European Foundation for the Improvement of Living and Working Conditions

Trends and drivers of change in the food and beverage industry in Europe: Mapping report

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emcc european Monitoring Centre on Change

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Introduction

Increased competition, food scares and new consumer trends are among the key challenges facing the food and beverage industry in Europe. While these challenges pose a threat to some companies they can be an expansion opportunity for others. In response to these new challenges, food companies are improving competitiveness by restructuring, and intensifying the fight for market share through product differentiation and/or the development of new food products.

Such fundamental changes and new priorities in the food industry also greatly affect local communities and society as a whole when local unemployment rises because processing plants are closed or when new healthy food products are developed. Thus, food and beverage companies do not merely battle for market share in their own sector, they also operate in a larger socio-economic context in which their strategic choices affect the welfare of many Europeans.

Figure 1: *Change in the food and beverage industry*

This mapping report is part of a study of the food industry that also features four case studies, two cluster studies and four scenarios. It gives a concise overview of the food industry and identifies the main trends and key drivers of change. The report should also enable readers to locate the case studies in relation to these drivers.

The report focuses on trends and drivers of change in relation to food manufacturing (NACE DA15.1 – DA15.9). It is based on national and European publications from a range of sources including the European Commission, the European Federation of Food, Agriculture and Tourism Trade Union (EFFAT) and the Confederation of the Food and Drink industries of the EU (CIAA). The data used in the report are based on the Eurostat database and CIAA publications. Please note that in some cases data from individual EU Member States and data by sub-sectors were not available.

Overview of the sector

The food industry is dominant in the EU manufacturing sector and plays a central role in the European economy. Its contribution to the EU gross domestic product (GDP) was around 1.8% in 2001. (The manufacturing sector's total share of EU GDP was 19.1%.)

The food industry (NACE DA15) can be divided into nine sub-sectors:

- Meat products (DA15.1)
- Oils and fats (DA15.4)
- Animal feeds (DA15.7)
- Fish products (DA15.2)
- Dairy products (DA15.5)
- Various food products (DA15.8)

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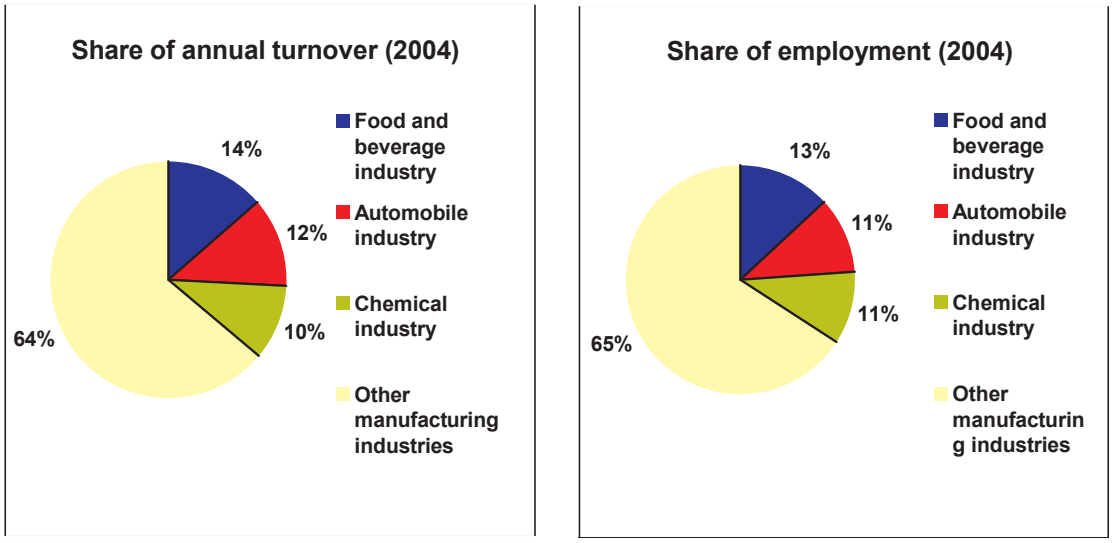
- Processed fruit and vegetables (DA15.3)
- Flour and starch products (DA15.6)
- Beverages (DA15.9)

The various food products sub-sector includes bakery products, pastry, cakes, sugar, chocolate and coffee, and is the largest of the nine in terms of turnover, number of enterprises and employment.

Position in the European manufacturing sector

In 2004, the food industry had EUR 815 billion in turnover and four million workers, making it the largest employer in the manufacturing sector (CIAA 2005).

Figure 2: *The food industry's share of turnover and employment in the manufacturing sector (2004)*



Source: *CIAA 2005, p. 8.*

The dominant position is also reflected in the industry's share of value added, 11.6%, in the manufacturing sector.

Changes in turnover

In the last 10 years, the average growth rate per annum in the food industry was 1.8% (CIAA 2005, p. 5), but in 2003–2004 turnover in the food industry rose by 2%. However, national growth rates differ. For example, in 2003–2004 turnover increased by 13.1% in Latvia but decreased by 2.2% in Denmark (CIAA 2005, p. 7).

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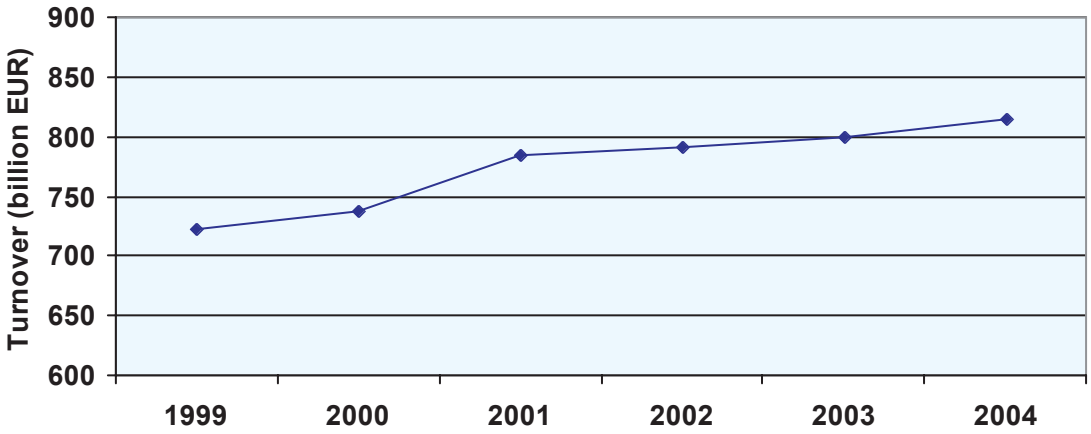
Figure 3: *Changes in turnover (1999–2004)*



Source: *Eurostat and CIAA 2005*

In the years 1999–2004 turnover in the food industry increased by 12.7%. Oils and fats stands out among the nine sub-sectors, with a remarkable 39.2% increase in 2000–2002.

National differences in turnover

There are significant national differences among the EU Member States' shares of the total food industry turnover. The leading producers of food and beverages in the EU – France, Germany, Italy, the UK and Spain – account for more than 70% of the total turnover (CIAA, **http://www.ciaa.be**). However, this ranking of the countries to some extent reflects their relative sizes. In terms of turnover per capita, the real giants in the European food industry are Ireland, Denmark and Belgium, while the Czech Republic, Estonia and Slovakia have the smallest.[1]

National differences are also evident in the industry's share of annual turnover in the national manufacturing sectors. For example in Cyprus food manufacturing is around 34% of national turnover, while in Finland it is 8%.

Structure of the sector

In 2001, the European food industry consisted of more than 281,000 enterprises ranging from small and medium sized enterprises (1-249 employees) to large multinational companies (250+ employees). Almost half of all the European food industry enterprises are in either Italy or France, while only 0.1% are in Luxembourg.

[1] Eurostat and own calculations based on available data from 2001 covering 14 Member States (France, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Poland, Slovenia, Greece, and Sweden are not included).

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Table 1: *Location, number and size of enterprises in the food industry (2001)*

			Member State's share of enterprises in the EU25 food industry (%)	Average number of employees per enterprise
		EU 25	100	15.6
Top 5	1	Italy	24.2	6
	2	France	23.7	n.a.
	3	Germany	12.6	23.2
	4	Spain	11.2	11.7
	5	Portugal	3.0	12
Bottom 5	16	Slovakia	0.3	56
	17	Latvia	0.3	n.a.
	18	Ireland	0.2	72.4
	19	Estonia	0.2	42
	20	Luxembourg	0.1	n.a.

Source: *Eurostat and own calculations based on available data from 20 Member States (Hungary, Malta, Poland, Slovenia and Greece are not included).*

Small and medium sized enterprises (SMEs)

The food industry has a great many SMEs: 99% of companies are SMEs, which employ 61% of the workers and account for 49% of the turnover (CIAA 2005, p. 6). According to Eurostat, large companies are primarily based in northern Europe while SMEs are often in the south (Eurostat 2004).

The share of SMEs in the national food industries is 100% in Cyprus, Poland, Slovenia and Malta, while Ireland has a relatively small share, 69.9%. Almost half of all the food industry SMEs in Europe are located in either Italy (24.4%) or France (23.9%).[2]

Large manufacturers in Europe

The 10 largest manufacturers in Europe have around 12% of the turnover in the European food industry. Two of the largest European food companies, Nestlé and Unilever, are among the 10 largest food companies in the world.

[2] Eurostat and own calculations based on available data from 2001 covering 23 Member States (Luxembourg and Greece are not included).

