established in 1985, over an area of 98 acres, which was expanded with another 163 acres in 1987. The total exports from 2000-01 are as under:-
11.4.3.5 Cochin Special Economic Zone (CSEZ)
The CSEZ was setup in 1985 in an area of 103 acres at Thrikkakara in Ernakulam District. Presently 66 units are in operation in the Zone. This is a multi products zone with units engaged in the manufacture of many products including frozen foods and value added spices. The year-wise exports since 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Years</th>
<th>Target</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td>660.00</td>
<td>690.84</td>
</tr>
<tr>
<td>2001-2002</td>
<td>800.00</td>
<td>764.30</td>
</tr>
<tr>
<td>2002-2003</td>
<td>875.00</td>
<td>822.35</td>
</tr>
<tr>
<td>2003-2004</td>
<td>1040.00</td>
<td>1037.96</td>
</tr>
<tr>
<td>2004-2005</td>
<td>1295.00</td>
<td>979.15</td>
</tr>
</tbody>
</table>

11.4.3.6 Falta Special Economic Zone (FSEZ)
FSEZ has been set up over an area of 280 acres near Kolkata. Presently there are 82 units functioning. This is a multi products zone with units engaged in the manufacture of many products including frozen foods, tea etc. The exports from the zone during the years from 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Years</th>
<th>Target</th>
<th>Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td>304.30</td>
<td></td>
</tr>
<tr>
<td>2001-2002</td>
<td>278.82</td>
<td></td>
</tr>
<tr>
<td>2002-2003</td>
<td>325.00</td>
<td>270.42</td>
</tr>
<tr>
<td>2003-2004</td>
<td>380.00</td>
<td>298.91</td>
</tr>
<tr>
<td>2004-05</td>
<td>375.00</td>
<td>290.00</td>
</tr>
</tbody>
</table>

11.4.3.7 Vishakhapatnam Special Economic Zone (VSEZ)
The Government had notified setting up of the seventh SEZ at Vishakhapatnam on 15.3.1989. An area of 360 acres of land has been acquired for the zone out of which basic infrastructural facilities in the first phase of the zone covering an area of about 163
acres have been completed. The zone has also been declared as custom bonded area by the Department of Revenue. At present 25 units in operation. The exports during the years from 2000-01 are as under:-

<table>
<thead>
<tr>
<th>Year</th>
<th>Target</th>
<th>Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td></td>
<td>219.08</td>
</tr>
<tr>
<td>2001-2002</td>
<td></td>
<td>250.98</td>
</tr>
<tr>
<td>2002-2003</td>
<td>300</td>
<td>357.27</td>
</tr>
<tr>
<td>2003-2004</td>
<td>500</td>
<td>435.67</td>
</tr>
<tr>
<td>2004-05 (upto 11/04)</td>
<td>545</td>
<td>288.03</td>
</tr>
</tbody>
</table>

11.4.4 Trade Fairs/ Exhibitions/ Commercial Publicity

The Indian Trade Promotion Organization (ITPO) seeks to achieve the core objective of export promotion through increased exposure to Indian traders at fairs in India and abroad.

11.4.4.1 Fairs in India

ITPO's domestic exhibitions mirror the latest developments in various sectors of the Indian industry. These events provide opportunity to the Indian manufacturers/exporters to promote their exports and also for launching and test marketing of their new products and services. ITPO had organized 24th annual India International Trade Fair (IITF) from November 14 to 27, 2004 with the theme “Information Technology and Agriculture”. The display covered an area of about 96700 sq.metres. This attracted 26 states and 4 Union Territories as well as 29 Public Sectors Undertakings, Commodity Boards, EPC's, Banks & Insurance Companies. Around 7400 exhibitors participated in the fair which included participation of 327 foreign companies from 28 countries. With 86 delegations from 48 countries, the number of delegations visiting IITF 2004 has increased as compared to last year. The fair provided an ideal platform for short and long term business transactions, sourcing supplies and appointing agents/distributors, launching new products, text marketing & firming up of joint ventures tie-ups and technology transfers. IITF 2005 was the Silver Jubilee edition of the event. As such efforts are on to encourage participation of large industrial houses for depicting the progress made in various fields in India. Efforts are also being made to increase foreign participation.

11.4.4.2 Fairs Abroad

During April –November 2004, ITPO had organized participation in 40 trade fairs out of total 54 events expected to be held during the year 2004-05, of which 19 were general events while 21 were specialized events. Geographically, 9 were held in WANA (West
Asia and North Africa), 15 in Europe, 8 in South East Asia, 8 in America. An exclusive Indian exhibition “A Slice of India in Mongolia” was also held in the month of Sept. 2004. During 2005-06, ITPO targets to increase India’s participation in 63 fairs/exhibitions across various countries viz., 13 in America, 23 in Europe, 13 in WANA countries and 14 in South East Asia. One of the major overseas event in which ITPO (Indian Trade Promotion Organization) participated during the year 2005-06 is Expo 2005 Aichi Japan from March 25 to September 25, 2005 being organized on behalf of Government of India. The theme of the event was “Nature & Humankind”. India is a major participating nation in these fairs abroad and preparations are on to project India in the right perspective.

11.4.4.3 Trade Development Activities

Export development programmes in identified markets create awareness of India’s manufacturing and export capabilities especially in new markets, as also provide opportunities to Indian exporters to garner export orders.

11.4.5 APEDA

The Agricultural and Processed Food Products Export Development Authority (APEDA) was established by an Act of Parliament in 1986 for the development and promotion of exports of certain agricultural and processed food products covered under the schedule to the APEDA Act. APEDA’s Head Office is located at New Delhi and there are two Regional Offices located at Mumbai and Bangalore. The commodities covered under the schedule to the APEDA Act are (1) Fruits, vegetables and their products, (2) Meat and meat products, (3) Poultry and poultry products, (4) Dairy products, (5) Confectionery, biscuits and bakery products, (6) Honey, jaggery and sugar products, (7) Cocoa products, (8) Alcoholic and non-alcoholic beverage, (9) Cereal products, (10) Groundnuts, peanuts and walnuts, (11) Pickles, papads and chutneys, (12) Guar gum, (13) Horticulture and floriculture products, (14) Herbal and medicinal plants, (15) Rice (non-Basmati).

11.4.5.1 Major Achievements of APEDA

Agri Export Zones

The policy for setting up of such Agri Export Zones was announced by the Govt. on the 31st March 2001 with the primary objective of boosting agri exports. The concept of Agri Export Zone attempts to take a comprehensive look at a particular produce/products located in a contiguous area for the purpose of developing and sourcing the raw materials, their processing/packaging, leading to final exports. Thus, the entire effort is centered on a cluster approach of identifying the potential products, the geographical region in which these are grown and adopting an end to end approach of integrating the
entire process, right from the stage of production till it reaches the market. The anticipated benefits to accrue such zones are as follows:-

- Strengthening of backward linkages.
- Product acceptability and its competitiveness abroad as well as in the domestic market.
- Value addition to basic agricultural produce.
- Cut down cost of production through economy of scale.
- Better price for agricultural produce.
- Improvement in product quality and packaging.
- Promote trade related research and development.
- Increased employment opportunities.

APEDA was appointed as the nodal agency by the Central Government to promote setting up of Agri Export Zones. Promotion of agricultural export is important for creating conditions for providing remunerative prices to farm produce. For this purpose Agri Export Zones are being promoted in different states and 60 such zones have been approved so far. APEDA will catalyze development of infrastructure and flow of credit to the units in these Agri Export Zones”.

11.4.5.2 Financial assistance under APEDA schemes
11.4.5.2.1 Schemes for Market Development

<table>
<thead>
<tr>
<th>Schemes for Market Development</th>
<th>Components</th>
<th>Scale of Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) i) Activity for development of packaging standards and design.</td>
<td>APEDA’s internal scheme for development work through involvement of institutions / organization in India and abroad with the cost sharing with exporters and / or organizations involved in the export promotion. Maximum amount in case of sharing with exporters / organization is Rs.5 lakhs or 50% of the cost of development whichever is less or 100% in case of APEDA</td>
<td></td>
</tr>
<tr>
<td>ii) Assistance to exporters for use of packaging material as per standards and specifications developed or adopted by APEDA.</td>
<td>30% subject to ceiling of Rs.1.50 lakhs per beneficiary.</td>
<td></td>
</tr>
<tr>
<td>iii) Assistance to Exporters, Producers, Growers, service providers, Co-operative Organizations. For purchase of “Intermediate Packaging Material” for domestic transportation of produce.</td>
<td>50% of the cost of the material subject to ceiling of Rs. 5 Lakhs.</td>
<td></td>
</tr>
</tbody>
</table>
B) i) Development and dissemination of market information data base on products, infrastructure, markets and pre-feasibility surveys / study etc. 100% to be implemented by APEDA

ii) Assistance to exporters, grower’s organizations, trade associations for conducting surveys, feasibility studies. 50% of the total cost subject to ceiling of Rs.2.00 lakhs per beneficiary.

iii) Assistance to Semi Government, State Government, Public Sector Undertakings for Conducting surveys, feasibility studies. 50% of the project cost subject to ceiling of Rs.10 lakhs per beneficiary.

c) i) Supply of material, samples, product literature, development of website, advertisement for publicity and market promotion for fairs / events organised / sponsored by APEDA. 100% to be implemented by APEDA

ii) Publicity & promotion through product literature, Publicity material, advertisement, film etc. by APEDA 100% to be implemented by APEDA

iii) Brand publicity through advertisement etc. 40% of the cost subject to a ceiling of Rs. 1 lakh per beneficiary.

iv) Export promotion by APEDA undertaking activities like buyer-seller meet, Product promotion, exchange of delegations, participation in Exhibitions / Fairs / Events etc. 100% of the cost.

11.4.5.2.2 Schemes for Infrastructure development

<table>
<thead>
<tr>
<th>Components</th>
<th>Scale of Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of common infrastructure facilities by APEDA or any other Government or Public Sector agency like Airport Authority of India or Port Trust etc.</td>
<td>100% grant-in-aid</td>
</tr>
</tbody>
</table>

**PART II**

A) Assistance for purchase of specialized transport units for animal products horticulture and floriculture sector. 25% of the cost subject to a ceiling of Rs.2.50 lakhs per beneficiary.

B) Assistance to exporters, producers, growers, Cooperative organization & federations for horticulture & floriculture sector for :

i) Mechanization of harvest operation of the produce. 25% of the cost subject to a ceiling of Rs.5.00 lakhs per beneficiary

ii) Setting up of sheds for intermediate storage and grading/storage/cleaning operation of produce. 25% of the cost of equipment subject to a ceiling of Rs.5.00 lakhs per beneficiary

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iii) Setting up of mechanized handling facilities including sorting, grading, washing, waxing, ripening, packaging & palletisation etc. 25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary

b) Setting up of both pre cooling facilities with proper handling system as well as cold storage for storing. 25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary

c) Providing facilities for pre shipment treatment such as fumigation, X-ray screening, hot water dip treatment, Water softening Plant 25% of the cost of equipment subject to a ceiling of Rs.10.00 lakhs per beneficiary

d) Setting up of integrated post harvest-handling system (pack houses / green houses with any two or more of the above facilities) 25% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary

e) Setting up of vapor heat (treatment, electronic beam processing or irradiation facilities 50% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary

f) Assistance for setting up of environment control system e.g. pollution control, effluent treatment etc. 25% of the cost subject to a ceiling of Rs.25 lakhs per beneficiary

g) Setting up of specialized storage facilities such as high humidity cold storage deep freezers, controlled atmosphere (CA) or modified atmosphere (MA) storage etc. 25% of the cost subject to a ceiling of Rs.10 lakhs per beneficiary

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<table>
<thead>
<tr>
<th>Components</th>
<th>Scale of Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) i) Assistance to exporters, producers, trade associations, public institutions etc. for setting up / strengthening laboratories.</td>
<td>50% of the total cost subject to a ceiling of Rs.5 lakhs per beneficiary.</td>
</tr>
<tr>
<td>ii) Assistance to exporters &amp; producers for installing quality management, quality assurance and quality control system such as ISO series, HACCP, TQM etc. including consultancy, quality improvement and certification for these.</td>
<td>50% of the cost subject to a ceiling of Rs.2 lakhs per beneficiary for each system.</td>
</tr>
<tr>
<td>iii) Activities related to standardization and quality control such as preparation of quality assurance manuals, guidelines, documents, standards, up gradation and recognition of labs for export testing, certifying exporters as Premium Quality Exporters etc. pesticide management</td>
<td>100% internal scheme of APEDA.</td>
</tr>
</tbody>
</table>
iv) Upgradation and recognition of labs for export testing. For upgradation up to 50% of cost for private labs and up to 100% of the cost for Central / State Government / University laboratories subject to a maximum of Rs.50 lakhs.

v) Testing of water, soil residues of pesticide, veterinary drugs, hormones, toxins contaminants in agricultural produce / products. 50% of the cost of tests subject to a ceiling of Rs.2000 per sample. Payment shall be made direct to laboratories and not to individual exporter.

(B) i) Assistance to growers and manufacture, exporter & export related organization for upgradation of technical and managerial personnel through training in India, excluding the cost of travel. 50% of the cost of approved training programme subject to Rs 50,000 per beneficiary. Assistance shall be given only for training undergone in the institutes on the panel of APEDA. The payment shall be made direct to the institute. The eligibility will be limited to once during the plan period. 100% organized by APEDA.

ii) Assistance to recognized associations of growers/exporters for organizing seminars/group activities including study tour within the country and for bringing out information literature. 50%percent of the cost of the seminar/workshop etc. subject to a ceiling of Rs. 1 lakh for national seminar and Rs. 2 lakh for international seminars. For information literature, the assistance shall be 50% of the cost subject to a ceiling of Rs.25, 000. Assistance shall be available only to such seminar that has been approved by APEDA in advance.

iii) Seminars organized by APEDA. 100% if organized by APEDA

iv) Assistance programme for study tour sponsored or organized by APEDA abroad. The assistance would be restricted to such activities that have correlation with exports. 50% of the total cost of travel and distribution of study material.

11.4.5.2.4 Scheme for Research & Development

<table>
<thead>
<tr>
<th>Components</th>
<th>Scale of Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assistance to support Research and development for export efforts through R &amp; D organizations in Government sector.</td>
<td>100% APEDA's internal scheme.</td>
</tr>
<tr>
<td>Assistance to exporters, Trade Associations, Cooperative institutions etc. to support relevant research &amp; development for export enhancement through R &amp; D</td>
<td>Up to 50 % of the total cost of the project subject to a ceiling of Rs. 10 Lakhs.</td>
</tr>
</tbody>
</table>
11.4.6 Service for Exports

11.4.6.1 Quality control and pre-shipment inspection

The Export Inspection Council was set up by the Government of India under Section 3 of the Export (Quality Control & Inspection) Act, 1963, as an apex body to provide for the sound development of export trade through quality control and pre-shipment inspection. EIC is assisted in its functions by the Export Inspection Agencies (EIA's) located at Chennai, Kochi, Kolkata, Delhi and Mumbai having a network of 41 sub-offices and laboratories to back up the pre-shipment inspection and certification activity. The main functions of EIC as contained in the Act are:- (1) To advise the Central Government regarding measures to be taken for enforcement of quality control and inspection in relation to commodities intended for export and to draw up programmes thereof and (2) To draw up programmes for quality control and inspection of commodities for exports. Notifications on export commodities Pet foods and animal by products not intended for human consumption would be brought under the Compulsory Quality Control and Inspection prior to shipment through necessary notification.

<table>
<thead>
<tr>
<th>System of Inspection</th>
<th>FOB Value of Exports (Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consignment Wise Inspection (CWI)</td>
<td>290.10</td>
</tr>
<tr>
<td>2. In-Process Quality Control (IPQC)</td>
<td>545.10</td>
</tr>
<tr>
<td>3. Food Safety Management Systems based Certification (FSMSC)</td>
<td>7400.62</td>
</tr>
</tbody>
</table>

11.4.6.2 Implementation of Certification in the Food Sector

The major activity of EIC/EIA's in the area of inspection and certification is in the food sector. This being a very sensitive sector; an increasing number of countries are imposing import controls. It is necessary to strengthen the certification systems in food sector not only to meet end product requirements of various importing countries but also to align with international standards on inspection and certification as laid down by Codex. It is proposed to review the various schemes under implementation as well as the operational instructions to align these with international standards. This is also very important to further progress in Memorandums of Understanding (MOU’s) and Mutual Recognition Agreements (MRA’s) with importing countries for recognition of India’s
certification. In the area of milk products, implementation of the Residue Monitoring Plan will be strengthened with a view to seeking recognition by European Commission (EC) and other countries. In the area of poultry meat & poultry meat products, although three units have applied for approval, one has been approved so far. It is expected that during the year 2005-06, some more units will be approved. In the area of raw (chilled/frozen) meat and animal casings, EIC/EIA’s are proposing to initiate certification of these products and will implement the scheme in 2005-06. On Basmati Rice, it is proposed to organize a workshop for exporters and explain to them the benefits of the scheme.

11.4.6.3 Indian Institute of Packaging (IIP)
The Indian Institute of Packaging (IIP), Mumbai, was formed in 1966 under the Societies Registration Act., 1860. The Institute is imparting training in packaging by conducting Post Graduate Diploma in Packaging, Intensive Training Course in Packaging, Distance Education (Correspondence Programme in Packaging), and Short term Entrepreneurship Course, Seminars, technical consultancy, testing and evaluation of packages, research and development in packaging and packaging designs etc. The product group include Candy & Toffee, VCI films, Glass Containers, Blower Fan Blades, CFB Box, Rayon Yarns, PTMV products, HDPE woven fabric bags, fertilizers, Dried vegetables, fresh Fruits, and vegetables, Prasad, Rubber Gaskets, Laminates and Modular furniture, onions, grapes, mangoes, Rabdi, Jeera Puris, Boondi Laddus, Edible Oils, Infestation of Chocolates, Drinking water, Plastic containers, Glass Bottles, Adhesives, Packaging Materials, Suiting & Shirting, yarn, printing machinery, mobile phones, hydraulic pumps, lift parts, pesticides, mango-bar, polyester rolls, medical equipments, insulators, motors and generators etc. Studies conducted are aimed at improvements in Packaging Systems, reduction in damage during distribution, optimizing on containers stuffing and advice on packaging for exports etc.

11.4.7 Foreign trade policy
The Foreign Trade Policy (FTP) announced on the 31st August 2004 is valid for a period of five years. Various schemes announced in the FTP are briefly as below:

11.4.7.1 Duty exemption/Remission Scheme
2.1 The Duty Exemption Scheme enables duty free import of input required for export production. An Advance License is issued under Duty Exemption Scheme.
2.2 The Duty Remission Scheme enables post export replenishment/remission of duty on inputs used in the export product. Duty Remission Scheme consists of (a) Duty Free Replenishment Certificate (DFRC) and (b) Duty Entitlement Pass Book (DEPB).
11.4.7.2 Agricultural Export Zones

With a view to promoting agricultural exports from the country and remunerative returns to the farming community in a sustained manner, AEZ as announced earlier would be set up for end to end development for export of specific products from a geographically contiguous area. AEZ would be identified by the State Government, who may evolve a comprehensive package of services provided by all State Government agencies, State agriculture universities and all institutions and agencies of the Union Government for intensive delivery in these zones. Such services which would be managed and coordinated by State Government would include provision of pre/post harvest treatment and operations, plant protection, processing, packaging, storage and related research & development etc. APEDA will supplement, within its schemes and provisions, efforts of State Governments for facilitating such exports. Units in AEZ would be entitled for all the facilities available for exports of goods in terms of provisions of the respective schemes.

11.4.7.3 Towns of Export Excellence

A number of towns in specific geographical locations have emerged as dynamic industrial clusters contributing handsomely to India’s exports. It is necessary to grant recognition to these industrial clusters with a view to maximizing their potential and enabling them to move higher in the value chain and tap new markets. Selected towns producing goods of Rs. 1000 Crores or more will be notified as Towns of Exports Excellence on the basis of potential for growth in exports. However, for the Towns of Export Excellence in the Handloom, Handicraft, Agriculture and Fisheries Sector, the threshold limit would be Rs. 250 Crores.

11.4.7.4 Free Trade and Warehousing Zone

(i) A new scheme to establish Free Trade and Warehousing Zone has been introduced to create trade-related infrastructure to facilitate the import and export of goods and services with freedom to carry out trade transactions in free currency. This is aimed at making India into a global trading-hub.

(ii) FDI would be permitted up to 100% in the development and establishment of the zones and their infrastructure facilities.

(iii) Each zone would have minimum outlay of Rs. 100 Crores and Five Lakhs sq.mts. built up area.

(iv) Units in the FTWZ’s would qualify for all other benefits as applicable for SEZ units.
11.4.7.5 Services export promotion council

An exclusive Service Export Promotion council shall be set up in order to map opportunities for key services in key markets, and develop strategic market access programmes, including brand building, in co-ordination with sectoral players and recognized nodal bodies of the services industry.

11.4.7.6 Procedural simplification and rationalization measures

(a) All exporters with minimum turnover of Rs. 5 Crores and good track record shall be exempted from furnishing Bank Guarantee in any of the schemes, so as to reduce their transactional costs.

(b) All goods and services exported, including through DTA units, shall be exempted from Service Tax.

(c) Validity of all licenses/entitlements issued under various schemes has been increased to a uniform 24 months.

(d) Number of returns and forms to be filed has been reduced. This process shall be continued in consultation with Customs & Excise.

(e) Enhanced delegation of powers to Zonal and Regional offices of DGFT for speedy and less cumbersome disposal of matters.

(f) Time bound introduction of Electronic Data Interface (EDI) for export transactions, 75% of all transactions to be on EDI within six months.

11.4.7.7 Grievance Redressal

A new mechanism for grievance redressal has been formulated and put into place by a government Resolution to facilitate speedy redressal of grievances of trade and industry.

