



**FEDERALIMENTARE**

Federazione Italiana dell'Industria Alimentare

# **Sustainability of the Food Chain**

## **The commitment of the Food and Drink Industry**

London, 29-30 November 2007

**Massimiliano Boccardelli - Industrial and Food Chain Policies  
Federalimentare - Italian Federation of Food and Drink Industries**

# EUROPEAN AGRO-FOOD INDUSTRY IN FIGURES

- **Turnover € 836 billion (2,6%)**  
First F&D Industry in the world, largest manufacturing sector in the EU (13.6%), ahead of the automobile and chemical industries
- **Employment 4 million people**  
Leading employer in the EU manufacturing industry (13%), ahead of the fabricated metal and machinery & equipment industries
- **282,600 companies (99% SMEs)**  
Fragmented industry
- **Exports € 48 billion**
- **Imports € 43 billion**  
Net exporter of food and drink products

# ITALIAN FOOD & DRINK INDUSTRY

## A pillar of the national economy

- **Second manufacturing sector**

Along with agriculture, induced activity and distribution, the Food and Drink Industry is the central element of the first economic sector of the Country.

- Industry purchases and processes **70%** of the national agricultural raw materials

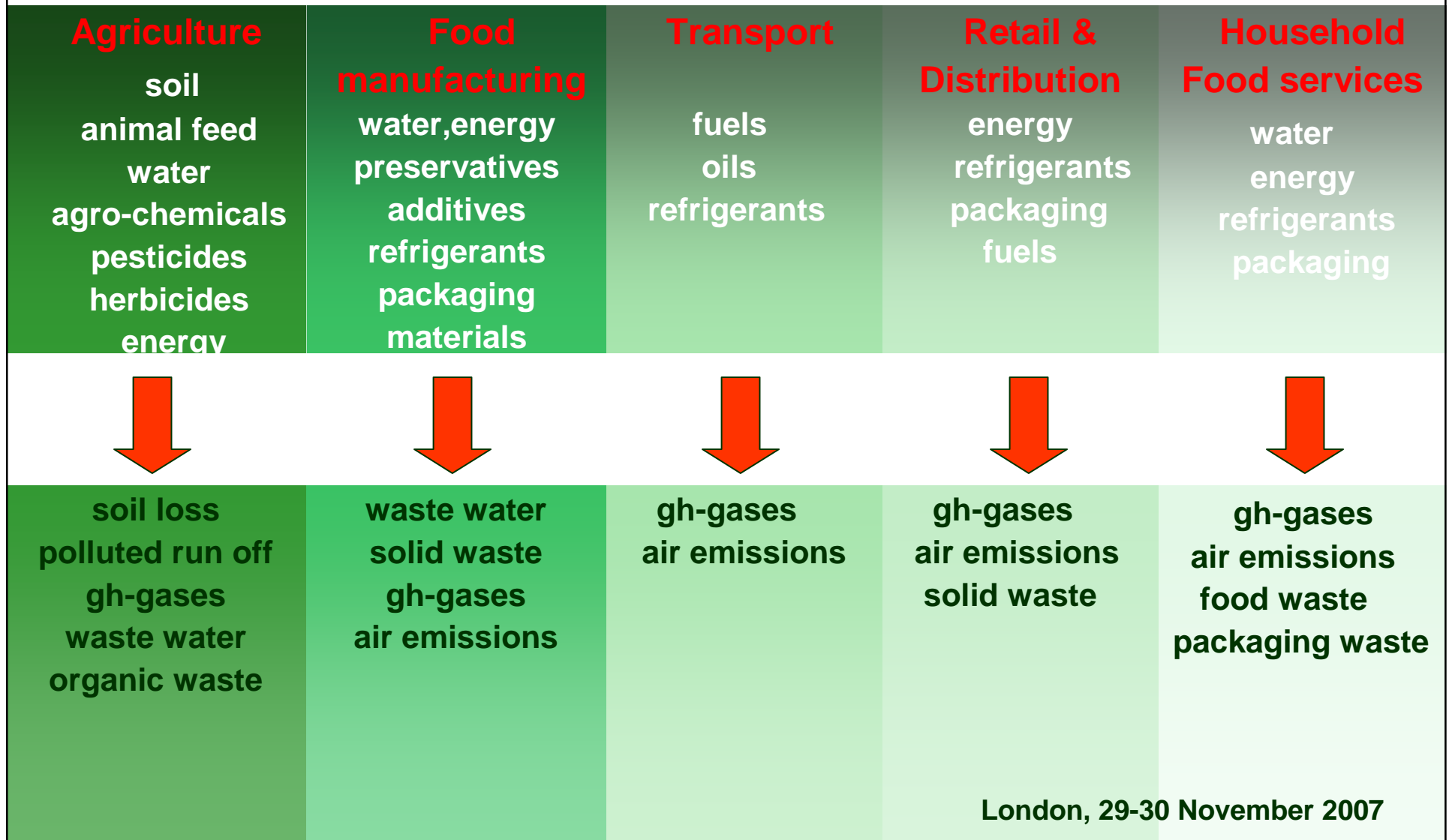
- Industry is generally recognized as the ambassador of **Made in Italy** in the world considering that almost **80%** of the Italian agro-food export is represented by high quality industry brands.

