

2010 JIIP SYMPOSIUM  
“The Future of Sectoral Innovation”  
19 April 2010

# Sectoral Innovation in comparison FOOD

*José María Lázaro*

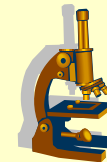
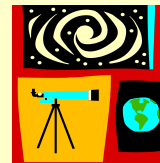
*Researcher (JIIP, Tecnalia)*



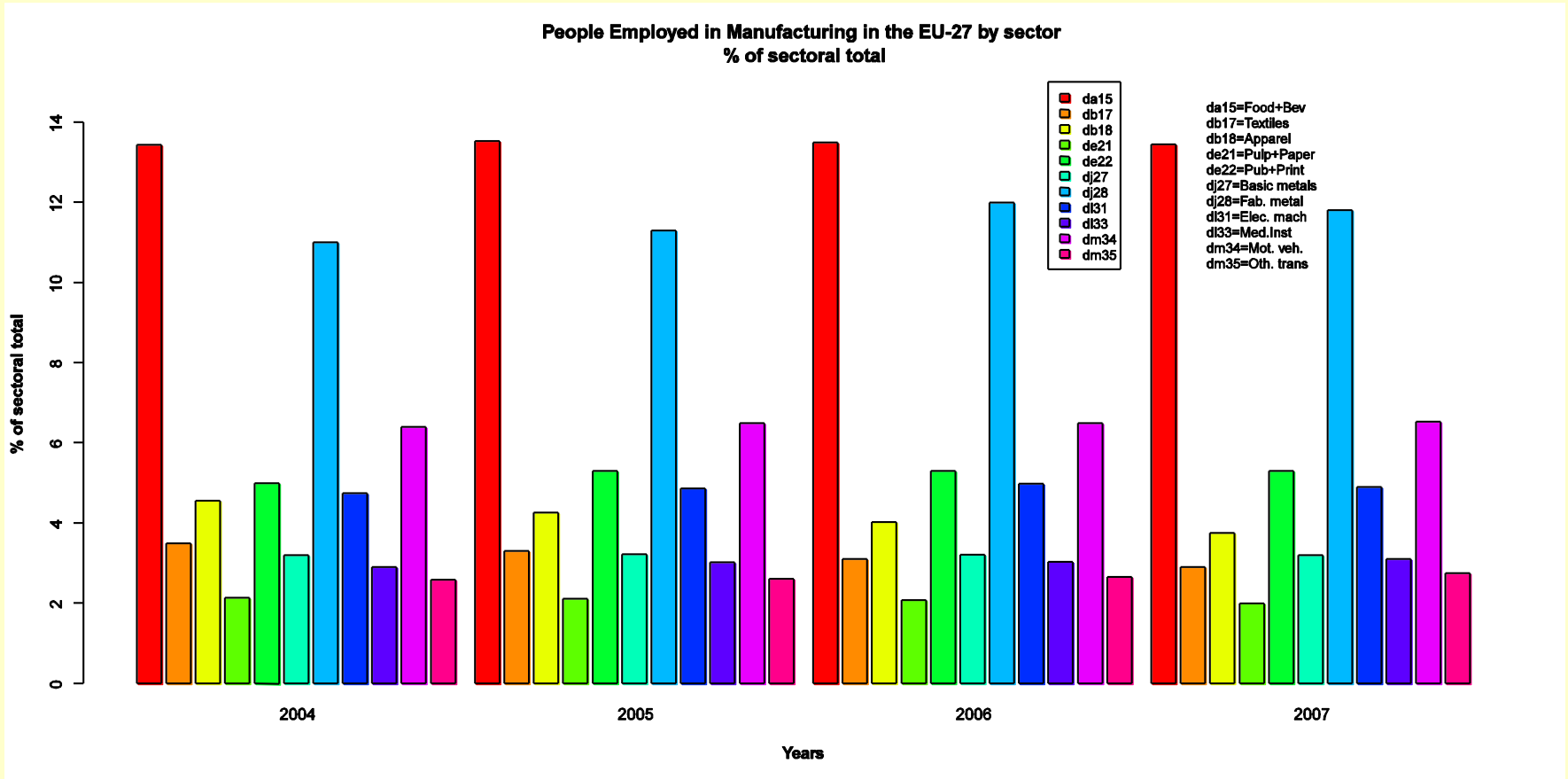
# Outline

---

- Sector definition
  - People employed + Value added
  - National perspective
- Innovation
  - Macro analysis
    - Modes, drivers, challenges
  - Micro analysis
    - What is innovation in the F&B sector?