11.4.8 Performance and the scope of individual activities projects and schemes with reference to financial outlays

11.4.8.1 Export Promotion

(A) Assistance for Export Promotion and Marketing Development: Assistance is given for the development of exports for the following schemes:
i) **Subsidy:** The provision under this head is generally for the payment of Duty Draw Back on Deemed Exports and reimbursement of CST in Special Economic Zones/EOU's and terminal excise duty in respect of deemed exports.

ii) **Grants-in-aid to Export:** Promotion and Market Development Organizations. Under this head, grants-in-aid are given to the various approved product specific Export Promotion Councils, Commodity Boards and Export Development Authorities for their development activities to promote exports of Indian products and commodities. MDA assistance to exporters is routed through FIEO, EPC's, Commodity Boards and Export Development Authorities for sale-cum-study tour, participation in trade fair/exhibition and publicity through printed material.

**(B) Market Access Initiative – Export Studies**

Under the “Market Access Initiative- Export Studies” Scheme, EPC’s and Trade Promotion Organizations etc. would project their requirements for undertaking marketing promotion efforts abroad on country-product focus approach basis in a single project covering the objectives of the scheme namely,

- Market Studies for select products in select countries to generate data for promotion of 60 exports from India,
- Assisting the exporters and EPC's in the promotion of Indian products and brands in international market
- Assisting projects for research and product development
- Supplementing State Governments efforts in carrying out export potential surveys of the respective State(s) for identified product groups etc.

### 11.4.8.2 Financials needed for setting up of a Special Economic Zone

The provision is towards administrative expenses such as salaries and allowances of officers and staff, travel expenses, advertisement and publicity and maintenance of the zones premises. Currently the provisions provided are as follows:
The provisions under SEZs are as under:-

(Rs. in crore)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cochin SEZ</td>
<td>2.44</td>
<td>2.35</td>
<td>2.78</td>
</tr>
<tr>
<td>2</td>
<td>Falta SEZ</td>
<td>1.88</td>
<td>1.75</td>
<td>2.06</td>
</tr>
<tr>
<td>3</td>
<td>Indore SEZ</td>
<td>0.40</td>
<td>0.38</td>
<td>0.50</td>
</tr>
<tr>
<td>4</td>
<td>Jaipur SEZ</td>
<td>0.37</td>
<td>0.34</td>
<td>0.40</td>
</tr>
<tr>
<td>5</td>
<td>Jodhpur SEZ</td>
<td>0.37</td>
<td>0.25</td>
<td>0.30</td>
</tr>
<tr>
<td>6</td>
<td>Kandla SEZ</td>
<td>3.52</td>
<td>3.35</td>
<td>3.90</td>
</tr>
<tr>
<td>7</td>
<td>Madras SEZ</td>
<td>3.86</td>
<td>3.58</td>
<td>4.05</td>
</tr>
<tr>
<td>8</td>
<td>Maha Mumbai SEZ</td>
<td>0.40</td>
<td>-</td>
<td>0.40</td>
</tr>
<tr>
<td>9</td>
<td>Manikanchan SEZ</td>
<td>0.37</td>
<td>0.31</td>
<td>0.40</td>
</tr>
<tr>
<td>10</td>
<td>Moradabad SEZ</td>
<td>0.37</td>
<td>0.25</td>
<td>0.35</td>
</tr>
<tr>
<td>11</td>
<td>Noida SEZ</td>
<td>3.93</td>
<td>4.39</td>
<td>5.00</td>
</tr>
<tr>
<td>12</td>
<td>Santacruz SEZ</td>
<td>6.05</td>
<td>4.71</td>
<td>4.90</td>
</tr>
<tr>
<td>13</td>
<td>Vishakhapatnam SEZ</td>
<td>2.18</td>
<td>2.03</td>
<td>2.43</td>
</tr>
</tbody>
</table>

Total 26.14 23.69 27.47

11.4.9 Transport assistance by Govt. for horticulture and processed food products exports

Govt. of India on 21st March, 2005 approved the Scheme for the grant of Transport Assistance for Export of identified Horticulture, Processed Food & Poultry Products for year 2005-06 & 2006-07. TA claims would be processed on the basis of net weight for Sea freight and gross weight for Air freight. APEDA would receive and process the applications for verification and disbursements as per the procedures/guidelines. The benefit will be available for export made with effect from 01/04/2005 to 31/03/2006 & 01/04/2006 to 31/03/2007 (for the last two financial years of the 10th Five Year Plan). The procedure and terms and conditions for claiming transport assistance will be as under and valid for exports shipment during 1st April 2005 up to 31st March 2007.
11.4.9.1 Specific TA Rates for Exports of Eligible Items by Sea

<table>
<thead>
<tr>
<th>Destination</th>
<th>TA Rate (Rs. per kg)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reef. Container</td>
<td>Non-reef. Container</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>6</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>6</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Middle East</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CIS Countries</td>
<td>6</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>South East Asia</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Far East &amp; North Asia (incl. China &amp; Japan)</td>
<td>6</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>North America (USA, Canada &amp; Mexico)</td>
<td>8</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Central America &amp; Caribbean</td>
<td>8</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>8</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>6</td>
<td>1.25</td>
<td></td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

11.4.9.2 Specific TA Rates for Exports of Eligible Items by Air

<table>
<thead>
<tr>
<th>Destination</th>
<th>TA Rate (Rs. per kg)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Reef. Container</td>
<td>Non-reef. Container</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>17</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>15</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Middle East</td>
<td>7</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>CIS Countries</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>South East Asia</td>
<td>7</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Far East &amp; North Asia (incl. China &amp; Japan)</td>
<td>18</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>North America (USA, Canada &amp; Mexico)</td>
<td>25</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Central America &amp; Caribbean</td>
<td>25</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>South America</td>
<td>25</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>18</td>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

*Technopak Research Analysis
### 11.4.9.3 Proposed TA norms for exports by Air

<table>
<thead>
<tr>
<th>For Fresh Cut Flowers</th>
<th>Other Eligible Items (except Fresh Cut Flowers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least of:</td>
<td>Least of:</td>
</tr>
<tr>
<td>» 20% of FOB value</td>
<td>» 10% of FOB value</td>
</tr>
<tr>
<td>» 25% of freight</td>
<td>» 25% of freight</td>
</tr>
<tr>
<td>» Specific rate (Rs. per kg)</td>
<td>» Specific rate (Rs. Per kg)</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

### 11.4.9.4 Proposed TA norms for exports by Sea

<table>
<thead>
<tr>
<th>For eligible products exported in non-reefer containers</th>
<th>For eligible products exported in reefer containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least of:</td>
<td>Least of:</td>
</tr>
<tr>
<td>» 10% of FOB value</td>
<td>» 10% of FOB value</td>
</tr>
<tr>
<td>» 25% of freight</td>
<td>» 33% of freight (inclusive of Inland freight in reefer containers)*</td>
</tr>
<tr>
<td>» Specific rate (Rs. per kg)</td>
<td>» Specific rate (Rs. per kg)</td>
</tr>
<tr>
<td></td>
<td>» 50% of ocean freight</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

*Note: Inland freight by reefer container (from factory to port) will be included in the freight norm used for TA calculations subject to the following conditions:*

- The reefer container is factory stuffed (i.e. inland movement from factory to port is by reefer container truck)
- Copies of the excise and Customs bonded seal (for inland movement) are included with the TA claim
- The total quantum of TA does not exceed 50% of the ocean freight

### 11.4.10 Financial assistance by Ministry of Food Processing Industries (MFPI)

#### 11.4.10.1 Scheme for Technology Upgradation/ Establishment/ Modernization of FPI's

The assistance will be in the form of grant subject to 25% of the plant and machinery and technical civil works subject to a maximum of Rs.50 lakhs in General Areas and 33.33% up to Rs.75 lakhs in Difficult Areas.
11.4.10.2 Food Park
25% of the project cost in General Areas and 33.33% in Difficult Areas subject to a maximum of Rs.4 crores for provision of common facilities like cold storage, food testing and analysis laboratory, effluent treatment plant, common processing facilities, power, water supply, etc.

12.4.10.3 Integrated Cold Chain facilities
25% of the cost of plant and machinery and technical civil works in General Areas and 33.33% in Difficult Areas with a common ceiling of 75 lakhs.

12.4.10.4 Value Added Center
25% of the cost of plant and machinery & technical civil works for setting up such centre subject to a ceiling of Rs.50 lakhs in general areas and 33.33% subject to a maximum of Rs.75 lakhs in difficult areas.

11.4.10.5 Irradiation Facilities
25% of the cost of plant and machinery and technical civil works for setting up of irradiation facilities in General Areas and 33.3% in Difficult Areas subject to a maximum of Rs.5 crores.

12.4.10.6 Packaging center
25% of the total cost of plant and machinery and technical civil work in General Areas and 33.33% in Difficult Areas subject to maximum of Rs.2 cores for establishing packaging centre independently and in food parks if the packaging centre is not already a part of the common facilities.

11.4.10.7 Food Processing Industries
The assistance will be in the form of grant subject to 25% of the plant and machinery and technical civil works subject to a maximum of Rs.50 lakhs in General Areas and 33.33% up to Rs.75 lakhs in Difficult Areas.
Chapter 12: COUNTRY WISE ENTRY STRATEGY & POTENTIAL ANALYSIS OF KEY FROZEN PRODUCTS

12.1 PROCESS FOR SHORTLISTING KEY FROZEN PRODUCTS

Step 1: The 11 frozen product categories that are exported worldwide were identified
- Frozen Sweet Corn
- Frozen Strawberries
- Frozen Raspberries
- Frozen Peas
- Frozen Potatoes
- Frozen Beans
- Frozen Spinach
- Frozen Legumes
- Frozen Fruits & Nuts
- Frozen Mix Vegetables
- Other Frozen Vegetables

Step 2: Secondary research was done on the import statistics for the 11 product categories of APEDA, for the target countries

Step 3: Primary research was conducted, to identify products which have export potential to the target countries, with the following:
- International retailers & aggregators,
- CIRAD & Agri experts
- Domestic exporters
# 12.2 Primary & Secondary Research Outcome

## 12.2.1 Secondary Research Outcome

### Low Potential

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>France</th>
<th>Germany</th>
<th>UK</th>
<th>USA</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Potatoes</td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
</tr>
<tr>
<td>Growth rates</td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
</tr>
<tr>
<td>Size of import quantity</td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
</tr>
<tr>
<td>Size/nature of players &amp; their growth</td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
<td><img src="image" alt="Low Potential" /></td>
</tr>
</tbody>
</table>

### High Potential

<table>
<thead>
<tr>
<th>Country</th>
<th>Belgium</th>
<th>France</th>
<th>Germany</th>
<th>UK</th>
<th>USA</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Potatoes</td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
</tr>
<tr>
<td>Growth rates</td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
</tr>
<tr>
<td>Size of import quantity</td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
</tr>
<tr>
<td>Size/nature of players &amp; their growth</td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
<td><img src="image" alt="High Potential" /></td>
</tr>
</tbody>
</table>

- Frozen Potatoes
- Frozen Beans
- Frozen Peas
- Frozen Sweet Corn
- Frozen Spinach
- Frozen Mix Vegetables
### 12.2.2 PRIMARY RESEARCH OUTCOME

The **primary research** resulted in selection of four key frozen products with potential of exports from India; namely,

- **Frozen Peas**
- **Frozen Beans**
- **Frozen Mix Vegetables**
- **Other Frozen Vegetables**
12.3 **COUNTRY WISE ENTRY STRATEGY**

12.3.1 **BELGIUM**

12.3.1.1 **PRODUCT POTENTIAL ANALYSIS**

The evaluation parameters used for analyzing the products with exports potential to Belgium are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Products</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>EU countries dominate and import quantities are declining</td>
<td>France, United Kingdom, Netherlands, Poland, Germany</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Growth in import quantities registered</td>
<td>France, China, Netherlands, Germany, Hungary</td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>EU countries dominate and import quantities are declining</td>
<td>France, Netherlands, Germany, Portugal, Spain</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>Import quantity increasing across main exporters</td>
<td>France, Spain, Netherlands, Poland, Turkey</td>
</tr>
</tbody>
</table>

As can be noted above, of the four categories identified from primary research, Frozen Peas and Frozen Vegetables have a certain potential in Belgium. These 2 categories have posted extremely healthy growth rates and China is one of the players who exports to Belgium. Apart from these four short listed categories there is potential in the Frozen Potatoes category as well, as per our secondary research.

12.3.1.2 **PRICING STRATEGY**

Currently India exports only Frozen Mix Vegetables to Belgium. Although on comparing the FOB prices India appears to be highly competitive in the Frozen Mix vegetables category, still this category has very low potential because of the other factors like product variety, lead time and product quality.

In the other categories, if India has to be competitive it needs to keep its prices lower than those of the competitors. Apeda can assist the exporters by providing them with various subsidies.
<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>49.82</td>
<td>37.82</td>
</tr>
<tr>
<td>Frozen Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>115.22</td>
<td>45.22</td>
</tr>
<tr>
<td>China</td>
<td>31.78</td>
<td>19.78</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>38.6</td>
<td>36.6</td>
</tr>
<tr>
<td>China</td>
<td>55.45</td>
<td>43.45</td>
</tr>
<tr>
<td>Ecuador</td>
<td>53.76</td>
<td>47.76</td>
</tr>
<tr>
<td>Frozen Mixed Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cameron</td>
<td>36.28</td>
<td>34.28</td>
</tr>
<tr>
<td>China</td>
<td>51.18</td>
<td>39.18</td>
</tr>
<tr>
<td>Congo</td>
<td>83.14</td>
<td>77.14</td>
</tr>
<tr>
<td>India</td>
<td>31.87</td>
<td>26.87</td>
</tr>
</tbody>
</table>

12.3.1.3 **MAKE OR BUY ANALYSIS**

The quality, packaging, marketing specifications and standards requirements for exports to Belgium are very stringent so the Indian exporters should form strategic alliances with International players and rent out the warehouse, cold storage facilities there.

12.3.1.4 **KEY FFV PLAYERS FOR POTENTIAL PARTNERSHIPS AND ALLIANCES**

**Key Importers in Belgium**
- Unilever
- McCain
- Findus

**Key Logistics Providers in Belgium**
- Soonius transport B.V.
- Seabrex/Ebrex
- Maersk

**Key Retailers in Belgium**
- Aldi
- Carrefour
- Colruyt
- Delhaize
12.3.2 FRANCE

12.3.2.1 PRODUCT POTENTIAL ANALYSIS

The evaluation parameters used for analyzing the products with exports potential to France are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Products</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>Belgium dominates the exports and the</td>
<td>Belgium, Spain, Morocco,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>quantity being imported is decreasing</td>
<td>Kenya, Netherlands</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Belgium dominates the exports and the</td>
<td>Belgium, Spain, Germany,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>quantity being imported is decreasing</td>
<td>Netherlands, China</td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>Import quantities are declining &amp; other</td>
<td>Belgium, Spain, Germany,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EU countries are the key exporters</td>
<td>Italy, Netherlands</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>EU countries dominate the market</td>
<td>Belgium, Spain, Poland,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Netherlands, Portugal</td>
</tr>
</tbody>
</table>

Although, primary research has helped us identify these 4 product categories, but, according to the analysis of the secondary data, none of them seem to be a perfect fit, for India to export to France. This is partly due to the fact that, the French are not ready to trust processing that is not done in front of them. They have major quality issues. The possible solution to this problem would be set up warehouses and processing plants in France. The other fact is that some of the major retailers such as Carrefour and Auchan in France import most of their fruits and vegetables through Spain, primarily because the ports are more easily accessible and getting the customs clearance is also easier.

12.3.2.2 PRICING STRATEGY

In the Frozen Mixed Vegetables category and in the Other Frozen Vegetables, India is highly price competitive. The price of Indian goods is as low as 50% of the Chinese products that are being imported into France. Although the pricing is competitive, quality of the product is a more important concern for the French, which acts as a great
impediment to the entry of Indian products into France. In the other categories, if India has to be competitive it needs to keep its prices lower than those of the competitors. Apeda can assist the exporters by providing them with various subsidies.

<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>49.04</td>
<td>37.04</td>
</tr>
<tr>
<td>Peru</td>
<td>89.29</td>
<td>79.29</td>
</tr>
<tr>
<td>Kenya</td>
<td>93.84</td>
<td>93.84</td>
</tr>
<tr>
<td>Ecuador</td>
<td>75.93</td>
<td>69.93</td>
</tr>
<tr>
<td>Frozen Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>91.36</td>
<td>89.36</td>
</tr>
<tr>
<td>Kenya</td>
<td>124.01</td>
<td>121.01</td>
</tr>
<tr>
<td>China</td>
<td>82.92</td>
<td>70.92</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>48.5</td>
<td>46.5</td>
</tr>
<tr>
<td>China</td>
<td>87.91</td>
<td>75.91</td>
</tr>
<tr>
<td>Chile</td>
<td>120.57</td>
<td>60.57</td>
</tr>
<tr>
<td>India</td>
<td>24.98</td>
<td>22.98</td>
</tr>
<tr>
<td>Frozen Mixed Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morocco</td>
<td>62.26</td>
<td>60.26</td>
</tr>
<tr>
<td>China</td>
<td>84.32</td>
<td>72.32</td>
</tr>
<tr>
<td>India</td>
<td>38.69</td>
<td>35.69</td>
</tr>
</tbody>
</table>

12.3.2.3 MAKE OR BUY ANALYSIS

- Research findings show that the French companies would prefer the Indian exporters to have a processing and a DC facility in France.
- So, in France it is suggested that the Indian exporters invest in their own processing facilities.
- An Investment of approximately Rs. 150 Crores, over a period of 3 years, would be required for setting up a processing facility & distribution centre in France.
- It would further be suggested that the Exporter own the equipment in the processing facility but outsource the DC operations initially.
- This would enable the exporter to attain the necessary know how and best practices, get the Company DC Managers trained on the right practices for a year and then subsequently, take over the operations from year 2 or year 3.
- It would also be advisable that the Indian exporter outsource the logistics operations in France. This would help them concentrate completely on the products and leave the logistics operations to an outsourced party.
12.3.2.4 Key FFV Players for Potential Partnerships and Alliances

Key Importers in France
- Nestle
- Unilever
- McCain
- Danone

Key Logistics Providers in France
- Soonius transport B.V.
- Seabrex/Ebrex
- Maersk

Key Retailers in France
- Auchan
- Carrefour
- E. Leclerc
- Intermarché
- Casino
12.3.3 GERMANY

12.3.3.1 PRODUCT POTENTIAL ANALYSIS

The evaluation parameters used for analyzing the products with exports potential to Germany are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Products</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>Belgium dominates and import quantities are declining</td>
<td>Belgium, Netherlands, France, Poland, China</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Import quantities are declining, but India has entered the market in 2005 which can grow further</td>
<td>China, Ecuador, USA, New Zealand, Mexico</td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>EU countries dominate &amp; imports are declining; India exported a small quantity in 2003 &amp; can re-attempt entry</td>
<td>Belgium, Netherlands, France, Denmark</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>Import market is large &amp; India's presence can be improved</td>
<td>Belgium, Poland, China, Spain, Netherlands</td>
</tr>
</tbody>
</table>

In Germany there is a huge re-export market. They also happen to be one of the biggest importers of fruits and vegetables in the European Union. Frozen Mix Vegetables and Other Frozen Vegetables categories are ripe for India to enter. In the other 2 categories the growth of import is following a negative trend; also, the imports are dominated by EU players, who enjoy the pleasure of proximity.

12.3.3.2 PRICING STRATEGY

India's Prices in most products are close to that of China. Although, China has a competitive advantage in terms of price, they are probably 9-10% cheaper than the Indian goods. In other Frozen Vegetables, India has a pricing advantage hence this category can be certainly explored.
In the other categories, if India has to be competitive it needs to keep its prices lower than those of the competitors. Apeda can assist the exporters by providing them with various subsidies.

<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>48.27</td>
<td>36.27</td>
</tr>
<tr>
<td>Frozen Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>42.26</td>
<td>30.26</td>
</tr>
<tr>
<td>India</td>
<td>40.33</td>
<td>43.33</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>51.02</td>
<td>39.02</td>
</tr>
<tr>
<td>Ecuador</td>
<td>54.2</td>
<td>48.2</td>
</tr>
<tr>
<td>Turkey</td>
<td>44.94</td>
<td>43.94</td>
</tr>
<tr>
<td>India</td>
<td>52.44</td>
<td>56.44</td>
</tr>
<tr>
<td>Frozen Mixed Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>57.36</td>
<td>45.36</td>
</tr>
</tbody>
</table>

**12.3.3.3 MAKE OR BUY ANALYSIS**

The quality, packaging, marketing specifications and standards requirements for exports to Germany are very stringent so the Indian exporters should form strategic alliances with International players and rent out the warehouse, cold storage facilities there.

**12.3.3.4 KEY FFV PLAYERS FOR POTENTIAL PARTNERSHIPS AND ALLIANCES**

**Key Importers in Germany**
- Unilever
- Bofrost
- Eismann
- McCain

**Key Logistics Providers in Germany**
- Soonius transport B.V.
- Seabrex/Ebrex
- Maersk

**Key Retailers in Germany**
- Metro
- Rewe
**12.3.4 United Kingdom**

**12.3.4.1 Product Potential Analysis**

The evaluation parameters used for analyzing the products with exports potential to United Kingdom are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Products</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>EU countries dominate and import quantities are declining; India exporting for past 3 years which could be expanded</td>
<td>Belgium, Netherlands, France, Guatemala, China</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Import quantities are increasing and India has exported in 2005, indicating further potential to expand</td>
<td>Belgium, France, New Zealand, Denmark, Netherlands</td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>Import quantities are declining, but India is present in this market which may be further expanded</td>
<td>Belgium, Germany, Netherlands, Ireland, China</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>Large quantities being imported and India has a presence that can be improved</td>
<td>Belgium, Spain, France, Poland, China</td>
</tr>
</tbody>
</table>

There is a huge demand for Indian Products in the United Kingdom, the import volumes are quite high and it has a descent growth rate as well. Above all, China is one of the important players in this market, which shows that distance is not really barrier to entering this market. Overall, there exists a potential for Indian exporters in all of the categories,
which needs to be exploited. India has been present in most of the categories in the recent past.

