Food, Health and Well-being – Research Priorities in FP7

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Outline

1. Prospects about the future & Challenges for the food industry
2. What does innovation mean?
3. How FP7 considers the needs
4. Conclusions
The world’s population in 2025-2030

- World: 8 billion inhabitants (today: 6.5 billions, +20%)
  - 97% of growth in developing countries (Asia, Africa)
  - 61% of population in Asia $\leftrightarrow$ 6.5% of population in the EU

- EU: 1/3 of population > 65 years (today: 1/5)

- EU: 20% of population will be obese (by 2020)
  350 million will suffer from diabetes (2030)

- World: 1.2 billion obese – 860 million malnourished

“Saving water from field to fork”. SIWI 2008.
The world’s economy in 2025-2030

- Energy demand: 15 billion tons oil equivalents (+50%)
  - 90% carbon-based energy
  - 3% “modern” renewable energy (wind, solar, bio-fuels etc.)
  - EU: 70% of energy have to be imported
  - Stable energy prices unlikely

- World production doubled,
  Asia will produce >30% of the world GDP (EU: 20%)

- World trade doubled,
  share of Asia will increase up to 35% (from 29% today)

- Food (processed) represents only 25% of global trade


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Changing nature of production: cause of consumer concerns

Production separated from Consumption
- physically – culturally - geographically

- Accumulation
- Transformation
- Global competition
- Personal choice
- Satisfaction
- Rising incomes

Source: Adapted from P. Lowe et al. 
Trend in Food science & Technology 19 (2008) 226-233
FutureFood6: Visions 2020

Homogeneous and traditional demand

- Demand for regional products

Sophisticated demand & well-informed citizens

- Leader in the healthy and safe food market

Increased knowledge R&D

- Cooperation in the food chain

Advanced knowledge and favourable context

- Competitiveness of the food industries

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Economic significance of the European Food and Drink industry

- **TOTAL TURNOVER BY PRODUCT**

![Pie chart showing turnover breakdown](chart-image.png)

- Traditional and local food: 65.2%
- Advanced traditional food: 16.6%
- Typical products: 6.2%
- New products: 11.1%
- Organic food: 0.9%

Approximately 83.6 million €/year, serving 480 million EU consumers. The largest manufacturing sector in the EU.

~ 99% SMEs

*EU25 - CIAA benchmarking report 2007 update*
Figure 4. Ranking of industrial sectors by aggregate R&D by main world region for the world top 1402 companies in the 2008 Scoreboard (£ bn).

Note: Ranked by total worldwide R&D investment of the sector.
Source: The 2008 EU Industrial R&D Investment Scoreboard, European Commission, JRC/DG RTD.
Applying processes that have been developed elsewhere

Imitation

Developing new innovative products and processes

Innovation

Growth

Source: Adapted from A. Sentence, Economic Outlook 20 (1996) 14
Role of the food chain

Most of the value is developed in the processing rather than in the commodity itself!

**Farmer**
- Custodian of land and water resources and an applier of technologies that provide for long-term sustainability.

**Assembler**
- Ensures origins and safety at all levels of the food chain.

**Processor**
- Developer of branded and own-label products that now provide not only caloric content but also health and nutrition alternatives.

**Distributor**
- Provider of unique foods for people to manage the health and nutrition of the general population.

Source: Adapted from Goldberg R., Nature Biotechnology 17, Suppl., 199

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Food Innovation drivers

Share of the drivers for innovation in Europe, in North America and in the World 2005 (%)

During the late 19th and the early part of the 20th centuries, practically all research was conducted outside the firm in stand-alone research organizations.

Importance of innovation networks as source of know-how

Balance between outsourced R&D and in-house capacity

Now on a global scale

“Roughly 3% of research is bought outside the firm” – EIRMA study
Innovative firms that did not perform R&D in 2000: Breakdown by Country


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Types of innovators

'Re Radical' innovators
- Bigger companies
- With R&D department(s)
- Effective networks
- Innovation from own resources

'Incremental' innovators
- Smaller companies
- No R&D department
- No or less networks
- Innovation by:
  - Adoption
  - Incremental change
  - Combining knowledge in new ways

