



Environment Review



Confédération des industries agro-alimentaires de l'UE
Confederation of the food and drink industries of the EU

CIAA Environment Review

This CIAA Environment Review shows the significant steps taken by the Food and Drink industry to improve its environmental management and performance. The Review is based on the results of a survey covering a series of key Environmental Performance Indicators. It also includes specific Case Studies which describe the practical measures being taken by individual companies.

CONTENTS

	Message from the CIAA President	3
	The Food and Drink industry: Economic and Social Overview	4
	The Food and Drink industry: Environment Overview	5
	Environment Survey	6
	■ Methodology	6
	■ Performance Results and Case Studies	7
	- Sustainable Use of Resources	7
	- Integrated Management of Packaging and Packaging Waste	11
	- Sustainable Management of Emissions and Waste	13
	- Integrated Environmental Management	18
	Shaping the Future	19
	Annexes	20
	■ Definitions	20
	■ Bibliography	21

Message from the CIAA President



The CIAA was instrumental in drafting the global sustainability report of the Food and Drink industry for the United Nations Environment Programme (UNEP) for the Johannesburg Summit in 2002.

This Environment Review of the European Food and Drink industry is a follow-up to this UNEP report. It confirms our commitment to sustainable development and our willingness to communicate the results of our environmental performance.

The Environmental Performance Indicators show substantial progress in a number of key areas, including stabilised consumption of energy, and a significant decline in water consumption, air emissions and wastewater per tonne of product.

The CIAA believes that any legal framework geared to sustainable development must support environmental protection initiatives taken by our member companies. Such a framework must also provide sufficient flexibility for our industry to continuously optimise its processes, innovate and renovate its products, and improve its environmental performance.

The right conditions have to be set to allow the Food and Drink industry to become an even stronger partner in implementing the global strategy for more equitable growth and achieving the Lisbon objectives.

This Environment Review reflects the priority placed by the European Food and Drink industry on the environment. It constitutes a starting point for subsequent efforts to enhance our sustainability performance and improve reporting on our progress. We hope it will serve as the basis for further discussion.

A handwritten signature in black ink, appearing to read 'Jean Martin'.

Jean Martin,
President

The Food and Drink industry: Economic and Social Overview

Overall, the Food and Drink (F&D) sector plays an important role in most European economies. Throughout its activities, it supports the EU's efforts to develop a dynamic and competitive economy - as targeted by the Lisbon Strategy.

To understand and appreciate the role of the F&D industry in Europe, and as background to the environment survey, below are some key points covering economic and social aspects of the industry.

- **Leading Sector.** The EU F&D industry is the top manufacturing sector in Europe, with a production value of 700 billion euros.
- **Continuous but Limited Growth.** The sector has experienced continued growth - on average 1.8% over the last 10 years.
- **Substantial Share.** In terms of value, the sector has 11% share of total industry, with average growth of 1.1% over the last ten years. In terms of production, it had approximately 13% share of total EU manufacturing in 2003, compared with 15% in 1995.
- **A Major Employer.** The F&D industry is one of the largest employers in the EU with 3.6 million employees. On average, around 13% of those employed in European manufacturing work in the industry.
- **Structural Diversity.** Small and Medium-sized Enterprises (SMEs) - with fewer than 250 employees - make up 99.3% of the industry, and account for 50% of its production value and 60% of EU F&D employment.
- **Major Contributor to Export/Import Trade.** The EU is the No.1 agri-food exporter and importer. Due to the positive balance of F&D products, the EU is a net exporter of agricultural products. In 2003, exports totalled 44.5 billion euros (a 3% decline compared with 2002). The USA is the largest export destination, followed by Japan and our neighbouring countries (Switzerland, Russia, etc.). As well as being the number one exporter, the EU is also the number one importer of agricultural products, mostly unprocessed, and mainly originating from Brazil, Argentina, USA and Asia.
- **Driving Force for other Sectors.** The EU F&D industry contributes significantly to the economic growth of many other sectors:
 - it buys and adds value to 70% of all EU agricultural production
 - it purchases energy and makes significant investments in equipment and technology
 - it is a major business partner of the packaging industry, of transport services providers and of the retail industry
 - it is one of the largest investors in advertising and other forms of marketing communication

The Food and Drink industry: Environment Overview

The F&D industry transforms natural, perishable agricultural raw materials into safe food products.

Understandably, Food Safety is the industry's top priority. The environment where raw materials are grown, and the environment in which the industry operates, both have a crucial influence on this.

The industry's respect for the environment and its commitment to sustainable development is demonstrated in three areas:

- Ensuring the quality and safety of F&D products
- Implementing eco-efficiency to protect natural resources and ensure their long-term availability, and minimising waste throughout the food supply chain
- Optimising costs to maintain the industry's competitiveness

With the aim of continuously improving its environmental performance, the industry has made considerable efforts to ensure that environmental considerations are integrated throughout the food supply chain. This starts with the production, purchase and processing of raw materials; continues through manufacturing, packaging and distribution; and ends with the consumer. Examples of initiatives include: supporting sustainable agriculture, adopting cleaner production practices, minimising waste - including packaging waste, and optimising the use of transport.

The industry conforms to legal requirements as minimum standards. It favours regulations that state clear objectives, but also allow operators to identify the most effective means to achieve those goals. In this context, experience has shown that many voluntary initiatives have led to a significant improvement in environmental performance.

Environment Survey

METHODOLOGY

The European F&D industry comprises very diverse product categories and a wide range of processes. It usually involves long and complex production chains. For these reasons, it is a challenging task to measure the industry's environmental performance. Furthermore, F&D manufacturing is just one of several links in the chain, and in many cases can make only a limited contribution to total environmental impact.

However, the CIAA has determined a number of key Environmental Performance Indicators (EPIs) to start tracking progress in key areas.

These measure the resources used and the waste generated by manufacturing operations, and include water and energy consumption, greenhouse gas emissions, wastewater and disposed waste generation¹.