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Table 2: *Top 10 manufacturers worldwide and in Europe (by sales in EUR billions 2004–2005)*

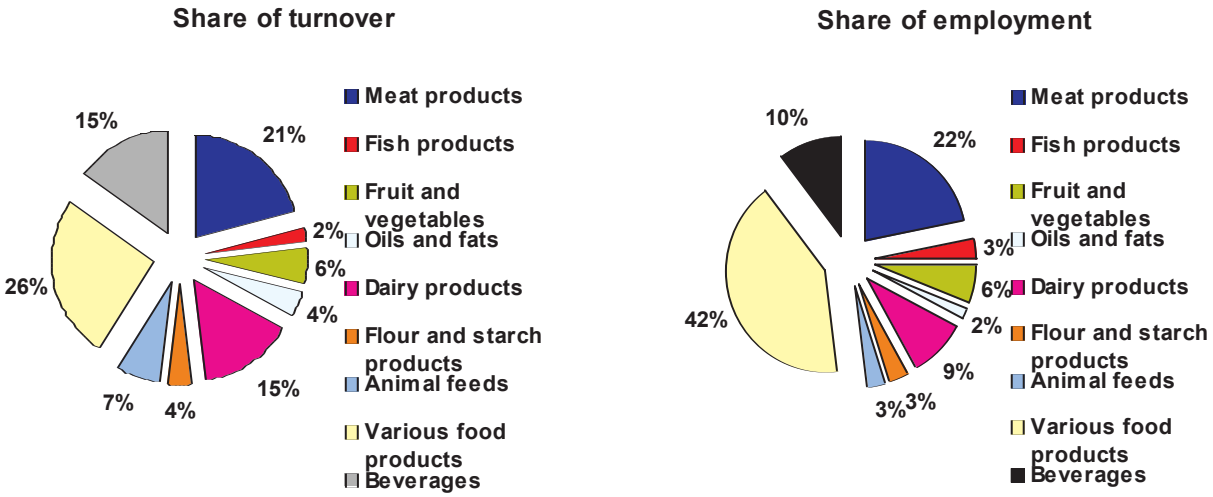
Worldwide			Europe		
Company	**Country**	**Total sales**	**Company**	**Country**	**European sales**
Nestlé	CH	56.2	Nestlé	CH	23.4
Cargill	USA	57.1	Unilever	NL/UK	17.9
Unilever	NL/UK	40.4	Cadbury Schweppes	UK	9.9
Archer Daniels Midland	USA	29.0	Danone	F	9.4
Kraft Foods Inc.	USA	25.9	Associated British Food	UK	8.2
PepsiCo	USA	23.5	Schottish & Newcastle	UK	7.3
Tyson Foods	USA	21.2	Heineken	NL	7.1
Bunge	USA	20.6	Diageo	UK	5.7
The Coca Cola Company	USA	17.7	Carlsberg	DK	4.8
Sara Lee	USA	15.4	Südzucker	DE	4.8

Source: *CIAA 2005, p. 18.*

Turnover, employment and labour intensity by sub-sector

The food industry is more labour intensive than the manufacturing sector as a whole (Eurostat 2004). Analysis of the distribution of turnover and employment in the sub-sectors shows that there is not a one-to-one relationship between share of turnover and share of employment, indicating that the sub-sectors vary considerably according to labour intensity. The two charts in Figure 4 illustrate this.

Figure 4: *Share of turnover and employment by sub-sector (2001)*



Source: *CIAA 2005, p. 8.*

Figure 4 shows that the share of turnover in each of the sub-sectors, meat products, fruit and vegetables, fish products and flour and starch is very close to the share of employment in these sub-sectors. In comparison, the various food products sub-sector, stands out as having an employment share almost twice that of its turnover share, implying high labour intensity. Three sub-sectors – beverages, dairy products and animal feeds – show the opposite pattern.

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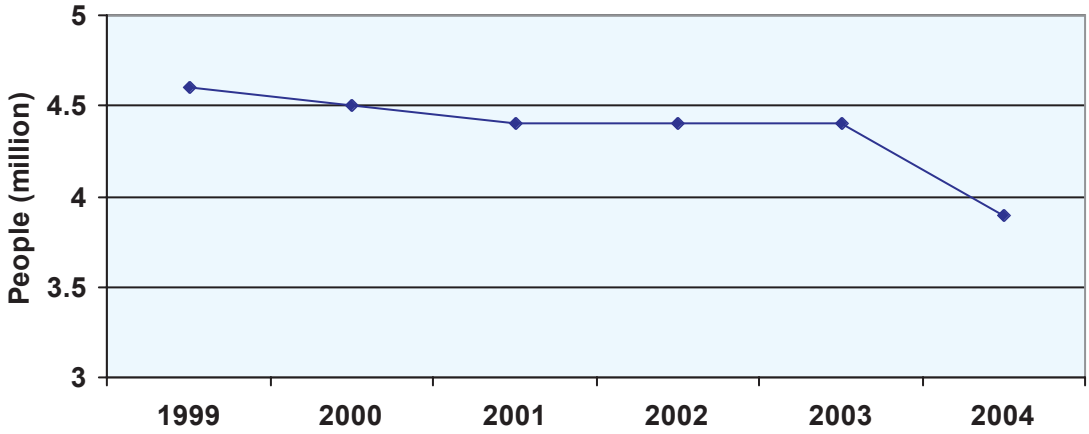
Employment

Employment in the food and beverage sector, after a period of stability at around 4.4 million, dropped by 11.4% during 2003–2004. However this overall figure masks different developments in the countries. For example, while Slovakia's decrease was close to the average at 9.1%, employment in Latvia rose by 10.6% (CIAA 2005, p. 7).

Figure 5: *Changes in employment (1999–2004)*

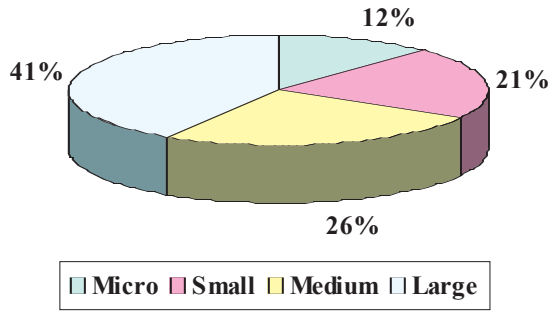


Source: *Eurostat and CIAA 2005*

The overall decrease in 1999–2004 was 15.2%, the beverages sub-sector being the hardest hit with a 2.5% decrease in 2000–2003.

Around 41%of food industry employees work in large enterprises (250+ employees) and around 26% work in medium sized enterprises (100-250 employees). This leaves a large proportion (33%) in small or micro enterprises. Regrettably, data on the proportion of food sector employment in multinational companies are not available.

Figure 6: *Share of employment in food industry by size of enterprises (2001)*



Source: *Eurostat*

Value added

In 1999–2003, value added in the food industry increased by 10.4% and here, too, developments in the EU Member States show significant differences. In Ireland and Hungary, value added increased by 61.6% and 52.1%, respectively, while in the UK it decreased by 3.7% (Eurostat, 2000–2003).

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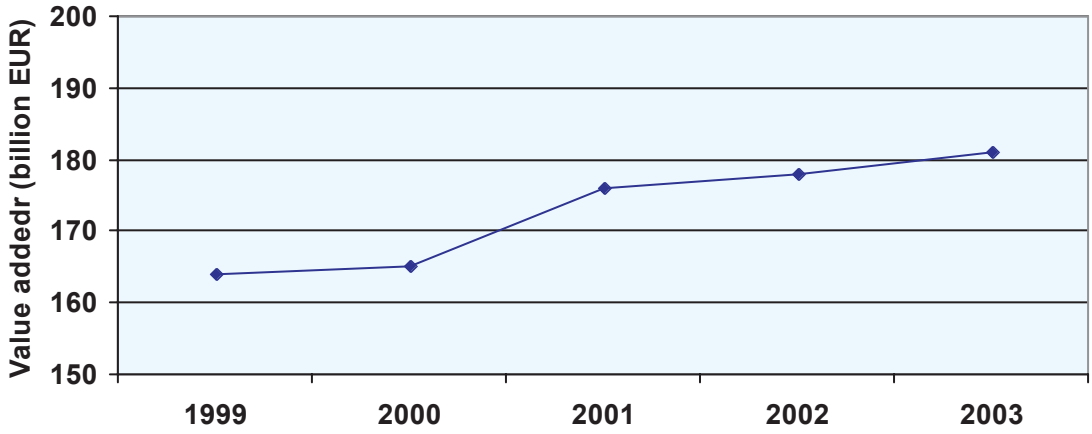
Figure 7: *Changes in value added (1999–2003)*



Source: *Eurostat*

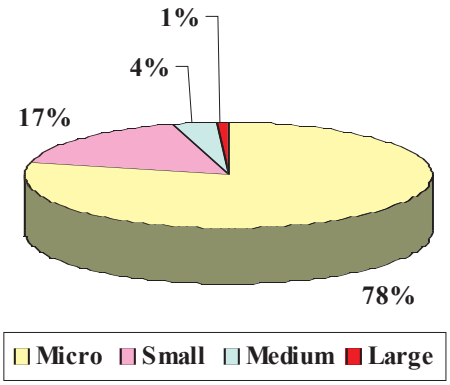
Value added in the oils and fats sub-sector increased by 48.4% in 2000–2002, while in the beverage sub-sector it increased by 3.4% in 2000–2003.

The various food products sub-sector had the largest share of value added and, together with meat products and beverages, accounted for around 70% of total value added in Europe.

Size of the enterprises in the food industry

Most (78%) of the 281,262 food companies in the European food industry (2001) are micro-companies with fewer than nine employees. The small (10–49 employees) and medium sized (50–249 employees) companies account for 17% and 4%, respectively, while the large companies (250+ employees) account for close to 1%.

Figure 8: *Distribution of micro, small, medium and large enterprises in the food industry (2001)*



Source: *Eurostat*

According to Eurostat the number of enterprises in the European food industry is falling. From 2000 to 2001, the number of enterprises was reduced by 11,000 (3.7% of all those in the industry). Most were micro-enterprises (10,523 or 4.5% of all the micro-enterprises). Only the number of medium sized enterprises increased in 2000–2001.

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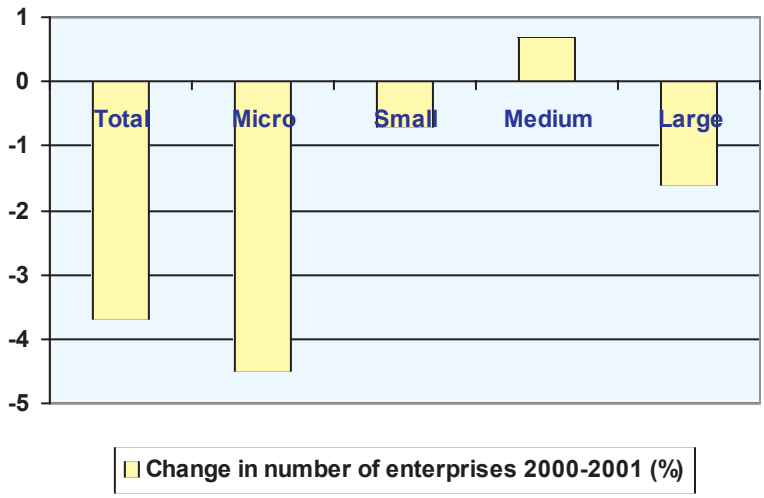
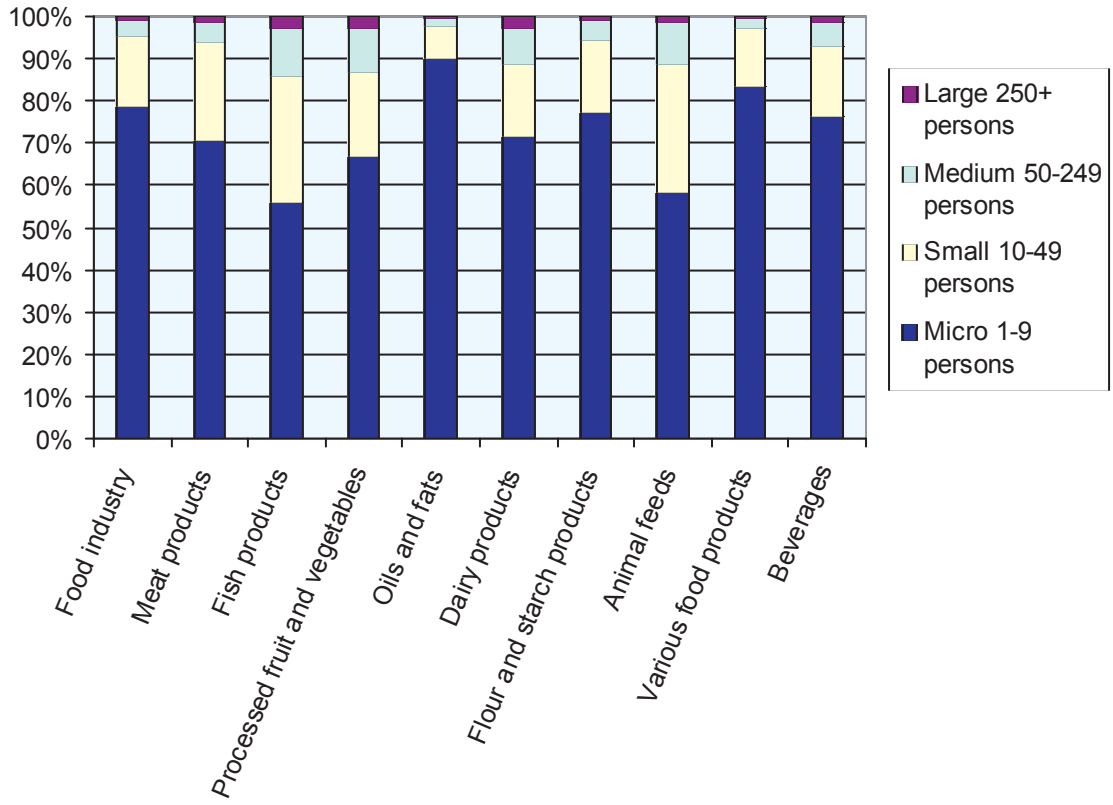
Figure 9: *Changes in the number of micro, small, medium and large enterprises in the food industry (2000–2001)*