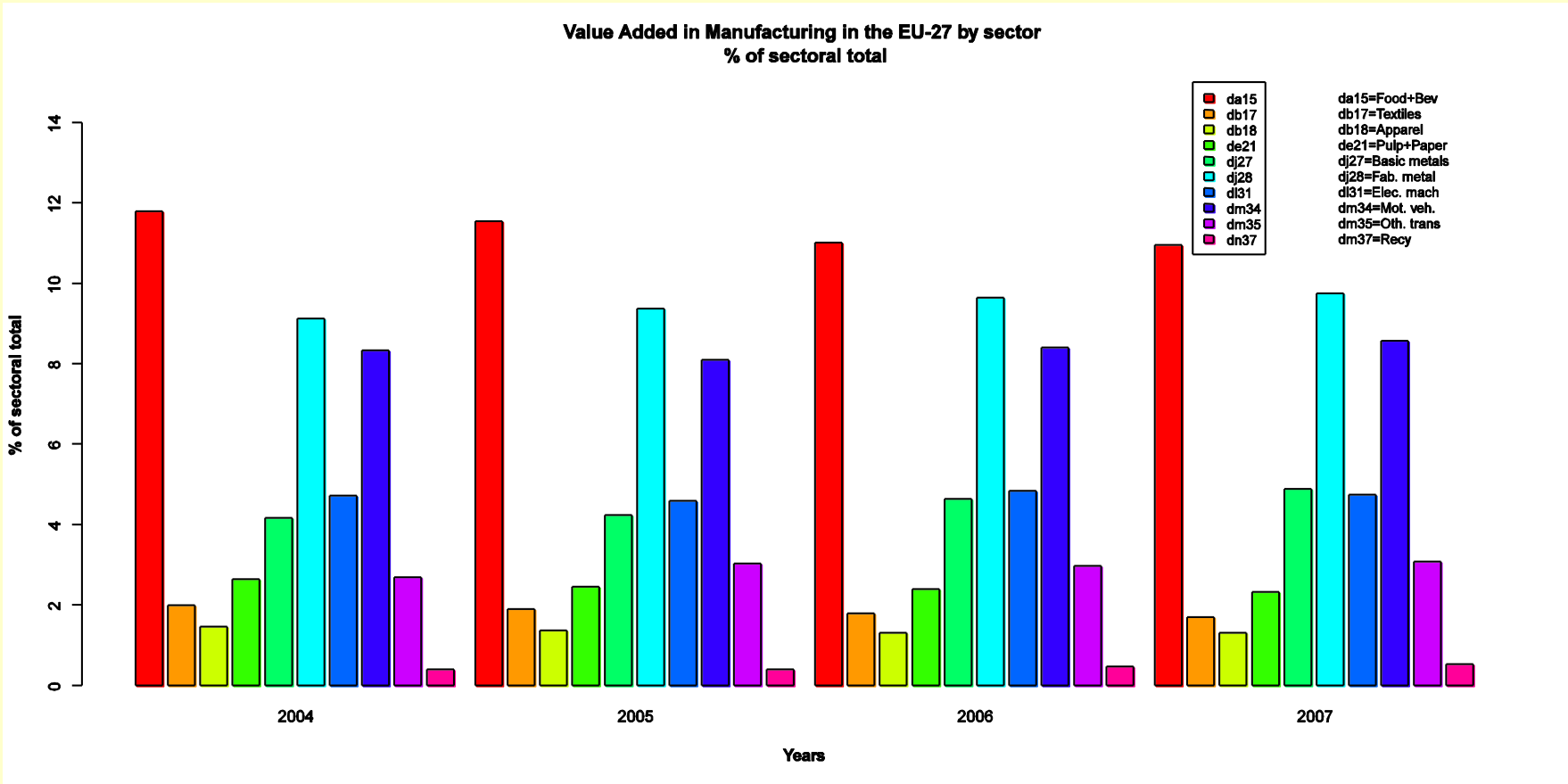


# The sector in figures...



... people employed

# The sector in figures...



... value added in manufacturing

# Most specialised activities...

|        | Most specialised                               | Second most specialised                       | Third most specialised                           |
|--------|--|---|--|
| BE     | Chemicals and chemical products                | Coke, refined petroleum prods. & nuclear fuel | Textiles   |
| BG (2) | Mining of metal ores                           | Wearing apparel; dressing and dyeing of fur   | Mining of coal and lignite; extraction of peat   |
| CZ     | Mining of coal and lignite; extraction of peat | Motor vehicles                                | Electricity, gas, steam and hot water supply     |
| DK     | Water transport                                | Real estate activities                        | Furniture; manufacturing n.e.c.                  |
| DE     | Motor vehicles                                 | Electrical machinery and apparatus            | Office machinery and computers                   |
| EE     | Wood and wood products                         | Wearing apparel; dressing and dyeing of fur   | Auxiliary transport activities; travel agencies  |
| IE     | Office machinery and computers                 | Chemicals and chemical products               | Radio, TV and communications equipment           |
| EL     | Water transport                                | Wearing apparel; dressing and dyeing of fur   | Coke, refined petroleum prods. & nuclear fuel    |
| ES     | Coke, refined petroleum prods. & nuclear fuel  | Construction                                  | Other non-metallic mineral products              |
| FR     | Mining of uranium and thorium ores             | Food products and beverages                   | Tobacco products                                 |
| IT     | Leather and leather goods                      | Wearing apparel; dressing and dyeing of fur   | Textiles   |
| CY (3) | Mining of uranium and thorium ores             | Coke, refined petroleum prods. & nuclear fuel | Electricity, gas, steam and hot water supply     |