Cooperation programme -
10 thematic areas, 32.365 € million
2007-2013

- Theme 2: Food, Agriculture and Biotechnology €1935
- Environment (including Climate Change) €1800
- Nano production €3500
- Information and Communication Technologies €9110
- Energy €2300
- Security €1350
- Space €1430
- Health €6050
- Transport (including Aeronautics) €4180
- Socio-economic Sciences and Humanities €610

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KBBE - Activity 2.2:

“Fork to farm”: Food (including sea-food), health and well-being

- Consumer, societal, industrial and health aspects of food and feed
- Nutrition, diet related diseases and disorders
- Innovative food and feed processing
- Improved quality and safety of food, beverage and feed
- Total food chain concept
Optimisation of resource use: research can provide solutions

<table>
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- Technological advances to reduce losses
- Reducing waste
- Sustainable production
- Sustainable consumption
- Strategies against malnutrition
- Development and harmonisation of standards
- Tailored food products
Research can provide solutions

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- Food markets and price volatility
- Price stickiness
- Eco-challenges and climate change
- Sustainability assessments and life-cycle analyses
- Food safety and environmental health:
  - Food hazard monitoring

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**Special Programme COOPERATION**

**Examples of funded projects**

**(Safety and Quality)**

<table>
<thead>
<tr>
<th>FP6</th>
<th>FP7</th>
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<tbody>
<tr>
<td><strong>Safer and environmentally friendly production methods and technologies and healthier foodstuffs</strong> ⇒ EU-SOL, BIOEXPLOIT</td>
<td><strong>Contaminants in the food chain</strong> ⇒ FACET</td>
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<td><strong>Impact of food on health</strong> ⇒ LYOCARD</td>
<td><strong>Nano-devices</strong> ⇒ NANOTETECT</td>
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<td><strong>Total food chain</strong> ⇒ NOCHEMFOOD, SEAFOODPLUS</td>
<td><strong>Food labelling</strong> ⇒ FLABEL</td>
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<td><strong>Development of methods</strong> ⇒ PATHOGENCOMBAT</td>
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<td><strong>Traceability processes along the production chain</strong> ⇒ CHILL-ON</td>
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**Total budget:** 77.8 m€

**Current budget:** 10.9 m€
Supporting innovation in nutrition science

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<th>FP6</th>
<th>NEW TOOLS for nutrition science:</th>
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<tr>
<td></td>
<td>- Nutrigenomics:</td>
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<td>- Information on food composition</td>
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<td>- Nutrient recommendations</td>
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<td>- Dietary assessment tool</td>
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Total budget: 74 m€
### Supporting innovation in nutrition science

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<td>- Systems Biology and bioanalytical tools for nutrition research</td>
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<td>- Optimal human cell function and nutrition</td>
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<td>- Development of biomarkers for health-promoting functions</td>
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<td>- Bioactive compounds in traditional food products</td>
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<td></td>
<td>-- Development of functional foods and ingredients</td>
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<td>- Role and mechanisms of action of plant bioactive compounds</td>
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Current budget: 32 m€
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Public-Private Partnerships (PPP)

- Leveraging private investment with the support of public funding
- At regional, national and transnational level

Pre-competitive research → Applied research
Approaches to “Better Funding”

- Topics chosen according to current needs
  - EC regularly seeks advice from stakeholders (PC, ETPs, AG…)
- Promotion of key technologies
  - e.g. Bio- and emerging technologies in the Work Programme
- More attractive conditions for industry (and in particular SMEs)
  - Applied research & demonstration
  - Special funding conditions for SMEs
- Foster co-operation
  - Co-operation is core for the funding schemes in FP7
Challenges

- Shift from low to high knowledge intensive activities
- Positively associated with income per head
- Creating a ready market for new and innovative products
- At the heart of the wealth generating process

Source: Adapted from A. Sentence, Economic Outlook 20 (1996) 14
Contributions

- The current challenges for the agro-food industry (innovation) and consumers protection will rely on more robust scientific data.

- Innovation can be 'radical' or 'incremental'. Both contribute to the development of the food sector.

- EU food research programmes try to respond to the needs of increasing public health (prevention), wealth (occupation) and competitiveness (Innovation).
Useful links

- EU Research: http://europa.eu/pol/rd
- FP6 project catalogue for food quality and safety: http://cordis.europa.eu/food/projects.htm
- Research DG Site: http://ec.europa.eu/research/
- RTD Info Magazine: http://ec.europa.eu/research/rtdinfo/