# ITALIAN FOOD & DRINK INDUSTRY BASIC FIGURES

- **turnover** 110 billion €
- **companies** 32.400 (6.500 with more than 9 direct employees)
- **number of operators** 390.000 of which 256.000 employees
- **exports** 16, 80 billion €
- **imports** 13,76 billion €
- **the 4 first sectors of Italian F&D Industry**
  - dairy sector (14,2 billion €)
  - wines & spirits(10,7 billion €)
  - confectionery (10,1 billion €)
  - meat processing (7,4 billion €)

# Sustainability of F&D products

## A responsibility shared in the food chain





## **Agriculture: the starting point of F&D sustainable policies**

Agriculture accounts for an important part of the environmental impacts, but farming systems can also contribute in preserving the natural environment, where raw materials are grown

- Farming activities impacts on natural resources:
  - ✓ agriculture is main user of water worldwide (70% of global, 37% of Eu water consumption);
  - ✓ agriculture contributes 9% of total Eu GHG emissions and 50% of GHG emissions in the food chain.
- The last reform of Eu CAP, as far as Eu rural development regulation (EC) 1698/2005 have been strongly focused on increased sustainability:
  - ✓ in conventional agricultural production, basically encouraging less intensive production methods and cross compliance
  - ✓ in developing integrated and organic farming (that now represents 4% of total Eu utilised agricultural area)



## **Agriculture: the starting point of F&D sustainable policies**

- 
- F&D producers (mainly largest ones) - even if not directly involved in farming activities - are supporting sustainable agricultural practices in the Eu and globally, while a rising number of SMEs are participating in national sustainability schemes.
  - Industry's approach embraces all 3 pillars (environmental, economical and social) of sustainability and is addressed on the following targets:
    1. ensuring safe food supplies
    2. preserving natural environment
    3. improving competitiveness of farming systems and socio economic conditions of local communities



# **Sustainable Agriculture Initiative (SAI) Platform**

## **F&D Industry commitment**

**SAI platform was created in 2002 and is now participated by 21 major food companies (among them: Unilever, Nestlé, Danone, Ferrero) with the aim of developing concrete initiatives in the field of sustainable agriculture in the areas of cereals, fruit, dairy, vegetables and coffee.**

**The WORKING GROUP ON DAIRY has developed sustainable dairy principles and practices on basis of International Dairy Federation (IDF) and FAO Guide to good dairy farming practice. These are now being tested in a number of pilot projects worldwide**

**The ROUND TABLE ON SUSTAINABLE PALM OIL (RSPO) created in 2004 to promote the growth and the use of sustainable palm oil and participated by Unilever, Nestlé, Ferrero and Heinz by reducing the use of agrochemicals and protecting the rainforest**