### 12.3.4.2 Pricing Strategy

In terms of cost competitiveness, it’s a very mixed bag for India. If we take a look at frozen beans, and other frozen vegetables, India is highly cost competitive. In fact; in more than one of these categories the cost is as low as 1/3rd of as that of India’s closest competing nations.

In the case of other frozen vegetables, although India is superior in terms of price offering when compared to its European counterparts, its pricing is higher than that of China.

In the remaining categories, if India has to be competitive it needs to keep its prices lower than those of the competitors. Apeda can assist the exporters by providing them with various subsidies.

<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frozen Peas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Newzealand</td>
<td>50.04</td>
<td>35.04</td>
</tr>
<tr>
<td>China</td>
<td>43</td>
<td>31</td>
</tr>
<tr>
<td>Peru</td>
<td>72.46</td>
<td>62.46</td>
</tr>
<tr>
<td><strong>Frozen Beans</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guatemala</td>
<td>65.23</td>
<td>59.23</td>
</tr>
<tr>
<td>China</td>
<td>64.57</td>
<td>52.57</td>
</tr>
<tr>
<td>India</td>
<td>20.68</td>
<td>18.68</td>
</tr>
<tr>
<td><strong>Other Frozen Vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>38.58</td>
<td>26.58</td>
</tr>
<tr>
<td>Turkey</td>
<td>36.08</td>
<td>34.08</td>
</tr>
<tr>
<td>Ecuador</td>
<td>57.41</td>
<td>51.41</td>
</tr>
<tr>
<td>India</td>
<td>45.43</td>
<td>47.43</td>
</tr>
<tr>
<td><strong>Frozen Mixed Vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>49.77</td>
<td>37.77</td>
</tr>
<tr>
<td>Thailand</td>
<td>234.86</td>
<td>134.86</td>
</tr>
<tr>
<td>India</td>
<td>84.33</td>
<td>78.33</td>
</tr>
</tbody>
</table>

### 12.3.4.3 Make or Buy Analysis

The quality, packaging, marketing specifications and standards requirements for exports to UK are very stringent so the Indian exporters should form strategic alliances with International players and rent out the warehouse, cold storage facilities there.
12.3.4.4 Key FFV Players for Potential Partnerships and Alliances

Key Importers in UK
- Unilever
- United Biscuits
- McCain
- GEEST

Key Logistics Providers in UK
- Eagle Global Logistics
- Maersk
- Seabrex/Ebrex
- Soonius Transport B.V.
- Christian Salvesen

Key Retailers in UK
- Tesco
- J Sainsbury
- Morrisons
- Sommerfield
12.3.5 United States of America

12.3.5.1 Product Potential Analysis

The evaluation parameters used for analyzing the products with exports potential to United States of America are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Products</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>Though there has been decline in the market, India has been exporting here &amp; it could be increased</td>
<td>Canada, China, Belgium-Luxemburg, France, Poland</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Exports from India to US have been witnessing a steady growth, indication more potential</td>
<td>Canada, China, Guatemala, Poland, New Zealand</td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>Increase in import quantities from all over the world including India</td>
<td>Mexico, Canada, Guatemala, China, Chile</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>India has been exporting on a continuous basis for the past 3 years, which could be expanded upon</td>
<td>Mexico, Canada, Guatemala, China, Ecuador</td>
</tr>
</tbody>
</table>

The general demand for fruits and vegetables in the US is very high and the growth rate is also fairly high. Due to the geographical positioning of US, distance becomes a constraint that almost everybody, except for the South American exporters, face. Hence, the players in Indian market are faced with almost similar barriers. The only differentiating factor is the Free Trade Agreements that many of the African and South American nations, not to mention Japan, hold with the US which provides them easier access to the American market.

12.3.5.2 Pricing Strategy

India is highly price competitive in almost all of the categories. This can be attributed to the fact that there is a strong supply chain and demand that exists between India and the US due to the large Indian population that is settled in the US. India possesses greater expertise on exports to the US. A fairly decent volume of trade has been prevalent between India and US since a very long time.
Indian products can be very competitive in the US market. This coupled with the fact that the US market is growing and the demand for Indian products is on the rise, increases the attractiveness of this market.

<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>40.22</td>
<td>38.22</td>
</tr>
<tr>
<td>China</td>
<td>48.07</td>
<td>43.07</td>
</tr>
<tr>
<td>Guatemala</td>
<td>62.44</td>
<td>59.94</td>
</tr>
<tr>
<td>India</td>
<td>77.38</td>
<td>67.38</td>
</tr>
<tr>
<td>Frozen Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>47.07</td>
<td>45.07</td>
</tr>
<tr>
<td>China</td>
<td>45.52</td>
<td>40.52</td>
</tr>
<tr>
<td>Belgium-Luxemborg</td>
<td>47.45</td>
<td>43.45</td>
</tr>
<tr>
<td>India</td>
<td>72.89</td>
<td>37.89</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>38.81</td>
<td>36.31</td>
</tr>
<tr>
<td>Canada</td>
<td>26.85</td>
<td>24.35</td>
</tr>
<tr>
<td>Guatemala</td>
<td>37.87</td>
<td>35.37</td>
</tr>
<tr>
<td>India</td>
<td>43.57</td>
<td>46.57</td>
</tr>
<tr>
<td>Frozen Mixed Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>51.11</td>
<td>48.61</td>
</tr>
<tr>
<td>Canada</td>
<td>40.46</td>
<td>37.96</td>
</tr>
<tr>
<td>Guatemala</td>
<td>46.39</td>
<td>43.89</td>
</tr>
<tr>
<td>India</td>
<td>36.28</td>
<td>38.28</td>
</tr>
</tbody>
</table>

**12.3.5.3 MAKE OR BUY ANALYSIS**

The quality, packaging, marketing specifications and standards requirements for exports to US are very stringent so the Indian exporters should form strategic alliances with International players and rent out the warehouse, cold storage facilities there.
12.3.5.4 **KEY FFV PLAYERS FOR POTENTIAL PARTNERSHIPS AND ALLIANCES**

**Key Importers in US**
- Birds Eye Foods Inc.
- ConAgra Foods Inc.
- Dean Foods Company
- Del Monte Foods
- H.J. Heinz
- Lamb Weston Inc.
- McCain Foods Inc.
- Green Giant
- Kraft Foods Inc.

**Key Logistics Providers in US**
- Maersk
- C.H. Robinson

**Key Retailers in US**
- ASDA Wal-Mart
- Kroger
- Costco
- Target
12.3.6 JAPAN

12.3.6.1 PRODUCT POTENTIAL ANALYSIS

The evaluation parameters used for analyzing the products with exports potential to Japan are:

- FFV Import Market Growth Rate
- Size of the import market
- Size/Nature of Players and their growth rate

<table>
<thead>
<tr>
<th>Japan</th>
<th>Potential</th>
<th>Why/Why Not?</th>
<th>Top Competitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Beans</td>
<td></td>
<td>Imports dominated by China</td>
<td>China, Thailand, USA, New Zealand,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Spain</td>
</tr>
<tr>
<td>Frozen Peas</td>
<td></td>
<td>Low quantity but potential exists as only 3</td>
<td>China, New Zealand, USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>countries exporting currently</td>
<td></td>
</tr>
<tr>
<td>Frozen Mix Vegetables</td>
<td></td>
<td>Import quantities are stagnant</td>
<td>China, USA, New Zealand, Mexico,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thailand</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td>Though India exported a small amount in 2005,</td>
<td>China, Ecuador, USA, New Zealand,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>this market is dominated by China and imports</td>
<td>Mexico</td>
</tr>
<tr>
<td></td>
<td></td>
<td>are in general falling from other countries</td>
<td></td>
</tr>
</tbody>
</table>

Frozen Peas is the only category that has been identified as a potential export category for India. This category does not have enough players catering to it which can be exploited. The volumes demanded are quite low. All the rest of the categories are dominated by China which gains an advantage due to its proximity. It becomes easier in terms of transportation lead times, freight costs, and warehousing.

12.3.6.2 PRICING STRATEGY

The pricing of the Indian products is competitive with respect to all other competitors except for China, which has a better pricing. India has a potential to enter this market, but will have to face a formidable challenge from China. In the long run, it would be essential to consolidate a strong supply chain and have partnerships with Japanese importers, in order to be successful in this market.
In the remaining categories, if India has to be competitive it needs to keep its prices lower than those of the competitors. Apeda can assist the exporters by providing them with various subsidies.

<table>
<thead>
<tr>
<th>Product Categories</th>
<th>CIF prices (Rs. per kg.)</th>
<th>FOB prices (Rs. per kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen Peas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>57.13</td>
<td>56.13</td>
</tr>
<tr>
<td>Newzealand</td>
<td>43.1</td>
<td>39.1</td>
</tr>
<tr>
<td>USA</td>
<td>50.5</td>
<td>46.5</td>
</tr>
<tr>
<td>Frozen Beans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>41.05</td>
<td>40.05</td>
</tr>
<tr>
<td>Thailand</td>
<td>51.79</td>
<td>48.79</td>
</tr>
<tr>
<td>USA</td>
<td>50.2</td>
<td>46.2</td>
</tr>
<tr>
<td>Other Frozen Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>53.06</td>
<td>52.06</td>
</tr>
<tr>
<td>Ecuador</td>
<td>82.59</td>
<td>76.59</td>
</tr>
<tr>
<td>USA</td>
<td>59.24</td>
<td>55.24</td>
</tr>
<tr>
<td>Frozen Mixed Vegetables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>79.48</td>
<td>78.48</td>
</tr>
<tr>
<td>USA</td>
<td>59.5</td>
<td>55.5</td>
</tr>
<tr>
<td>Newzealand</td>
<td>48.71</td>
<td>44.71</td>
</tr>
</tbody>
</table>

### 12.3.6.3 MAKE OR BUY ANALYSIS

The quality, packaging, marketing specifications and standards requirements for exports to Japan are very stringent so the Indian exporters should form strategic alliances with International players and rent out the warehouse, cold storage facilities there.

### 12.3.6.4 KEY FFV PLAYERS FOR POTENTIAL PARTNERSHIPS AND ALLIANCES

**Key Importers in US**

- Nichirei
- Ajinomoto
- Nichiro Gyogyo
- Snow Brand
- Kraft Foods Inc.

**Key Logistics Providers in US**

- NY Logistics
- OIA Logistics
Key Retailers in US
- U&Y Stores
- Aeon
- Daiei
- Takashimaya

12.3.7 SUMMARY

After analyzing the 6 top importers in the world we can conclude that US and UK offer the highest potentials for Indian frozen food imports. Both countries have large Indian populations and both of them are high on consumption and offer a growing market. These are 2 markets Indian exporters certainly need to exploit.

Europe is the biggest importer of fruits and vegetables in the whole world and this fact should not be overlooked. Countries such as Belgium and Germany offer fair potential in terms of exports and since they are amongst the biggest exporters in the world, one should certainly pay attention to them. Also, the European market lays strong emphasis on the quality of the product which makes it essential for the Indian products to concur with the standards set in order to be accepted. Quality is one of the reasons Indian products are not being accepted in France; it is a major concern for the French. China has a supply chain agreement charted out with the European Union, this investment that China has made in terms of not infrastructure and accords, allows for its exporters to have an upper hand, in terms of reduction of lead times and transit costs.

In Japan the growth of the market is not very strong. This combined with the fact that Japan has very strong ties with the US which inhibits competitors by giving preference to the American product make it highly unattractive. This coupled with the proximity of China to Japan makes it even more difficult for Indian exporters.

12.4 MAKE OR BUY ANALYSIS

12.4.1 INTRODUCTION

When any exporter looks forward to exporting a product abroad, the most difficult and complicated part of the process is the setting up of the supply chain. When laying down the supply chain it is essential to decide whether the exporter is going to rent the infrastructure required to set up the supply chain or is he/she going to acquire it. One of the components of the supply chain that the exporter must look at is the warehouse.
12.4.2 BENEFITS OF SETTING UP OWN INFRASTRUCTURE IN INDIA

- Cold Storage Infrastructure in India
  - There is no Exporter who has Pan India presence in cold storage
  - Most exporters cater to single product category hence, lack scale in handling multiple product categories
  - There are very few exporters who have humidity and temperature controlled reefer fleet.
  - Cost of outsourcing the operations to a 3rd party logistics is huge because there are very few shared facilities available.
  - Very few 3rd party logistics have services like vehicle tracking, real-time inventory management, break bulk and cross docking.
- There is no adherence to International standards and certifications amongst the existing exporters
- Since, there are strict quality norms for export of the products, the exporter should be involved right from production, processing and storage of products so that there is minimum contamination and no multiple handling of the products
- Attaining the know-how and skill sets in superior supply chain solutions can be a USP for the business
- Value added service handling will make the exporter as a partner of choice for Importers in Europe and USA

12.4.3 BENEFITS OF OUTSOURCING DC MANAGEMENT IN EUROPE/US/JAPAN

- There is an existing over-capacity of cold-storage space in target countries, due to which space is available at economical rates as against the huge cost incurred in setting up the infrastructure
- Familiarity with local conditions and adherence to legal necessitates
  - An already entrenched player will have all necessary legal & environmental clearances and administrative resources which may be expensive to set up till sufficient volumes can be commanded
  - It will help in a speedy and more effective implementation of the distribution services
- Manpower Management gets completely outsourced, resulting in benefits like
  - Minimum members on company’s payroll and thus, negligible company involvement in solving local labor and staff issues. (3rd party logistics liaise with labor contractors for the floor staff)
  - Ready Availability of Skilled and Trained Staff of the 3rd party logistics
• Gaining know how of Good Practices in Warehousing & Logistics, from the 3rd party logistics
• Familiarity of 3rd party logistics with Warehouse Management System, will help in speedy and more effective implementation
  o In case of absence of Warehouse Management System, 3rd party logistics (3 PL) have their own proprietary Warehouse Management System, which can be used by the client. This is charged separately
• Setting incentives / penalty against performance standards (like OTIF (On Time in Full), Stock Accuracy, Minimum Stock Damage and Losses etc.) will enhance control and consistently monitor performance.
• 3 PLs have set up Logistics centers across the continent, in various locations, which they are renting out to various companies at nominal rates for Shared or Exclusive service.
• Shared capacity enables LTL(Less than full load) distribution for better service.
• For Transport Management, 3 PLs provide value added services like Load Consolidation, Backhauls, Fleet Management and Vehicle Tracking.
• This would give the exporter a complete visibility in all stages of product flow

12.4.4 Advantages of Having Third Party Logistic Provider (3PL) in Europe/US/Japan
• Having a outsourced 3 PL in other countries is beneficial in a scenario, when a company
  o Wants to focus mainly on its core business, thus outsourcing the logistics and supply chain function to reliable exporters
  o Requires a large number of DCs, to be managed across various countries
  o Has ventured into a new business, with less know how about the operating procedures, (about distribution & warehousing) which can be imparted and managed by an experienced 3 PL
• There can be an alternative strategy i.e. to initially engage a 3 PL (with relevant experience) , attain the necessary know how, get the Company DC Managers trained on the good / right practices for a year and then subsequently , take over the operations
CHAPTER 13: COMPETITIVE ANALYSIS OF COUNTRIES EXPORTING FROZEN PRODUCTS

13.1 MAJOR EXPORTING NATIONS FOR FROZEN PRODUCTS

- China
- Bulgaria
- Canada
- Chile
- Guatemala
- Kenya
- Mexico
- Thailand
- New Zealand
- Indonesia
- Morocco
- USA
- Saudi Arabia
- EU
  - Belgium
  - France
  - Netherlands
  - Poland
  - Spain
  - Sweden
  - UK

13.2 POLICIES AND COMPETITIVE ADVANTAGES OF EXPORTING NATIONS

13.2.1 BULGARIA

Opportunities exist in the food processing sector, especially the fruit and vegetable area, for Bulgaria to compete in international markets, especially the European markets. Bulgaria already exports high quality processed fruits and vegetables to many European countries, with most products going to Germany, Italy, Greece and Austria. In 2000, zero-tariff quotas were negotiated with the E.U. for several processed products including tomatoes, cherries and plums.
By the year 2008 Bulgaria will be a part of the European Union; this implies that the EU already gives preferential treatment to the nation. Bulgaria has one of the highest export subsidies in the whole of Europe, although they have acceded to the WTO. They also impose many protective policies for which they have acquired an extension till 2007 from WTO.

Bulgaria has the highest level of direct foreign investment to GDP in the entire Central and Eastern European region, helping to defy a decline in the sector throughout the CEE region. Growing foreign investors' interest in the Bulgarian economy as a result of the country's macro-economic stabilization and the structural reform program of the Bulgarian government implemented over the last few years. According to data of the Foreign Investment Agency, 1997 and 1998 saw the highest growth of FDI to Bulgaria. 1997 and 1998 (preliminary data) investments accounted for 33.3% and 26.5% respectively. Investors' interest has been highest in the manufacturing sector, with investments in industry (the food processing industry included) reporting the highest share of 54.2% over the same period.

Subsidies worth €12.6m are to be distributed amongst organic farmers and food producers in Bulgaria, as the country looks to capitalise on the growing export market in the sector.

Bulgaria has signed trade agreements with the EU, CEFTA and EFTA; a free trade area has been established between Bulgaria and Turkey. FTA's with Morocco, Israel and Macedonia are to be soon finalised.

Some of the initiatives by the Bulgarian government are:

- Availability of external financial and technical assistance through EU pre-accession instruments; and through the USAID program.
- Improved access to the Single market of Bulgarian export goods with competitive advantages;
- Political stabilisation on the Balkans which increases intensity of regional trade and tourism;
- Formulation and implementation of consistent policies for rural development and increased government concerns about regional development issues;
- Access to the EU accumulated experience in rural development approaches and increased possibilities for exchange of experience and know-how.
The fore-mentioned facts put Bulgaria at a really advantageous position in terms of agro-trade. They have access to several aids; not only from the EU but also from the US. At present they have policies which protect their agricultural industry to a very great extent but that would have to go soon with their adherence to the WTO policies. Nevertheless they would always have the advantage of proximity with the European Union and also the advantage of being a part of international FTA’s. Considering the positions one can say that Bulgaria is poised for excellent growth in the future.

13.2.2 CHINA

China is one of the top exporters of Fruits and Vegetables in the world today. The reforms over the past one decade in the Chinese agricultural system have been able to facilitate this. Some of the reforms and intrinsic strengths have facilitated the trade that exists today:

- Farming is less land intensive and more labour intensive in China.

- Fruits and Vegetables by nature happen to be more labour intensive and less land intensive. The availability of cheap and abundant labour facilitates this type of farming in China.

- It has been widely believed that horticultural and livestock producers will profit from China’s WTO accession. The major reason is that fruits, vegetables, meat and poultry are labor intensive products for which China enjoys cost-competitiveness. However, potential does not necessarily translate into reality. To realize the possible gain much work needs to be done to improve standards and quality of the products.

- Encouraging the formation of rural enterprises, entrepreneurial communities that pooled resources and worked as a private organization to improve the price and distribution. This move pushed the agriculture of the country towards privatization of the farms. The Rural Enterprises are owned by the local governments or in some cases are privately owned. They make their own decisions on weather to allow FDI or not and the prices at which produce is to be sold. This has resulted in the improvement in productivity as well as better policy management as decentralization occurs.

- They produce high quality products for export which are in line with international rules or guidelines. In future, World Trade Organization (WTO) rules as well as
the international standards on organic farming will play an even more important role than today.

- The development of organic agriculture in China began with export-oriented production, closely linked with the international market.
- “Tight cooperation” is made between the company and farmers’ associations or cooperatives based on the agreement reached. The farmers’ association or cooperative is responsible for internal quality control and production organization. The company is in charge of purchasing the organic food at a higher price than the market price. For instance, Yaxiya in Tai An, Shandong province, specializing in organic vegetables, operates in this way. The relationship between the China Environmental Organic Food Company and producers is indirectly established in respect of organic farming methods and organic certification.

- The EU – China supply chain co-operation results in sharing of information between the 2 economies and a well integrated supply chain. This results in higher security levels on the container transport and less waiting for Chinese containers on the European ports.

- The current agricultural taxes and fees constitute a very heavy financial burden on farmers. In a pilot program to reform and reduce those taxes and fees by 20%, farmers are now paying 8.5% of their production value as uniform agricultural tax. Taking all factors into consideration, the current agricultural support level in China should be in the ranged of − 5% to − 10%.

- **Advantages that China had which had enjoyed till their accession to the WTO:**
  
  - Fixed rate of the Chinese currency; the Chinese currency rate was fixed in the past which created price distortion in the market. They have recently taken the first steps towards making it a floating currency.
  
  - High export subsidies and import tariffs; China had maintained imports tariffs as high as 74% in certain products since a very long time. This disallowed anybody from exporting to China and created an atmosphere free of competition for the Chinese farmers; at least within their country. They were also providing their farmers with high export subsidies.
Summary of import and export tariff equivalent in China, 2001–2020

<table>
<thead>
<tr>
<th>Item</th>
<th>Import tariff equivalent %</th>
<th>Export tariff equivalent %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Oilseed</td>
<td>85</td>
<td>4</td>
</tr>
<tr>
<td>Sugar</td>
<td>19</td>
<td>35</td>
</tr>
<tr>
<td>Horticulture</td>
<td>20</td>
<td>35</td>
</tr>
<tr>
<td>Pork and poultry</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Milk</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Processed food</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

* Source: CCAP. Similar assumptions were also used in van Tongeren and Huang (2004); Ianchovichina and Martin (2004).

- High percentage of Chinese horticultural exports goes to Japan and the Southeast Asian countries, where they enjoy the advantage of proximity.