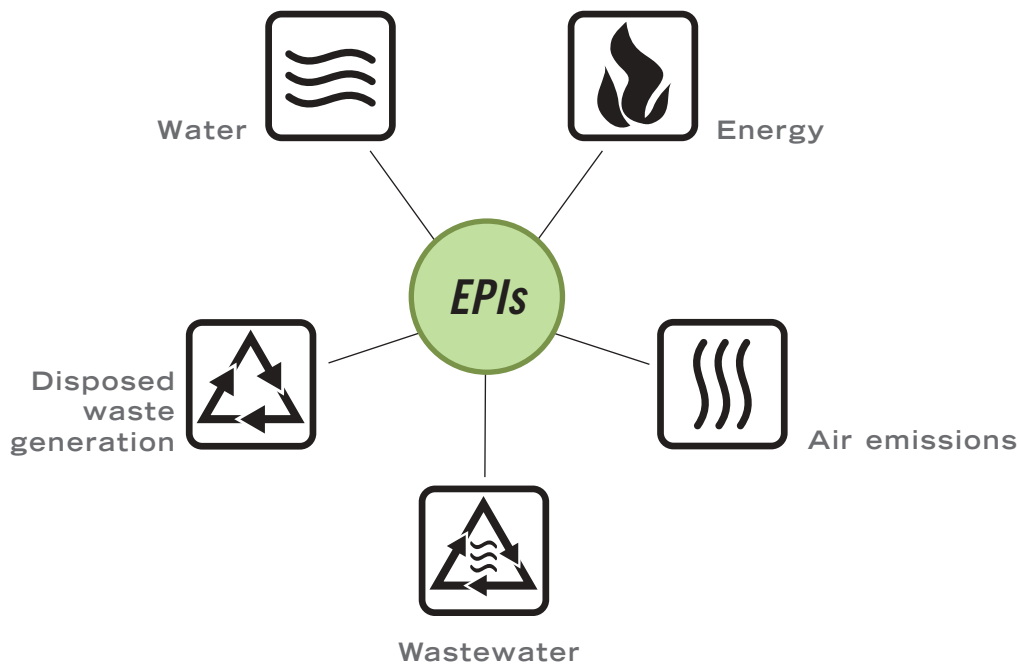
Using these EPIs, an environmental survey was carried out among CIAA members, namely the 15 National Federations and individual companies. The survey covered the F&D industry in the EU 15, reflecting the situation before enlargement.

Graphs include data for 2000, 2001 and 2002 with corresponding production volumes. The graphs have been elaborated on the basis of data provided by individual

companies including Danone, Ferrero, Heineken, Kellogg's, Kraft Foods, Nestlé, PepsiCo, Pernod-Ricard, The Coca-Cola Company and Unilever as well as data from two F&D national associations (Belgium - FEVIA, Finland - ETL and France - ANIA).

The survey covers over 10% of the total turnover of the EU F&D industry. The consolidated figures cannot be extrapolated to cover the whole industry, but they do show a trend of environmental performance in the sector, and provide tangible evidence of the progress achieved between 2000 and 2002.

This report also used public information and data obtained via public reports and websites, as well as environmental or sustainability reports from individual companies².



(1) See definitions in Annexes
 (2) See bibliography in Annexes

PERFORMANCE RESULTS AND CASE STUDIES

The Review covers four main environmental fields:

Sustainable Use of Resources
 Integrated Management of Packaging and Packaging Waste
 Sustainable Management of Emissions and Waste
 Integrated Environmental Management

Sustainable Use of Resources

F&D manufacturers across the EU continuously strive towards sustainable use of resources. This is achieved by strict management of resources used as process inputs throughout the supply chain. These resources include agricultural products, water, energy and packaging materials. In some cases, they can also include carefully selected by-products and co-products from F&D processes.



Agricultural Products

In order to produce safe, high quality products, the initial production of agricultural products requires a safe, protected environment. Although F&D companies generally are not involved in the production of raw materials, they have often been able to influence their suppliers to implement sustainable agricultural initiatives.

CASE STUDY

SAI Platform
 (Sustainable Agriculture Initiative)
 Supporting Sustainable Agriculture Practices



SAI Platform is an initiative set up by the F&D industry to promote sustainable agriculture, which it defines as: “a productive, competitive and efficient way to produce agricultural products, while at the same time protecting and improving the natural environment and social/economic conditions of local communities”.

Experts from its member companies, together with other stakeholders in the food chain, have developed principles and practices for the sustainable production of key agricultural products - e.g. cereals, coffee, dairy, fruits, potatoes and other vegetables, and palm oil.

SAI Platform is targeted to the mainstream market and is based on a holistic approach. The practices therefore address all three pillars of sustainability: economic, social and environmental.

Currently, principles and practices for sustainable coffee production are being tested in sixteen pilot projects in Africa, Asia and Latin America. The purpose of these test projects is to adapt the principles and practices to local conditions and to report practical results of progress towards more sustainable production.

CASE STUDY

Caobisco³
 Cocoa Sector
 Programmes for
 Sustainable Growth



The cocoa trade, comprising growers, processors and chocolate manufacturers, are working together in a number of comprehensive programmes, aimed at “taking science into the field”.

Several programmes are geared at improving production efficiency and at the same time improving labour standards. Other initiatives promote reforestation of degraded tropical lands in a sustainable and environmentally responsible way. Educational programmes focus on building farmers’ environmental experience and productivity through “Farmer Field Schools”.

Finally, several projects are promoted via the International Cocoa Organisation and involve both the cocoa producing countries and the cocoa consuming countries. These programmes are aimed at ensuring the sustainable growth and supply of cocoa, and enhancing the long-term competitiveness and economic prospects of the cocoa sector.

(3) Caobisco: Association of the Chocolate, Biscuit and Confectionery Industries of the EU



Water

Most of the world's freshwater withdrawal - more than 70% - is used in agriculture. 10% is used for domestic purposes and 20% in industry.

To put the F&D industry's water use in perspective, and to cite one typical example, in the Netherlands, the F&D processing industry uses around 8% of all water used by the entire industrial sector.

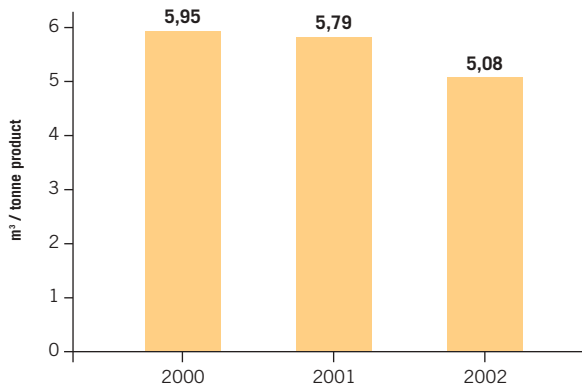
The F&D manufacturing process is absolutely dependent on water. It is vital in many ways including washing, boiling, extraction and cooling.