**The WORLD COCOA FOUNDATION (WCF) founded in 2000, including, among the others, Nestlé, Ferrero, Kargill, Kraft, plays a leading role in developing effective on the ground programmes and raising funds for the cocoa farming sectors members needs**

**The COMMON CODE for the COFFEE COMMUNITY (4C) ASSOCIATION aims at improving producers income and living conditions via cost reductions, quality improvements, improved marketing conditions and environmental sustainability**

*Source: CIAA*

**London, 29-30 November 2007**

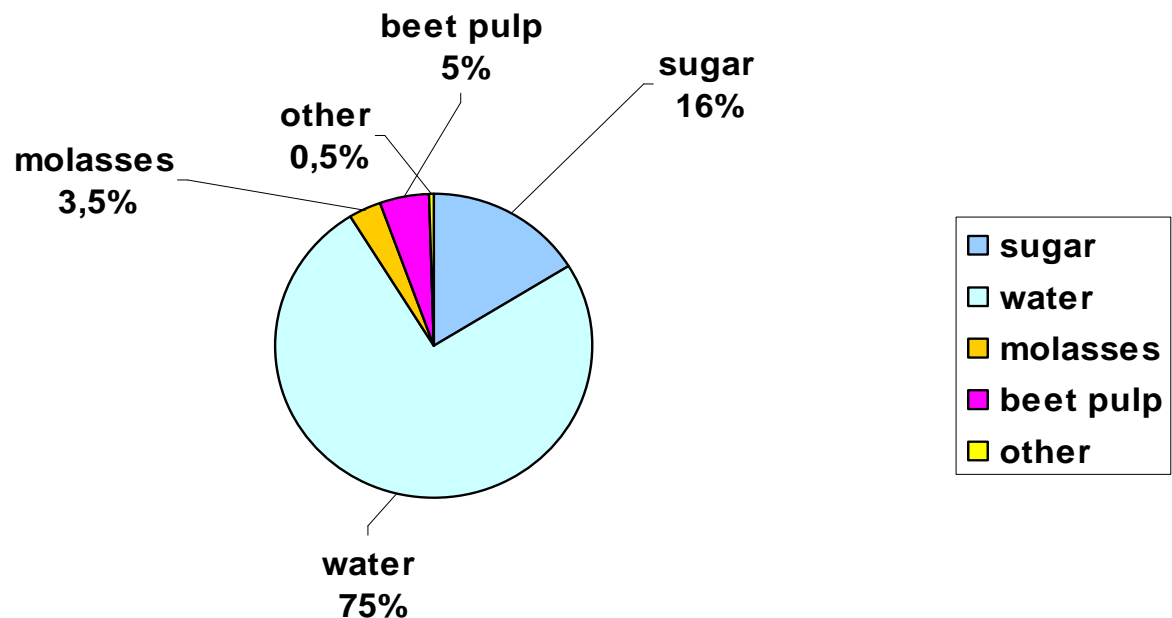
# Resource efficiency in food manufacturing

## Full raw materials use: the main way for waste prevention

- Besides the production of its core products, the objective of F&D Industry is to use 100% of materials components arising from the processes (the s.c. by-products) by exploiting all useful applications of agricultural crops (animal feeds, fertilisers, bio-fuels, pharmaceuticals, cosmetics).