China’s major fresh and frozen produce exports

<table>
<thead>
<tr>
<th>Item</th>
<th>Average value</th>
<th>Major markets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002-04</td>
<td></td>
</tr>
<tr>
<td></td>
<td>($ million)</td>
<td></td>
</tr>
<tr>
<td>Fresh fruit</td>
<td>405</td>
<td></td>
</tr>
<tr>
<td>Apples</td>
<td>211</td>
<td>ASEAN (56%), Russia (13%), European Union (12%)</td>
</tr>
<tr>
<td>Pears</td>
<td>77</td>
<td>ASEAN (56%), Russia (12%), Canada (7%)</td>
</tr>
<tr>
<td>Tangerines</td>
<td>65</td>
<td>ASEAN (70%), Russia (12%), Canada (10%)</td>
</tr>
<tr>
<td>Oranges</td>
<td>8</td>
<td>Hong Kong (65%), ASEAN (26%)</td>
</tr>
<tr>
<td>Fresh vegetables</td>
<td>843</td>
<td>ASEAN (39%), European Union (7%), U.S. (7%), South Korea (4%)</td>
</tr>
<tr>
<td>Garlic</td>
<td>373</td>
<td>ASEAN (39%), European Union (7%), U.S. (7%), South Korea (4%)</td>
</tr>
<tr>
<td>Mushrooms</td>
<td>108</td>
<td>Japan (84%), European Union (8%), U.S. (4%)</td>
</tr>
<tr>
<td>Onions</td>
<td>73</td>
<td>Japan (51%), Russia (26%), ASEAN (15%), South Korea (5%)</td>
</tr>
<tr>
<td>Carrots</td>
<td>46</td>
<td>Japan (27%), South Korea (23%), Hong Kong (21%)</td>
</tr>
<tr>
<td>Radishes</td>
<td>43</td>
<td>Japan (63%), South Korea (32%)</td>
</tr>
</tbody>
</table>

Because of data unavailability, the Association of Southeast Asian Nations (ASEAN) here includes only Myanmar, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

Source: USDA, Foreign Agricultural Service, Global Agricultural Trade System.
• One important means of increasing food production in the future will be through increased investment in farm technology and agricultural research and development (R&D). Many studies have suggested that R&D has played an important role in raising China’s grain output. The Chinese government has also set up many institutions to study the effect of policies as well scientific innovations on the productivity as well as sustainability of agricultural production.

13.2.3 CANADA

Canada is the world’s third largest exporter of agri-food products, after the US and EU, accounting for 3.5 per cent of world exports. Canada’s exports to the US increased dramatically in recent years and accounts for over 60 per cent of Canada’s agri-food exports. The US is particularly important for consumer-oriented and intermediate exports, as 76 per cent of these exports are destined for the US market.

Advances in technology and farming practices have contributed to a consolidation of farms. Over time, there has been a trend towards significantly larger farms. Yet, 98 per cent of all farms are still family operations.

Canada along with the US and Mexico is a part of the North American Free Trade Area (NAFTA), which explains the high levels of trade between these countries. Market integration has taken hold in North American agriculture. Agricultural trade among the NAFTA countries has grown across a broad range of products, new cross-border investments have taken place in the region’s processed food industry, and supply chains and productive activities across international borders have undergone restructuring.

This trade consists of not only final consumer products but also intermediate inputs and raw materials, as firms reorganize their activities around regional markets for both inputs and outputs, spurred in part by greater foreign direct investment (FDI). In addition, decision makers in both the government and private sector pursue a course of greater institutional and policy cooperation and coordination to encourage market integration.

Trade expansion is related to increased consumption of fresh produce, particularly in Canada and the U.S., on both seasonal and aggregate levels. Private sector negotiates reference-price agreements to secure suspensions of key antidumping cases.

A High degree of integration exists between the US and Canada in terms of Fruit and vegetable exports. Canadian consumers now have tariff- and quota-free access to full
range of U.S. produce. Canada has emerged as an important supplier of tomatoes, cucumbers, and peppers to the U.S., in addition to fresh and frozen potatoes.

U.S. firms undertake most of the FDI in the North American processed food sector. In 2003, the stock of U.S. direct investment in the Canadian U.S. $4.3 billion

Canada has a Free Trade Area with Israel as well. They also have agreements on trade of agricultural products with the European Union. This helps them in pushing their produce in these countries substantially more easily.

Through the Agricultural Policy Framework, Canada has crafted new approaches to food safety and food quality, the environment, science's role in agriculture, and the overall reinvigoration of the agricultural sector. Their high exports numbers are by the virtue of their adherence to the NAFTA.

13.2.4 CHILE

Fresh fruit leads Chile's export mix - Chile emerges as major supplier of fresh fruit to world market due to ample natural resources, consumer demand for fresh fruit during winter season in U.S. and Europe, and incentives in agricultural policies of Chilean government, encouraging trend toward diversification of exports and development of non-traditional crops.

Chile's emergence as a supplier of fresh fruit to the world market reflects a trend among Latin American exporters toward sales of horticultural products in order to diversify agriculture, provide employment, and generate foreign exchange. In recent years, developing economies of Latin America have encouraged agricultural exporters to diversify through a variety of incentives. These include exemption from export taxes, and tariffs on inputs granted to producers of non-traditional products.

A price band mechanism provides protection for some importable agricultural products, while exportables are priced at world levels even in the domestic market. As a result, a dualism seems to have developed in Chilean agriculture, whereby producers of exportables are continually striving to enhance productivity and improve quality in order to maintain their place in the international market and gain access to new markets, while the less productive importables sector lags behind.

Chile began to liberalize its trade in the middle of the seventies, and continued to extend the process over the next two decades, strengthening its international ties through
multilateral and bilateral agreements. At the same time, it's pursued its unilateral efforts to open up the economy through tariff reductions and a uniform tariff, currently 11 per cent ad valorem.

Chile's trade relations have become increasingly focused on the negotiation of bilateral trade agreements, with Canada and Mexico (in the absence of full NAFTA membership), and also with Colombia, Ecuador, Venezuela and MERCOSUR. A framework agreement with the EU is under negotiation. In pursuit of regional goals, Chile has a clear preference for concluding free-trade agreements that do not inhibit its own freedom to undertake further unilateral reforms. Chile is also active in APEC; its interpretation of the "open regionalism" principle is that it leaves open the option of further unilateral reforms, rather than MFN application of measures agreed within the region.

Chile maintains and has continued to develop an open and transparent trade policy for goods and services, coupled with a comparable investment regime. The legal and institutional system favors foreign investment, a fact which, together with the country's political and macroeconomic stability, accounts for the average annual growth rate in investment flows into the country of some 34 per cent.

Chile embarked on the process of economic liberalization very early. They understood the fact that they needed to open up their markets to facilitate greater trade. Along with this Chile has pursued an agenda of working in partnership by being part of bilateral and multi-lateral trade agreements. They have understood that they possess the advantage of being in the southern hemisphere which helps the country makes sales during the northern winters and have successfully been able to exploit the fact. This along with the investment made in the sector and efforts made have resulted in their leadership in fruit exports.

13.2.5 GUATEMALA

The United States is Guatemala's most important trading partner, being the market for 36% of Guatemalan exports and the source of 40% of its imports. Other important trading partners are other members of the Central American Common Market, the European Union, and Mexico. Tariff reductions under preferential agreements have contributed to improved access to the Guatemalan market for partners. Duty-free access is offered to most imports from the Central American Common Market. Preferential tariffs are also offered to Mexico under a bilateral free-trade agreement, and to Colombia, Cuba, Panama, and Venezuela.
Guatemala has increasingly participated in preferential trade arrangements; the Central American Common Market is at the centre of its regional trade relations. Guatemala has a Free Trade Agreement (FTA) with Mexico, now supported by new initiatives for closer physical integration between the two and with other countries in the region. Negotiations for FTAs with Canada, Chile, the Dominican Republic, and Panama have been concluded; the Agreement with the Dominican Republic is also in process. They are in talks with El Salvador, Honduras, and Nicaragua on the formation of a customs union, and an agreement on trade in services and investment are under way. Guatemala also has Partial Scope Agreements with Colombia, Cuba, and Venezuela, and participates in the negotiating groups of the Free Trade Area of the Americas.

Legislation on free-trade zones and maquila enterprises constitute Guatemala's main instruments for export promotion. Pursuant to these arrangements, exporting enterprises may, under certain conditions, benefit from exemptions from import duties and various internal taxes. Guatemala does not make use of official export credits or insurance programmes to promote exports.

Guatemala's special fiscal arrangements for free trade zones and maquila enterprises appear to have favoured particularly the production of various non-traditional goods, although no precise estimates exist. These goods comprise agricultural products such as cut flowers and specialty vegetables, fishery products such as shrimps, and manufactures, in particular textiles and apparel. As foreign trade under these special arrangements is not recorded, actual exports in these sectors as well as imports of necessary inputs may be underestimated in official trade statistics.

13.2.6 INDONESIA

The removal of trade restrictions is at the centre of Indonesia's current reform process. Besides the tariff reduction programme, Indonesia has undertaken to remove all non-tariff barriers and export restrictions not justified on health, safety or environmental grounds.

Applied MFN tariffs have been reduced from an un-weighted average of about 20% in 1994 to 9.5% in 1998. Further unilateral tariff cuts are scheduled up to 2003 in accordance with a clearly defined programme of tariff reduction. By 2003, the maximum applied tariffs for nearly all products were reduced to not exceed 10%. Already in 1998, tariffs on food items have been reduced to a maximum of 5%.

In addition, Indonesia has implemented its commitments under the ASEAN Free Trade Area (AFTA), Asia–Pacific Economic Cooperation (APEC) and the WTO.
Agriculture is relatively important to the Indonesian economy, employing 45 per cent of the labour force but producing only 17 per cent of national output (Banerjee and Siregar, 2002). Agricultural bound tariffs are very high, around 65 per cent in trade-weighted terms, and significantly exceed applied tariffs, which average 7 per cent before the recent increases in sugar and rice. There are high applied tariffs on rice (now around 30 per cent), meat (around 20 per cent), bananas (20 per cent), skimmed milk powder (25 per cent), tomatoes (25 per cent) and roasted coffee (25 per cent) (UNCTAD, 2003a). Because bound tariffs are often more than twice the applied levels, negotiated reductions of 50 per cent or less are likely to have little economic impact in the agricultural sector.

Under ASEAN plus one agreements ASEAN has entered into of late attempts to adopt a similar “best practices structure”. The beginning is always an umbrella comprehensive partnership agreement which by definition is “comprehensive” in that it covers goods, services, investment, rules, competition policy, customs and trade facilitation, standards and also most importantly economic and technical cooperation. This is the “new age” agreement, and is based on recent experience and one could say on the three pillars of APEC.

Other important features of the ASEAN plus one agreement worth noting are:

- Starting with an FTA in goods including an early harvest component which provides quick benefits to ensure continued support;
- Comprehensive coverage (90 percent normal track, 10 percent sensitive track);
- Ambition: target of elimination of tariffs;
- Standardized rules: simple rules of origin based on 40 percent ASEAN cumulative content;

Indonesia is looking at reducing the trade barriers that exist in adherence with the WTO requirements. They are also looking carefully at their trading partners and trying to come up with strategic alliances with nations to promote trade. Indonesia for several years has been under very conservative policies and when they began to open up their economies, the Asian financial crisis and then followed by the avian flu epidemic and then the tsunami thwarted the possibilities of trade. But in the near future they are going to be on the path of growth and prosperity.
13.2.7 **Kenya**

Kenyan horticulture has become prominent in recent years, and is now the third leading agricultural export, following tea and coffee. Fresh produce accounted for about 30% of horticultural exports, and included green beans, onions, cabbages, snow peas, avocados, mangoes, and passion fruit. Flowers exported include roses, carnations, statice, astromeria, and lilies.

Seventy percent of Kenya’s merchandise exports are agricultural; and 33 percent of manufacturing sector output is based on agricultural products (Pearson 1995). Because of agriculture’s contribution to total output and employment, for sometime to come, attempts to improve living standards must give particular attention to increased incomes and productivity in the agricultural sector. Enhancement of agricultural productivity is thus an important condition in alleviating rural poverty, and increasing household food security and stimulating growth in non-farm activities. Unfortunately, there is limited household-level information available in Kenya to allow planners, policy makers and donors to make a comprehensive assessment of the factors that determine agricultural productivity in Kenya.

Kenya’s agricultural policy aims to ensure food security, defined to include self-sufficiency in main foodstuffs. To this end, Kenya has frequently changed its foreign trade regime for agricultural products and its agricultural reforms have often been reversed. Almost all the marketing boards – there is at least one board for each major crop – are still in operation, albeit with relatively limited powers. Producer prices are still set and floor prices maintained by the boards for certain crops (e.g. rice, maize, pyrethrum, bixa, cashew nuts, and milk) because of their dominant position or under their statutory powers. The liberalization of marketing functions, while producer prices for certain crops are still set at low levels by boards, has encouraged exports of unprocessed commodities.

Kenya’s export earnings, continues to be generated mainly from exports of primary agricultural products including coffee, tea and horticulture. Food and beverages contributed 57.4 per cent of the total export earnings.

Export Processing Zones are coordinated by the Export Processing Zones Authority (EPZA). A number of EPZ’s have already been established. Enterprises operating in export processing zones in Kenya enjoy the following benefits:

- a two years tax holiday and a float 25% tax for the next 10 years;
- Exemption from all withholding taxes on dividends and other payments to non-residents during the first 10 years;
- Exemption from import duties on machinery raw materials and intermediate inputs;
- No restriction on management or technical arrangement;
- Exemption from stamp duty; and
- Exemption from VAT and operate on one license only.

Linking small farmers to high-value urban and export markets is an important strategy for raising rural incomes and reducing poverty. Such a strategy may also be critical for maintaining export competitiveness, at least for some labor-intensive crops that require careful husbandry. Government should avoid counterproductive attempts to impose cooperative production, contract farming, nucleus estate production, or any other specific marketing system. Efficient market institutions should evolve out of experiments with different forms. The government can facilitate linkages between farmers and exporters or other buyers by helping to organize farmer groups, establishing ground rules for farmer-buyer contracts, disseminating lessons learned from successful contract schemes, establishing small-claims courts to address contract disputes, gathering and disseminating information about the past performance of buyers and farmers, and providing certification services to reduce the transaction costs faced by buyers trying to purchase from many small farmers.

Although disputes in contract farming arrangements will never be avoided completely, the experience of Kenya indicates that the government may have a role in enforcing contracts between buyers and growers, or at least in mediating the disputes between them. Developing new institutional arrangements that would facilitate the enforcement of contracts would contribute significantly to more widespread use of contract farming and would expand the participation of small farmers in high-value horticultural production and export.

13.2.8 Mexico

Mexico gets excellent market access as a result of being a part of the NAFTA. It gives them access to the whole of North America. Along with this they also have bilateral agreements with Argentina covering the field of agriculture and are in the process of becoming a part of the Mercosur (Argentina, Uruguay, and Paraguay).
As a result of being a part of the NAFTA there has a great deal of investment from FDI’s which has come into the country especially in the food processing industry. U.S. firms undertake most of the FDI in the North American processed food sector. In 2003, the stock of U.S. direct investment in the Mexican food industries equaled U.S. $1.7 billion. The country itself has many programs for agro-finance; that have been made available to farmers in order to promote agriculture.

Mexico is the principal US foreign supplier of fresh vegetables (65% of US fresh vegetable import value in 2004), exporting most products during the winter when US supply is inadequate. This seasonality has an added advantage for Mexico, since their exports get a major boost, and the proximity lets them be competitive in the US market.

There is a high degree of integration regarding Mexican producers and the U.S. market and Mexico now tying to promote exports of non-traditional produce.

Mexican exports to the United States of frozen concentrated orange juice, sugar, and peanuts and U.S. exports to Mexico of corn, dried beans, and nonfat dry milk. Mexico and the United States also have the option to apply temporary safeguards on bilateral trade in selected agricultural products until 2008.

Even closer integration of the North American fruit and vegetable market is possible, particularly with respect to Mexico. U.S. exporters, who have already had some success in the Mexican market, are likely to experience additional benefits from their close ties to supermarket chains operating in Mexico. Rapid expansion of the Mexican supermarket sector is changing the way in which food is produced, marketed, and sold there, resulting in a supply system that is more closely connected with the United States.

To take full advantage of the integrated continental market, the Mexican Government has engaged in a series of institution-building activities related to fruits and vegetables. First, it has created the brand “Mexico Calidad Suprema” (Supreme Quality) to identify agricultural and food products of exceptional quality. This brand distinguishes qualifying Mexican products not only in foreign markets but also in the domestic market, particularly in supermarkets where labeled products are more likely to be sold. Second, the Government has established a voluntary quality certification program for agri-food products to minimize disputes among buyers and sellers and to ensure that the sale price reflects the quality of the product. Third, under the banner of “MexBest,” the Mexican Government and private sector are working together to promote Mexican agri-food products of export quality at agricultural expositions and conferences. Fourth, the
Government is promoting nontraditional fruit and vegetable exports, such as litchis, maracuyás, artichokes, chayote, huanzontle, huitlacoche, mushrooms, nopal, and okra.

Mexico’s reforms are part of a continuing effort to implement agricultural supports similar to those found in the developed economies, while still addressing the needs and wants of smaller producers who are less commercially oriented.

Through the exploitation of the trade agreements that Mexico has with the rest of American continent and also the advantage of proximity that it enjoys Mexico has been able to capture a good share in the North American markets for its produce. They have also made extensive investments in quality initiatives and also have received great amount of support from US in terms of FDI to undertake such initiatives. All of these points along with the advantage of having good weather in winters when their produce is in demand in the US; this has resulted in good exports for this nation.

### 13.2.9 Morocco

The Euro-Mediterranean Free Trade Area can only be established if more bilateral and regional agreements are concluded between the Mediterranean countries, and if existing free trade agreements are upgraded. These free trade agreements will also enable the implementation of the Pan Euro Med accumulation of origin, a system which presupposes the existence of preferential relations between the partners involved.

Both the crucial importance of the agricultural sector in the economic structure of the Mediterranean countries and its weight in their trade with the EU suggest substantial gains from increased opening. Agriculture is already subject to tariff dismantling schedules in all Association Agreements, and a large part of Mediterranean agricultural exports can already enter the EU market duty free.

In 2003, official development assistance (ODA) to Morocco declined by about 6% as compared to the previous year ($316 million vs. $336 million). Grants represented about 72% of the total. The main characteristic of ODA this year is a significant shift from macro-economic to infrastructure aspects, including roads, ports, railroads, telecommunications, airports, hydro-electricity and irrigation. Assistance to social sectors stabilized at about one third of total ODA. The European Union provided almost half (48.9%) of the foreign assistance. In 2003, USAID was the second bilateral donor, on a par with Germany (4.5%) and behind France (21.6%). Coordination among donors has improved somewhat in 2004, with impetus from multilateral and bilateral donors, including USAID. Channels for exchange of information and sector coordination have been
established and the host country government is engaged and playing an increased role in the process.

Moroccan exports have been benefiting from the fact that there have been several aids provided to them from the part of the Americans and the European Union. Also the fact they have close proximity to the mainland of Europe aids the export since the markup on the price of the product is a lot less. They do not have a highly developed agriculture industry and probably would not be able to sustain their growth and leadership.

13.2.10 NEW ZEALAND

New Zealand's economy has traditionally been based on a foundation of exports from its very efficient agricultural system. Leading agricultural exports include meat, dairy products, forest products, fruit and vegetables, fish, and wool. New Zealand was a direct beneficiary of many of the reforms achieved under the Uruguay Round of trade negotiations, with agriculture in general and the dairy sector in particular enjoying many new trade opportunities in the long term.

Horticulture NZ (a governmental body to overlook the horticultural production of the country) will continue to build on the industry's accomplishments to date, which include:

- Favorable changes to regional and district plans as a result of submissions and appeals.
- Improvements to increase the supply of seasonal labor including establishing www.picknz.co.nz to provide local and international job seekers with information on how and where they can work in the industry.
- Successful lobbying for improved border security with 100% screening of all luggage and improvements in inspection of containers.
- A much greater understanding of and focus on the trade issues facing horticulture by New Zealand's trade representatives.
- A very positive outcome for the horticulture industry in negotiation of the Thai trade agreement.
- The promotion of careers in horticulture and the coordination of horticultural education and training.
- Submissions on environmental issues such as carbon tax, disposal of on farm plastics, water management and quality, and agrichemical use.
- Environmental best practice in growing methods with the establishment of the GROWSAFE and Fresh Produce Approved Supplier Programme.
Therefore through the various state initiatives to promote agriculture and especially horticulture the export of horticultural products has been promoted. The government understands the importance of the agriculture to the development of their economy and recognizes the potential to earn through the export of agriculture as well. All of these factors along with the favorable terms that New Zealand has with the western world and the proximity to the eastern serves as a favorable factor with regards to horticultural trade.

13.2.11 SAUDI ARABIA

Saudi Arabia also has more than 2/3 of their irrigated areas equipped with modern systems, particularly central pivots. The country is supporting domestic production through direct government subsidies and high producer prices.

Saudi Arabia relies heavily on subsidies, both operational and investment, to irrigation water. In Saudi Arabia water is provided to farmers at zero cost. Removal or reduction of such subsidy is a very delicate social and political issue in almost all countries of the Region.

In an open-market system, with free entry and exist, the price is a rationing device i.e. getting prices right. Therefore, if prices are artificially low, the actual cost for consumers is reduced and their effective demand increase.

Agricultural subsidies were dramatically curtailed in the early 1990s and have been reduced in recent budgets, in line with the government’s deficit reduction plans and its goal to reduce water consumption.

Restrictions on shelf life labeling standards in Saudi Arabia may make it difficult for some U.S. food producers to compete in the Saudi market. In July 2000 Saudi Arabia announced a ban on all genetically modified (GMO) food products. If a product contains one or more genetically modified and plant ingredients, the information is supposed to be clearly communicated to the consumer in the required label. The Minister also required that GMO imports must be accompanied by a certificate issued by the producing country stating that the product was approved for consumption in the country of origin.

Saudi Arabia receives a lot of aids in terms of money as well as technology from the US. They are one of the few nations to have mastered the use of drip irrigation for the growth of vegetables in the Middle East. This helps them utilize the one resource that they are
short of; Water, very well. Along with this the tariffs and ban on imports and the support that they provide to their farmers in terms of high market prices ensures the success of the country’s agriculture.

13.2.12 THAILAND

Around 41% of Thailand’s labor force is employed in agriculture. It also explains that the agricultural sector is characterized by small and fragmented land holdings, and by modest technological inputs. The agricultural sector in Thailand is thus much more vulnerable than New Zealand’s agricultural sector. While the development of new markets for agricultural exports is important for Thai farmers, it is also important that the Thai government should be able to take steps to protect its farmers. The devastating impact of avian influenza on the Thai poultry industry is a good example of the vulnerability of farmers in developing countries to natural disasters and other external shocks.