Source: *Eurostat. Note that the change is calculated based on the total number of enterprises within each of the four categories and not the total number of enterprises in the food industry.*

Analysing enterprise size by sub-sector shows that the oils and fats sub-sector has the most micro-enterprises while most large enterprises are in the dairy products sub-sector.

Figure 10: *The distribution of micro, small, medium and large enterprises in the food industry – by sub-sectors (2001)*



Source: *Eurostat*

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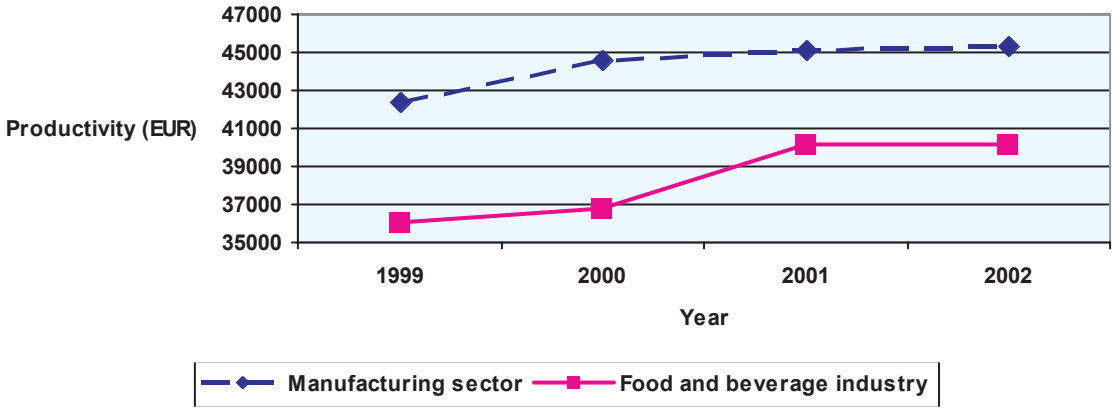
Productivity

Labour productivity (gross value added per employee per year) in the food industry is lower than in manufacturing as a whole. The industry has been catching up for some years – 1999–2002 productivity increased by 11.4% – and productivity in the industry has grown faster than in manufacturing as a whole.

However, since 2001 productivity growth has been stagnating both in the food sector and in manufacturing. Despite the productivity growth in the early years of the century, the food industry still lags, probably because of its large percentage of SMEs. Productivity can be increased either by rationalising production to increase labour efficiency or by producing higher value products that command higher prices.

The food industry is pursuing both paths, but with different emphases, and these days many European food enterprises must make the strategic choice between seeking the low-end market and striving to achieve maximum efficiency throughout the value chain, or going for the high-end, high-price market and the accompanying customer focus on safety, health, ethical standards, statements of origin, sensory qualities and so on.

Figure 11: *Changes in productivity per employee per year (1999–2002)*

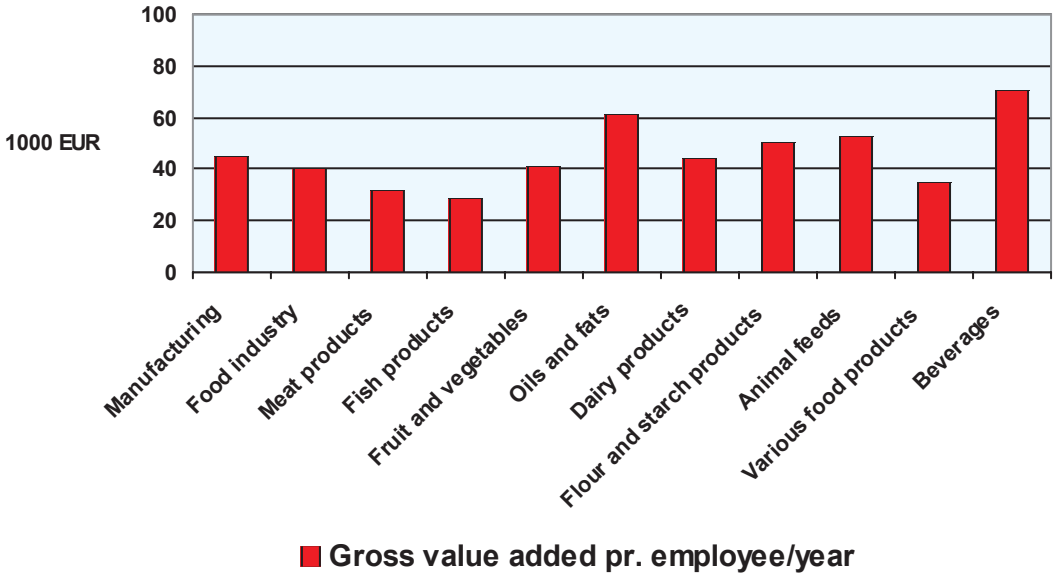


Source: *Eurostat*

Productivity by sub-sector

There are considerable differences between the productivity of the sub-sectors. Oils and fats and beverages have high productivity while fish products has the lowest.

Figure 12: *Productivity by sub-sector*



Source: *Eurostat*

Productivity in the oils and fats sub-sector grew by 32.8% in 2000–2002, while growth in the beverages sub-sector was considerably slower at 2.2%.

National differences

There are significant differences in labour productivity across Europe. For example, in 2001 it was EUR 103,200 in Ireland and EUR 59,900 in the UK, while in Slovakia it was EUR 7,500.[3]

[3] Eurostat, based on available data from 2001 covering 13 Member States (France, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Poland, Slovenia, Greece, Czech Republic, and Sweden are not included).

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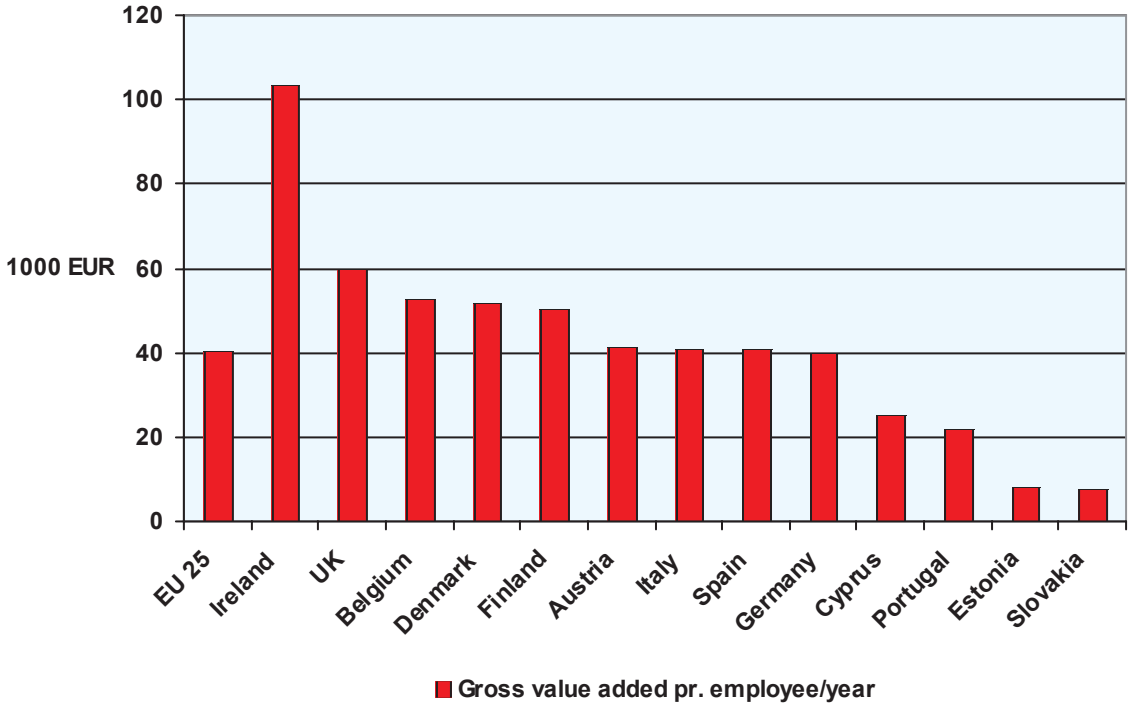
Figure 13: *Productivity in the EU Member States (2001)*



Source: *Eurostat, based on available data from 13 Member States (France, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Poland, Slovenia, Greece, Czech Republic and Sweden are not included).*

The high productivity in Ireland is largely because there the various food sub-sector is only 5% of total employment in the food industry (Cassidy 2004, p. 94). The relatively low productivity in Estonia and Slovakia suggests that productivity in general in the Central and East European countries might be lower than in the EU15.

The impact of enterprise size on productivity

Labour productivity in the food sector is also influenced by th enterprise size. This varies from the micro level (1-9 employees) to transnational corporations with several thousand employees and, according to CIAA, productivity in micro enterprises (1-9 employees) was just over one third of that in large ones (250+) (CIAA 2005).