- Example of resource efficiency:

Eu sugar Industry processes 110 millions/ton beet per year, producing 17 million ton of sugar, representing only 16% of fresh sugar beet weight, and, at the same time, a large number of other products



Source: CEFS  
(European Sugar Manufacturers,

London, 29-30 November 2007

# Waste management: when waste becomes a source

According to European Environmental Agency, Eu total manufacturing represents **26%** of the overall waste generation in the Eu, while F&D Industry represents **3,25%**: waste prevention and management through reuse, recycle and recovery, is a priority for food producers. Examples of waste valorisation by F&D Industry:

## Solid waste

### Composting

i.e. use of spent coffee ground for producing high quality compost destined to land remediation/restoration

Production of soil conditioner from processing of biodegradable waste in presence of oxygen (composting) or by using anaerobic digestion which also produces methane gas as an important source of bio-energy

### Anaerobic digestion

i.e. using peeling and other residues of potatoes processing together with the used water, in an anaerobic reactor to produce bio-gas by natural degradation



# Waste water: prevention and valorisation of the source of life

Waste water is the **most common waste** deriving from food industrial processing:  
Food and Drink Industry is strongly committed to:

- reducing quantity of waste water developing the efficiency of the production processes
- improving quality of waste water
- optimising reuse, recycling and recovery of waste water

Several companies operate a full three steps treatment:

1. the organic components contained in the process water are valorised to produce energy (anaerobic pre-treatment) and subsequently
2. compost (aerobic digestion)
3. while a tertiary treatment (i.e. removal of nitrogen and phosphor) further improve quality of discharged water, also decreasing discharge of oxygen depleting substances.



# **Climate change: reducing emissions through energy efficiency**

## **Eu targets by 2020:**

- 1. Reducing GHG emissions by 20%**
- 2. Improving energy efficiency by 20%**
- 3. Raising the share of renewable energy sources by 20%  
and the share of biofuels in transport by 10%**

London, 29-30 November 2007



# Climate change: reducing emissions through energy efficiency

## The scenario

- F&D production processes are featured by relatively low energy intensity (highly differentiated among various sub-sectors), nevertheless transition to low carbon economy will have strong impacts on F&D Industry, which is largely exposed to global warming also considering the effects on agriculture, desertification, availability of clean water and crops. According to IEA (International Energy Agency), in the OECD, Industry accounts for about 8% of industrial energy use and Food, Drink and Tobacco sectors account for 1,5%.
- In the period 1990-2005, the economic value of F&D Industry's production output has grown by more than 51% in the Eu-15 and today amounts to more than 730 billions € per year, in respect of a growth in CO<sub>2</sub> emissions limited to 13% in the same period (*source EEA*)



## The challenge: Eu F&D Industry's sustainable energy roadmap

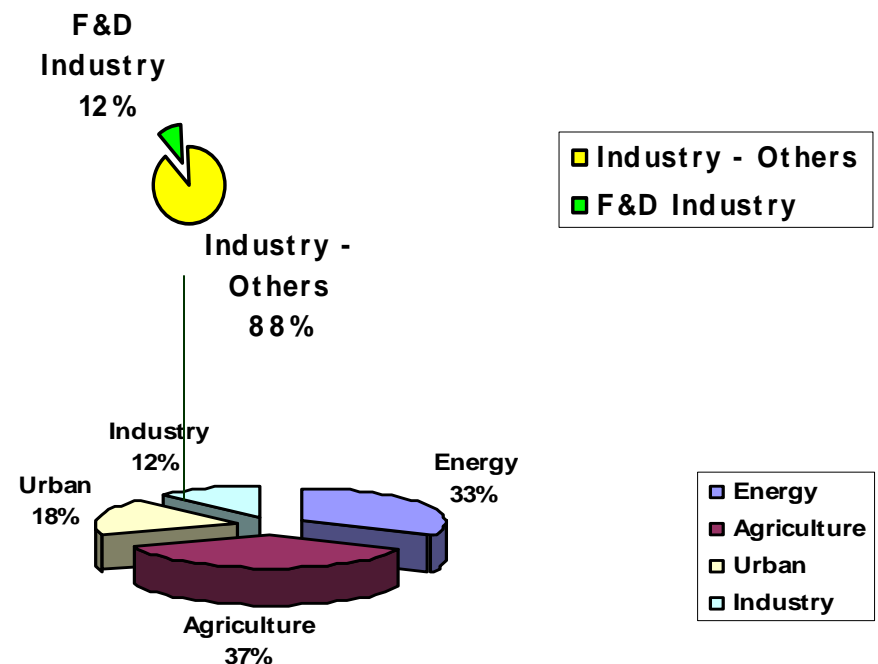
### Improving energy efficiency implies a multiple approach:

1. On the side of demand, **implementation of energy efficiency measures** requires the spreading of sector best practices on energy management as well as the participation in national energy schemes, involving the greatest number of SMEs.
2. On a supply side, an option is represented by switching from oil and solid fuels to natural gas, renewable energy and biomass through the **exploitation of internal sources** (i.e. bio-gas from by-products and waste)

# Water - Preserving the source of life

In food chain water performs 3 fundamental functions

- Agricultural uses ( 70% of global and 37% of Eu-27 fresh water)
- Main ingredient of product (bottled water, non-alcoholic/alcoholic drinks)
- Crucial element in many food processing operations, essential in ensuring strictest hygiene standards.



Source: EEA (Eu 27)

**Hygiene constraints – The implementation of water saving policies must always consider technical limits that have to be respected to ensure compliance with Eu hygiene standards !!**

London, 29-30 November 2007

# Water - Food and Drink Industry initiatives

## Eco-efficiency



### Reducing water consumption

#### Investment in efficient water technology

Implementation of technologies for water reuse and recycling for example replacing fresh water intake with water recovered in production process and recycling suitable water streams for irrigation purposes

#### Behavioural changes – Best practices

Behavioural change is the long hanging fruit for water efficiency, incurring limited costs and saving substantial amounts of water

### Protecting water supplies outside food and drink factories

i.e. for mineral water producers, this means never use more water than each spring naturally produces, cooperating with farmers communities and other stakeholders to draw up guidelines for sustainable management



## Packaging

# Ensuring the highest food quality and safety reducing the environmental impact of packaging

- As major user of packaging, F&D Industry is strongly committed in reducing environmental impacts of packaging along life cycle. At the same time, packaging is essential in guaranteeing product quality and food safety.
- Packaging plays also a crucial role in preventing food waste: an insufficient or unsuitable packaging damages product safety and generates more food waste, with an higher overall environmental impact, since all inputs invested in the product would be wasted (agricultural raw materials, water, energy transport fuels and packaging itself).

***In several developing countries, where packaging doesn't exist, food wastage can exceed 50% before reaching the consumption stage, compared to 2/4% in industrialised countries*** (G. Pre, Packaging of Food products – Its role and requirements – Pack. India 1997)

London, 29-30 November 2007



## Packaging: figures and trends

- In the Eu, packaging represents around **5%** of total waste, **17%** of municipal waste by weight and **30%** by volume  
*(Source: European Commission)*
- F&d Industry as major user of packaging accounts for about **2/3** of total Eu packaging waste by weight
- It's also important to underline some social and demographic trends strongly influencing packaging (i.e. growing number of single person households results in increased waste volumes per household, including packaging waste).



# Packaging – Food and Drink Industry initiatives

Industry has implemented a wide range of initiatives to promote responsible packaging management:

## 1. Source reduction

Limiting packaging volume and weight preserving the required levels of safety, hygiene and acceptance of the packed products by consumers cover different measures:

- ✓ redesigning packaging to minimise use of materials
- ✓ reducing secondary and tertiary packaging
- ✓ using different packaging materials to optimise combinations
- ✓ using lighter materials
- ✓ distributing products in bulk
- ✓ using packaging eco-design
- ✓ rationalising product ranges to reduce packaging
- ✓ using recycled and recyclable materials



# Packaging – Food and Drink Industry initiatives

## 2. Re-use

F&D Industry makes use of re-usable packaging where it is the most sensible solution (i.e. for long distance trips, recyclable packaging is generally a better environmental option due to reduced fuel use and CO<sub>2</sub> emission). 20% of F&D packaging is reusable.