The national seven-year plans to position Thailand as a regional biotechnology hub, with the goal of promoting the emergence of more than 100 new Thailand-based biotechnology companies.

Monsanto has coached Thai government scientists in the processes used in certain genetic-engineering techniques, particularly for GM corn. The U.S. government has also provided indirect financial support to Thailand’s biotechnology drive, particularly through aid earmarked to help the government develop the regulatory and legal framework to patent, protect and export GM products.

But critics warn that a full embrace of GMO technology could shut down important export markets for Thailand, and might have a negative impact on the environment and human health.

Scientists and food-industry executives are waiting to see exactly how big food exporters like Thailand, the world’s largest rice producer and exporter, reconcile the potential risks and rewards of GMO’s.

Thailand is a member of the ASEAN Free Trade Area (AFTA) which is comprised of the ten member countries of ASEAN where tariff rates on 99.5% of goods have been lowered to between 0-5 percent among the original six member countries. In order for US companies to remain competitive in Thailand's attractive market, and in lieu of a
multilateral, comprehensive WTO Agreement, the US must aggressively pursue a liberalizing, comprehensive, WTO consistent bilateral trade agreement with Thailand.

Thailand maintains programs to support trade in certain manufactured products and processed agricultural products, which may constitute export subsidies. These include various tax benefits, import duty reductions, credit at below-market rates on some government-to-government sales of Thai rice (established on a case-by-case basis), and preferential financing for exporters. The Thai government terminated its packing credit program in compliance with WTO commitments but received an extension of its WTO exemption period for the Industrial Estate Authority of Thailand and the Board of Investment until December 2005. Low interest loans provided under the Export Market Diversification Promotion Program for exporters targeting new markets ended in December 2003.

Thus, Thai exports depend highly upon the use of GMO crops, which is not a very good feature. Also with the compliance of Thailand with the WTO their agricultural industry will not be as competitive as it is today. They however have the advantage of being a part of AFTA and this might help them promote their cause in Asia.

13.2.13 USA

When we take a look at the strategy adopted by America to promote their exports and grow their export markets, it is impossible not to notice that USA has bilateral or multilateral tie-up’s with almost all of the nations of the world through the several pacts that it is a part of. Listed below are the various trade ties that the country has:

- Free Trade Agreement of the Americas (FTAA)
- North American Free Trade Agreement (NAFTA)
- Central American-Dominican Republic-United States (CAFTA-DR)

**Free Trade Agreements**

- U.S.-Chile
- U.S.-India
- U.S.-Korea
- U.S.-European Union
- Trade With Cuba
- U.S.-Canada
- U.S.-South African Customs Union (SACU) Trade
These trade initiatives give US exporter’s preferential terms and conditions. In most of the cases US does not have to face the import restrictions that many of the other countries have to face. For instance in the case of the EU, USA has the advantage lower tariff rates (though still quite high) as compared to most of the world.

Also, through USAID, USA helps in the development of many of the developing as well as under-developed markets. This gives them complete and open access to all of these markets, which depend on their aids to survive.

Geographically USA is also very gifted with the highest arable land in the whole world. This fact results in them having one in every three acres in America being planted for exports. These give them a great deal of flexibility in terms of managing the produce in the country.

They are at the cutting edge of technology in terms of technology with research not only being carried out in the US but also in association with other countries such as India through their Agricultural knowledge initiative. The initiative aims at public-private partnerships, which will help to facilitate technology transfer, trade, and investment and bolster agricultural research, education, and extension. In pursuing these objectives, a critical component is cooperation on development of effective policy, regulatory, and institutional frameworks.

13.2.14 EU (BELGIUM, FRANCE, NETHERLANDS, POLAND, SWEDEN, SPAIN, UK)

The whole of the European Union is covered by a single agricultural policy named the Common Agricultural Policy (CAP). A regulations governing agriculture are covered by this law. The points that are covered under the CAP include:

The logos for Protected Designations of Origin and Protected Geographical Indications (PDO's and PGI's) both apply to agricultural products or foodstuffs with a strong link to a specific region or place. A product that carries the PGI logo has a specific characteristic or reputation associating it with a given area, and at least one stage in the production process is carried out in that area. Examples are “Clare Island Salmon”, “Arancia Rossa di Sicilia” and “Dortmunder Bier”.

Specific Policies that help to market the product
- Financial incentives available under rural development policy for farmers to improve product quality;
Specific encouragement for conversion to organic farming.

**Assistance is provided for farmers and others in rural areas, for such actions as:**

- Training in new farming techniques and rural crafts
- Assisting young farmers to set up on farms
- Using advisory services
- Farm/forestry investments
- Modernising farm buildings and machines
- Assisting farmers to meet demanding EU standards, e.g. environmental, animal welfare, and public health
- Helping establish food processing facilities on the farm so that farmers can earn more income from farm products by adding value to them
- Assistance in marketing farm products
- Improving product quality and marketing of quality products
- Setting up of producer groups in the new Member States
- Restoring damaged agricultural and forestry production potential
- Making additional improvements to animal welfare

Common Market Organizations (CMO) are sets of rules that govern the European Union's markets for given agricultural products, such as beef or cereals. There are currently 21 individual CMO's, but the Commission plans to replace them with a single one, with harmonised rules on intervention, import tariff quotas, export refunds, safeguard measures and state aids.

A number of sensitive sectors were left out of the 2003 reform, including sugar, wine, bananas and other fruits and vegetables. However, outdated rules, excessive production quotas and overly generous subsidies have encouraged uncompetitive farmers to produce huge surpluses, forcing the EU to spend fortunes on storage and transformation. Wine, bananas and fruit and vegetables are currently under discussion.

Europe is one of the economies that provide the most amount of subsidies to its farmers. It is essential for them to reduce this support according to the WTO. Their accession to the WTO has not really resulted in the decrease of these aids to their farmers (although the CAP professes that attempts are being made to do that).

As a result of the CAP most of the farms in Europe operate in the form of co-operatives which has a common goal. They are therefore able to farm more efficiently and co-
APEDA (Agricultural and Processed Food Products Exports Development Authority)

operatives have a greater bargaining power in the market due to their sheer size. The protection of their produce’s branding occurs through the POI clause; this implies for instance that Champagne can only come from France. Also, the farmers in EU are always up to date on the latest machinery or methods of farming to be used, which again is helpful in improving yields.

EU as a whole is also involved in many FTA’s and trade initiatives, as a result negotiations take place in the various trade blocks and the farmers from EU get better deals and are able to maintain their illegitimate advantages (in terms of subsidies and protection) again due to the sheer size of the EU economy.

13.3 COMPETITOR APPROACH SUMMARY

- **Large acreage** - The competitors use harvest combines for harvesting the produce hence making the produce lower in cost and fresh as well.
- **High Subsidies** - Lots of subsidies are given by competing country’s governments which make their products cost competitive.
- **Low Inland transportation cost** - Competing countries do not face the high Inland transportation cost as compared to the Indian exporters. For e.g. in case of exporting peas, since most of the peas are grown in Punjab and Uttar Pradesh it costs approximately Rs 5-6 per kg to bring the produce to Mumbai port. This makes the export option unprofitable and unviable.
- **Cheap raw material** - Raw material cost is quite cheap in the competing countries making the finished product cost competitive.
- **Image of the competing country is better as compared to India** - Image of India is quite poor as a food processor. Hence, Indian produce has few takers and it is looked upon as that of low quality.
- **Good varieties** – The competing countries grow varieties which ripen very fast.
- **Good packaging techniques** - Competitors have advanced packing techniques making the product attractive.
- **Huge investment in infrastructure** - The competitors have good infrastructure to support the seamless export.
- **World class processing plant** - The processing plants in competing countries have much more capacity as compared to the Indian plants.
- **Good quality** - The quality of certain products of the competitors is much better as compared to Indian product. For e.g. Thailand is known for its good quality pineapples.
CHAPTER 14: APEDA’S ROLE – TECHNOPAK RECOMMENDATIONS

14.1 APEDA’S ROLE – GAP ANALYSIS AND RECOMMENDATIONS

The Frozen Product Industry is defined by Innovation. Today the innovation continues as the category reinvents itself regularly. In international markets, Frozen products in retail and foodservice offer a stunning variety of options with ever-enhancing convenience, economy, flavor and nutrition, hence a great deal of R&D needs to be done in this area so that Indian Frozen products can develop great export potential.

APEDA can promote Indian Frozen Fruits & Vegetables exports through both back end and front end activities. In a nutshell the activities where APEDA can assist the Indian exporters, growers & manufacturers are:

- Assistance for Research & Development
- Assistance for Market Development
- Assistance for Infrastructure Development
- Assistance for Quality Development
- Assistance for Transport
- Assistance to Farmers

14.1.1 Assistance for Research & Development

14.1.1.1 Current activities by APEDA

The activities currently undertaken by APEDA for R&D assistance are

- Assistance to support Research & Development for export efforts through R&D organizations in Government sector. The Scale of Assistance is 100% under APEDA’s internal scheme

- Assist the exporters, trade associations, co-op institutions, to support relevant R&D for export enhancement through R&D organizations in co-op private sector. The Scale of Assistance is up to 50% of the total cost of the project subject to a ceiling of Rs. 10 lakhs

14.1.1.2 Gap Analysis & Recommendations

The Problem areas of Indian Exporters with respect to the R&D activities are
• Insufficient R&D activities to identify newer markets & product categories
• Insufficient R&D on the export products with less or no domestic potential

The International market however regularly has a demand for new & innovative product varieties & categories.

Thus to bridge the gap, **Technopak has the following recommendations for APEDA**

• Increase the grant for R&D on new product categories & varieties, value added products and the cultivation methods of categories with less domestic potential

• Increase the R&D focus on the ethnic ready to eat meals as this is one niche category where India can prove great potential

• Conduct research in target countries on the Frozen food products currently being consumed at the Indian restaurants there. Special emphasis can be given on the Indian ethnic ready to eat meals category

• Conduct research on the food service companies for the frozen products with potential. Indian exporters can then contact them for future alliances where in they can supply the desired frozen food products

14.1.2 Assistance for Market Development
14.1.2.1 Packaging
14.1.2.1.1 Current activities by APEDA

• Development of Packaging standards & design. The Scale of Assistance is 100% implementation by APEDA

• Assist exporters in use of packing materials as per standards. The Scale of Assistance is 30% subject to ceiling of Rs. 1.5 lakhs per beneficiary

• Assistance for purchase of ‘Intermediate Packaging Material’ for domestic transportation of produce. The Scale of Assistance is 30% subject to ceiling of Rs. 1.5 lakhs

14.1.2.1.2 Gap Analysis & Recommendations

The **problem area of Indian exporters** with regards to Packaging is that there is very low awareness about the International packaging standards.
The International market also holds a view that Indian Products are low on quality due to bad packaging.

Thus to bridge the gap, Technopak has the following recommendations for APEDA:

- Increase the scale of assistance & formulate training programs for the exporters, growers, & service providers, wherein all the players come on a common platform, through a symposium, with the International retailers and understand their requirements, specifications

- Invest in R&D for innovative packaging technologies so as to suit the international market demands and collaborate with international research institutes for the same

14.1.2.2 Market Feasibility Studies

14.1.2.2.1 Current activities by APEDA

- Development & dissemination of market information data base. The Scale of Assistance is 100% implementation by APEDA

- Assistance to exporters for conducting feasibility studies. The Scale of Assistance is 50% of the total cost subject to ceiling of Rs. 2 lakhs per beneficiary

- Assistance to Govt. & public sector for conducting feasibility studies. The Scale of Assistance is 50% of the total cost subject to ceiling of Rs. 10 lakhs per beneficiary

14.1.2.2.2 Gap Analysis & Recommendations

The Problem areas of Indian Exporters with respect to the R&D activities are

- Insufficient Market Intelligence, R&D activities to identify newer markets & product categories

- Lack of information flow in the value chain; farmers unaware of the market demands

The International market view suggests that Indian products low on Innovation & existing varieties in demand.
Thus to bridge the gap, Technopak has the following recommendations for APEDA:

- Increase the financial assistance to exporters for conducting market feasibility studies so that they can explore more opportunities in terms of large number of markets, different varieties, product categories and value added products.

- Organize workshops for farmers so that they are also informed on the market database.

14.1.2.3 Branding & Promotion

14.1.2.3.1 Current activities by APEDA

- Supply of publicity material, development of Website, advertisements, market promotion or fairs/events sponsored by APEDA. The Scale of Assistance is 100% implementation by APEDA.

- Publicity & promotion through product literature, publicity material by APEDA. The Scale of Assistance is 100% implementation by APEDA.

- Brand publicity through advertisements. The Scale of Assistance is 40% of the cost subject to a ceiling of Rs. 1 lac per beneficiary.

- Export promotion through buyer seller meets, delegations, expositions. The Scale of Assistance is 100% of the cost.

14.1.2.3.2 Gap Analysis & Recommendations

The problem area of Indian exporters mainly is that the marketing & promotional activities being done by APEDA are not sufficient.

The international market in general holds a very poor perception of the Indian products.

Thus to bridge the gap, Technopak has the following recommendations for APEDA:

- Partner with, or outsource branding & promotion to an International marketing firm to get a more suitable approach of international marketing customized as per target countries.

- Increase the grants allocated for branding.
• Explore the feasibility of sale promotion through International retailers & departmental stores

• Increase the participation of Indian export contingent in the trade fairs like AGRIBEX, AGF, ANUGA, and SIAL. Distributing the information about Indian exports in electronic form rather than product literatures

• Increase branding activities through online mediums and not just print

14.1.3 Assistance for Infrastructure Development

14.1.3.1 Current activities by APEDA

• Establishment of common by APEDA or any other Government or Public Sector agency. The Scale of Assistance is 100% grant in aid

• Assistance for purchase of specialized transport units for animal products, horticulture & floriculture. The Scale of Assistance is 25% of the cost subject to a ceiling of Rs. 2.5 lakhs per beneficiary

• Assistance to exporters, growers, cooperative organizations & federations for horticulture & floriculture sectors

• Mechanizations of harvest operations. The Scale of Assistance is 25% of the cost of equipments subject to a ceiling of Rs. 5 lakhs per beneficiary

• Setting up of sheds for intermediate storage & grading, storage, cleaning etc. The Scale of Assistance is 25% of the cost of equipment subject to a ceiling of Rs. 5 lakhs per beneficiary

• Setting up of mechanized handling facilities. The Scale of Assistance is 25% of the cost of equipment subject to a ceiling of Rs. 10 lakhs per beneficiary

• Setting up of pre cooling facilities & cold storage. The Scale of Assistance is 25% of the cost of equipment subject to a ceiling of Rs. 10 lakhs per beneficiary

• Providing facilities for pre shipment treatment. The Scale of Assistance is 25% of the cost of equipment subject to a ceiling of Rs. 10 lakhs per beneficiary
• Setting up of vapor heat treatment, irradiation facilities. The Scale of Assistance is 50% of the cost subject to a ceiling of Rs. 25 lakhs per beneficiary

• Assistance to set up environment control systems. The Scale of Assistance is 25% of the cost subject to a ceiling of Rs. 25 lakhs per beneficiary

• Setting up of specialized storage facilities. The Scale of Assistance is 25% of the cost subject to a ceiling of Rs. 10 lakhs per beneficiary

14.1.3.2 Gap Analysis & Recommendations

The main problem area of Indian exporters is lack of capital for setting up the infrastructure.

The International market holds the view that Indian partners should set up a warehouses in target countries to shorten the lead time. Also the International Retailers require the delivery at their warehouses.

Thus to bridge the gap, Technopak has the following recommendations for APEDA:

• Assist the FFV exporters to rent out or lease the warehouse facilities set up in target markets for the DTR initiative

• Increase the grants for setting up of specialized storage facilities so that the export produce maintains the requisite quality standards

• Give more assistance & grants for cold storage. This is one of the major problems of the Indian FFV exporters for e.g. Vadilal has 2 cold storage of 800 MT. They require additional 3000 MT that calls for an investment of 3 crores. Currently only 10 lakhs is given so increase the limit

• Give subsidized land to International aggregators as an incentive, for setting up facilities in the Special Economic Zones in India. The international aggregators would get an exposure of the Indian products, & their export potential
14.1.4 Assistance for Quality Development

14.1.4.1 Current activities by APEDA

- Assistance to exporters for setting up/strengthening laboratories. The Scale of Assistance is 50% of the total cost subject to a ceiling of Rs. 5 lakhs per beneficiary.

- Assistance to exporters for installing quality management, control & assurance systems, including the consultancy, certification & quality improvement for these. The Scale of Assistance is 50% of the cost subject to a ceiling of Rs. 2 lakhs per beneficiary for each system.

- Activities related to standardization & quality control such as preparation of quality manuals, up gradation & recognition of labs, certification of exporters, pesticide management program etc. The Scale of Assistance is 100% internal scheme of APEDA.

- Up gradation & recognition of labs for export testing. The Scale of Assistance is for up gradation up to 50% of the cost for private labs & up to 100% of the cost for Central/State govt. subject to a maximum of Rs. 50 lakhs.

- Testing of water, soil residues of pesticide, veterinary drugs, Hormones, toxins, contaminants in agri products. The Scale of Assistance is 50% of the cost of tests subject to a ceiling of Rs. 2000 per sample. Payment to be made to labs & not exporters.

- Assistance programme for study tours sponsored by APEDA abroad. The Scale of Assistance is 50% of the total travel cost & distribution of study material.

- Assistance to recognized associations of growers/exporters for organizing seminars, study tours within India & bringing out information literature. The Scale of Assistance is 50% of the total cost of workshop/seminar subject to a ceiling of Rs. 1 lakh for national and Rs. 2 lakhs for international seminars. For information literature, the assistance shall be 50% of the cost subject to a ceiling of Rs. 25,000. Assistance shall be available only to seminars approved by APEDA.

- Seminars organized by APEDA. The Scale of Assistance is 100% if organized by APEDA.
• Assistance to exporters, growers for upgradation of technical & managerial personnel through training in India, excluding the cost of travel. The Scale of Assistance is 50% of the total cost of approved training programme subject to Rs. 50,000 per beneficiary; 100% if organized by APEDA

14.1.4.2 Gap Analysis & Recommendations

The main problem that Indian exporters face is the difficulty in adhering to quality standards.

The International market holds the view that Indian products do not adhere to their stringent quality standards. Also, the International players require a complete traceability of the product.

Thus to bridge the gap, Technopak has the following recommendations for APEDA:

• Assist the exporters, growers for upgradation of technical & managerial personnel through international training & not just limit them to training in India
• Increase assistance for study tours abroad regarding management studies
• Provide more grants for setting up of quality testing laboratories so that more specialized equipments are used for stringent quality checking procedures, as per the international standards
• Create a brand to identify agricultural and food products of exceptional quality. This brand should distinguish Indian products not only in foreign markets but also in the domestic market, particularly in supermarkets where labeled products are more likely to be sold.
• The Government should establish a voluntary quality certification program for agri-food products to minimize disputes among buyers and sellers and to ensure that the sale price reflects the quality of the product.
• The Indian Government and private sector are working together to promote Indian agri-food products of export quality at agricultural expositions and conferences.
14.1.5 Transport related Assistance

14.1.5.1 Current activities by APEDA

The following TA rates are being followed by APEDA

**Specific TA rates for exports of eligible items by sea**

<table>
<thead>
<tr>
<th>Destination</th>
<th>Reefer Container</th>
<th>Non-reefer Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Africa</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Middle East</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>CIS Countries</td>
<td>6</td>
<td>1.25</td>
</tr>
<tr>
<td>Southeast Asia</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Fareast &amp; North Asia (incl. China &amp; Japan)</td>
<td>6</td>
<td>1.25</td>
</tr>
<tr>
<td>North America (USA, Canada &amp; Mexico)</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Central America &amp; Caribbean</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>South America</td>
<td>8</td>
<td>2.5</td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>6</td>
<td>1.25</td>
</tr>
</tbody>
</table>

**Specific TA rates for exports of eligible items by air**

<table>
<thead>
<tr>
<th>Destination</th>
<th>Reefer Container</th>
<th>Non-reefer Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>Africa</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Middle East</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>CIS Countries</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>South East Asia</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Far East &amp; North Asia (incl. China, Japan)</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>North America (USA, Canada &amp; Mexico)</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Central America &amp; Caribbean</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>South America</td>
<td>25</td>
<td>35</td>
</tr>
<tr>
<td>Australia &amp; New Zealand</td>
<td>18</td>
<td>27</td>
</tr>
</tbody>
</table>

The eligible items for the above mentioned TA rates are Horticulture, Processed Food & Poultry Products.
14.1.5.2 Gap Analysis & Recommendations

The problem areas of Indian exporters are: lack of subsidy for inland transportation and high costs of air freight.

For International players short lead times are a requisite also they require delivery at their warehouses.

Thus to bridge the gap, Technopak has the following recommendations for APEDA:

- Provide subsidies & grants to the exporters for investments in reefer containers to reduce hassles while shipping
- Provide transport assistance to the growers & exporters from field to final destination (domestic & international) up to 25% of the freight cost
- Provide inland reefer transportation subsidy to the exporters

14.1.6 Assistance to farmers

The main problem area of Indian exporters is that there is lack of information flow in the value chain regarding product specifications, packaging, labeling, and quality standards as per the International demand.

Technopak Recommendations to APEDA:

- Focus on educating the farmers on cultivation methods of new product categories & varieties that have potential for export & demand in international markets
- Encourage & provide incentives to farmers to engage in organic farming
- Educate the farmers on International packaging/labeling/quality standards by organizing workshops, and by bringing them on a common platform with Indian exporters, and International retailers.
CHAPTER 15: TRANSCRIPTS ~ MEETING WITH INDIAN EXPORTERS

15.1 IQF, BANGALORE

15.1.1 Contact person: Mr. Parikh

15.1.2 Company Profile
IQF Foods makes and sells Tropical Fruit, Ethnic and International Vegetables, manufactured to customers’ specifications for quality and taste at globally competitive prices. IQF Foods is owned and managed by industry professionals having a wealth of experience with national and multinational processed food groups such as the Tata’s, United Breweries and Brooke Bond/Unilever.