Its usage varies considerably, dependent on product category. For instance, it is a key ingredient in beverage production such as beer, soft drinks and of course bottled waters.

The industry has taken many proactive measures to protect water resources. These include reduction of consumption, re-use and recycling of appropriate water streams, wastewater reduction and treatment.

Significant savings have been made in reduction of water consumption in F&D production. However, in some cases, quality and hygiene considerations limit the amount of water savings that can be achieved. For instance, about eight litres of water are necessary to manufacture each kilo of cheese. Water is necessary for washing the lactose, cleaning and making the cheese itself. Promoting further water re-use could disturb the microbiological process. This example underlines the need to find the precise balance between optimum safety and minimal water use.

Water Consumption



EVOLUTION OF WATER CONSUMPTION PER TONNE OF PRODUCT

From 2000 to 2002, F&D companies participating in the CIAA survey achieved a significant reduction in total water consumption per tonne of product - saving as much as 15%, down from 5.95 to 5.08 m³.

CASE STUDY
Nestlé Waters
Leading Sustainable
Development Practices



Nestlé Waters' Vittel and Contrex springs are located in the heart of the Vosges mountains in France, surrounded by fields and forests. In the early 70's, intensification of farming practices led to concerns about imbalances in the local ecosystem.

In 1975, a surface and run-off water monitoring system was installed. A multi-disciplinary team of researchers set out to determine how to maintain high agricultural yields while preserving natural mineral water quality. Tests were conducted in three pilot farms, resulting in scientifically-based recommendations being made across the region.

Building on these experiences, in 1992, Nestlé Waters established an agricultural advisory firm called Agrivair. Its purpose is to help farmers improve their agricultural practices by adopting a set of very specific measures. These include: eliminate corn crops; rotate cereal, alfalfa and wild grasses crops; ban phyto-sanitary products; compost all animal waste; and ensure the implementation of Agrivair standards in farm buildings.

Today, the initial goals have been largely achieved, and farmers have moved to more environmentally-friendly farming practices. Some farmers - mostly milk producers - building on experience, have taken their own initiative and become involved in profitable organic farming. Agrivair has also diversified further by managing, for example, the manufacture and distribution of compost made from manure.



Energy

Clearly, energy is necessary for the F&D manufacturing process. It is used mainly for drying, heating, baking, cooking, refrigeration and freezing.

To put the industry's energy use into perspective, the Dutch food processing industry accounted for around 10% of total industrial energy consumption in 2000, and Belgium's consumption represented less than 6.8% of the total in 2001.

As a result of the industry's energy efficiency efforts, most F&D companies have reported substantial reductions in energy consumption per unit of production, also resulting in a significant air emissions decline. This improvement has been achieved by:

- Switching from heavy fuel to natural gas as an energy source
- Improving energy management
- Introducing co-generation, combining heat and power (CHP)
- Recovering agricultural by-products as a source of energy
- Using innovative equipment and processes



CASE STUDY

**Ferrero
"Motor Challenge
Programme"
Reduces Electricity Consumption**

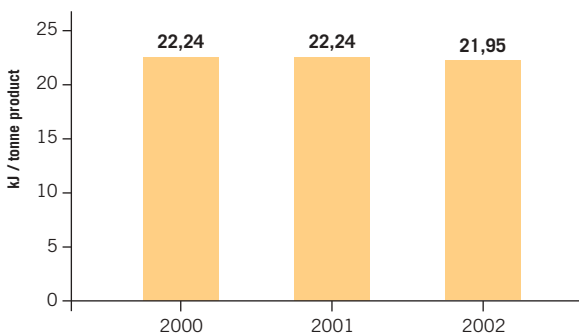
The Ferrero Company's biggest factory is in Alba, Italy, and is certified with ISO 14001. It has successfully improved its environmental performance in several ways including recovery of discarded materials, reducing emissions and implementing sustainable management of two important resources: water and energy.

To improve its efficient management of energy further, Ferrero was one of the first to volunteer as a partner of the European Commission's "Motor Challenge Programme", even joining before its official launch in February 2003.

The Motor Challenge Programme is tightly focused on improving energy efficiency of electric Motor Driven Systems while maintaining reliability and quality of service.

As a result of Ferrero's participation in the pilot phase, and its desire to use the best available techniques, electricity consumption per tonne of product was reduced by 7% between 1999 and 2002.

Energy Consumption



EVOLUTION OF ENERGY CONSUMPTION PER TONNE OF PRODUCT

Over the period 2000-2002, energy consumption per tonne of product by companies participating in the CIAA survey was stable, and then decreased slightly.



By-products and Co-products

Some materials generated during F&D production can be used as resources in F&D manufacturing. These materials must fulfil strict quality requirements and must have a high nutritional, agronomic and/or economic value. They are also called by- and co-products⁴. Examples include wheat gluten, wheat germs, potato fibres, etc.

Some by-products and co-products from the F&D industry can also be a resource for other sectors such as the pharmaceutical and cosmetic industries. Another significant

use is for animal feed (e.g. oil-seed meal, maize germs, beet pulp, molasses, brewers grains, whey permeate, wheat feed, broken biscuits/pastry, etc.). In 2002 around 60 million tons of co-products from the F&D industry were used in animal feed.

Some by-products (e.g. bio-solids from wastewater treatment plants) that meet relevant legal requirements, are also spread on land as a valuable organic fertilizer.

CASE STUDY

EU Sugar Industry 100% use of Sugar Beet By-products and Co-products



The European sugar industry processes some 110 million tonnes of beet every year, producing 17 million tonnes of sugar. However, beet processing in sugar factories generates a number of other products including beet pulp and molasses. These are used as animal feed and for production of alcohol and yeast.

Weed, beet leaves and roots that arrive in the factories are used as animal feed too. Sugar factory lime, produced during the processing of beet, is highly appreciated by farmers, who use it as a fertilizer. Beet earth can also be used as a soil improver. Even the stones and sand resulting from the cleaning of the beets are used in civil works. Indeed, 100% of every beet is used in one way or another to yield a useful product.

CASE STUDY

Pernod Ricard Re-use of Whisky Co-products for High-value Animal Feed



Whisky is an entirely natural product, made only from cereals, water and yeast. EU and international laws protect its simple and traditional production process. The key raw materials are cereals, mainly barley for malt whisky, wheat and maize.

These organic ingredients provide opportunities for the re-use of materials left after fermentation and distillation. Among the materials generated in addition to the main product, 99% are co-products, which find a new application, for example as cattle feed.