Research and development and innovation

Research and research and development (R&D) spending drive innovation and increase competitiveness. However, in comparison to the US, Europe's main competitor, the European food industry is weak in R&D investment and innovation in products and processes, particularly for biotechnology (European Commission 2005, p. 41). In fact, the EU lags behind the US with 30% fewer patent applications, and in the past years there has been a rapid decline in GMO field research in the EU (European Commission, 2003).

Also, even though the amount spent on R&D in the European food sector rose by 20% between 1997 and 2001, R&D intensity defined as R&D expenditure in the food industry as a percentage of output in 2001 was lower in the EU than in the US, Canada and Japan (CIAA 2005). It is important to note here that a high percentage of R&D does not in itself indicate that consumers get better (healthier, tastier) food, because R&D effort might go into areas other than quality improvement, such as optimising logistics, developing new additives or packaging.

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In Europe, the leader in terms of innovation is the dairy sector (including cheese production), followed by ready-made frozen meals, frozen products and soft drinks (CIAA, **http://www.ciaa.be**).

Trade

In 2004, the EU25 exported EUR 45 billion worth of food and drink products to third countries, while importing EUR 41 billion worth. More imports in that year decreased the trade surplus by 24%. Intra-EU trade was EUR 139 billion in 2004.

Trends and drivers of change

Productivity initiatives to boost productivity in the food sector

While the labour productivity of the European food and drink industry – measured by the value added generated per person employed – has grown since the 1990s, it remains considerably lower than in other manufacturing sectors, including the chemical and automobile sectors. It is still more labour intensive than manufacturing as a whole.

Following trade liberalisation and falling freight rates, competition in the sector has increased considerably. The industry has also taken a number of initiatives to enhance productivity and maintain a competitive edge. They include the following measures intended to reduce costs and increase markets:

- Company restructuring:
  - Mergers and acquisitions to increase economies of scale and avoid excess capacity
  - Outsourcing business processes to permit focus on value creation in core competence areas in the business
  - Relocation of production facilities to low-wage countries and regions
- Automation of production and other processes to decrease dependence on human resources and transfer activities to self-service facilities for customers and partners
- Optimisation of logistical infrastructure and systems
- Energy saving measures through new technology and materials, new production methods and good-practice implementation

Other productivity initiatives include small food producers developing products, services or business models in order to increase value added. This strategy entails selling a narrow, specialised range of products to a large, even global, market using advanced logistics and the internet.

Medium sized companies with relatively high capital costs but lacking the capacity to develop into global businesses seem likely to lose out in the effort to boost productivity.

Traditionally, medium sized companies were able to thrive by depending on a local or regional market, perhaps supplemented with one or two well defined export markets. A number of factors helped. Some food industry products, such as meats or dairy products, have a strictly limited life and selling them outside a small area requires an investment in logistic capacity. With trade liberalisation and improved technologies for food preservation and distribution, both smaller and larger companies are better able to compete in providing perishable foods.

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At the low end, supermarket chains buy food wherever it is cheapest, and consumers become used to buying food at a low prices. This gives retailers considerable power to put pressure on producers to sell food at lower prices.

At the high end, small producers who manufacture high quality products can access dispersed customers by innovative logistics and internet technology. Their individual market share might be small but the value added that goes with the claims for uniqueness and quality is high.

This means that medium sized companies that are geared to mass production, but not at a global scale, and whose brand is recognised only locally, are caught in the middle. Those located in regions where the multinational producers have not yet gained a foothold, such as some new EU Member States, are obvious candidates for acquisition by multinationals wanting to expand their markets. Otherwise, they are threatened by closure as competitive pressures grow.

With reforms of the Common Agricultural Policy (CAP) (see next section), the competitive pressure and its consequences can be expected to grow, particularly in the sub-sectors of the food manufacturing industry with the closest links to agriculture.

The implications for the food-sector labour market are likely to be more mass redundancies among blue-collar workers in medium sized production facilities in Northern and Western Europe. Some of these blue-collar jobs will be relocated to the new Member States, but this will probably be temporary, as competitive pressures from overseas grows and these jobs are moved to countries such as China and India.

These trends mean that total employment in the European food sector is likely to fall as productivity grows. At the same time, developments in the food industry are creating a demand for employees with higher skills, both sector-specific and overall. These developments include greater regulation of the food production and handling, requiring a workforce that can understand and implement hygiene, safety and other regulations. The increasing use of technologies and of raw and ancillary materials from other countries requires workers who can understand instructions in foreign languages. Also, increased global trade requires sales and marketing staff who can function in different cultural and linguistic contexts.

In summary, productivity trends are towards

- a more segmented food industry
- concentration and cost cutting continuing among large corporations
- diversification and specialisation continuing among SMEs
- medium sized companies being squeezed in the middle
- fewer employed in the sector
- demand for new skills to match technological developments

Political and regulatory developments

Reforming the CAP

During the last decade the CAP reforms have moved policy from price and production subsidies to a more comprehensive farmer income support. An important decision at the Luxembourg Council on 26 June 2003 introduced a single farm payment scheme that is independent of production. The new single farm payments will be linked to the performance of farms with respect to environmental standards, food safety, animal and plant health and animal welfare

standards, as well as the requirement to keep all farmland in good agricultural and environmental condition (cross-compliance) (European Commission 2004c).

The latest step in the CAP reform was a reform of the sugar sector in 2005 that sets out to cut the guaranteed price for white sugar by 36% over four years. The next step is a reform of the policies supporting the wine sector and the fruit and vegetables sector.[4]

The CAP reform process is likely to continue resulting in fundamental changes in the conditions for food production in Europe. These changes in combination with the ongoing process of eliminating external trade barriers should, in theory, result in greater competition and lower prices for food products, thereby increasing pressure on the food manufacturing industry.

The European sugar sector

During the 2004–05 sugar campaign, the European sugar sector in the EU-25 consisted of 119 sugar refinery companies and 190 factories producing almost 20 million tonnes of white sugar, 17.5 million tonnes of it by the EU15.

Employment in sugar processing during the 1995–96 campaign in EU15 countries was 52,102 compared to 32,947 during the 2004–05 campaign. That is, employment decreased by almost 20,000 in less than a decade while production of white sugar stayed comparatively stable. The inclusion of the ten new Member States means that employment for the EU25 in 2004–05 was more than 53,000.

The sugar reform will transform the European sugar sector even more. The European Federation of Food, Agriculture and Tourism Trade Unions (EFFAT) expects the loss of 25,000 direct and 125,000 indirect jobs because of the new sugar regime. The Comité Europeen des Fabricants de Sucre (CEFS, **http://www.cefs.org/**) estimates that production capacity will be reduced by 20–40% and that the sector will undergo a period of consolidation resulting in fewer but stronger sugar refinery companies. For example France has 32 sugar refineries today and it is estimated that in 10 years only 20 will remain. It is likely that the EU sugar reform will lead to the closure of the least effective refineries throughout Europe, and there will be many rounds of restructuring in the least efficient countries such as Italy, Greece and Portugal.

Some consequences are already apparent. From February 2004 to March 2006, the ERM reports ten closures. Companies all over Europe were affected and at least 2,322 jobs were lost. Most companies run several sites and had to close some. Examples include the Belgian Raffinerie Tirlemontoise, which closed one of four sites, the Polish National Sugar Company, which closed four of 22 sites. In December 2005, Irish Sugar announced the closure of its plant in Carlow, with the loss of 326 jobs, and the relocation of the rest of the production to Mallow. However, on 15 March 2006, it announced that this site, the last remaining sugar processing plant in Ireland, would also close in May. The closure of the Mallow sugar beet factory in Co Cork resulted in the loss of 320 full- and part-time jobs and marks the end of the 80-year old sugar industry in Ireland.

[4] Speech by Commissioner Mariann Fischer Boel on 12 January 2006. *Challenges for EU Agriculture Policy in 2006*, **http://www.europa.eu.int/rapid/pressReleasesAction.do?reference=SPEECH/06/3&format=HTML&aged=0&language=EN&guiLanguage=en [accessed 1 February 2006].**

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The EU will go from being a net exporter of sugar to a net importer. The exports will be much lower and could concentrate on local neighbouring countries. CEFS believes that Brazil, as the market leader in sugar, will benefit because its main competitor, Europe, will have a smaller market share and that the refineries will benefit from a market with much less white sugar on the market as Brazilian producers supply raw sugar in need of refining. Many European sugar companies, including Vermandoise, Nordzucker and Danisco have prepared for the reform by rationalising their production. Many are looking for alternative markets, such as bio fuels, or are diversifying into complementary markets. Typical of these is Danisco, which has built significant core markets in food ingredients.

Sources: *CEFS, EFFAT and companies' websites*

A change of direction

The focus on preparing for the challenges that globalisation poses for the EU – not least greater competition from Asian countries – has important implications for the food industry. It has been suggested that to meet these challenges, the EU should increase spending on research at the expense of the CAP. In a 2005 speech, Prime Minister Blair said '…a modern budget for Europe is not one that 10 years from now is still spending 40% of its money on the CAP.'[5]

Such a change of political direction could provide further impetus to CAP reform and, in turn, greatly affect the food manufacturing industry. However, reforming the CAP is not easy because of many vested interests and the social consequences of such a political and financial reorientation. This might explain why the December 2005 agreement on the financial perspective for 2007–2013 did not fully reflect the stated intentions of a budget modernisation.

Food safety

During the last few years, food safety has been among the top issues of the political agenda in most European countries. Contributing factors include the BSE crisis in 1996 and the outbreak of foot and mouth disease in 2001, which caused many consumers to lose confidence in the safety of beef.[6] The recent spread of avian flu to Europe also contributed to consumer concern.[7]

Other, more local, food safety concerns have prompted national and international authorities to take steps to reduce risks of food-related ailments. Bacteria such as salmonella, campylobacter, and E. coli, which can cause serious illness, are most often acquired through contaminated food. In 2004, zoonotic diseases affected more than 380,000 EU citizens (European Food Safety Authority [EFSA] 2006). Besides the real threats to human health, the health risk might cause consumers to abandon the type of food known to be a source of the disease. For example, following the discovery of birds with avian flu in Italy in January 2006, consumption of poultry dropped by 70%, according to the Confederazione Italiana Agricoltori.[8]

[5] BBC News, **http://news.bbc.co.uk/1/hi/uk_politics/4122288.stm** [accessed 31 January 2006].

[6] European Commission, **http://www.europa.eu.int/comm/agriculture/foodqual/beef/index_en.htm** [accessed 31 January 2006].

[7] Industry debates on avian flu can be found on sector websites such as **http://www.meatprocess.com** and **http://www.meatnews.com**

[8] **http://www.meatprocess.com**

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Concerns over food safety have led to several national and European initiatives aimed at increasing consumer confidence in food products, including the Commission White Paper on food safety, regulations on food safety and food quality, and the establishment of EFSA in 2002. These initiatives affect all parts of the food supply chain by requiring industry to establish procedures to ensure that illnesses are not transmitted, food products are traceable and procedures are documented .