15.1.3 Turnover
Their turnover is Rs. 7 crores per annum approximately (2000tn tones).

15.1.4 Product
Frozen fruits and vegetables; mainly mango and papaya. But also includes okra, beans, drumsticks, gourds, spinach.

15.1.5 Export market: Germany, Holland and Sweden

15.1.6 What APEDA should do to promote export?
- APEDA should provide market intelligence report covering markets, products and price ranges.
- APEDA should make sure that information flow from its European office to Indian exporters.
- APEDA should act as a facilitator for financing capital.

15.1.7 Payment terms: CAD (In Europe no L/C)

15.1.8 Other points
- Net margin of 10-11%
- Sea freight charge – USD 3400 per container for 20 tones.
- Revenue generation of 15-45 lakhs per container
- Procurement from Kolar region from farmer, middlemen and mandi
15.1.9 Value Chain

IQF → Indenting agent → Manufacturer → Retailer
15.2 PAGRO FOODS LTD., CHANDIGARH

15.2.1 Contact person: Mr. N.S. Brar

15.2.2 Company Profile
It is a fruit and vegetable processing unit located in Punjab. The Company is 6 years old, turnover between 2 and 3 crore Rupees. Most of the business is from the Middle East. The reasons being that Middle East has a large number of Indian expatriates.

15.2.3 Export market
Exporting to Supermarket chains like Emke, Lulu. Other exporters Allanas, Mother Diary, Chambal group have stopped now. They are also, supplying to Al-Kabeer.

15.2.4 Products being exported:
- Green Peas
- Mixed vegetable- carrot, beans, cauliflower, peas.
- Sweet corn

15.2.5 Products with export potential
- Baby carrot
- Broccoli
- Brussels Sprouts

15.2.6 Problems faced
- Retailers force the supplier to take the entire shelf which is expensive- suggestion: APEDA to take entire shelf or grant money to the suppliers so that they can take the shelf.
- Varietals issues – EU require varieties which are not popular in India. Hence, required R&D.
- Duty levied on products from India – suggestion: let APEDA bear the duty.
- Credit required for packaging
- Inland reefer transport subsidy
15.3 Himalayan International Ltd., Delhi

15.3.1 Contact Person: Mr. Man Mohan Malik/ Mr. Rajan Dhawan

15.3.2 Company Profile
Himalaya International Ltd. started its operations during Jan 1992. Over the years the company has not only implemented latest State-of-the-art technology, but also integrated vertically to give itself an edge over its competitors. Himalaya International Ltd., today stands as a pioneer in the field of agro products exports. The Company has made substantial progress since its establishment.

15.3.3 Turnover: Rs.22 crores.

15.3.4 Export Market: USA

15.3.5 Product list
- Mushroom: IQF and canned
- Cheese: Mozzarella
- Baby Potatoes
- Spinach
- Indian Sweets
- Frozen Bread

15.3.6 Problems
- Higher priority to be given to reefer trucks to ensure that they do not get stopped excessively at check points.
- Investments in reefer containers to reduce hassles while shipping.
- Information pertaining to packaging to improve packaging levels.
- Market intelligence reports to identify newer products and categories.
15.4   **VADILAL GROUP, AHMEDABAD**

15.4.1 **Contact person:** Mr. Kamlesh Champaneri – General Manager

15.4.2 **Company Profile**

Vadilal group is a diversified business group with major interests in Ice Creams, Food processing, Real estate development and specialty gases.

15.4.3 **Turnover:** Rs. 2000 million + per annum approximately.

15.4.4 **Processed Food division**

The Processed Foods Division processes and markets a wide variety of fruits, vegetables and ready-to-serve Indian Foods. The Division also exports several of these products to the European Union, the Middle East and the US. The exports have grown exponentially over the last few years and with an impressive array of overseas buyers, account for more than 80% of the turnover of the Division. It operates a state-of-the-art plant with a total installed capacity of 16,200 MTS per annum (5400 MTS of canned and 10800 MTS of IQF), at Dharampur in valsad district of Gujarat, India started in 1991, today it is one of the leading manufacturers and exporters of tropical fruits, vegetables and ready-to-serve foods, in India.

15.4.5 **Product range**

The product range includes the following:

- Quick treat
- IQF fruits and vegetables
- RTE Foods
- Condiments
- Mango products
- Canned products like pulps and juices
- Jams
- Chutneys
- Ketchup and sauces
- Baked beans in tomato sauce
- Sweet corn
15.4.6 **Quality specifications**

The division has been accredited ISO - 9002 certificate by Underwriters Laboratories Inc., USA.

15.4.7 **Export markets**

USA, UK, Japan, Europe, Canada, Australia, South Africa and New Zealand - ethnic population.

15.4.8 **Competition**

Thailand is the main competitor as their production and yield is higher as compared to India.

- Frozen parathas – Malaysia
- Frozen mango – Pakistan and Mexico
- Frozen papaya – Brazil
- Frozen Pineapple – Thailand
- Frozen vegetables – Asian countries

15.4.9 **What India should do to gain the market?**

- Product should be targeted to main market
- Processing plants need to have more quality and hygiene.
- Infrastructure should be of world class
- Essential to have high capacity plants like Mcken, the Canada based company is setting up Rs 70 crore plants in Gujarat which will have the capacity of 2 tonnes per hour.
- Education and training to farmer about the international standards
- Investment in sorting and grading equipment
- Have to make pesticide and residue free product.

15.4.10 **What APEDA should do to promote exports?**

- Assistance in power cost
- High transport cost – India should have domestic freight
- Assistance for packaging division. One cylinder costs Rs. 8,000 and one variety packaging costs Rs. 75,000.
- Assistance in publishing in the media for advertisement
- Assistance in focusing in the mainstream market.
• APEDA should give more assistance for cold storage. E.g.: Vadilal has 2 cold storage of 800 MT. They require additional 3000 MT which calls for an investment of 3 crores. But APEDA gives only 10 lakhs.
• In-principal approval should be waived off. Applications to be submitted prior to completion of the particular activity like what MOFPI is insisting.
• Need to work towards specific variety development like papaya. Baby okra has huge demand but India is presently is not capable for the same.

15.4.11 Payment terms: L/C and CAD – 30-45 days

15.4.12 Value Chain
15.5 **CAPITAL FOODS EXPORTS PVT. LTD., MUMBAI**

15.5.1 **Contact person:** Mr. Rajdeep Singh – Export Manager

15.5.2 **Company Profile**

Capital Foods is one of the largest players in processed food market. It is present in both domestic and international market. Capital Foods Ltd has its manufacturing facilities at:

- Nashik in Maharashtra, 250 kms from Mumbai. The facility has following dedicated line: Wet line for Ketchup, chutney and pastes. Canning line for backed beans and soups.
- Kandla, situated in SEZ. The largest RTE meal plant in India with processed area of 1, 00,000 sq ft.

15.5.3 **Financials:** Turnover of Rs. 30 crores approximately.

15.5.4 **Brands:** Ching’s secret and Smith & Jones.

15.5.5 **Private label**

Capital Food is a leading private label manufacturer in world processed foods business. It is manufacturing for some of the leading brands of the world.

15.5.6 **Product range:** Product range includes the following:

- IQF Frozen vegetables
- OQF frozen fruits
- RTE micro curries
- RTE micro rice
- Frozen RTE
- Frozen Indian snacks
- Frozen Indian bread
- Instant mixes
- Curry pastes
- Cutneys and sauces
- Sauce and noodles
- Ketchup
- Cooking pastes
- Water / Syrups
15.5.7 Quality Certification: HACCP and BRC certified.

15.5.8 Buyers
- Tesco and Natco foods in U.K.
- Raja foods in US
- Sabi foods in Australia
- T. Choitram in Dubai

15.5.9 Buyer’s requirement:
- Want more transparency in the entire process
- Product traceability

15.5.10 Others
- Completely satisfied with the way they are growing as they have one of the leading contact in each of the markets.
15.6 **MOTHER DAIRY**

15.6.1 **Contact person:** Mr. S. Kankan - AGM

15.6.2 **Company Profile:**
Mother Dairy - Delhi was set up in 1974 under the Operation Flood Program. It is now a subsidiary company of National Dairy Development Board (NDDB). Mother Dairy sources its entire requirement of liquid milk from dairy cooperatives. Similarly, Mother Dairy sources fruits and vegetables from farmers/growers associations. Mother Dairy also contributes to the cause of oilseeds grower cooperatives that manufacture/ pack the Dhara range of edible oils by undertaking to nationally market all Dhara products.

15.6.3 **Turnover:** Rs. 1700 crore (2005)

15.6.4 **Product range**
- Mango Pulp and Concentrate
- Papaya Pulp and Concentrate
- Guava Pulp and Concentrate
- Litchi Pulp and Concentrate
- Various other fruits Pulp and Concentrate

15.6.5 **Quality specifications**
- HACCP, 2002 RvA (Food Safety Management Systems)
- Quality Assurance Laboratory is accredited as per ISO/IEC 17025:1999 by National Accreditation Board for Testing & Calibration Laboratories, Department of Science & Technology, GOI.

**Quality Control**
- All the standard certificates in place
- Additional certificates are sourced as per the buyers requirement
- All the products are as per the product spec sheet sent by the buyer
- There are annual physical audits by the companies
- Social audits are also in place
15.6.6 Supply Chain
Since Mother Dairy is not dealing in retail ready products hence they do not have any direct to retail connection to any retailer. Mother Dairy supplies to the importers in various countries directly and in turn importers in the individual countries supply to the various manufactures. Mother Dairy has marketing office in Holland but the only work it does is procurement of order. No part of supply chain is owned by Mother Dairy.

- Reason behind the retailers/ foreign players for not taking the products directly
  - Stock Holding
  - Regular supply
- Since Indian product is only seasonal and foreign players have various other points to source from for the same product so a third party handles the same.
- Even for the Indian Suppliers the cost of maintaining infrastructure in abroad would be very high and may not be feasible.

Transportation:
- All the transportation is being done through Sea.
- Mother Dairy uses two ports – JNPT and Chennai
- Major Destination Ports are - Hamburg and Rotterdam
- Container cost is on an average USD 750 – 1000 per container

Processing Facility:
- Mumbai – 15000 tons/ annum
- Bangalore – 45000 tons/ annum

15.6.7 Exports:
- Mother Dairy has not tried exporting anything other than Fruit Pulp and concentrate.
- Trade Terms
  - Consignment Basis
  - Cash Against Document/ LC/ DA
  - CIF Term
  - 60-90 Days payment period
- In almost all the cases, the sourcing company specifies the shipping line as they have better negotiation capabilities.
- Mother Dairy does not have any problems in the process of exports, although they do not find enough quantity to source.
- Export markets
  - Europe
  - USA
  - Canada
  - Middle East
CHAPTER 16: TRANSCRIPTS ~ JAPANESE AGGREGATORS

16.1 SHINEI KAISHA

16.1.1 Contact person: Mr. Kaoch

16.1.2 Department: Frozen fruits and vegetables

16.1.3 Imports of frozen fruits and vegetables: Mainly from China, U.S.A

<table>
<thead>
<tr>
<th>Quantity Imported (tones per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
</tr>
<tr>
<td>USA</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

16.1.4 Frequency of purchase:
- From China: Daily
- From USA: Weekly

16.1.5 Perception about Indian Products:
Never imported any product from India, but the person interviewed had a feeling that India might produce good quality products. This company never had opportunity to import from India.

16.1.6 Preserving of frozen products:
This Company makes use of refrigeration, fridge for storing the frozen products. They do not own any refrigeration facility, but use it on a rental basis.

16.1.7 Currently what this company imports from India:
They are not importing any product from India.

16.1.8 Products that have potential to be exported from India:
Company is interested in 3 products viz.
- Frozen mango
- Frozen peas
- Frozen berries.
16.1.9 Main reason for importing frozen vegetables from China:
   Good quality and low prices

16.1.10 Are they interested in importing frozen fruits and vegetables from India?
   Yes, but only if they can get high quality at a low price.

16.2 **SHOEI FOODS CORPORATION**

16.2.1 **Contact person:** Manager for Frozen fruits & vegetables

16.2.2 **Department:** Frozen fruits & vegetables

16.2.3 **The biggest sourcing countries:**
   1. USA
   2. China
   3. Canada

16.2.4 **Frequency of purchasing:**
   It is based on requirements, demands & inventory levels & also the contract with the suppliers. It can be weekly, 15 days or monthly.

16.2.5 **Quantity of purchase:**
   Around 3000 tonnes a year from 3 countries mentioned.

16.2.6 **Supply Chain:**
   Self owned from the warehouses for the imported product and also have refrigeration facility on a rental basis.

16.2.7 **Main reasons for importing frozen vegetables & fruits from mentioned countries:**
   Quality & price.

16.2.8 **Currently what are they sourcing from India:**
   They do not import any product from India.

16.2.9 **Perception about Indian products:**
   This company never had an opportunity to import from India. Has no idea about the quality, price and availability of the Indian products.

16.2.10 **Products which has potential to be exported from India:**
• Frozen berries
• Frozen mangoes

16.2.11 Are they interested in importing frozen fruits and vegetables from India?
Yes, but only if India can provide good quality with a reasonable price.
16.3 CGC JAPAN

16.3.1 Contact person: Mr. Nakagiri

16.3.2 Department: Frozen vegetables

16.3.3 The biggest sourcing countries:

1. USA (frozen fruits)
2. China (frozen vegetables)

16.3.4 Frequency of purchasing: Weekly

16.3.5 Supply Chain:
Self owned from the warehouses for the imported product and also have refrigeration facility on a rental basis. They have their own trucks for transportation.

16.3.6 Main reason for importing frozen vegetables & fruits from mentioned countries:
Very good combination of Quality & price

16.3.7 Currently what are they sourcing from India: Prawns

16.3.8 Perception about Indian products:
This company never had an opportunity to import frozen fruits and vegetables from India. Has no idea about the quality, price and availability of the Indian products.

16.3.9 Are they interested in importing frozen fruits and vegetables from India?
Not interested.
16.4  **Toshin Trading Co Ltd**

16.4.1 **Contact person:** Ms. Takako, Imports Department (frozen)

16.4.2 **The biggest sourcing countries:**
   China, Korea, South & North America

16.4.3 **Frequency of purchase:** Depending on demand

16.4.4 **Supply Chain:**
   Self owned from the warehouses for the imported product and also have refrigeration facility on a rental basis.

16.4.5 **Main reason for importing frozen vegetables & fruits from mentioned countries:**
   Quality

16.4.6 **Products imported from the above mentioned countries:**
   Frozen Strawberries, beans, lemons, orange, apple, spinach

16.4.7 **Currently what are they sourcing from India:**
   They do not import any product from India.

16.4.8 **Perception about Indian products**
   This company never had an opportunity to import from India. Hearing for the first time that India would produce frozen fruits and vegetables. However, they believe that the quality of Indian products should be good.

16.4.9 **Products which has potential to be exported from India:**
   Not interested to import from India.

16.4.10 **Are they interested in importing frozen fruits and vegetables from India?**
   Not interested.
16.5  **EIKO BOEKI KAISHA LTD**

16.5.1 **Contact person:** Mr. Shiono, Managing Director

16.5.2 **The biggest sourcing countries:**
   European Union, China, USA, Argentina, South Africa and Philippines

16.5.3 **Frequency of purchase:** Monthly

16.5.4 **Supply Chain:**
   It has a warehouse on a rented basis. The company does not have a cold storage facility. However, it has its own fleet of trucks for transportation.

16.5.5 **Main reason for importing frozen vegetables & fruits from the mentioned countries:**
   Quality

16.5.6 **Specifications of the products:**
   Follow international standards (EUREPGAP).

16.5.7 **Products imported from the above mentioned countries**
   Fruit juice concentrates of apple, grapes, apricot, pears, and mango. Mangoes & berries juice concentrates are mainly imported from Philippines.

16.5.8 **Currently what are they sourcing from India:**
   Mango puree

16.5.9 **Perception about Indian products:**
   - Quality is good.
   - The price is not very low, but it is reasonable.

16.5.10 **Products which has potential to be exported from India:**
   Not interested to import from India at present

16.5.11 **Are they interested in importing frozen fruits and vegetables from India?**
   Not interested.
16.6 **DAIMARU KOGYO LTD**

16.6.1 Contact person: Mr. Hatanaka, Manager

16.6.2 The biggest sourcing countries:
    New Zealand, USA

16.6.3 Frequency of purchase: Every 2 months

16.6.4 Supply Chain:
    The company has a special contract with regards to the warehouse, cold storage.

16.6.5 Main reason for importing frozen vegetables & fruits from the mentioned countries:
    Quality

16.6.6 Specifications of the products:
    Japanese standards are followed to import products because these standards are more stringent than the international ones.

16.6.7 Products imported from the above mentioned countries:
    Corn, mixed vegetables, peas, beans, berries, strawberries, blueberries

16.6.8 Currently what are they sourcing from India:
    Do not import anything from India.

16.6.9 Perception about Indian products
    No Idea.

16.6.10 Products which has potential to be exported from India:
    Corn, Peas and Beans

16.6.11 Are they interested in importing frozen fruits and vegetables from India?
    Yes. But, can proceed further after going through the price list and other information.
CHAPTER 17: TRANSCRIPTS ~ EUROPEAN AGGREGATORS

17.1 COMPANY: ARDO NV, BELGIUM

17.1.1 Contact Person: Pol Demeyer, Sourcing Manager

17.1.2 Company Profile

Ardo NV, a 40 years old company, is a large producer, processor and exporter headquartered in Belgium. The company started off as a family business in 1950s and has grown to a € 480 million business house. The company started internationalizing its production in 1990s and as a result has 16 manufacturing facilities across Europe with a total processing capacity of around 5 Lakh Metric Tons per annum.

The company primarily deals in the Frozen Fruits and Vegetables Category. The operations of the company are spread across Europe with production facilities in Belgium, France, Netherlands, United Kingdom, Denmark, Portugal, Spain, Ireland, Germany, Russia and Czech Republic. The company is looking for expansion in the Central and Eastern Europe. They have been actively looking for options of acquiring manufacturing facilities.

17.1.3 What do they buy and from where

Ardo NV deals in a very wide range of Fruits and Vegetables. A detailed list is attached along with this document. Some of the main product categories Ardo deals in are – Peas, Carrots, Cauliflower, Spinach, Brussels sprouts, Beans, and Leeks. The 7 product categories mentioned above contribute around 80% of the company's turnover. Ardo is one of the prominent players in the semi-cooked and pre-cooked frozen meal segment. It has a wide variety of products in this category, which it develops in synchronization with the requirements of its clients. Ardo sources primarily from China, US, Turkey, Morocco, Canada, South America. These countries are in addition to the countries, where Ardo has its cultivation and processing facilities.

17.1.4 What are the specifications of the products

Minimum EU certifications have to be met. The company provides its specifications only to partners, so at this stage has refused to share the specifications.

17.1.5 What is the Client Mix?

<table>
<thead>
<tr>
<th>Clients</th>
<th>Break up of sales Mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>30%</td>
</tr>
<tr>
<td>Catering</td>
<td>60%</td>
</tr>
<tr>
<td>Bakery Industry</td>
<td>10%</td>
</tr>
</tbody>
</table>
The retailers to whom Ardo supplies includes some of the largest players like Carrefour, Tesco, Metro, Edeka etc. Unlike many suppliers, Ardo supplies directly to almost all the retail customers.

17.1.6 Sourcing details and expectations from Suppliers

The sourcing process from locations where the production facilities are not present is explained as follows:

Ardo NV places order with its suppliers based on its annual sales plan. Since Ardo is working with most of its suppliers on a long term basis, the annual quantities required from each of its suppliers is communicated so as the supplier is able to plan its production accordingly. The product is sent directly from the supplier to Ardo’s manufacturing facilities, where it is further processed to be converted into the finished product form. In most of the cases, the transportation is provided by the supplier. Ardo outsources the transportation in rest of the cases. In total Ardo has around 15-16 Warehouses and Cold Storages (capacity of 150000 MT / annum).

Ardo owns the supply chain to a greater extent. It has its own warehouses in all its production plants, from where the finished product is directly shipped to the customer.

The company is of the view that warehousing is a must have for them as they are into processing, however for the suppliers it is an added advantage if they have a warehouse in Europe. It helps the suppliers in making the supply chain more efficient. It becomes all the more important for suppliers based in far off areas like Asia to have a local facility, as in their case the transit time for the shipment is very high as compared to suppliers based in Europe and nearby areas. In case of an order, the Europe based suppliers are able to serve it faster as compared to Asia based suppliers.

The other terms and conditions of Sourcing include –

- **Mode of Payment** – Ardo has the policy of making payment to the suppliers 30 days after arrival and acceptance.
- **Credit Terms** – 30 days
- **Round the Year Availability** – Ardo NV prefers six monthly or yearly contracts with its suppliers, with the objective of assured supplies, which it commits in turn to its retailer clients.

Though in most of the cases Ardo doesn’t face supply related problems due to its contractual arrangements and long term relationships with the suppliers. However, in very few cases, Ardo has faced issues like,
APEDA (Agricultural and Processed Food Products Exports Development Authority)

- No supply despite contract
- Quality problems

17.1.7 Perception about Products from India
The Company is already sourcing Basmati Rice and Mushrooms (a very little amount) from India. Regarding these products the impression is good. However for other product categories, the company is willing to explore the opportunities and is open to the idea of sourcing from India. The expectations from suppliers are:
- Sticking to the quality specifications
- Responsiveness of the suppliers
- Competitive pricing
But lately the perception about India has been changing. The companies want to exploit the potential India has.