| LV     | Wood and wood products                         | Wearing apparel; dressing and dyeing of fur   | Land transport; transport via pipelines          |
| LT     | Wearing apparel; dressing and dyeing of fur    | Wood and wood products                        | Land transport; transport via pipelines          |
| LU     | Air transport                                  | Basic metals                                  | Rubber and plastic products                      |
| HU     | Coke, refined petroleum prods. & nuclear fuel  | Radio, TV and communications equipment        | Office machinery and computers                   |
| MT     | :  | :   | :  |
| NL     | Tobacco products                               | Water transport                               | Extraction of crude petroleum & natural gas      |
| AT     | Wood and wood products                         | Radio, TV and communications equipment        | Basic metals                                     |
| PL     | Mining of coal and lignite; extraction of peat | Coke, refined petroleum prods. & nuclear fuel | Collection, purification & distribution of water |
| PT     | Wearing apparel; dressing and dyeing of fur    | Textiles                                      | Tobacco products                                 |
| RO     | Wearing apparel; dressing and dyeing of fur    | Extraction of crude petroleum & natural gas   | Leather and leather goods                        |
| SI     | Leather and leather goods                      | Textiles                                      | Recycling  |
| SK     | Basic metals                                   | Electricity, gas, steam and hot water supply  | Collection, purification & distribution of water |
| FI     | Radio, TV and communications equipment         | Pulp, paper and paper products                | Wood and wood products                           |
| SE     | Mining of metal ores                           | Pulp, paper and paper products                | Radio, TV and communications equipment           |
| UK     | Extraction of crude petroleum & natural gas    | Research and development                      | Air transport                                    |

... on the basis of value added specialisation ratios (EU-27, 2006, Eurostat)