Other regulatory requirements

In addition to regulation on food safety and quality, the food industry is subject to more regulation in fields such as labelling of food products, to environmental regulation in fields such as pollution, emissions and disposal of waste and animal by-products and to animal welfare regulations. The food industry is subject to more regulation than other industries, adding to the costs of production – both in terms of more administration (documentation) and the investment needed to comply with regulatory requirements, new equipment, adaptation of existing facilities to hygiene requirements, emission controls, etc.

This focus on health and food safety and increased trade are likely to continue to increase the burden. Health and safety requirements seem likely to favour, on the one hand, large companies with the technical and administrative capacity to handle complex legal and technical matters and, on the other, micro enterprises that are often exempt from the requirements. The losers will be SMEs bound by the requirements but with insufficient capacity to satisfy them.

In addition, within the EU the impact of regulatory requirements is considered biased in favour of the enterprises of the old Member States. Since the 1980s, the food industry has been subject to demands to reduce environmental impacts, improve hygiene and improve the working environment of employees. In the new Member States, such requirements were previously less strict or non-existent so that many of their enterprises now struggle to meet EU requirements.

For example, in Poland in 2004, only 127 of 1,513 meat processors were licensed to export their produce to EU and it was expected that no more than 1,000 (and probably fewer) would end up complying with EU safety regulations and at least 500 companies would have to close.[9]

Implications

In summary, political developments have the following implications for the food industry:

- European food manufacturing, especially the sub-sectors closest to agriculture, is facing more global competition because of the elimination of trade barriers and ongoing CAP reform. Unless new trade restrictions are introduced (recently done in the textile sector), the need to remain competitive is likely to accelerate restructuring in the form of rationalisation and outsourcing to cut costs, and mergers and acquisitions to expand markets.
- The immediate political handling of food related crises affects food companies' business. With increased trade and increased enterprise size, the food industry is becoming still more vulnerable to the effects of diseases such as avian flu and BSE.
- Given that regulatory requirements will continue to grow, the trend towards a segmented industry with very large and very small players and few in the middle can be expected to continue. Furthermore, the requirements act as an entry barrier for enterprises in the new Member States, making them ready targets for acquisition by large multinationals.

[9] **http://www.meatprocess.com**, newsletter

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- Increased regulation creates the need for new types of staff in the food industry. Compliance will require more employees with higher education, including specialists in fields such as legislation, engineering and microbiology and those with broader competencies in reporting, communications, etc.
- At the lower levels of the workforce, regulatory compliance calls for more employee training and for recruiting skilled people with qualifications relevant to quality control and food safety.

Technological change

Automation of plants and processes and new technologies are paving the way for more effective forms of production and the development of new products. Among the key technologies are biotechnology, information and communication technology (ICT), radio frequency identification (RFID), robotics and sensor technologies.

Biotechnology

Biotechnology is an important tool for developing and producing new food products that are designed to be health-promoting and environmentally sustainable. According to a Danish biotechnology strategy published in 2004, the use and development of biotechnology can have the following benefits (Directorate for Food, Fisheries and Agri Business 2004):

- Developing health-promoting foods by identifying and investigating dietary components that can help preventing health problems such as obesity, diabetes and cardiovascular diseases.
- Increasing food safety by substituting chemicals with enzymes, developing faster and more sensitive and effective methods of food inspection and developing bacteria that can control pathogenic microorganisms.
- Improving the eating quality of food products by replacing chemical additives with biological processes and developing new methods to monitor quality during food production.
- Promoting sustainable production methods by developing resistant plant varieties to reduce the use of pesticides and making food production more efficient through the use of enzyme additives that improve feed utilisation in animals.

The next step in the development of novel foods is nanotechnologies, which offer new possibilities in relation to storage life as well as to changing and designing the taste, appearance, consistency and nutritional properties of food products.

While research on technologies such as biotechnology can pave the way for innovation and growth in the food industry, there are a number of ethical, health related and environmental concerns associated with the use of biotechnology and in particular the use of genetically modified organisms (GMOs). As mentioned, biotechnology has potential benefits and some even consider it the solution to world hunger (EMCC 2004: 8). On the other hand, biotechnology also poses a risk – or at least is perceived to pose a risk – to the environment and to human health. Organisations such as Greenpeace warn that GMOs can 'spread through nature and interbreed with natural organisms, thereby contaminating non "GE" environments and future generations in an unforeseeable and uncontrollable way'.[10]

[10] Greenpeace, **http://www.greenpeace.org/international/campaigns/genetic-engineering** [accessed 23 April 2006]

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Even though labelling of genetic modified foods puts consumers in a good position to make their own choices regarding biotechnology, the lack of knowledge of its environmental and health related effects makes it difficult for citizens and politicians to set a clear course for its future use. Surveys reveal that public accerptance of biotechnology to some extent depends on the industry in question. Europeans generally accept medical applications of biotechnology but there is considerable public scepticism about its use in food production and manufacturing. Scepticism affects the market perspective for biotechnology applications and thus the interest and research in this area. In fact, according to the European Commission, the sceptical public attitude toward GMOs has led to decreasing public and private investments in agricultural biotechnology research and the relocation of private R&D to countries outside Europe (European Commission 2005).

Information and communication technology and radio frequency identification

The use of ICT in the food and beverage industry supports and promotes the exchange of information between the different parts of the supply chain. This promotes efficiency by reducing administrative workloads, but it is also vital for food safety and the increasing demand for traceability. ICT is also an important tool for monitoring the production and manufacturing process, thus improving quality management and ensuring compliance with environmental standards (Danish Ministry of Science, Technology and Innovation, 2005).

Integration of ICT in the supply chain is also an opportunity to collect information about customer behaviour that can be used to improve production planning and the development of new products. One of the main technologies supporting this is RFID tags – electronic barcodes that enable producers, manufacturers and retailers to collect data about consumption patterns. RFID tags also let customers get detailed information about the products that they are considering buying. In the case of beef, such information could include the farm of origin, the name of the cow, nutritional information about the beef and recipe suggestions.

RFID technology also offers substantial benefits in relation to logistics and supply chain management, including greater transparency in the supply chain so that individual production units can be traced from the producer to the customer and back. The main driver of RFID use is the regulatory demand for improved traceability and the demand from large international retailers such as Tesco, Wal-Mart and Metro for using RFID tags (3i, 2005). Consumer demand for detailed product information is another important driver of its use in the food industry.

Robotics and sensor technology

Robots can increase productivity and contribute to competitiveness as well as relieving humans of tedious and repetitive work. However the difficult tasks and processes in the food industry limits the use of robots there. Robot technology is not widely used, especially in SMEs, because it lacks flexibility and is expensive for dealing with small and varying lot sizes (European Robotics Platform 2005, p. 4). Food manufacturing still largely requires manual work under strenuous, unhealthy and hazardous conditions. Developing robot systems to do complex food industry tasks, based on information generated by sensors, is a major technological challenge.

Sensor technology has a range of other applications that can contribute to more efficient and more environmentally sustainable food production and manufacturing. Sensors can monitor and control the production process, providing information for adjusting inputs such as animal feed and medicine. Nanosensors in food packaging can be used to indicate a product's condition in terms of temperature, storage life, etc.

E-business

Consumers are shopping more online, giving the food industry an opportunity to to sell directly to customers and limit the influence of retailers on business decisions. The business-to-consumer e-commerce interaction is also a tool for the food industry to gather information on consumer trends and market developments and to develop a closer relationship with costumers in order to gain their loyalty.

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Electronic business-to-business solutions are fairly widely used because many powerful large retail and wholesale groups require food suppliers to conduct digital transactions and master electronic data interchange (EDI) if they are to supply the groups. Fortunately, the cost of implementing EDI has come down over the last few years, allowing SMEs to implement e-business solutions. More procurement and purchasing is now done electronically too.

A recent study shows that while 33% of companies in the food industry have a website, only 8% report online sales. Likewise, their use of customer relations management (CRM) systems is very limited. While there are no pronounced differences between small and large firms in the level of online sales, CRM systems are used mostly by large firms (European Commission 2005c). The European E-business Report, which analysed use of e-business in the food industry in eight countries (Denmark, Germany, Italy, France, United Kingdom, Spain, Netherlands, Portugal), suggests that 19% of food industry companies use e-business for procurement and 8% use it for sales to consumers.

Priorities and future technological developments

According to a recent report on the vision for 2020 and beyond, a number of technological priorities will change in future: food and health, food quality and manufacturing, food safety, sustainable food production and food-chain management (European Technology Platform on Food for Life 2005).

The following areas of technological development can be highlighted:

- New packaging technologies (edible coatings, films, controlled or modified atmosphere packaging, intelligent packaging, inspection systems using new sensing methods etc.).
- Development of reliable tracking and tracing systems to ensure product safety and guarantee product origin.
- Clean-room technology.
- Technologies for minimising by-products and waste and reducing processing costs.
- Integrated production and process design; technologies for flexible, distributed and miniaturised processing systems to cope with personalised demands as well as hygienic and minimal processing systems for optimal quality (e.g. supervisory control and data acquisition (SCADA) and distributed control systems (DCS).
- Rapid online analytical methods for measuring required properties of supplied raw materials.
- Bio-processing and improved separation technologies for novel ingredients.
- Technologies for convenience foods – easy to handle, time saving, ready-to-eat and heat-to-eat – and development of turnkey solutions including ingredients and processing equipment.
- Technologies to reduce sugar, salt and fat levels, for new products and meal concepts for specific groups such as children, and for creating novel food-product textures.
- Developments to understand the dynamics of sensory perception from receptor to brain, including flavour release and breakdown of the food structure.
- Development of a new generation of information and communication technologies and data handling within the food sector and adoption of new-generation tools relating to production, trade, retail and consumer issues.

In summary, the future of the EU food and drink industry lies in its ability to disseminate and use technical know-how, in developing its capacity to adopt and exploit new technologies and while doing so, improving quality attributes to maintain and increase its share of world food markets. In the absence of sustained investment in technology advances

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internally, it is likely that EU markets will be increasingly supplied by food companies investing outside its borders, attracted by low labour costs and fewer regulations.

In general, SMEs do not invest greatly in new technologies, and large companies typically focus on marketing, because selling the emotional benefits of food has proved very successful and rewarding. Nevertheless, it is likely that more companies will realise that they must develop their technologies if they are to remain competitive. Investment in automation and new technological developments (SCADA and DCS in particular) will reduce the need for manual and unskilled labour.

At the same time, introducing new technologies will result in skills gaps and require employee training or recruiting. Implementing and investing in new technologies to increase competitiveness will require financial and human resources that can be hard for small companies to mobilise.

Globalisation and international competition

Globalisation is a key challenge for the European food industry. The opening of markets through the elimination of trade barriers is creating an increasingly competitive operating environment for companies in the food industry. Competition from low-wage countries, access to cheap primary products and fewer food regulations is putting the European food industry under pressure and this calls for new strategies aimed at increasing competitiveness by reducing companies' production costs. Such strategies can include mergers, the outsourcing of tasks and relocation of the production facilities to regions or countries with lower wage levels and fewer regulations.