17.1.8 Product Categories interested in sourcing from India
At this stage, Ardo will not share the specifications with us. As a policy, the specifications are meant for partners. Thus Ardo first signs a deal and then shares information like specifications. However the products Ardo is interested in sourcing from India are as follows:
1. Pineapples
2. Papaya
3. Mangoes
4. Grapes
5. Apples
6. Cherry Tomatoes
7. Asparagus – White & Green
8. Pea Pods
9. White Mushrooms
10. Dry Rice
11. Herbs – Coriander, Garlic, Garlic Sprouts, Pepper

17.1.9 Ardo Product Categories

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Product Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-herbs mix</td>
<td>Lotus Mix</td>
</tr>
<tr>
<td>Andalusian mix</td>
<td>Luxury button sprouts</td>
</tr>
<tr>
<td>Andalusian mix</td>
<td>Macedoine Mix</td>
</tr>
<tr>
<td>Artichoke bottoms</td>
<td>Macedoine mix</td>
</tr>
<tr>
<td>Asian mix</td>
<td>Marrow peas</td>
</tr>
<tr>
<td>Baby Broad beans</td>
<td>Mediterranean Brunoise</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Baby carrots</td>
<td>Menestra</td>
</tr>
<tr>
<td>Basil</td>
<td>Menestra Imperial</td>
</tr>
<tr>
<td>Baton carrots</td>
<td>Menestra Riojana</td>
</tr>
<tr>
<td>Beans puree portions</td>
<td>Mexico Mix</td>
</tr>
<tr>
<td>Bilberries (blueberries)</td>
<td>Mini carrots</td>
</tr>
<tr>
<td>Black forest mix</td>
<td>Mix spring onions, gambas and asparagus</td>
</tr>
<tr>
<td>Black salsify</td>
<td>Mixed vegetables in buttersauce</td>
</tr>
<tr>
<td>Black salsify EXTRA</td>
<td>Mochov Mix</td>
</tr>
<tr>
<td>Blackberries</td>
<td>Mushroom cocktail</td>
</tr>
<tr>
<td>Blackcurrants</td>
<td>Natural onion rings</td>
</tr>
<tr>
<td>Bretonne mix</td>
<td>Nuggets Cauliflower and Cheese</td>
</tr>
<tr>
<td>Broad beans extra fine</td>
<td>Onion rings battered</td>
</tr>
<tr>
<td>Broad beans fine</td>
<td>Onion rings breaded</td>
</tr>
<tr>
<td>Broccoli florets</td>
<td>Oyster mushrooms</td>
</tr>
<tr>
<td>Broccoli florets 30/45</td>
<td>Paella</td>
</tr>
<tr>
<td>Broccoli florets medium</td>
<td>Parisian carrots small</td>
</tr>
<tr>
<td>Broccoli florets small</td>
<td>Parisian carrots very small</td>
</tr>
<tr>
<td>Broccoli Mix</td>
<td>Parisian potatoes 20/25</td>
</tr>
<tr>
<td>Broccoli puree portions</td>
<td>Pasta Penne</td>
</tr>
<tr>
<td>Carrot puree portions</td>
<td>Pasta Polio</td>
</tr>
<tr>
<td>Carrot strips</td>
<td>Pasta Primavera</td>
</tr>
<tr>
<td>Carrots Rustica</td>
<td>Pasta Spirelli</td>
</tr>
<tr>
<td>Cauliflower florets</td>
<td>Pasta Trulli</td>
</tr>
<tr>
<td>Cauliflower Florets</td>
<td>Peapods - Mange Tout</td>
</tr>
<tr>
<td>Cauliflower Florets EXTRA</td>
<td>Peas, sweet corn, pepper mix</td>
</tr>
<tr>
<td>Cauliflower florets small</td>
<td>Penne Spinaci</td>
</tr>
<tr>
<td>Cauliflower florets very small</td>
<td>Petits poid</td>
</tr>
<tr>
<td>Cauliflower puree portions</td>
<td>Petits poid</td>
</tr>
<tr>
<td>Cauliflower florets with Mornay sauce</td>
<td>Plums</td>
</tr>
<tr>
<td>Celeriac puree portions</td>
<td>Poêlée Champêtre</td>
</tr>
<tr>
<td>Celeriac strips</td>
<td>Pot au feu - vegetable mix</td>
</tr>
<tr>
<td>Cep</td>
<td>Pre-fried sliced onions</td>
</tr>
<tr>
<td>Cep sliced</td>
<td>Purslane</td>
</tr>
<tr>
<td>Chanterelles</td>
<td>Raspberries</td>
</tr>
<tr>
<td>Chanterelles</td>
<td>Ratatouille</td>
</tr>
<tr>
<td>Chervil Portions</td>
<td>Ratatouille Vegetable Mix</td>
</tr>
<tr>
<td>China Mix</td>
<td>Red cabbage</td>
</tr>
<tr>
<td>Chives</td>
<td>Red cabbage with apple in portions</td>
</tr>
<tr>
<td>Choice peas</td>
<td>Red currants</td>
</tr>
<tr>
<td>Chopped creamed spinach block</td>
<td>Red kidney beans</td>
</tr>
<tr>
<td>Chopped Creamed spinach in portions</td>
<td>Rhubarb</td>
</tr>
<tr>
<td>Chopped spinach block</td>
<td>Rice</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Chopped spinach irregular portions 50g</td>
<td>Rice Basmati</td>
</tr>
<tr>
<td>Chopped spinach mini-tablets 7g</td>
<td>Rice Pilani</td>
</tr>
<tr>
<td>Chopped spinach portions 15g</td>
<td>Romanesco Florets</td>
</tr>
<tr>
<td>Corn cobs</td>
<td>Romanesco Mix</td>
</tr>
<tr>
<td>Corn mix</td>
<td>Root vegetable mix</td>
</tr>
<tr>
<td>Cranberries</td>
<td>Russian salad</td>
</tr>
<tr>
<td>Creamed leaf spinach in portions</td>
<td>Salsa Nuggets</td>
</tr>
<tr>
<td>Creamed leeks in portions</td>
<td>Salsislies with béchamel sauce</td>
</tr>
<tr>
<td>Creamed Savoy cabbage in portions</td>
<td>Savoy cabbage portions</td>
</tr>
<tr>
<td>Curly kale block</td>
<td>Shallots</td>
</tr>
<tr>
<td>Curly kale portions</td>
<td>Silverskin Onions</td>
</tr>
<tr>
<td>Cut celery</td>
<td>Sliced Apples</td>
</tr>
<tr>
<td>Cut green beans 4 cm</td>
<td>Sliced carrots crinkle cut</td>
</tr>
<tr>
<td>Cut green beans 4cm</td>
<td>Sliced carrots flat cut</td>
</tr>
<tr>
<td>Cut green leeks</td>
<td>Sliced carrots flat cut</td>
</tr>
<tr>
<td>Cut leaf spinach portions</td>
<td>Sliced courgettes</td>
</tr>
<tr>
<td>Cut Romano Beans</td>
<td>Sliced Courgettes</td>
</tr>
<tr>
<td>Cut Romano beans 4cm</td>
<td>Sliced Dutch green beans</td>
</tr>
<tr>
<td>Cut wax beans</td>
<td>Sliced green beans</td>
</tr>
<tr>
<td>Delicacy rice mix</td>
<td>Sliced green peppers</td>
</tr>
<tr>
<td>Diced beetroot</td>
<td>Sliced mixed peppers red/green</td>
</tr>
<tr>
<td>Diced carrots</td>
<td>Sliced Mushrooms</td>
</tr>
<tr>
<td>Diced carrots</td>
<td>Sliced mushrooms Hotel</td>
</tr>
<tr>
<td>Diced celeriac</td>
<td>Sliced mushrooms Standard</td>
</tr>
<tr>
<td>Diced courgettes</td>
<td>Sliced onions</td>
</tr>
<tr>
<td>Diced mixed peppers red/green</td>
<td>Sliced Peppers Red/Green/ Yellow</td>
</tr>
<tr>
<td>Diced onions 10x10x10mm</td>
<td>Sliced red peppers</td>
</tr>
<tr>
<td>Diced Onions 6x6x6mm</td>
<td>Small Brussels sprouts</td>
</tr>
<tr>
<td>Diced Swede</td>
<td>Soup greens</td>
</tr>
<tr>
<td>Diced tomatoes</td>
<td>Soup vegetables</td>
</tr>
<tr>
<td>Dill</td>
<td>Soup vegetables</td>
</tr>
<tr>
<td>Endive portions</td>
<td>Sourcherries</td>
</tr>
<tr>
<td>Ensaladilla</td>
<td>Soybean sprouts</td>
</tr>
<tr>
<td>Euro Mix</td>
<td>Spinach puree portions</td>
</tr>
<tr>
<td>Exotic fruits with passion fruit juice</td>
<td>Spinaci Filanti</td>
</tr>
<tr>
<td>Farfallle Prosciutto (with ham)</td>
<td>Spring vegetables</td>
</tr>
<tr>
<td>Fine cut leeks</td>
<td>Spring vegetables with potatoes</td>
</tr>
<tr>
<td>Flageolet beans</td>
<td>Stirfry vegetables</td>
</tr>
<tr>
<td>Flageolet beans</td>
<td>Strawberries</td>
</tr>
<tr>
<td>Forestière mix</td>
<td>Sugar snap peas</td>
</tr>
<tr>
<td>French potatoes</td>
<td>Summer mix</td>
</tr>
<tr>
<td>Fruit Berry Mix</td>
<td>Summer mix</td>
</tr>
<tr>
<td>Garden peas</td>
<td>Sweet corn</td>
</tr>
<tr>
<td>Garden peas</td>
<td>Sweet corn 'Supersweet'</td>
</tr>
<tr>
<td>Garden Peas extra fine</td>
<td>Swiss Chard portions</td>
</tr>
<tr>
<td>Garden peas extra fine</td>
<td>Taboulé</td>
</tr>
</tbody>
</table>

325
<table>
<thead>
<tr>
<th>Garden peas extra fine</th>
<th>Tropical fruit mix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garden peas fine</td>
<td>Turnip cabbage</td>
</tr>
<tr>
<td>Garden peas medium/Diced carrots</td>
<td>Vegetable Medley with herbs sauce</td>
</tr>
<tr>
<td>Garden peas medium/Young carrots</td>
<td>Vegetable Mix for Minestrone</td>
</tr>
<tr>
<td>Garden peas puree portions</td>
<td>Vegetables for Couscous</td>
</tr>
<tr>
<td>Garden Peas Very Fine/Small Young Carrots</td>
<td>Vitality Mix</td>
</tr>
<tr>
<td>Garlic</td>
<td>White asparagus spears</td>
</tr>
<tr>
<td>Gold Mix</td>
<td>White cabbage</td>
</tr>
<tr>
<td>Gratin Brocoli</td>
<td>Whole green asparagus</td>
</tr>
<tr>
<td>Haricots Paysanne</td>
<td>Whole Green Beans extra fine</td>
</tr>
<tr>
<td>Hawaimix</td>
<td>Whole green beans fine</td>
</tr>
<tr>
<td>Italian Grill</td>
<td>Whole green beans medium</td>
</tr>
<tr>
<td>Jardiniere Mix</td>
<td>Whole green beans medium</td>
</tr>
<tr>
<td>Julienne Mix</td>
<td>Whole green beans very fine</td>
</tr>
<tr>
<td>Leaf spinach block</td>
<td>Whole green beans very fine</td>
</tr>
<tr>
<td>Leaf spinach portions 15g</td>
<td>Whole mushrooms</td>
</tr>
<tr>
<td>Leaf spinach portions 15g</td>
<td>Whole wax beans</td>
</tr>
<tr>
<td>Leaf spinach portions 50g</td>
<td>Wild rice mix</td>
</tr>
<tr>
<td>Leek rings</td>
<td>Wok Mix</td>
</tr>
<tr>
<td>Leek rings 70/30</td>
<td>Wok Verde</td>
</tr>
<tr>
<td>Leipziger allerlei</td>
<td>Woodland mushroom mix</td>
</tr>
<tr>
<td>Loose leaf spinach</td>
<td>Young carrots</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis
17.2 COMPANY: CROPS NV, BELGIUM

17.2.1 Contact Person: Johan Polfliet, Purchase Manager

17.2.2 Company Profile
Crops NV was established in 1948 as a processor of Fruits and Vegetables. During a course of almost 60 years the company has grown into a € 135 Million company. Crops NV have 3 manufacturing facilities across Belgium with a total processing capacity of 1.6 Lakh MT per annum.

17.2.3 What do they buy and from where
Crops primarily deal in frozen products, producing a wide variety of fruits and vegetable based products. The product ranges from a simple vegetable or fruit mix to prepared meals (Heat and eat food).

17.2.4 Some of the main fruits and vegetables, Crops deal in are

<table>
<thead>
<tr>
<th>Fruits</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mango</td>
<td>Aubergine</td>
</tr>
<tr>
<td>Papaya</td>
<td>Broccoli</td>
</tr>
<tr>
<td>Pineapple</td>
<td>Asparagus</td>
</tr>
<tr>
<td>Melons</td>
<td>Bamboo</td>
</tr>
<tr>
<td>Citrus Fruits</td>
<td>Black Fungus</td>
</tr>
<tr>
<td>Banana</td>
<td>Pea Pods</td>
</tr>
<tr>
<td>Berries</td>
<td>Mushrooms</td>
</tr>
<tr>
<td>Plum</td>
<td></td>
</tr>
<tr>
<td>Cherries</td>
<td></td>
</tr>
</tbody>
</table>

*Technopak research analysis

The major sourcing countries for Tropical Fruits are: South America – Peru, Chile, Ecuador, Mexico, Costa Rica, China, Vietnam, and Thailand.

17.2.5 What are the specifications of the products?
Minimum EU certifications have to be met. They have sent the specifications of the few selected products (attached in appendix).

17.2.6 What is the client mix?
Crops NV mainly supplies to retailers. The client list includes almost all the leading retailers of Europe like Tesco, Rewe, Metro, Carrefour, Edeka, Aldi, Casino, LeClerc, Dunsch, Corp, and Spar. In total Crops supplies to around 46 retailers.

17.2.7 Sourcing Details and expectations from suppliers
The supply chain is partially owned by Crops. It has warehouses/cold storages at all the manufacturing units. The transportation is outsourced. Generally the suppliers provide
Crops with the transportation. However in cases where Crops has to arrange for its transportation, it is outsourced to transportation companies.

17.2.8 The other terms and conditions for sourcing are as follows

- **Mode of payment** – If the supplier is new, then the company has a policy of making payment only after 30 days of arrival and acceptance. The second level of which is 50% in advance and the rest of it 30 days after arrival and acceptance. In case of established suppliers, it’s an open account policy.

- **Round the year availability** – Crops NV generally has tie ups with its suppliers in the form of periodic contracts of 6 months or 1 year to ensure round the year availability.

- **Issues regarding sourcing** – Crops faces the issue related to round the year availability of the product especially Mangoes. As the season for Mangoes in Peru is very short, the company ends up spending a lot of money in storing the mango pulp, for the lean season. The interest in sourcing Mangoes from India emerges from this issue only as season in India is much longer, thus can assure regular supplies.

17.2.9 The Perception about Products from India

The Company has good opinion about products from India and is willing to participate in the export promotion program.

17.2.10 Products categories interested in sourcing from India

Crops NV is interested in sourcing the following product categories from India:

- Pineapples
- Papaya
- Melon
- Bananas
- Mangoes
- Grapes
- Asparagus
17.3 COMPANY: NETRA AGRO B.V. (SVZ INTERNATIONAL B.V)

17.3.1 Contact person: Ms. Elghalia Agraour

17.3.2 Company Profile
Netra Agro b.v. was established in 1992 and is a subsidiary company of SVZ Industrial Products b.v. in The Netherlands. The Company is specialized in import and marketing of tropical and semi tropical fruits and vegetable products for industrial purposes. The company is specialized in import and marketing of tropical and semi tropical processed fruit and vegetable products for industrial purposes. Netra Agro has own offices or representatives in the Netherlands, United Kingdom, France and Spain. Sales are also done through the SVZ offices and agents network.

17.3.3 Product list
Only deals in IQF fruits and vegetables, canned fruits and vegetables, fruit puree, concentrated fruit puree and organic fruits. Netra Agro does bulk sourcing (10 kg / 12 kg / 15 kg packs)

17.3.4 What do they buy and from where
Netra Agro imports most of the products from China, Vietnam, Thailand and South America. Netra Agro b.v. imports its products from countries in Asia, South America and Africa.

17.3.5 What are the specifications of the products
Minimum EU certifications have to be met. The company provides its specifications only to partners, so at this stage has refused to share the specifications.

17.3.6 What is Netra Agro client mix
Netra Agro supplies its products only to the wholesalers and Industry people. It is completely for industrial use.

17.3.7 What is the service levels expected from the exporters
Netra agro expects the following services from the exporters:

- Product should have full information right from source to pesticide content, microbiology etc as they believe that customers are getting more and more difficult day by day.
- They expect prior information incase of any delay in delivery.

17.3.8 Currently what are they sourcing from India
Netra Agro presently sources Mango and Papaya IQF products and Mango puree from India.

17.3.9 Perception about Indian products
Netra Agro presently sources from Vadilal, ITC and Capital foods. They face the following problems with Indian exporters:
- Packaging problem
- Products are without the general information.
- Indian exporters don’t inform about the delay in supply in advance.

17.3.10 Products which has potential to be exported from India
- Mango puree
- Papaya puree
- Gherkins
- IQF products

17.3.11 Trade mix
Netra Agro supplies 90% of its products directly to the European countries and 10% of the product go via cross trade, like directly from India to European locations, Brazil to South Africa and China to Dubai etc.

17.3.12 Trade terms
Netra Agro pays cash against document and sometimes also has 45 days of credit period.
17.4 **COMPANY: SCANDIMEAT (DENMARK)**

17.4.1 **Contact person:** Mr. Arne Meldgaard

17.4.2 **Company Profile**

The group operates worldwide with import and export of chilled, frozen and processed food products including vegetables, pork, beef, poultry, fish, and seafood. Its activities are spread worldwide, but it concentrates mainly on four major regions: Western Europe, Eastern Europe, South America and Far East. It sources FFV from China and Poland.

17.4.3 **Financials**

75% of Scandimeat’s business comes from buy and sell and 25% of its business is commission based. Buy and sell business forms 30 million euros.

17.4.4 **Product list**

Frozen Vegetables (Beans, Cauliflower, Broccoli, Carrot and green peas), Vegetable oils, Butter and cheese products, refined sugar, Pork, Beef, Poultry, Fish and Seafood. Their products also include green peas, beans, carrots, cauliflowers, cucumber, leeks, potatoes, onions, asparagus, tomato puré, sunflower oil, sweet cream / lactic butter, edam and gouda cheese.

17.4.5 **Sourcing volume**

12-15 containers of FFV p.a. from China, 10-15 40 ft container from Russia, 1-2 containers from Far East.

17.4.6 **What do they buy and from where**

Scandimeat offers the product on shipment basis. They offer the product from China and other European countries directly to Bulgaria, Romania, Poland, Russia and other eastern European countries. Like Corn from Canada to Brazil etc.

17.4.7 **What are the specifications of the products?**

Minimum EU certifications have to be met. The company provides its specifications only to partners, so at this stage has refused to share the specifications.

17.4.8 **What is the product mix?**

- Frozen beef and fish products – 75%
- Frozen vegetables – 20%
- Others – 5%
17.4.9 Currently what are they sourcing from India
Have already imported beef from India 15 years back.

17.4.10 Perception about Indian products
They didn’t find the product up to the quality standard. The product when arrived was not of the same quality as shown. Even packaging was not accordingly.

17.4.11 Products which Scandimeat is interested to source from India:

- Frozen vegetables (Beans, peas, cauliflower, Broccoli, Carrot)
- Fruit juices

17.4.12 Payment terms
20% is down payment and balance CAD. Commission percentage totally depends on negotiation and is very rare on fixed percentage basis.

17.4.13 Services to the client
Scandimeat helps the client in the whole operation. It sends its people to the client site to inspect the quality of the produce. They also instruct in packaging and loading in the container.
17.5 **COMPANY: GOOD FOOD GROUP (DENMARK)**

17.5.1 **Contact person:** Mr. Otto Christensen

17.5.2 **Company Profile**

On May 1, 1951 Inga and Peter Christensen started baking cookies for the nearest grocery store and within a few years they had five sales wagons and more than 400 customers buying their home-made cookies.

17.5.3 **Milestones**

- 1951: Inga’s cookies is established in Vejle
- 1975: First export order
- 1986: Ingadane is sold to the closest competitor
- 1986: Hornbech jam factory is acquired
- 1986-96: Several acquisitions - wine, bread, honey
- 1996: First production site outside Denmark is acquired
- 1997: Trading company in the UK is acquired
- 2000: More acquisitions: JAN Import and Queens Biscuits
- 2003: Danica Foods is acquired and Queens Biscuits is sold
- 2004: Today Good Food Group consists of 10 companies

17.5.4 **Subsidiaries**

- **Scandic Food A/S (Denmark)**
  - **Production and sales:** Jams, marmalades, honey, syrup, juice, pickled vegetables and non-dairy cream.

- **Scandic Food Sp. z o. o. (Poland)**
  - **Production and sales:** Frozen fruits and vegetables, jams, marmalades and pickled vegetables.

- **Danica Foods (Norway and Sweden)**
  - **Production and sales:** Jams, marmalades and juices.

- **Erik Troels-Smith A/S (Denmark)**
  - **Production and sales:** Wine and spirits.

- **Streamline Foods Ltd. (UK)**
  - **Sales:** Quality food importers and distributors

- **JAN Import A/S (Denmark)**
  - **Production and sales:** Import, packing and distribution of nuts, dried fruits and pasta.

- **Dan Labels A/S (Denmark)**
  - **Production and sales:** Production, sales and distribution of self-adhesive and
17.5.5 Financials

Key figures:
- Turnover: 900 million DKK
- Balance: 445 million DKK
- Employees: >650
- Export: >60%
- Markets: >65 countries

17.5.6 Product list

The companies in the Good Food Group produces and supplies a wide range of quality food products, e.g. jams, marmalades, stewed fruit, juices, frozen fruits and vegetables, honeys, wine, nuts, rice and pasta. Good Food Group has production facilities and sales offices in Denmark, Sweden, Norway, Poland, United Kingdom, Germany, USA and Russia. The Group provides food products to customers in more than 65 countries.