# Most specialised countries...

|   | Most specialised | Second most specialised | Third most specialised |
|---|------------------|-------------------------|------------------------|
| Mining of coal and lignite; extraction of peat  | Poland           | Czech Republic          | Bulgaria               |
| Extraction of crude petroleum & natural gas     | Romania          | United Kingdom          | Netherlands            |
| Mining of uranium and thorium ores              | :                | :                       | :                      |
| Mining of metal ores                            | Bulgaria         | Sweden                  | Romania                |
| Other mining and quarrying                      | Bulgaria         | Cyprus                  | Greece                 |
| Food products and beverages                     | Poland           | Lithuania               | Greece                 |
| Tobacco products                                | Netherlands      | Bulgaria                | Greece                 |
| Textiles  | Portugal         | Italy                   | Bulgaria               |
| Wearing apparel; dressing and dyeing of fur     | Bulgaria         | Romania                 | Lithuania              |
| Leather and leather goods                       | Romania          | Italy                   | Slovenia               |
| Wood and wood products                          | Latvia           | Estonia                 | Lithuania              |
| Pulp, paper and paper products                  | Finland          | Sweden                  | Slovakia               |
| Publishing, printing, reprod. of recorded media | Ireland          | United Kingdom          | Finland                |
| Coke, refined petroleum prods. & nuclear fuel   | Poland           | Hungary                 | Greece                 |
| Chemicals and chemical products                 | Ireland          | Belgium                 | Slovenia               |

...

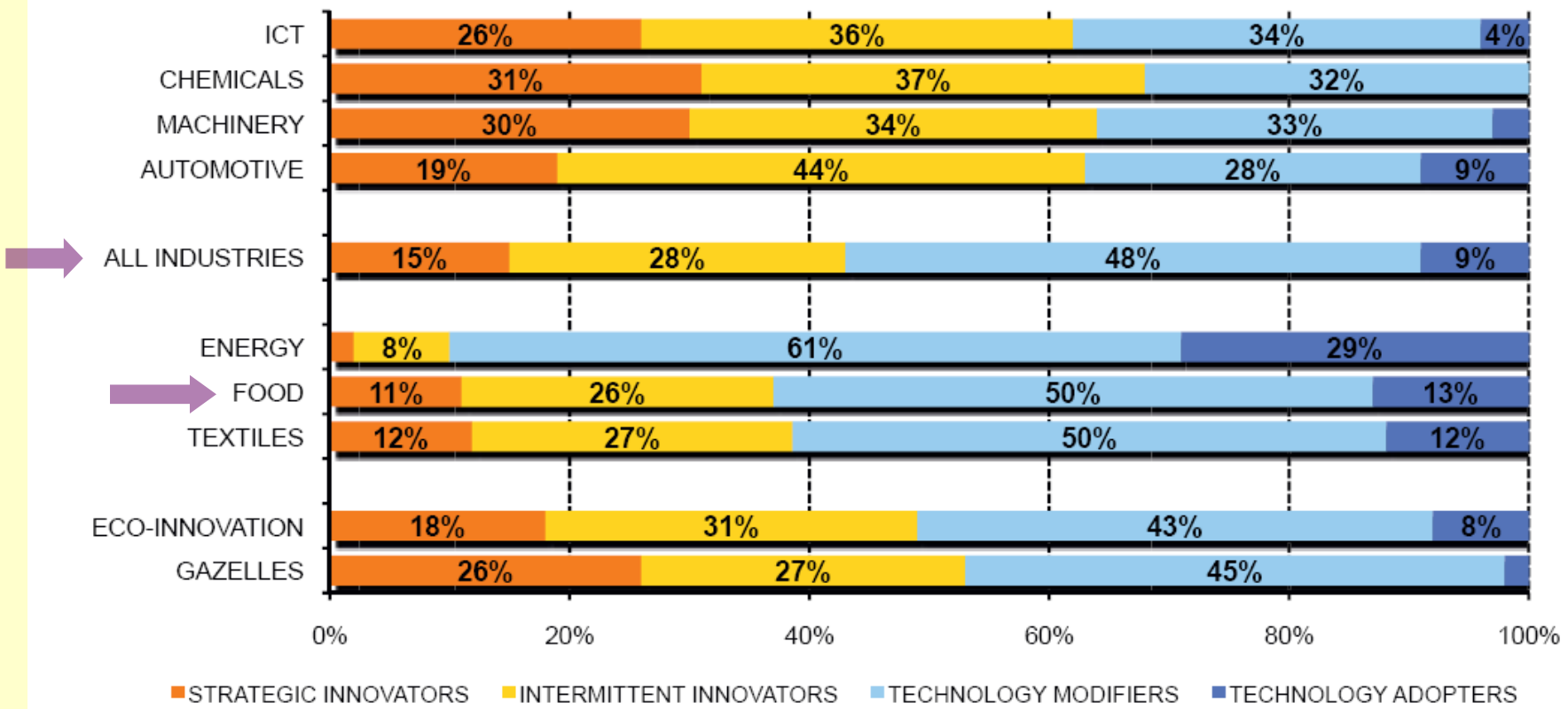
...