“Draff” is a solid cereal co-product from malt and grain distilleries and is usually sold for processing into a valued animal feed.

Spent wash, pot ale and spent lees are the liquid co-products remaining after batch distillation. Materials from continuous column distillation are called “stillage”. These co-products are generally concentrated into a syrup, marketed as an animal feed by itself, or combined with draff to produce, after drying, distillers dark grains (DDG) called “cattle cake”. Rich in oils, proteins and some essential minerals, this DDG is a high-value, much sought-after and internationally traded animal feed.

(4) See definitions in Annexes

Integrated Management of Packaging and Packaging Waste

As a result of its integrated management efforts, the F&D industry has continued to make significant progress in packaging source reduction and packaging waste recovery. Packaging is an important contributor to product quality, so any initiatives that lead to packaging source reduction must not prejudice its functionality.



Functions and Benefits of Food Packaging

Packaging plays a crucial role in preserving the safety, quality and integrity of F&D products. In so doing, packaging has a very important waste prevention function. The waste that packaging helps avoid, particularly in the food sector, is typically much larger than the waste it produces. In developing countries, as much as 50% of food was - and still is - spoiled, and never reaches the consumer due to the lack of good packaging. In today's industrialised world, as a result of high packaging standards, the spoilage rate rarely exceeds 2 - 3%.

Packaging also provides convenience for consumers and gives them vital, helpful information (ingredients, nutrition, serving instructions, "best before" dates, etc.).



Decoupling

The latest European figures show that used packaging represents 3% of total waste, and about 16% of municipal solid waste.

Overall economic growth, combined with changing demographics and consumers' habits, has led to a steady increase in total municipal solid waste. For example, between 1990 and 1995, it increased by 11%, and predictions are that this trend will continue, clearly an issue that needs to be addressed.

However, the same trend is not true for packaging waste. Although there was a steady increase from the '50s to the late '80s, during recent years in most EU countries, tonnage levels have remained stable. A typical example comes from France, where the packaging tonnage fell from 4.85% of household waste in 1997 to 4.7% in 2000. This decrease happened despite a growing number of packed products in this same period.

The F&D industry, together with other packaged goods manufacturers, have managed to bring about a decoupling between their economic growth and the final disposal of their packaging waste.



Packaging Source Reduction

The significant efforts made by the F&D industry over the last ten years to reduce the amount of packaging material used have contributed to this decoupling. Indeed, environmental considerations have now become a systematic part of packaging design.

As a result, new packages and materials have now been developed that are lighter in weight, yet are still capable of maintaining the package's function of preserving product quality and safety.



CASE STUDY

Danone Packaging Source Reduction

Today, Danone is well-known for its mineral waters, fresh dairy products and biscuits. However, Danone has its origins in the glass business. The company has therefore been involved from its earliest days in issues linked with packaging and the environment.

Throughout Europe and across the Group's companies and subsidiaries, Danone has set objectives for packaging source reduction. Compliance with regulations and European standards, and participation in national recycling schemes have combined to achieve significant results at industry level. These include:

- Around 30% of PET bottles are recycled in Europe. This is expected to increase rapidly to 35%.
- Almost all cardboard comes from recycling.
- Since 1995, there has been a weight reduction of more than 25% in the 1.5 litre Evian PET bottle.

Initiatives such as these have strongly contributed to stabilising the total weight of domestic packaging in the whole of France in the eight years between 1994 and 2002.

Looking ahead, the challenge for Danone is to continuously improve its performance. New initiatives cover the whole life-cycle of the product. For example, Eco-design has been introduced in all the functions concerned with product and packaging design. A guide for Packaging Eco-design has been distributed, and actions are being monitored on the 10 top products of each Danone Business Unit all over the world.



Packaging Waste Recovery

Today, more and more packaging waste is being recovered, either as a material (recycling) or as a form of energy (incineration with energy recovery).

Considerable amounts of time, effort and money have been invested to develop efficient recovery schemes and to encourage consumer awareness. In 1997, figures reported by 14 EU Member States indicated that 53% of all packaging waste was recovered. By 2001, 15 Member States achieved an overall recovery rate of 60%.

Particular effort has been put into recycling, with the result that the overall recycling rate has increased from 46% in 1997 to 53% in 2001. These results are an indicator of good progress in terms of resource efficiency. However, 100% recycling is not the optimum level since collection, sorting and recycling processes have their own impact on the environment.

A Balanced Approach

The EU F&D industry is constantly pursuing its efforts to reduce packaging waste while taking into consideration a number of constraints:

- Within the limits of food safety, packaging manufacturers and users will continue to optimise the environmental performance of packages, by marketing lighter, “smarter”, easier to recover packages, in line with the CEN standard on source prevention (EN13428:2003).
- Innovation in packaging design has to take into account changing social structures, lifestyle choices and personal tastes. Surveys in Europe show, for example, an increased preference for single-serve products. This may lead to an increase in packaging material for some products.
- The wide variation of local geographic and demographic conditions across Europe makes it impossible to prescribe a single solution for packaging waste management. In certain situations, recovery options such as energy recovery, composting or bio-degradation make better sense than recycling.

Neither light-weighting of packaging nor recycling at any cost is the solution. The overall objective should be that of sustainability. For this, a balanced approach is needed, that takes into account environmental impacts, costs and social factors.

Sustainable Management of Emissions and Waste

Throughout the supply chain, the F&D industry strives continuously towards sustainable management of air emissions, wastewater and solid waste.



Air Emissions

The F&D industry has invested heavily in reducing emissions (CO₂, NO_x, SO_x, ozone depleting substances) and the physical impacts linked to these emissions (odour, noise, dust).

Greenhouse Gas (GHG) Emissions

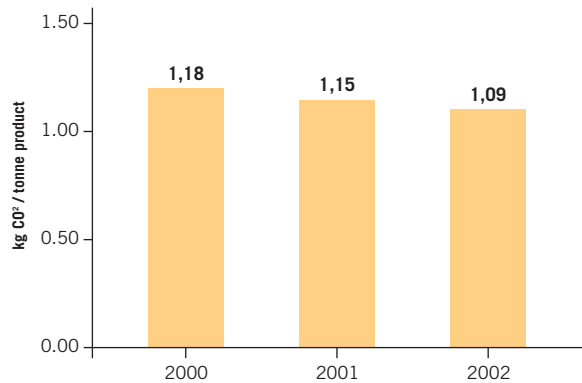
Recent national data show the contribution of F&D activities to the greenhouse effect. In 2000, the Dutch food-processing industry accounted for around 10% of total industry carbon dioxide (CO₂) emissions. In 2001, Belgium was responsible for 5.3%, and France around 13%. Significant investments continue to be made to reduce these levels.