Trade liberalisation

International negotiations on trade liberalisation are driving greater international competition. Negotiations on trade liberalisation are conducted in the World Trade Organisation and are aimed at:

- increasing market access
- reducing export subsidies
- reducing domestic subsidies

Although the recent difficult negotiations show that it will be some time before the barriers to international trade are fully eliminated, the direction of the negotiations is clear and there is reason to expect that competitive pressure on the European food industry will intensify.

For example, Europe has accepted open sugar borders and from 2009 poor sugar producing countries will have open access to European markets. A high market price for sugar would have encouraged the poor countries to flood the European market with sugar as soon as the border opened completely. However, the market price will surely fall, the best thing that could happen to European sugar production. This will make sugar exports from non-EU countries much less lucrative due to fixed shipping costs, and will give an advantage to European sugar refineries that run effectively and have focused on adding value to their products. Trade liberalisation in other sub-sectors of the food industry might have similar effects on the companies in these sub-sectors.

In the dairy sector, the Chinese market is experiencing significant growth and it is estimated that China will be the eighth largest dairy producer in 2008. The European dairy companies are currently lagging behind dairy companies from countries like New Zealand, Australia and the US in supplying China, and it will be important for European companies to gain strong footholds in this market.

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Similar developments are affecting other food sub-sectors, for example, beverages. It is estimated that in 2020 Russia will be the largest food groceries market in Europe, ahead of France, the UK and Germany. This puts pressure on European food suppliers to acquire or develop production and logistics capabilities in this market over the coming years.

The enlargement process

The EU was enlarged in May 2004 when 10 countries formally joined. In 2007, Bulgaria and Romania are expected to join. Turkey and Croatia are negotiating terms of membership, and a number of other countries including the Federal Yugoslavian Republic of Macedonia have been accepted as candidate countries. The enlargement has created new markets that will, in turn, put more competitive pressure on the food industry. Moreover, the enlargement has paved the way for food manufacturers to move their production to low-wage countries.

The enlarged EU provides both opportunities and threats and obstacles for European food and drinks companies. Competitive pressure on the food industry is intensified because of the low-wage markets in the new Member States. There are already examples of food companies from Eastern Europe entering markets in older Member States with low-priced goods (for example, meat and fruit) putting pressure on existing suppliers in these markets. On the other hand, the larger EU has also created new markets and new opportunities for food suppliers in the old Member States to expand or relocate to regions with lower production costs, and there is evidence that they are taking advantage of this opportunity.

To seize opportunities in new Member States, companies need insight into these markets, the barriers to entry and their regulatory requirements. Companies competing with suppliers from low-wage countries are more likely to succeed if they can change their strategy and compete on factors other than just price (e.g. benefits, value, service etc.). Food companies from the new Member States and acceding countries must upgrade technologies, knowledge and competencies in order to compete or even get access to new markets. Dairies, slaughterhouses and meat processing plants that do not adhere to the stricter food safety standards can be forced to close.

The Polish dairy industry is an example of a sector under pressure. According to a recent report by the US-based Babcock Institute at the University of Wisconsin, Poland's dairy industry is undergoing a turbulent transition period (The Babcock Institute, 2005). The report maintains that the relatively small milk quota Poland has received from the EU threatens to transform the country from a net exporter of dairy products to a net importer in five to seven years. Figures show that the change would be dramatic – export value was predicted at almost EUR 650 million in 2005, with imports at around EUR 100 million. Almost half of the exports go to the EU15 countries.

There were 356 dairy plants in Poland at the start of 2005, with 212 given clearance to sell in the EU based on strict quality standards. The remaining 144 have until the end of 2006 to meet the standards. The report indicates that most of these plants will go out of business by the end of the transition period because they will fail to meet the standards. The situation is similar in many other new Member States and acceding countries, such as Bulgaria, and the problem also applies to meat processing and other food areas.

Market developments

Concentration and consolidation

Mergers and acquisitions in the food and beverage industry are creating large corporations that improve competitiveness through economies of scale (EMCC 2004, p. 5). Other manufacturing companies consolidate their market position by discontinuing the manufacturing of their core products to focus on high growth areas such as convenience foods (KPMG Corporate Finance 2000). For example, Geest sold its banana division in 1996 and focused on preparing and marketing fresh, prepared foods and marketing fresh produce (http://www.geest.co.uk). A sub-sector example can be seen in the

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flavouring sector where the five top market participants account for an estimated 54% of total revenues, and the large flavour houses are expanding their application base by acquiring smaller specialised companies.

Concentration and consolidation is also changing the market structure in food wholesaling and food retailing. Concentration in the retail sector seems to lead to less competition and higher consumer prices, according to a 2005 study by the Danish Competition Authority (Danish Competition Authority 2005). Furthermore, the consolidation has concentrated negotiating power in the large food retailers such as Carrefour and Tesco, so that retailers are gaining control of the food chain and putting prices under pressure. In fact, European food processors see the dominant position of retailers as the greatest threat to food processors across Europe (KPMG Corporate Finance 2000).

The food supply chain and private label products

Concentration in the retail sector is shifting the power balance from producers to retailers, leading to the development of partnerships, or horizontal integration of the food supply chain. Another significant trend is the increasing dominance of private label products, food products manufactured or provided by one company for sale under another's brand (Wal-Mart, Tesco etc.). This means that a company's own brand products compete on the shelf with its other (usually cheaper) products, but under the retailer's brand. According to a study (Fearne & Dedman 2000), almost half of all foods purchased in UK supermarkets are private label products. An important implication is that food retailers can exert considerable influence and control over manufacturers because they can change suppliers for private label products. On the other hand, using private labels ties the retail chain's brand to the private label products so that it might become increasingly dependent on a few large suppliers who can deliver safe products of consistent quality on a large scale and at competitive prices.

The study found that horizontal coordination is central to the transformation of the UK food industry. This is reflected in the development of supply chain partnerships, arrangements between buyer and seller, which (as opposed to value chain integration) leave the operation and control of the two businesses substantially independent.

Fearne & Dedman point to three important drivers of the evolution of supply chain partnerships:

- the competitive food retail environment
- food safety and supply chain integrity
- rationalisation of the supply base

Price wars and below cost selling

There is an ongoing struggle between retailers for market share. Sometimes this leads to price wars among discounters offering low prices based on large quantities, fast turnover, low prices from manufacturers and low operating costs.

Part of the price wars is the below-cost selling strategy defined as retailers selling certain goods at below the production or purchase cost. This practice puts pressure not only on small shops that lack the market power to match these prices, but also on their suppliers, such as farmers and food manufacturers. This forces suppliers to squeeze costs, which affects wages and conditions in those companies (EFFAT 2004).

Merger and acquisition activities in the European food and beverage processing market, driven by a desire to dispose of non-core activities and focus more on the company strengths, will lead to greater investment in new technologies to coordinate uniform data exchange across multiple production sites.

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The consolidation in the food retail sector is already leading to new types of global agreements between large food suppliers and large worldwide retail groups. These agreements allow the food suppliers to ease the pressure on diminishing margins by building collaboration into the contracts on global promotion, supply chain initiatives, and data sharing as well as agreeing international pricing tiers. Such agreements might not work for every supplier but it is clear that those who build the internal structure to handle such large accounts will reap the benefits of serious brand advantage.

Private label popularity is challenging the reign of famous brands, leaving European manufacturers with a dilemma: should they produce more private labels to recover profits or adapt their trademarked goods to meet changing consumer needs? The brands in the middle, not premium or economy (private label), will suffer because they are neither cheap nor popular with consumers. For these manufacturers brand erosion is very real. Taking on more private label orders might be tempting for European producers so that they can operate across both sectors and take advantage of the wide appeal of private ranges but it is a risky strategy that might cause irreparable damage to their own brands.

Consumer trends and social changes

Most observers considered the consumer the primary driving force in today's global food market. Income growth and changes in lifestyle and family structures are changing the demand for food products in favour of high-value foods and convenience foods (Gehlhar & Regmi 2005). The increased focus on issues such as nutrition, food safety, ecology, animal welfare and environmental sustainability also affect the demand for food products.

Demographic changes

A number of demographic changes could affect the future demand for food products. First, there will be fewer European mouths to feed in future. Falling birth rates will probably reduce the overall population in Europe from 455.2 million in 2005 to 431.2 million in 2050 (Hughes 2005). This decrease in population puts a limit to growth opportunities in the European markets.

The European population is also getting older. In 2020, the percentage of the population over 60 years will be 24.5% in the UK, 26.6% in France, 27.4% in Spain, 29.3% in Germany and 30.8% in Italy. The expected percentages in the US and the world are 22% and 13.6%, respectively. An older population increases the demand for products designed to match the special nutritional needs of people in this stage of life.

Growth in niche markets

Increasingly, the market for food is becoming segmented. However, segmented demand is not necessarily linked to clearly identifiable segments in the population. As Professor David Hughes, Imperial College London, pointed out in a speech to the Danish Food Forum in June 2005, the same consumer might buy convenience food in a discount store or ready-made meals from a take-away during the week and then, come the weekend, insist on preparing meals from fresh, organic ingredients.

However, while there is still a large demand for discount, it is generally agreed that future growth will be in the demand for specialist products in niche markets including ethnic, organic and vegetarian foods. This is an opportunity, especially for small and medium sized firms (EMCC 2004, p. 6). While the demand for organic foods is driven by taste, freshness, quality and food safety concerns (Lohr 2001), it is global tourism and migration that influence the demand for ethnic foods. According to a market research report from 2005, ethnic food sales are rising 14% a year in Europe and 5% in the US (Datamonitor, 2005).

New lifestyles, new family patterns

Lifestyle changes resulting from longer working hours, more leisure activities and the growing number of families with two working parents have increased the demand for semi-prepared, convenience, foods. Consumers want fresh and healthy convenience food rather than dehydrated and canned products (KPMG Corporate Finance 2000).

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These changes in lifestyle and greater affluence make eating outside the home more popular. Greater food awareness is increasing the demand for high value foods while the mushrooming of discount retailers indicates that consumers are also increasingly price conscious.

Healthy living

The focus on obesity, food safety scares and concerns about the effect of GMOs on human health are among the factors making consumers more conscious about healthy living. This awareness influences the market for food products and increases the growth potential for organic and functional foods (KPMG Corporate Finance 2000).

There is a growing awareness of the problem of obesity and consumers expect the food industry to come up with a solution. This expectation is a challenge because the food industry risks being found liable like the tobacco industry was (Mandag Morgen 2005). To avoid this, a number of national associations for the food and beverage industry have participated in activities aimed at promoting healthy living and physical activity. Recent examples include the German food sector, which in 2004 – together with private organisations, companies and the federal government – founded a cross-sector platform to promote healthy lifestyles initiatives (CIAA, 2004).