...

... on the basis of the share of value added in the non-financial business economy (EU-27, 2006, Eurostat)

# Innovation modes

INNOVATION MODES (% OF INNOVATING FIRMS)



Source: EUROSTAT CIS-3 micro data; Pooled sample of innovators. No data are available for the aerospace and biotechnology industries. UNU-Merit calculations. For details see Hollanders (2007).

# Innovation drivers

| Policy dimensions<br>Sectors | Sector classification |                   | Markets factors for innovation |                          | Research and technologies |                     |                        | Markets and innovation |                              |             | innovation environment |            |       |
|------------------------------|-----------------------|-------------------|--------------------------------|--------------------------|---------------------------|---------------------|------------------------|------------------------|------------------------------|-------------|------------------------|------------|-------|
|                              | Innovation Intensity  | Technology source | Financial constraints          | Human resources & skills | knowledge creation & R&D  | Diffusion knowledge | Networks & cooperation | Lead market potential  | Demand & user-producer links | Competition | Innovation culture     | Regulation | Taxes |
| ICT                          | High                  | Tech. producers   | -                              | +                        | +                         | +                   | +                      | 6                      | +                            | +           | +                      | +          | +     |
| Machinery                    |                       |                   | -                              | +                        | +                         | +                   | +                      | 5                      | +                            | ∩           | +                      | +          | +     |
| Aerospace                    | Med-High              | Tech. producers   | -                              | +                        | +                         | +                   | +                      |                        | +                            | +           | +                      |            | +     |
| Chemical                     | Med-High              |                   | -                              | +                        | +                         | +                   | +                      | 2                      | +                            | ∩           | +                      | +          | +     |
| Automotive                   |                       | -                 | +                              | +                        | +                         | +                   | 5                      | +                      | ∩                            | +           |                        |            |       |
| Energy                       |                       | -                 | +                              | +                        | +                         | +                   | 5                      |                        | +                            | +           | +                      | +/-        |       |
| Textiles                     | Med-Low               | Techn. users      | -                              | +                        | +                         | +                   | +                      | 2                      | +                            | U           | +                      |            |       |
| Food/drink                   |                       | -                 | +                              | +                        | +                         | +                   | 5                      |                        | ∩                            | +           | +                      |            |       |
| Eco-Innovators               |                       | Tech. producers   | -                              | +                        | +                         | +                   | +                      |                        | +                            |             | +                      | +          | +     |
| Gazelles                     |                       |                   | -                              | +                        | +                         | +                   | +                      |                        |                              |             | +                      | +          |       |
| Biotech                      |                       |                   | -                              | +                        | +                         | +                   | +                      |                        | +                            |             | +                      | +          | +     |

Legend: green: highly significant; yellow: important; grey: no decisive evidence. The + - signs indicate expected causality, ∩U shape of relationship, number in column "lead market potential": number of countries where sector has lead market potential in at least three of the five dimensions of the lead market analysis.  
 Source: Analysis by WIFO