CO₂ air emissions are directly associated with energy use, so any improvements in energy efficiency helps to mitigate the greenhouse effect.

Over and above legal requirements, a number of F&D initiatives have increased efficiency in its use of energy and materials, thereby reducing CO₂ and other air emissions and waste, as well as cutting production costs. These measures include co-generation, fuel shift, the use of agricultural by-products as a source of energy, and equipment/process innovations.

With the ratification of the Kyoto Protocol in May 2002, the EU has launched its Emissions Trading Scheme for all installations above 20 MegaWatt (MW). Under this scheme, the F&D industry will further stimulate reduction of CO₂ and other air emissions contributing to the GHG effect.

Greenhouse Gases



CO₂ EMISSIONS PER TONNE OF PRODUCT:

From 2000 to 2002, companies participating in the CIAA survey reduced emissions of CO₂ per tonne of product, and improved their eco-efficiency by 8%.

Note: Agricultural products used as raw materials by the F&D industry absorb CO₂ during their growth. These quantities have not been discounted in the above graph.

CASE STUDY

Glanbia Ingredients Combined Heat and Power (CHP)



Glanbia Ingredients is a major Irish milk processor and supplier of milk-based ingredients. Its state-of-the-art CHP plant at Ballyragget is one of the largest of its kind in Ireland. By producing both electricity and steam at the same time, this plant is much more energy-efficient than conventional power plants.

Through combined steam and power generation, the effects of greenhouse gas (CO₂) have been reduced by an impressive 35%, and of acid rain (NO_x and SO_x) by 34% and 100% respectively.

The CHP plant has also increased its steam generation capacity. The old obsolete plant has been replaced with modern, efficient boilers.

Finally, significant savings in energy costs have also been achieved.

CASE STUDY

The Coca-Cola Company Global Commitment to Reducing Greenhouse Gases



After having been among the leaders in moving out of chlorofluorocarbon (CFC) refrigeration in the early 90s', The Coca-Cola Company has now publicly committed to gradually move out of equipment containing fluorinated hydrocarbons (HFCs), an ozone-neutral but also a strong greenhouse gas. The company has initiated a \$30 million R&D programme called "eKOfreshment" together with key suppliers and technology partners, aimed at developing sustainable alternatives. On the basis of this work, it has now established that newly developed CO₂ refrigeration is currently the best option for its equipment needs. Initial field tests have demonstrated that CO₂-based equipment is reliable and more energy-efficient than equivalent HFC-based installations. Commercial transition worldwide will roll out as the units become available at competitive prices, starting in 2005.

The Company has also announced the development of a helium-based Stirling unit, which has the potential to become a very efficient alternative for smaller equipment. Field tests of Stirling-based vending machines are currently taking place in Japan.

By 2010, Coca-Cola also committed to purchase equipment that will be 40% to 50% more energy-efficient than units purchased in 2000. The combined impact of these measures will mean that Coca-Cola's new cooling equipment in 2010 will emit 700,000 tonnes less of CO₂-equivalent greenhouse gases - equal to 150,000 fewer cars on the road, or 80,000 hectares of trees to sequester the CO₂.

Air Acidification (SO_x and NO_x)

Much of the fuel used to produce energy comes from non-renewable sources. Some of these, like coal or heavy fuel, can contain high amounts of sulphur, causing sulphur oxides (SO_x) and nitrogen oxides (NO_x) emissions when they are burned. When emitted, SO_x and NO_x can contribute to acid deposition and the generation of smog.

Many measures, such as fuel shift, have been taken by the F&D industry to adopt alternative energy solutions, thereby reducing SO_x and NO_x emissions and improving energy efficiency.

Ozone-depleting Substances (Refrigerants)

In the F&D sector, many manufacturing processes depend on refrigeration and air conditioning to ensure the safe conservation of the product (e.g. frozen food), and therefore require the use of refrigerants.

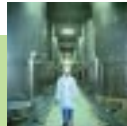
For many years, CFCs were considered to be among the safest types of refrigerant. However, CFCs and, to a lesser extent, Hydrochlorofluorocarbons (HCFCs), are now known to contribute to depleting the stratospheric ozone layer. As a result, and as requested by the Montreal Protocol and EU legislation, efforts are being made to phase out their use.

HFCs do not deplete the ozone layer. They have now become the norm in most commercial refrigeration applications. However, even though HFCs are efficient and safe, they still have a high global warming potential.

Over the last few years, several F&D companies have been working with refrigeration manufacturers to develop and test innovative technologies with the objective of reducing global warming and energy use. These include ammonia, hydrocarbons, carbon dioxide, stirling, thermoacoustic and solar powered cooling.

CASE STUDY

Nestlé Promoting CO₂ as a Natural Refrigerant in Large- scale Refrigeration Plants



In 1986, well before the Montreal Protocol and the EU laid down their requirements, Nestlé made its own commitment to reducing refrigerant emissions from its industrial plants.

Specific maintenance and capital investment programmes were initiated. These resulted in an impressive 99% reduction in ozone depleting substances per tonne of manufactured product.

To achieve these results, Nestlé, for instance, pioneered the innovative refrigeration carbon dioxide/ammonia (CO₂/NH₃) cascade system at their Hayes factory in the UK. This ground-breaking project created a snowball effect. Today there are more than 50 CO₂/NH₃ cascade systems operating around the world.

Currently, Nestlé has six major capital investment programmes that will eliminate a further 80 tonnes of R22 refrigerant from their installations.



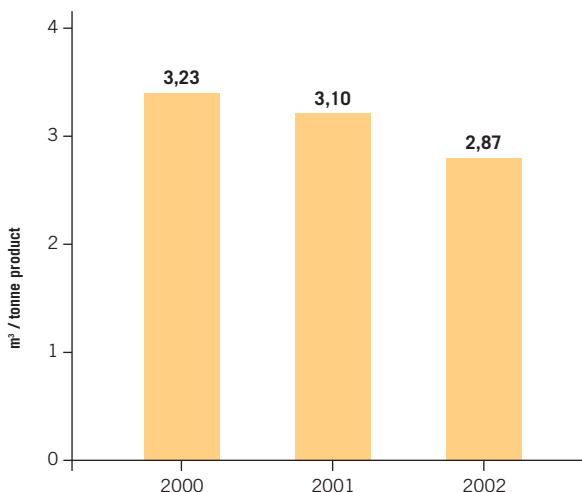


Wastewater

In general, the wastewater generated by the F&D industry is biologically purified either in installations belonging to the companies and/or in public wastewater treatment installations. Treated wastewater is then discharged into the environment.