17.5.7 Private and branded Product mix

Good Food Group offers private label products and is important product development partner and production partner to numerous customers. At the same time Good Food Group offers branded goods, e.g. Streamline, Skaelskor Frugtpplantage, Sun Island, Green Valley, Danish Orchards, Dana and Danish Garden. It captures 40% of the Danish market.

17.5.8 Deals mainly in the below categories
- Strawberry
- Black Current
- Raspberry
- Orange
• Cauliflower
• Brussels Sprouts
• Gherkins

17.5.9 What are the specifications of the products
Minimum EU certifications have to be met.

17.5.10 Currently what are they sourcing from India
Good Food Group was planning to take over Marico for producing jams and jellies earlier but now the idea has been dropped. Now they are looking forward for NOGA (Nagpur Orange Growers Association). Presently Good Food is into red fruits and vegetables but is looking at India for sourcing yellow fruits and vegetables.

17.5.11 Products they want to source from India (yellow base)
• Orange
• Pineapple
• Peach
• Apricot
• Guava
• Frozen mixed vegetables

17.5.12 Trade terms
Normal payment term: Cash against document after 30 days on arrival of goods. Super market takes 35-40 days for payment.

17.5.13 Production facilities
• 50,000 tons of Jams and Jellies per annum in Denmark, Sweden and Norway
• 17,000 tons of FFV per annum in Poland.

17.5.14 Main markets
England, US, Australia, Russia are the main export market for Good Food Group.

17.5.15 Requirement
Good Food wants stability of supply.
17.6 **COMPANY: INTERTERRA (SPAIN)**

17.6.1 **Contact person: Mr. Berthold Steindl**

17.6.2 **Company Profile**

The Medina Group, created more than 40 years ago, was founded by Mr. Antonio Medina. He was a pioneer in growing of strawberries in Huelva.

Presently, the Medina Group produces and markets fresh fruit (plums, hard and soft persimmons, strawberries, citrus fruits, peaches, kumquats and figs), frozen fruit (strawberries, plums, soft persimmons; strawberry and raspberry plants), greens and fresh vegetables (potatoes, carrots and onions).

AGROMEDINA has a strong presence in both domestic and international markets. Nationally, AGROMEDINA has more than 60 customers throughout Spain and has several customer-distributors in the main distribution markets (Mercamadrid, Mercabana, Mercabilbao Mercasevilla, etc).

As far as international markets are concerned, its produce is sold all over Europe (Germany, France, England, Holland, Belgium, Italy, Portugal, Sweden, Finland, Denmark and Austria). It has also entered new markets like Brazil, Canada, Singapore and Hong Kong.

17.6.3 **What do they buy and from where**

They deal only with exotic fruits like Persimmon (kaki). Part of their requirement of this fruit comes from own/contracted farms in Europe. The remaining is sourced from countries like China and Mexico. Medina Group produces and markets the following products.

- **Fresh Fruits**
  - Plums
  - Persimmons
  - Strawberries
  - Citrus fruits
  - Peaches
  - Kumquats
  - Figs

- **Frozen Fruits**
  - Strawberries
  - Plums
APEDA (Agricultural and Processed Food Products Exports Development Authority)

- Soft persimmons
- Strawberry and raspberry plants

- Greens and fresh vegetables
  - Potatoes
  - Carrots
  - Onions

17.6.4 What are the specifications of the products
Minimum EU certifications have to be met. The company provides its specifications only to partners, so at this stage has refused to share the specifications.

17.6.5 What is Interterra client mix
The Company is currently supplying to small retailers in Spain and neighboring countries.

17.6.6 Currently what are they sourcing from India: Not importing anything from India.

17.6.7 Perception about Indian products: Unable to answer the questions
17.7 COMPANY: MONDI FOODS NV, BELGIUM

17.7.1 Contact person: Mr. Noeyens

17.7.2 Company Profile
Mondi food is a 40 years old company headquartered in Belgium. It was initially set up in Holland and has production facilities in Belgium, Poland and Serbia and Montenegro. Mondi Foods is dedicated to producing close to source, with growing investments in Europe's major fruit-growing regions as part of a policy of backward integration.

17.7.3 Product list
- IQF fruits whole, crushed and sliced/diced fruits.
- Fruit puree, frozen, aseptic, chilled or preserved in SO2.
- Concentrated fruit purees.
- Fruit juice concentrates, frozen, aseptic or chilled
- Organic

17.7.4 What do they buy and from where
Though they source a wide variety of fruits, some of the major categories are – Apple, Kiwi, Peach, Berries, Guava, Mango, Melon, and Papaya.

17.7.5 What are the specifications of the products
Minimum EU certifications have to be respected.

17.7.6 What is Mondi Foods client mix
The client list of Mondi Foods includes all the major retailers, like Metro, Carrefour, and Tesco etc. However to these retailers supplies are made through agents/intermediaries.

17.7.7 What is the service levels expected from the exporters
Mondi Foods expectations are as follows:
- Quality according to specifications
- Supplies according to contractual agreement
- Responsive suppliers

17.7.8 Currently what are they sourcing from India
Mondi foods don’t source anything from India as of now

17.7.9 Perception about Indian products
They have not sourced from India till now, so have a neutral opinion.

17.7.10 Products which has potential to be exported from India

- Mangoes
- Banana
- Pineapple

However the company is not interested in sourcing from India as of now.

17.7.11 Trade terms
Mondi foods have an open account policy for most of its suppliers, with a credit period ranging from 30-60 days.
CHAPTER 18: PROFILES OF LOGISTICS AND SHIPPING PARTNERS

18.1 LOGISTIC PARTNERS

18.1.1 MAERSK LOGISTICS

Maersk Logistics is a recognized leader in the international logistics market, providing customized solutions for integrated supply chain management, warehousing and distribution, customs house brokerage, airfreight, and NVOCC services through our subsidiary DSL Star Express. Spective is Maersk Logistics supply chain visibility, event management and business intelligence solution. Spective provides a single, online access point to end-to-end supply chain information from the manufacturing process through to the distribution order, allowing clients to run the most connected, efficient and responsive supply chains. Spective combines world class technology with Maersk Logistics' global supply chain experience and operational capability to deliver business solutions that raise the level of confidence and control in clients' supply chains.

The company is part of the A.P. Moller-Maersk Group, which has more than 100,000 employees in more than 125 countries around the world. Besides shipping and logistics, the A.P. Moller-Maersk Group is engaged in the exploration and production of oil and gas, ship building, industry, supermarkets, and IT services.

<table>
<thead>
<tr>
<th></th>
<th>IFRS</th>
<th>UK GAAP **</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year ended 31 December 2005</td>
<td>Year ended 31 December 2004</td>
</tr>
<tr>
<td></td>
<td>£’000</td>
<td>£’000</td>
</tr>
<tr>
<td>Group turnover</td>
<td>538,713</td>
<td>583,368</td>
</tr>
<tr>
<td>Gross profit</td>
<td>275,315</td>
<td>307,088</td>
</tr>
<tr>
<td>Operating profit</td>
<td>86,422</td>
<td>52,099</td>
</tr>
<tr>
<td>Profit on ordinary activities after taxation</td>
<td>80,292</td>
<td>68,632</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

18.1.2 DHL

DHL is the global market leader in international express, overland transport and air freight. It is also the world's number 1 in ocean freight and contract logistics. DHL offers a full range of customized solutions - from express document shipping to supply chain management. With the acquisition of Exel plc in December 2005, Deutsche Post World
Net further strengthened its logistics power. As a result, DHL is now operating with two new logistics brands: DHL Exel Supply Chain and DHL Global Forwarding.

- Number of Employees: around 285,000
- Number of Offices: around 6,500
- Number of Hubs, Warehouses & Terminals: more than 450
- Number of Aircraft: 420
- Number of Gateways: 240
- Number of Vehicles: 76,200
- Number of Countries & Territories: more than 220
- Shipments per Year: more than 1.5 billion
- Destinations Covered: 120,000

Key financials for DHL Worldwide Network S.A. /N.V.

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Subsidiary of Deutsche Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>December</td>
</tr>
<tr>
<td>2004 Sales (mil.)</td>
<td>$33,524.4</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>21.6%</td>
</tr>
<tr>
<td>2004 Employees</td>
<td>171,980</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

18.1.2.1 Divisions of DHL

**DHL Express**
DHL Express has a network covering over 4,000 offices and more than 120,000 destinations worldwide. It is the result of the consolidation of the former DHL Worldwide Express business and the Deutsche Post Euro Express parcels business and offers Same Day, Express, Parcel and Freight services.

**DHL Freight**
DHL Freight offers international and national transport solutions for part and full load in Europe. They move goods by road, rail and a combination of the two. DHL Freight covers the former non-documents and non-parcels business as well as the former Danzas Eurocargo road transport business.
**DHL Global Forwarding**
DHL Global Forwarding is the market leader in air and ocean freight and a project logistics services provider operating worldwide.

**DHL Exel Supply Chain**
DHL Exel Supply Chain provides customized, IT-based solutions along the entire supply chain. Along with core procurement logistics, warehousing and sales logistics operations, they offer top-flight value-added services such as finishing, co-packing, price labeling, billing, order processing - all the way to sales promotion and financial services.

### 18.1.3 Kuehne + Nagel Inc
Kuehne + Nagel Group now also ranks among the top five worldwide contract logistics players following its recent acquisition of ACR Logistics. Kuehne + Nagel offer the complete range of one-stop-shop road transportation products and services. The company provides total flexibility to changing market requirements because of its close partnerships with a reliable fleet of sub-contractors. Kuehne + Nagel also offer dedicated and individual delivery services throughout Europe. Its road transportation products come with sophisticated online tracking and tracing capabilities.

#### Key financials

<table>
<thead>
<tr>
<th>In CHF million.</th>
<th>January – September</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2004</td>
</tr>
<tr>
<td>Turnover</td>
<td>8,392</td>
</tr>
<tr>
<td>Gross profit</td>
<td>1,712</td>
</tr>
<tr>
<td>Operational result (EBITDA)</td>
<td>343</td>
</tr>
<tr>
<td>Earnings before tax (EBT)</td>
<td>239</td>
</tr>
<tr>
<td>Net earnings</td>
<td>163</td>
</tr>
</tbody>
</table>

*Technopak research analysis

Kuehne + Nagel have been expanding its overland operations and have over the past months gradually come closer to the goal of operating its own European network. Intensified cooperation between the company’s national organizations across Europe and the successful integration of acquired firms contributed to a 21.0 per cent increase in turnover. The operational result was up 27.2 per cent compared with the previous year; the EBITDA margin remained stable at 1.7 per cent.
Of the group’s total gross profit, Sea & Air Logistics contributed 53.1 per cent, Contract Logistics, the other main pillar of the Group’s business, 31.3 per cent and Rail & Road Logistics 14.4 per cent.

18.1.4 Eagle Global Logistics

Eagle Global Logistics provides a multitude of services such as, multi-modal domestic and international transportation, value chain strategy consultation, warehouse management, order and inventory visibility and control, materials handling, import/export facilitation and information technology solutions to ensure seamless, single-source accountability for our customers. The company’s total logistics management services include: Transportation (International & Domestic Freight Forwarding via air, ocean and ground) Import and Export Services.

Key financials for EGL

<table>
<thead>
<tr>
<th>(Thousands, except share amounts)</th>
<th>2005</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues</td>
<td>$3096516</td>
<td>$2741392</td>
</tr>
<tr>
<td>Net Revenues</td>
<td>948474</td>
<td>865366</td>
</tr>
<tr>
<td>Operating Income</td>
<td>95410</td>
<td>81324</td>
</tr>
<tr>
<td>Net Income</td>
<td>58160</td>
<td>50878</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis

EGL Eagle Global Logistics has launched a new integrated delivery network in Europe offering customer a three-tier service solution for road and express deliveries across the continent. All shipments in EGL’s new European Road and Express service are collected and delivered by EGL for maximum service control. They also offer full shipment visibility, local customer support and a simple pricing structure and door-to-door service with proven service reliability. EGL is also UK’s leading Customs Provider and is at the forefront of all Customs Initiatives providing the following Customs clearance regimes:

- Customs Freight Simplified Procedure (CFSP)
- Customs Bonded Warehousing
- Inward/Outward Processing Relief
- Local Clearance
- Single European
18.1.5 Penske

Penske Logistics is a wholly owned subsidiary of Penske Truck Leasing, a joint venture between Penske Corporation and GE Capital. Penske offers worldwide services in the field of transport management and integrated logistics services and can dispose of more than 200,000 trucks ranging from light to heavy duty. It provides a host of logistics solutions including Transport, Dedicated Contract Carriage, Distribution Center Management, Transportation Management Services and Lead Logistics Provider. Penske Logistics helps consumer packaged goods producers and distributors meet the demands of today’s retailers. Penske also provides professional, reliable personnel who are dedicated to helping meet your client satisfaction goals. It also offers third party logistics services, managing any combination of inventory, transportation, inbound and outbound flow, supplier and reverse logistics operations.

Penske has been in Europe since 1997. Operating from several locations in the Netherlands, Germany, France, Italy and Estonia, the company disposes of 150,000 m² of warehousing and cross dock facilities. The company’s European transportation management center is based in Roosendaal. Together with other campuses in Coevorden and Venlo, the company operates as launching pads for services to different parts of Europe.

18.1.6 Soonius Transport B.V.

Soonius Transport B.V. has all vehicles with modern, temperature-controlled box bodies and trailers. Their trailers have roller-decks and full side door walls which increase the capability of accepting various freight and return-freight consignments. Three of their trucks cover national distribution whilst the remaining 38 vehicles cover international routes. Including the charters, they currently have thirty-five trucks traveling internationally.

Specialization is transportation daily groupage-freights of vegetables and fruit to various destinations in Scandinavia. 22 Tractors with chill and freeze trailers of which there are 5 with roller decks and 10 with full side-door walls 19 Ridges with chill and freeze box-body and three-axle chill and freeze trailers All the trucks and tractors are replaced within five years to ensure that all our transportation equipment is of a high standard.
18.1.7 **Seabrex/Ebrex**

Seabrex/Ebrex is a specialist company in the area of perishables. Fruit and vegetables arriving in the Port of Rotterdam are handled by Seabrex at its own terminals located in the heart of Rotterdam Fruitport. Cargo arriving by air is received by their offices at Schiphol Airport, Amsterdam.

Products from all over the world are handled. Countries and regions of origin are a.o.: Chile, Argentina, Brazil, Central America, Cuba, United States, Canary Islands, Morocco, South Africa, New Zealand etc. etc. These goods arrive both in specialized reefer ships and reefer containers.

The company is involved in joint ventures in terminal operations in other parts of the world, such as in South Africa and Mexico. The objective of these projects is to ensure a smooth, reliable, integrated supply- and cold chain from the packing house to the doorstep of the European receivers.

The comprehensive services offered are:

- Terminal operations
- Forwarding
- Quality control
- Cold storage
- Customs formalities
- Distribution
- Supply chain management
18.2 SHIPPING PARTNERS

18.2.1 A.P. MOLLER - MAERSK A/S

Maersk Line is one of the world's largest container shipping companies with a fleet of more than 500 containerships with an overall capacity of more than 1.3 million TEU's (twenty-foot-equivalent units). It is a part of the A.P. Moller - Maersk Group which comprises of A.P. Moller -Maersk A/S and subsidiaries and employs more than 110,000 people in over 125 countries. Besides containerships, the A.P. Moller -Maersk fleet includes bulk carriers, supply and specialty ships, and tankers. The company also is a major container terminal operator, through APM Terminals. In addition, A.P. Moller - Maersk drills for oil and gas, primarily in the North Sea, and owns one of Denmark's largest grocery and general merchandise chains. Other units build ships and shipping containers and provide air cargo services.

Key financials for A.P. Møller - Mærsk A/S

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public (Copenhagen: MAERSKA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>December</td>
</tr>
<tr>
<td>2005 Sales (mil.)</td>
<td>$33,058.4</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>8.7%</td>
</tr>
<tr>
<td>2005 Employees</td>
<td>67,498</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis
18.2.2 Evergreen Marine Corporation (Taiwan) Ltd

Evergreen Marine has sprouted into one of the world's largest container shipping companies having a fleet of about 100 container carriers that serve more than 240 locations in 80 countries. Its operations include several east-west routes between Asia and North America. Evergreen Marine holds stakes in companies such as passenger and freight carrier EVA Airways. Other affiliates are engaged in container manufacturing, shipbuilding, port operations, real estate development, and engineering.

Key financials for Evergreen Marine Corporation (Taiwan) Ltd

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public Taiwan: Full Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>December</td>
</tr>
<tr>
<td>2004 Sales (mil.)</td>
<td>$4,080.4</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>30.1%</td>
</tr>
<tr>
<td>2004 Net Income (mil.)</td>
<td>$377.9</td>
</tr>
<tr>
<td>1-Year Net Income Growth</td>
<td>257.5%</td>
</tr>
<tr>
<td>2004 Employees</td>
<td>2,518</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis*
18.2.3 NIPPON YUSEN KABUSHIKI KAISHA (NYK LINES)

Nippon Yusen Kabushiki Kaisha (known as NYK Line) is one of Japan’s largest marine transportation providers and has a fleet of about 650 vessels. NYK Line provides liner service, specialized carriers, and tankers. The company also offers logistics services such as customs clearance, inventory management, packaging, supply chain management, and warehousing. In addition, it operates round-the-world cruise line NYK Cruises. NYK Line is a member of the Mitsubishi keiretsu (group of companies loosely linked by cross-ownership).

Key financials for NYK Line

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public (Exchange: Tokyo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>March</td>
</tr>
<tr>
<td>2006 Sales (mil.)</td>
<td>$16,321.7</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>9.3%</td>
</tr>
<tr>
<td>2006 Net Income (mil.)</td>
<td>$782.9</td>
</tr>
<tr>
<td>1-Year Net Income Growth</td>
<td>18.0%</td>
</tr>
<tr>
<td>2006 Employees</td>
<td>33,000</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis
18.2.4 Neptune Orient Lines Limited

Neptune Orient Lines is one of the world's largest container shipping and logistics companies and through its US-based APL subsidiary. Neptune Orient provides container transportation on the world's major ocean trade routes. APL accounts for more than 80% of the company's sales. Neptune Orient's APL Logistics unit provides supply chain management services. Neptune Orient sold its American Eagle Tankers unit to Malaysia International Shipping Corporation in 2003. The government of Singapore owns a third of Neptune Orient Lines.

Key financials for Neptune Orient Lines Limited

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public (Pink Sheets: NPTOF; Singapore: NEPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>December</td>
</tr>
<tr>
<td>2004 Sales (mil.)</td>
<td>$6,544.8</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>18.5%</td>
</tr>
<tr>
<td>2004 Net Income (mil.)</td>
<td>$942.7</td>
</tr>
<tr>
<td>1-Year Net Income Growth</td>
<td>119.8%</td>
</tr>
<tr>
<td>2004 Employees</td>
<td>11,304</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis*
18.2.5 Hanjin Shipping Co., Ltd.

Hanjin Shipping has 140 vessels visiting ports all over the world. The company's fleet, which includes container, bulk, and LNG (liquefied natural gas) carriers and oil tankers, serves 70 major ports. Its network includes nine dedicated marine terminals. Hanjin Shipping's bulk operations consist of liners, trampers, and specialized services for shipping both dry cargo (such as coal) and liquid cargo (such as crude oil). The company also provides logistics services, including intermodal freight transportation. Hanjin Shipping is part of South Korea's diversified Hanjin Group.

Key financials for Hanjin Shipping Co., Ltd

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public (Exchange: Korea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>December</td>
</tr>
<tr>
<td>2005 Sales (mil.)</td>
<td>$5,858.7 (est.)</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>(1.1%) (est.)</td>
</tr>
<tr>
<td>2005 Net Income (mil.)</td>
<td>$473.0</td>
</tr>
<tr>
<td>1-Year Net Income Growth</td>
<td>(23.3%)</td>
</tr>
<tr>
<td>2005 Employees</td>
<td>3,500</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis
18.2.6 **Mediterranean Shipping Company, S.A.**

Mediterranean Shipping Company (MSC) founded in 1970, is one of the world's largest container transporters. The company's fleet of almost 300 containerships serves more than 200 ports on five continents. MSC is the leading provider of direct port calls, serving the 5 continents and calling at 215 ports through 175 main direct and combined weekly liner services. MSC is also active in the softer side of marine transportation, providing leisure cruises through its MSC Cruises division. MSC has also invested in crew training, shipyards, container workshops, ship planning centers and dangerous cargo management centers, which control the proper stowage of hazardous cargo worldwide through a very sophisticated MSC computer system. It has 350 dedicated local offices supported by an MSC staff worldwide of over 28,000 professionals.

**Key Figures of MSC as of 2005**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Quantity Of vessels</td>
<td>278</td>
</tr>
<tr>
<td>Quantity of TEU’s (Intake Capacity)</td>
<td>780,000</td>
</tr>
<tr>
<td>Quantity of Full TEU’s carried (Total throughput)</td>
<td>6,500,000</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis*
18.2.7 **Mitsui O.S.K. Lines, Ltd.**

MOL is one of the world's largest marine transportation companies and operates a fleet of more than 600 vessels. The company's fleet includes containerships, bulk carriers, car carriers, tankers, and liquefied natural gas (LNG) carriers. MOL also operates cruise ships, tugboats, and domestic ferries. In addition, the company provides services such as warehousing and freight forwarding and operates marine terminals.

### Key financials for Mitsui O.S.K. Lines, Ltd.

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Public (Exchange: Tokyo)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal Year-End</td>
<td>March</td>
</tr>
<tr>
<td>2005 Sales (mil.)</td>
<td>$10,909.6</td>
</tr>
<tr>
<td>1-Year Sales Growth</td>
<td>15.6%</td>
</tr>
<tr>
<td>2005 Net Income (mil.)</td>
<td>$913.6</td>
</tr>
<tr>
<td>1-Year Net Income Growth</td>
<td>74.2%</td>
</tr>
<tr>
<td>2005 Employees</td>
<td>7,385</td>
</tr>
</tbody>
</table>

*Technopak Research Analysis*
CHAPTER 19: REFERENCES

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http://www.igd.com