# Innovation challenges and policy priorities

| Policy dimensions |                | Sector classification |                   | Markets factors for innovation |                          | Research and technologies |                              |                         | Markets and innovation |                                 |             | innovation environment |            |        |        |
|-------------------|----------------|-----------------------|-------------------|--------------------------------|--------------------------|---------------------------|------------------------------|-------------------------|------------------------|---------------------------------|-------------|------------------------|------------|--------|--------|
|                   |                | Innovation Intensity  | Technology source | Financial constraints          | Human resources & skills | knowledge creation & R&D  | Diffusion informal knowledge | Networks & cooperations | Lead market potential  | Demand & user-producer linkages | Competition | Innovation culture     | Regulation | Taxes  |        |
| Sectors           |                |                       | Tech. producers   | ICT                            | High                     | Green                     | Green                        | Green                   | Yellow                 | Yellow                          | Green       | Green                  | Green      | Yellow | White  |
|                   | Machinery      | High                  |                   | Yellow                         | Green                    | Green                     | Yellow                       | Yellow                  | Yellow                 | White                           | White       | Yellow                 | White      | White  | White  |
|                   | Aerospace      | Med-High              |                   | Yellow                         | Yellow                   | Green                     | Yellow                       | Yellow                  | Grey                   | Green                           | Green       | Yellow                 | Yellow     | Yellow | Yellow |
|                   | Chemical       | Med-High              |                   | Green                          | Green                    | Green                     | White                        | White                   | White                  | White                           | White       | Yellow                 | Yellow     | Yellow | Yellow |
|                   | Automotive     |                       |                   | Yellow                         | Green                    | White                     | White                        | Green                   | Yellow                 | Green                           | White       | Yellow                 | Yellow     | Yellow | Yellow |
|                   | Energy         |                       |                   | Yellow                         | White                    | White                     | White                        | White                   | Yellow                 | White                           | Green       | Yellow                 | Green      | White  | White  |
|                   | Textiles       | Med-Low               | Techn. users      | Yellow                         | Yellow                   | White                     | Green                        | Green                   | White                  | Yellow                          | White       | Yellow                 | White      | White  |        |
|                   | Food/drink     |                       |                   | Yellow                         | Green                    | White                     | Green                        | Yellow                  | Yellow                 | White                           | Green       | Green                  | White      | White  |        |
|                   | Eco-Innovators | Med-Low               | Tech. producers   | Green                          | Grey                     | Grey                      | Grey                         | Grey                    | Grey                   | Yellow                          | Grey        | Green                  | Green      | White  |        |
|                   | Gazelles       |                       |                   | Green                          | Green                    | White                     | Grey                         | White                   | Grey                   | White                           | Grey        | Yellow                 | White      | White  |        |
|                   | Biotech        |                       |                   | Green                          | Green                    | Green                     | Grey                         | Green                   | Grey                   | Green                           | Grey        | Green                  | Yellow     | White  | White  |

Legend: ■ very important ■ important ■ no significant evidence.  
 Source: Analysis by WIFO.



# Innovation in the F&B sector. Main issues

---

- New products
- Food safety
  - HACCP (Hazard Analysis & Critical Control Points)
  - Products
    - Meat, poultry and fish
    - Eggs & Dairy products
    - Fruits & Vegetables
  - Illnesses: E. coli, salmonella, parasites
- New technologies and processes
  - Conservation and stabilization
  - Decontamination
  - On-line control
- Environment
- Gastronomic Development: creativity

# Innovation in the F&B sector.

---

- Needs from new population sectors (children, elderly, new communities –immigration-, globalization, tourism) and the own industry (no e-additives...)
- Improvement in organoleptic properties (sensory information): taste, colour, odour and feel.
- Nutritional aspects and health,
  - Aimed at specific population targets:
    - children, pregnant, elderly, cardiovascular
  - Reduction of some nutrients:
    - Saturated fats, sodium, sugars
  - Addition of some nutrients or bioactive components:
    - Dietetic fibre, vitamins, minerals...
    - Antioxidants, polyunsaturated fatty acids...

# Innovation in F&B. Main issues

---

- Market demands products which are
  - Easy to cook
  - Lightly processed –keeping or improving its nutritional properties
  - Functional foods
  - Low in fat
  - Less salt -sodium

# Thank you all for your attention

---

- Some references (just a few):
  - Sectoral Innovation Watch Synthesis Report (slides: 7-8-9)
    - [http://www.europe-innova.org/c/document\\_library/get\\_file?folderId=26354&name=DLFE-2921.pdf](http://www.europe-innova.org/c/document_library/get_file?folderId=26354&name=DLFE-2921.pdf) (accessed on 2010-04-14)
  - Azti-Tecnalia (sorry, in Spanish):
    - <http://www.azti.es/idi.html> (accessed on 2010-04-11)
  - Eurobarometer
    - Health and Food (Spec. Eurobarometer, 246, Nov 2006)
    - Risk Issues. Food Safety (Spec. Eurobarom. 238, Feb 2006)
    - Europeans and Biotechnology (Eurobarom. 64.3, May 2006)



– [josemari@labein.es](mailto:josemari@labein.es)