As a result of greater use of water treatment installations, the past five years have shown a significant decrease in the discharge of oxygen-depleting substances into surface waters. This reduction benefits the fauna and flora of the rivers and seas.

Wastewater Flow



WASTEWATER DISCHARGE PER TONNE OF PRODUCT

The companies contributing to the CIAA survey reported a progressive reduction in wastewater discharge per tonne of product since 2000. Eco-efficiency (the ability to manufacture more products while generating less wastewater) has improved by 11%.



CASE STUDY

**Unilever
Sharing Best Practice
to Reduce Energy Use
and Waste**

A study across Unilever’s Ice Cream and Frozen Foods Business Group showed that environmental loads varied according to the type of product manufactured, the degree of plant utilisation, the level of environmental training and the efficiency of refrigeration plant.

The study highlighted many examples of good practice, including:

- Reducing water used in washing by installing an automated system to transfer ingredients, at the Sagit Frozen Foods factory in Cisterna, Italy.
- Reducing waste and chemical oxygen demand (COD) by removing organic matter from the water used to wash vegetables at the Langnese Iglo Frozen Foods factory in Reken, Germany.
- Reducing the amount of waste frying oil requiring disposal by the installation of on-line monitoring equipment at Birds Eye Walls, Lowestoft, England.
- Saving significant amounts of energy and water simply by reusing cooling water for washing at the Ice Cream factory in Flen, Sweden.
- Cutting the level of impurities in wastewater by 20% as a result of environmental training at the Frigo factory in Barcelona, Spain.

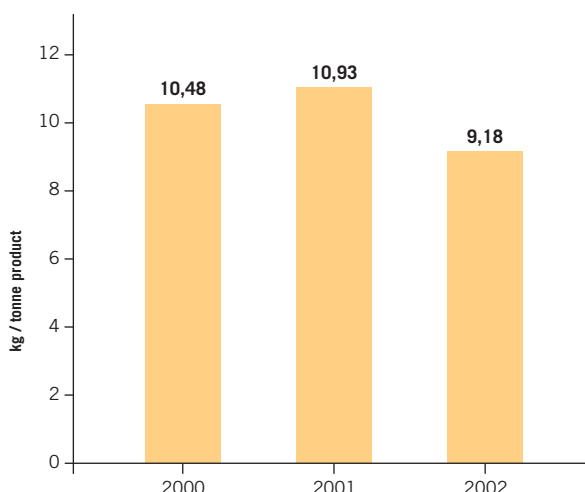
Best practices and environmental benefits across disciplines and processes were shared so that all could gain from the real-life experience that specifically demonstrated improved performance in areas such as water use, COD, solid waste and energy.



Solid Waste

Waste represents an unwanted cost for companies in the F&D industry, and any reduction therefore contributes to their competitiveness. The industry's reduction programmes and recycling efforts continue to lead to diminishing the volume of waste.

Disposed Waste



DISPOSED WASTE GENERATED PER TONNE OF PRODUCT

Overall, from 2000 to 2002, among the companies participating in the CIAA survey, the disposed waste generated per tonne of product was reduced, and eco-efficiency has improved by 12.5%.

These positive efforts made by the F&D industry could be even further enhanced by a more favourable regulatory climate, in which products with economic, agronomic and nutritional value are considered as being useful and not as waste.

Indeed, the current legal definition of waste arguably includes these useful products.

This results in wastage of resources. Potential users, such as breeders and animal feed producers, lose the opportunity of the supply of high quality raw materials essential to balance the needs of the EU livestock population.

This also has serious economic and administrative impacts on both the holders (i.e. F&D manufacturers) and the potential users. Instead of income, the holders incur costs to discharge these useful products. In addition, logistic costs for storage and transport of these products are increased because of their waste classification. Holders also bear a heavy administrative burden (e.g. duty of care, carrier registration, site authorisations). Besides, other requirements have to be met: permit procedures, financial guarantees for waste management and compliance with the IPPC Directive and emission targets. On the other hand, potential users will have to find more expensive alternatives.

Integrated Environmental Management

In line with the principles of sustainable development, the EU F&D industry is firmly committed to continuous improvement in both its product and process performance. In this context, the industry fully supports sustainable agriculture, eco-efficiency in production, efficient distribution and the optimisation of product end-of-life.

To achieve its objectives, the industry has developed and implemented an Integrated Environmental Management approach that ensures that environmental considerations are integrated throughout the F&D supply chain.



Effective Tools for Implementation (EMS, ISO 14001 certification, LCA, EPIs, CBA)

The F&D industry uses several internationally recognised tools for implementing this integrated management approach.

The establishment of Environmental Management Systems (EMS) reflects the high priority given to environmental considerations and their integration in all aspects of the industry's activities. Most companies have implemented their own EMS and a large number are certified or in the process of being certified with ISO 14001 or EMAS. The EU F&D industry has the third highest number of EMAS registered organisations in any sector and represents 9% of all EMAS registered organisations.

Other tools such as Life-Cycle Analysis (LCAs) and EPIs are also used by F&D companies to manage the environmental impacts of their activities. Many companies have been involved in LCA studies on products such as margarine, dairy, bread, pork, natural mineral waters and other beverages, and also on packaging. Although LCAs are useful internal and voluntary tools for companies to help to identify areas for improvement, they are not designed for public policy-making.

Cost Benefit Analysis (CBA) is another tool used by F&D companies to help them to decide whether to initiate a specific environmental measure.



Research & Development (R&D), Reporting, Information & Communication

R&D is crucial for all F&D companies and plays a vital role in identifying and developing technological solutions that lead to improvements in environmental performance (e.g. eco-design, etc). R&D in the F&D industry usually involves co-operation with scientific and research institutions and universities, as well as suppliers.

Issuing regular reports is an efficient way to respond to stakeholders' demands for transparency about companies' operations and the values of the "Companies behind the Brands". F&D companies, as well as National and European Associations are now producing Environmental Performance reports, and also Sustainability or Corporate Social Responsibility reports.