An interesting change is that people in the rich world are now starting to get a little slimmer: 'We're all very aware of the whole fat problem, what the World Health Organisation has called "globesity". I reckon that that's peaked, and it's just going to start going in the opposite direction.'[11]

Consumer scepticism

Although people might be more health conscious, the take-up of novel foods such as functional foods and genetically modified (GM) foods has been slow in Europe. A recent study points to consumers' risk perceptions and concerns associated with processing technologies, emerging scientific innovations and their own health status as the main reason for the slow take-up (Frewer et al, 2003). A study in 2000 showed that European consumers' attitudes towards GM food products are highly negative – both at the general level and at the product level.

The study also found differences between countries in the degree of negativity towards GM food products. Danish and German consumers were generally found to be more averse than British and particularly Italian consumers were.[12] These findings were confirmed in a 2002 opinion poll showing that while Europeans are in favour of medical applications of biotechnology, they are sceptical about agricultural and food-related biotechnology (European Commission, 2004).

On the other hand, in recent years the political reservations regarding GMOs have been less pronounced. Germany and Denmark are among the EU Member States that have changed their attitude towards GMOs.

Sustainability

Consumers are concerned not only with products, but also with issues relating to the production process. This makes sustainability in terms of the environmental impact of the production, animal welfare, food safety, fair trade and working conditions an important factor when it comes to explaining consumers' choice of product. However, this trend is also subject to some reservations, because what consumers say they prefer does not necessarily reflect what they buy. According to a 2003 study, there is a limit to what most consumers are willing to pay for organic and eco-labelled

[11] The Economist, Against conventional wisdom: Discussion on the fight against flab with Emma Duncan, deputy editor, The Economist, **http://www.economist.com/theworldin/podcast/?d=2006**, [accessed 21 February 2006].

[12] European Commission, Consumer attitudes and decision-making with regard to genetically modified food products, **http://europa.eu.int/comm/research/quality-of-life/gmo/04-food/04-01-project.html** [accessed 8 February 2006].

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products. In fact, price seems to be the greatest barrier to environmental buying (Centre for Alternative Social Analysis, 2003).

Close encounter with consumers

Consumer food markets are becoming more fragmented in terms of lifestyles and tastes (Forfás 2003, p. 20). At the same time, retail chains put pressure on manufacturers by using private label products, which a number of manufacturers might produce to specification. This poses a serious challenge for the food industry because products must be adjusted and directed towards more diverse groups. Companies need close contact with consumers to get information on market developments that can they can use for their branding strategies and for spotting trends.

The manufacturing sector wants to short-cut the value chain and establish close and direct contact with consumers to cut out the retail business, but also to get information on market developments that can be used for branding strategies and for spotting trends.

The proven strategy to ensure consumer loyalty has been the use of product brands, which establishes loyalty between consumer and product. Branding identifies the product with certain consumer lifestyles and aspirations using marketing tools such as images and positioning of advertisements. However, the branding strategy is risky. The stronger the brand, the greater the risk, because the strength of a global brand can quickly become a liability if it becomes associated with a food scandal or just with a negative aspect of any consumer trend. If this happens, the company might try to refocus its brand. For example, Nestlé used to be associated mainly with infant nutrition and sweets but is now projecting nutrition and health as its main mission through advertisements and websites: 'Quality and nutritional value are the essential ingredients in all of our brands. Millions of people prefer Nestlé products every day, happy with the addition to their wellness that they bring.'[13] Branding is also a strategy that very large corporations in command of large PR and marketing budgets can mange easier than small companies.

As an alternative to global branding, innovative methods developed in the last few years establish closer links between food companies and consumers. Internet technology and e-logistics have boosted new types of operations that pack and bring food products directly from producers to the consumer's doorstep. In Scandinavia, the company Aarstiderne.com has developed this concept rapidly followed by a host of farmers, fish shops and butchers. In addition, the Danish COOP chain is now offering a 'vegetables on your doorstep' concept.

Consequences and implications

The market division between the large number of consumers giving priority to price and a growing number who give priority to other issues such as health, sustainability or authenticity can be expected to continue. In this divided market, producers must develop consistent yet flexible strategies. This is easier for niche producers with one or few core products but harder for big multibrand corporations because negative associations can rub off one product or product brand to the corporate brand and the entire product line.

The expected growth in global as well as local niche markets represents an opportunity for small companies that can exploit communications and logistic technologies to reach geographically dispersed consumers.

The emphasis on food safety and on nutritional value increases the need for research, development and documentation and, therefore, for new types of competencies in the industry.

[13] **http://www.nestle.com**

Food manufacturers compete on one end of the food supply chain with farmers offering products directly to consumers and on the other with caterers and fast food restaurants , while the focus on nutrition brings competition with parts of the pharmaceutical industry. Innovation becomes ever more important in these circumstances – both product innovation and innovation of the business model itself. This is a big challenge in a sector where innovation so far has been relatively slow and incremental.

Consequences of drivers of change

Restructuring and human resources strategy

The European food manufacturing industry has recently undergone radical changes to adjust to pressures from globalisation. A number of large players have restructured business in order to keep or expand their market shares. Such restructuring efforts include divesting less-profitable operations and operations not directly linked to core business, strengthening core business by acquiring competitors or similar companies in new markets, outsourcing peripheral activities and relocating operations to regions with low labour costs. These developments are clearly captured by the European Restructuring Monitor (ERM) (**http://www.emcc.eurofound.eu.int**), as shown in the table below.

Table 3: *Breakdown of employment effect by type of restructuring in the food and beverage industry (announcements for the period 1 April 2003 to 1 April 2006)*

Country	# Planned job reductions	% Planned job reductions	# planned job creation	% planned job creation	# Cases	% Cases
United Kingdom	12,949	25.53%	1,410	12.41%	49	19.14%
Poland	1,842	3.63%	4,750	41.82%	23	8.98%
Netherlands	4,913	9.69%	0	0%	23	8.98%
France	5,737	11.31%	300	2.64%	23	8.98%
Germany	5,664	11.17%	405	3.57%	20	7.81%
Denmark	3,703	7.3%	0	0%	14	5.47%
Czech Republic	1,116	2.2%	557	4.9%	12	4.69%
Hungary	2,086	4.11%	480	4.23%	12	4.69%
Finland	2,045	4.03%	0	0%	11	4.3%
Ireland	2,276	4.49%	750	6.6%	11	4.3%
Sweden	1,891	3.73%	60	0.53%	10	3.91%
Belgium	1,328	2.62%	247	2.17%	10	3.91%
Slovakia	943	1.86%	650	5.72%	7	2.73%
Spain	1,858	3.66%	150	1.32%	7	2.73%
Romania	324	0.64%	990	8.72%	7	2.73%
Lithuania	758	1.49%	110	0.97%	5	1.95%
Bulgaria	98	0.19%	500	4.4%	4	1.56%
Slovenia	385	0.76%	0	0%	3	1.17%
Austria	330	0.65%	0	0%	3	1.17%
Italy	467	0.92%	0	0%	2	0.78%
Total	**50,713**	**100%**	**11,359**	**100%**	**256**	**100%**

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The number of announced redundancies captured by the ERM between 1 April 2003 and 1 April 2006 is 50,713. The fact that only instances involving more than 100 employees are recorded, and that the sector has a very large number of very small enterprises, suggests that the actual number of employees affected by restructuring in the food sector is much larger. This might be especially true for southern European countries and the new Member States that have a lot of small and medium sized businesses. It is likely that many jobs have been cut there in recent years that are not recorded in the ERM.

According to the ERM, most jobs are reduced because of internal restructuring, with bankruptcy/closure the next highest causes. Relocation and offshoring/delocalisation played only a minor role in the number of jobs lost. Mergers and acquisitions, although small in numbers, tend to reduce the number of jobs, but in some cases also create new jobs.

The amount of internal restructuring indicates that companies are adapting to new market conditions. From April 2003 to April 2006, 98 of 256 reported cases involved internal restructuring. This category includes a range of activities, many of them dismissals for various reasons. For example, both the Palm brewery in Belgium, in February 2005, and CocaCola in France, in January 2006, had reduced sales and therefore reduced their workforces. Kostelecké uzeniny, a producer of meat and canned food from the Czech Republic, dismissed 100 people because of higher purchasing prices, rising meat imports and more frequent veterinary tests.

Bankruptcy or closure of production plants has caused more than 18,000 jobs to disappear all over Europe. The countries that record the most losses are the United Kingdom (18 cases) with more than 4,700 jobs lost, France with eight cases and more than 1,600 jobs lost, Ireland and Hungary with six cases each and job losses of around 1,400 and 1,700, respectively, and Germany with four cases and 1,950 jobs lost. However, these findings could also be a result of ERM's thresholds, which prevent smaller companies – often those in smaller or Eastern European countries – to be included in the statistics. Often, the companies are not bankrupt but close some of their less profitable subsidiaries or production plants. For example, British Dairy producer, Yoplait Dairy Crest, closed one site in Somerset, the German Nordmilch group, producing milk and dairy products, reduced its plants from 19 to 13, and the Irish Kerry Group closed its Kantoher Chicken processing plant in Kileedy, Limerick.

Business expansion has created more than 9,000 new jobs in Europe. The countries with most job creations are Poland, the United Kingdom and Romania. One example is Caroli, a fast growing Romanian group, which in 2006 has 12% of the meat products market in Romania. In December 2003, it acquired its competitor, Gourmet. In March 2006, it announced the building of a new plant and the creation of 150 new jobs. Other examples are HydroComp in Bulgaria, Northern Foods in the United Kingdom and Proconsol in Spain, all of which announced business expansion in 2005.

The 43 reported cases of business expansion include many international companies investing in the new Member States. For example, in February 2006, Unilever announced an expansion in the Czech Republic that will create 150 jobs. Uniq Lisner, a Polish company producing canned fish, part of the British Uniq group, is going to invest in a new production plant that will increase its production capacity by 30% and create about 300 new jobs. However, there are also examples of international companies pulling out of national markets. Imperial Tobacco Group closed its Slovakian subsidiary, Slovak International Tabak, in 2004 and dismissed more than 300 people.

Apparently the general direction of offshoring and delocalisation, which is defined as the relocation or outsourcing of an activity outside a country's border, is from old to new Member States. Administrative units as well as production facilities have been transferred. In 10 of 14 offshoring cases reported in the ERM, western based (but internationally acting) companies shifted parts of their activities to Eastern European countries. For example, in November 2005, Kraft Foods moved some of its administrative units and sales departments from Germany to Slovakia. In February 2006 InBev announced the transfer of administrative and financial services from Belgium to Hungary. In January 2006, the Netherlands based parent company of British sweets manufacturer Chewits decided to move its production to Slovakia.