## 3. Recycling and recovery

National recovery and recycling schemes for packaging waste have been successful in achieving and, in some cases, going over, Eu targets (fixed by Directive 2004/12/EC).

*There isn't a unique rule, since the choice between reuse and recycle must take in consideration all specific factors involved.*



# Packaging – Food and Drink Industry initiatives

## 4. Innovation

F&D, together with packaging materials suppliers and converters, are working hard to develop innovative packaging solutions, as:

- ✓ packaging made from **renewable resources** (maize starch);
- ✓ **energy recovery from packaging waste** which can constitute another important treatment option, depending on packaging material and local circumstances (i.e. plastics in particular are featured by an high energy potential).



## **Packaging – The full achievement of Eu recovery and recycling targets**

- **From 2002 on, all recovery and recycling targets applicable to Eu MMSS have been successfully achieved.**
- **Despite a significant growth of packaging consumption in Eu, packaging waste sent to final disposal fell by nearly **10%** between 1997 and 2001 and by nearly **12%** between 2001 and 2004 with an overall reduction of more than **20%**. Both achievements were due to a significant contribution of Industry to the efficient functioning of national recovery and recycling schemes.**



## **Transport - Trends in food transportation**

- **As it happens in most sectors, F&D Industry experienced an increase in transport operations over the past decades. Despite F&D moved towards fewer and more efficient production centres, Industry had to adapt to:**
  - ✓ **retailers expectations for “just in time” deliveries and complying short terms orders**
  - ✓ **changes in life styles and diets and globalisation of food supply that lead to a demand for more products always available throughout the year**
  - ✓ **Eu enlargement that increased community trade**



## Transport - Food miles

- While increased food transport obviously has an environmental impact, food miles (how many miles a food travelled before arriving to final consumer) per se don't serve as a valid indicator of sustainability.
- The assessment of food transport sustainability is complex and depends critically on an integrated approach based on environmental life cycle thinking that considers **transport mode and efficiency, efficiency in agriculture and in processing.**



## Transport & Distribution - Food miles

- **Transport mode and efficiency** (i.e. road transport has an high global warming impact per ton carried, whereas sea/rail transport is very efficient)
- **Efficiency in agriculture**: some raw materials grow only in continents other from those of destination, while others grow more efficiently in distant climatic zones (i.e. it's more sustainable to grow tomatoes in Spain or south Italy than in Denmark).
- **Efficiency in processing**: sometime food can be processed more efficiently in distant installations, than in the country of origin.



## **Transport & Distribution - Food miles F&D Industry initiatives**

- **F&D Industry companies pursue a range of initiatives to optimise transport efficiency and reduce environmental impact and costs from upstream (raw materials-factories) to downstream (factories-consumers).**
- **In this context, the efforts of F&D Industry are mainly addressed to:**
  - ✓ **optimise the mix of transport modes (i.e. switching from road to rail/ship)**
  - ✓ **invest in new technologies by supporting the introduction of new engine norms (Euro IV, V) and replacing old vehicles with new ones with reduced emissions either for its own fleets or in choosing its logistic providers.**



# Consumers

Consumers are responsible for significant environmental impacts:

- 1) directly, in the way they transport, store and prepare foods (**energy efficiency**), create waste and dispose of it (**waste management**)
- 2) indirectly, as they influence upstream supply chain through their purchasing decision

Sustainable F&D products consumption requires:

- ✓ improvement of consumers' shopping decisions and household planning to prevent food waste;
- ✓ use of improved energy efficiency food related appliances;
- ✓ improved consumers' contribution to the successful functioning of national recycle and recovery schemes.

London, 29-30 November 2007



## **Conclusions**

**All the aspects of sustainability of food chain are highly interlinked: a sustainable development of food chain requires a life cycle approach and a close connection between raw materials production, primary and secondary processing, packaging, waste management, transport, distribution and households' activities.**

**The transition towards more sustainable systems must go hand in hand with strengthening the competitiveness of the stakeholders in the European food systems and wide world.**



**Thanks for the attention**