Communication and transparent information also help to raise consumer awareness of environmental concerns and provide practical solutions. In this area, much has been done by the F&D industry, not only to protect the environment at its sites but also to reach out beyond its operations. One example is that of companies sponsoring public environmental projects related to water protection, anti-littering, land conservation, etc.

Shaping the Future

This survey reaffirms the considerable efforts made by European F&D companies to achieve continuous improvement in their environmental performance. The 2000-2002 data on use of resources and management of waste indicate on-going improvements in the eco-efficiency of the F&D industry.

As a result, the EU F&D sector has been able to achieve a decoupling between its economic growth and its environmental impact in several areas. This is illustrated by the decrease in water consumption, the stabilisation of energy use, and the reduction in disposed waste per tonne of product. In addition, the industry's approach to packaging waste management has resulted in an increased recovery rate.

Looking to the future, the industry is committed to building on these improvements.

CHALLENGES FOR THE F&D INDUSTRY

To meet the challenge of further significant environmental progress, the F&D industry will focus its innovation and improvement opportunities on four key areas over the next five years. In particular, emphasis will continue to be put on:

Water Conservation: Protecting the resource and optimising the efficient use of water, along the entire food manufacturing chain.

Energy Savings: Finding innovative ways of energy sourcing and use, leading to greater eco-efficiency.

Air Emissions and Waste Reduction: Instigating technological and logistical initiatives, aimed at reducing both greenhouse gas and other air emissions, and waste.

Packaging Eco-design: Building on existing practices and developing new packaging solutions.

While continuing to take into account and address consumer needs, the F&D industry will do all it can to achieve improvements in these areas. This can only be accomplished in partnership with other key stakeholders such as equipment, raw material, energy, water, packaging and transport suppliers, as well as retailers and governments.

CIAA LEADERSHIP

Support. To help its members to address these challenges, the CIAA will continue to provide a range of services and activities designed to assist in the strategic development and day-to-day management of their businesses. It will actively pursue its efforts to provide guidance on environmental aspects.

Best Practice. The CIAA is instrumental in increasing the awareness and responsibility of its members to environmental issues. It offers a platform of discussion through committees and expert groups, allowing our member companies to exchange views and share environmental best practice.

Communication. Better communication and transparent information are key to raising awareness, as well as contributing to education and consumer confidence. The CIAA is committed to pursuing its reporting initiatives and to encouraging all its members to participate in this effort.

Policy. The CIAA actively contributes to the drafting and implementation of EU environmental policy. It will continue to play a key role in ensuring that EU F&D manufacturers operate in an appropriately regulated market-place, which at the same time continues to maximise their competitiveness.

Regulators. Considerable efforts are made to collaborate with regulators so that they adopt a broader approach to policy-making that integrates economic, social and environmental dimensions.

Partnership and Dialogue. Several initiatives have been launched under the leadership of both the CIAA and the European Commission. For instance, a partnership on integrated resource and waste management in the F&D sector was set up in 2004 involving retailers, consumers, farmers, the EU authorities, NGOs, and international organisations such as UNEP. The aim is to develop pragmatic guidance for the EU definition of waste, with a view to introducing a degree of constructive flexibility for F&D operators. This kind of dialogue is essential, and coupled with the need to forge strong working relationships with business partners and consumers, will continue to have a very significant influence on the F&D industry's road to sustainability.

Annexes

DEFINITIONS

- **Energy consumption:** The sum of all energy purchased or obtained - less any energy that, in rare cases, is sold. This includes electricity, steam, fuels such as oil and natural gas, and by-products used for energy recovery. The energy is used in many different ways to transform raw materials into finished products, for example, conveying, cooking and packaging. Considering all energy sources used per site, all processes and activities included: production (industrial processes), commercial uses (offices, etc.).
- **Water consumption:** The sum of water consumed from all sources, including purchases from suppliers and surface or ground water sources. Water is used in a variety of ways: as an ingredient (excluding bottled water), for industrial processes (for example, steam for cooking), in cooling processes and for cleaning.
- **Co-product:** A material, intentionally and/or unavoidably, created in the same process and at the same time as the main product. Both a main product and a co-product may each meet a set of specifications or design, and individually each is capable of being used directly for a particular purpose (e.g. oil-seed meal, corn gluten feed, wheat gluten, maize germs, molasses, beet pulp, brewers grains, cheese whey, etc.).
- **By-product:** A material which arises during the manufacture or distribution stage of a product. It may be used directly as an effective substitute for a product or as an ingredient in another manufacturing process to create a different product. They are, for example, out-of-specification products or surplus food products (broken biscuits, mis-shapes, etc.), sludge, filter-cakes from filtration, etc.
- **Wastewater generation:** The sum of all wastewater discharged from a factory. This primarily includes industrial wastewaters. Wastewater is generated in manufacturing from processing, cleaning and some cooling processes.
- **Greenhouse gases:** The sum of all on-site greenhouse gas emissions from combustion and fermentation processes used to manufacture products. Greenhouse gases are commonly accepted as contributing to global warming, as outlined in the Kyoto Protocol. These greenhouse gas emissions can result from burning of fuels in boilers, roasters, dryers and electric generators.
- **Ozone-depleting substances:** The sum of substances emitted which have been shown to contribute to the depletion of the ozone layer. The common unit of measurement is R-11 equivalents. R-11 is one type of refrigerant, which has been assigned an ozone depleting potential of one, with all other ozone depleting substances being assigned related values. The impact potential of each substance is determined using conversion factors commonly agreed by most authorities. These substances are primarily refrigerants in equipment used to cool or freeze products, or methyl bromide - a fumigant used to protect raw materials or products from insects.
- **Waste:** Materials from the production process that are discarded and destined for disposal, exclusive of co- and by-products (i.e. through landfilling or incineration).