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If new market opportunities open up, large companies often jump at the chance. They buy competitors, expand their businesses and strengthen their market position. The ERM does not record many cases of mergers and acquisitions, but the data show clearly where the capital comes from. Of the nine cases of mergers and acquisitions reported, eight Western European companies (mostly internationally oriented, like the Danish Royal Greenland Seafood, the Scandinavian Arla Foods, worldwide operating Diageo, the Danish Carlsberg or the British Sundora Foods), and only one from Eastern Europe (the internationally active Slovenian group Istrabenz) have merged with or acquired companies. In seven of nine cases, mergers/acquisitions led to job reductions. In the case of Pozmeat and Royal Greenland Seafood, however, Western investors entered the Eastern European market and created jobs there. If the announcements turn into reality, mergers and acquisitions will create as many jobs (1,700) than they destroy (1,770)[14].

Outsourcing is not widespread in the food and beverage sector. However, one big international player, the beverage producer InBev, outsources some operations. The company announced in February 2006 that it will create a European shared services centre and outsource its business systems and application services for certain European countries. This could lead to about 360 job reductions in five European countries, but at the same time create more than 100 new jobs in the Czech Republic and nearly 200 in Hungary. After the Danish Carlsberg group acquired the German Holsten brewery in January 2004, the outsourcing of the logistics department was seriously considered.

These examples show that the number of jobs lost in the food and beverage sector might not necessarily translate into an overall loss of jobs. Instead, there seems to be a shift of jobs out of the food and beverage sector and into business services.

Consequences and implications

Some large corporations in the food sector have already found that restructuring that brings with it severe social consequences for local communities can deal a devastating blow to the public image of their brands.[15] In addition, political pressure has been mounting on corporations to assume social responsibility. As a result, more companies are adopting human resource strategies that emphasise workforce skills development and implementing measures to ensure that mass redundancies do not affect communities too severely. Such measures include providing redundant workers with outplacement counselling and assistance, training and supplementary financial benefits.

However, workers in the food and beverage industry are generally less qualified than workers in the manufacturing sector. In 2002, around 36% of the workers in the industry had completed only primary education (Eurostat 2004, p. 4). In addition, all the current industry trends have wide ranging consequences for the future skills needs in the sector. Therefore, forward looking human resource strategies in face of restructuring are particularly important in the food industry.

Industrial relations and social dialogue

A comprehensive body of EU legislation on managing corporate restructuring combines the adaptability needed in an increasingly global economy with minimum standards for workers' protection. This includes directives on European works councils and on minimum requirements for workers' information and consultation in companies. To complement this legislation, the EU promotes social dialogue.[16]

[14] Due to the method used in the collection of data, the European Restructuring Monitor does not provide a complete picture of restructuring and job loss/job creation in the European food and tobacco industry. All figures refer to planned job reductions/creation These measures are not necessarily implemented as announced.

[15] See for example the case of Danone (EMCC case studies EF/05/48/EN C 3).

[16] European Commission, **http://www.europa.eu.int/comm/employment_social/social_model/2_en.html#23** [accessed 23 February 2006].

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The social dialogue in Europe has been strengthened through the establishment of sectoral social dialogue committees that bring together the social partners. However, of the current 31 sectoral social dialogue committees, only the sectoral committee for the sugar industry is directly related to the food industry.

Labour market and gender issues

Employment in the European industry as a whole has been decreasing since the 1970s, indicating a permanent change in the industrial fabric and employment (European Commission 2005b, p. 7). The employment situation in the European food industry has also changed: while future demographic changes will reduce the workforce which, in turn, will increase competition for talented candidates, employment in the food industry is currently decreasing and fell by half a million workers in 2003–2004.

Automation and technological developments will reduce the need for unskilled labour while the need for other qualifications will increase. According to a skills needs analysis by the UK-based Learning and Skills Council Nottinghamshire, the regional food industry is expected to shift towards an increased proportion of higher level occupations in management, professional and technical occupations with a corresponding drop in the number of people employed in low-skilled and skilled occupations such as bakers, butchers and electrical engineers (Learning Skills Council Nottinghamshire, 2004).

Changes in the bargaining situation

Workers in the European food industry face increased competition, especially on wages because of globalisation and the European enlargement that allow companies to move manufacturing to regions with lower wages. This has also changed the bargaining advantage in favour of employers, who can use the threat of relocation to get concessions.

On the other hand, in some sectors companies are experiencing skills shortages (notably technical skills) and expansive business strategies often require new qualified staff. Consequently, food companies must still promote and position themselves as attractive employers.

Changes in the job situations of women

The food industry is dominated by male workers, but the share of female workers is higher than in manufacturing as a whole: 39.4% compared to 35.5% in the manufacturing sector (Eurostat 2004). Women account for a large proportion of low-skilled and low-paid jobs, so they are vulnerable to the introduction of new technology and automation of the food manufacturing process.[17] The share of women workers varies according to food sub-sector. For example, in fish processing the share of women is high while in other sub-sectors it is much lower.

According to a comparative study on gender wage gaps in six European countries, the gap is considerable among fish- and food-processing workers, mainly because of the heterogeneity across jobs in the sector. Men and women have different tasks, and men's tasks, such as the handling of machines and heavy work, are better paid than women's. On the other hand, the gender wage gap is not large compared with manufacturing workers in general (Norwegian Centre for Gender Equality 2002, p. 49-50).

[17] ILO (International Labour Organisation), **http://www.ilo.org/public/english/dialogue/sector/sectors/food/gender.htm** [accessed 22 February 2006].

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Employees, especially women, must improve their skills in order to adapt to change in the food industry. Employers must pay attention to attracting employees with relevant qualifications and provide training opportunities for current employees in order to avoid skills gaps and skills shortages.

Skills gaps and training issues

Many of the challenges for the food industry point to the need for workers with specific technical skills and skills related to food safety and quality. However, workers in the food industry do not necessarily have the skills needed and such skills gaps are a threat to growth in the European food industry.

An analysis of skills gaps in the Irish food industry identified the following critical skills gaps:[18]

Table 4: *Critical gaps in the Irish food industry*

Skills area	Critical gap
R&D/New product development/Quality control skills	• Skills needed to commercialise new product developments • Product research/new product developments skills
Processing skills	• Operative skills (existing technology) • Operative skills (new technology/process) • Production supervisory skills • Operative skills (craft workers)
Sales and marketing skills	• Marketing skills • Language skills • Negotiation skills • Category management skills
Support skills	• Training skills • IT skills (especially supply chain management and logistics) • Business planning skills

Source: *Forfás 2003*

Apart from these specific training needs, the industry's ability to attract graduates must be greatly enhanced (Forfás 2003, p. 8).

The International Federation of Plant Bakeries (AIBI) offers an example of skills needs in the baking sector. Students are no longer interested in learning baking technology, and those who do study it do not opt to work in plant bakeries. They enter other industries, such as milling or baking improvement, where they see better opportunities.

Professors who specialise in baking technology at universities are close to retirement. Lack of funding means that these positions are unlikely be filled again, which will make it even more difficult for the baking industry to recruit university graduates. Companies must improve the attractiveness of their jobs or develop the skills in house through other means, in collaboration with vocational training institutions.

[18] Although the conclusions in this analysis might not reflect the situation in all European countries, the analysis on the other hand does point to possible skills gaps in relatively developed food industries.

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Although developments are still at an early stage, radio frequency identification (RFID) is another area of skills shortage. According to the Computing Technology Industry Association (CompTia), the demand by large retail companies that their suppliers implement RFID technology will lead to shortages in knowledge and skills. In collaboration with several organisations, CompTia is setting up training to address this shortage. However, food sector companies must also address this shortage by identifying their own requirements and organising training for their staffs.[19]

Main challenges and barriers to training

One of the main challenges in the food industry (and other industries) is to persuade employers of the benefits of employee training and to provide systematic skill-development training. The CompTia study identifies a number of barriers to training that include:

- Management's understanding of the role of training and the direct and indirect costs of training.
- The disruption to business caused by staff unavailability during training.
- Short term operational focus of the industry.
- Weakness in the industry's strategic planning and absence of links between strategic plans and human resource development.
- Commodity orientation in the industry implies that management focus is on cost control and efficiencies rather than strategic development of business.

The study's key message is that management's traditional short term operational focus is no longer adequate to counter the threats to the industry, and that the quality of the industry's liaison with the education and training sector needs to be improved.

Skills development initiatives

One recent national initiative in relation to skills development is Improve Limited, established in July 2004 as the authority on skill development in the UK food industry. Improve's mission is to 'drive up skills for profit' by working with employers, trade associations and employees in the food industry.[20] The main task is to manage the research, development and delivery of skills training and skills products, and this includes working with other sectors' skills councils representing employers along the food supply chain. Among other things, Improve points to the need to ensure appropriate skills in the growing interface between manufacturers and retailers, and skills relevant to distribution, warehousing and other logistics related functions.[21]

In the UK around 19% of the approximately 650,000 food sector employees have no formal qualifications and a further 15% have nothing higher than a National Vocational Level 1 qualification. The sector is also facing a skills shortage, with an estimated 200,000 new employees in skilled trades and professions needed in the 10 years to 2012 to fill job vacancies as the existing workforce retires. Other European markets are facing similar challenges.

[19] **http://www.comptia.org/certification/rfid/default.aspx**

[20] Improve, **http://www.improveltd.co.uk/improve/Top_Links/About_Improve.c1004.aspx** [accessed 10 February 2006].

[21] Improve, Good, Better, Best, **http://www.improveltd.co.uk/web/Data/Product%20Information/About%20Improve.pdf**, [accessed 10 February 2006].

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Most companies (small and large) will be forced to conduct training and certification to meet new food safety and quality standards, including the recently published ISO 22000 standard. Food companies (and especially the SMEs) are much less likely to invest in training to develop technical, marketing and business innovation skills. It is not just that they are unwilling – many companies, especially in the new Member States, simply lack knowledge, time, links to the education and research community and the infrastructure to conduct education and training.

SWOT analysis of the European food industry

This report highlights aspects of the challenges for the European food and beverage sector now and in the future. This SWOT table summarises these challenges, along with the inherent strengths of the industry, to show the strategic landscape facing the industry in the global competition.

Table 5: *SWOT analysis of the food industry*

Strengths	Weaknesses	Opportunities	Threats
High standards for food quality, safety and sustainability Strong ability to add value Logistics (means of transportation and distribution)	Low level of investment in R&D Low productivity Labour intensive production Technical skills shortages Low levels of qualifications among workers	Demand for new products (nutritionally healthy, convenience, organic, fair trade, nostalgic etc.) Increased segmentation of markets into target groups with specific needs Availability of new technologies: • product related (nutrigenomics, GMO etc.) • processes and logistics (intelligent packaging, e-logistics etc.) • consumer relations (e-trade, blogging etc.) Opportunities for new businesses combining pharmaceuticals and food manufacturing	Increased competition from other parts of the world Increased power of food retailers Competition from primary producers (farmers) selling produce directly to customers Competition from caterers and restaurants Ageing and declining European population affecting employment and markets Inconsistent consumer trends making strategic decisions difficult.

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