BIBLIOGRAPHY

CAOBISCO,

www.caobisco.com

CEFS, *Environmental Report - Beet Growing and Sugar Production in Europe, 2003*
www.comitesucre.org/www/pdf/environ.pdf

CIAA, *Data & Trends of the food and drink industry, 2003*

Danone Group, *Social and Environmental Responsibility Report 2003*
www.danone.com

EUROSTAT, Statistical Office of the European Communities
epp.eurostat.cec.eu.int/portal/

Ferrero

www.ferrero.it
www.ferrero.com

FEVIA, *Rapport environnemental de l'industrie alimentaire 1999*

FEVIA, *Deuxième rapport environnemental de l'industrie alimentaire 2003*
www.fevia.be

Glanbia Ingredients

www.glanbia.ie

Heineken, *Sustainability Report 2002/2003*
www.heinekeninternational.com

INCPEN, *Packaging Reduction- Doing more with less, 2003*

INCPEN, *Environmental Impact of Packaging in the UK Food Supply System, 1996*
www.incpen.org

Kellogg's

www.kelloggs.com
www.kelloggcompany.com

Kraft Foods

www.kraft.com

Nestlé, *Environment Progress Report 2000*

Nestlé, *The Nestlé Sustainability Review 2002*

Nestlé, *Nestlé and Water – Sustainability, Protection, Stewardship, 2003*
www.nestle.environment.com

PepsiCo

www.pepsico.com

Pernod Ricard

www.pernod-ricard.com

SAI Platform (Sustainable Agriculture Initiative)

www.saiplatform.org

The Coca-Cola Company, *2003 Environmental Report*

www.environmentalreport.coca-cola.com

"UNEP Report", *Industry as a partner for sustainable development – Food and Drink, 2002*, developed by CIAA in collaboration with Food and Drink associations around the world for the WSSD, 2002

www.unep.org
www.ciaa.be

Unilever, *Environmental Report 2003*

www.unilever.com

National Federations

Austria

FIAA - FACHVERBAND LEBENSMITTELINDUSTRIE

Belgium

FEVIA - FEDERATION DE L'INDUSTRIE ALIMENTAIRE/FEDERATIE VOEDINGSINDUSTRIEN

Czech Republic

PKCR- FEDERATION OF THE F&D INDUSTRY OF THE CZECH REPUBLIC

Denmark

FI - FOEDVAREINDUSTRIEN

Estonia

ETL - ESTONIAN ASSOCIATION OF F&D INDUSTRY

Finland

ETL – ELINTARVIKETEOLLISUUSLIITTO RY

France

ANIA - ASSOCIATION NATIONALE DES INDUSTRIES ALIMENTAIRES

Germany

BLL/BVE- BUND FÜR LEBENSMITTELRECHT UND LEBENSMITTELKUNDE/ BUNDESVEREINIGUNG DER DEUTSCHEN ERNÄHRUNGSINDUSTRIEN

Greece

SEVT - FEDERATION OF HELLENIC FOOD INDUSTRIES

Hungary

FHFI (EFOSZ) - FEDERATION OF HUNGARIAN FOOD INDUSTRIES

Ireland

FDF - FOOD AND DRINK FEDERATION IRELAND

Italy

FEDERALIMENTARE - FEDERAZIONE ITALIANA DELL'INDUSTRIA ALIMENTARE

Luxembourg

FIAL- FEDERATION INDUSTRIES AGRO-ALIMENTAIRES LUXEMBOURGEOISES

Poland

PFPZ - POLISH FEDERATION OF FOOD INDUSTRY

Portugal

FIPA – FEDERAÇÃO DAS INDUSTRIAS PORTUGUESAS AGRO-ALIMENTARES

Slovakia

FOOD CHAMBER OF COMMERCE

Slovenia

ASSOCIATION OF FOOD INDUSTRIES OF SLOVENIA

Spain

FIAB - FEDERACION ESPANOLA DE IND.DE LA ALIMENTACION Y BEBIDAS

Sweden

LI - LIVSMEDELSFÖRETAGEN

The Netherlands

FNLI - FEDERATIE NEDERLANDSE LEVENSMIDDELEN INDUSTRIE

United Kingdom

FDF - FOOD & DRINK FEDERATION

OBSERVERS

Norway

NBL - NORWEGIAN FOOD & DRINK INDUSTRIES FEDERATION

Romania

ROMALIMENTA - ROMANIAN EMPLOYERS' FEDERATION OF FOOD INDUSTRY

Sectors

Bakery

Beer

Breakfast cereals

Chocolate, biscuits and confectionery

Dairy products

Dietetic products

Flours

Frozen products

Fruit and vegetable preserves

Fruit and vegetable juices

Ice cream

Isoglucose

Margarine

Mineral waters

Oils

Pasta

Pet food

Processed meat

Raw material and improvers for bakery and pastry

Roasted coffee

Salt

Sauces

Semolina

Snacks

Soft drinks

Soluble coffee

Spices

Starch

Stocks and soups

Sugar

Tea

Transformed potatoes

Vegetal proteins

Yeast

European Committee of large Food and Drink companies

ADM

BUNGE EUROPE

CARGILL

COCA-COLA

DANONE

FERRERO

HEINEKEN

HEINZ

INTERBREW

KELLOGG'S

KRAFT FOODS

MASTERFOODS

NESTLE

PEPSICO

PERNOD RICARD

SARA LEE

SÜDZUCKER

TATE & LYLE

UNILEVER



Confédération des industries agro-alimentaires de l'UE
Confederation of the food and drink industries of the EU

CIAA is the voice of the EU Food and Drink (F&D) industry – the largest industrial sector, major employer and exporter in the EU. The CIAA mission is to represent the F&D industries' interests at the level of European and international institutions, in order to contribute to the development of a European and international legislative and economic framework addressing the competitiveness of industry, food quality and safety, consumer protection and respect for the environment.

CIAA membership is made up of 23 national federations, including 2 observers from Central and Eastern Europe and the European Economic Area (EEA), 33 European sector associations and major European F&D companies grouped in a Liaison Committee.

The permanent secretariat of the CIAA, based in Brussels, maintains close contact with European and international institutions on food-related developments and coordinates the work of more than 500 experts, grouped in committees and working groups around the following three themes:

- Trade and Competitiveness
- Food and Consumer Policy
- Environment

Through these committees and expert groups, manufacturers from all the countries of the European Union provide broad and in-depth expertise. They contribute to establishing CIAA positions on key issues which, once approved, are communicated to European and international decision makers.

As a result of its longstanding work in the European and international field, CIAA has become a favoured partner of Community and international institutions on horizontal food issues such as food quality and safety, nutrition and health, novel foods, labelling, sustainable development and respect for the environment, the Common Agricultural Policy, international trade issues and EU enlargement.



Confédération des industries agro-alimentaires de l'UE
Confederation of the food and drink industries of the EU

CIAA AISBL
Avenue des Arts 43
B-1040 Brussels
Belgium

Phone: +32.2.514 11 11
Fax: +32.2.511 29 05
e.comere@ciaa.be
ciaa@ciaa.be
www.ciaa.be