Bottlenecks to innovation in the food industry
A reflection paper of the CIAA

Although the food industry is the largest manufacturing sector in Europe, its expenditure on R & D is rather low. Obviously this has an impact on innovation, but not exclusively.

The food and drink industry is composed of a diverse range of companies from SME’s (defined as having less than 250 employees) to large companies that are big global players. It is a fragmented industry where SMEs make up more than 99% of the food and drink business population. Yet these companies generate some 48.5% of the industry’s turnover and employ 63% of its workforce. Large companies account for approximately 1% of all food and drink enterprises but they provide some 51.5% of the turnover, 53% of the added value and contribute to 37% of the employment.

Most SMEs face endless problems regarding the introduction of innovative products and processes. SMEs, although aware of the importance of innovation, have limited organization and resource capacities, and lack the necessary managerial competencies, experience and strategic vision. Further difficulties for the development and implementation of innovation occur when firms have problems with allocation and coordination of resources, collection of relevant information and knowledge, and when learning is not included in the innovation process.

Clearly there is no generic or universal method available to enhance innovation, and each company will face different barriers en route. Each case needs individual evaluation and often a tailor-made solution, pointing to the need for a structured and holistic approach with flexible tools for analysis and identification of barriers. In turn, this approach should allow the selection of appropriate actions and programmes aimed at elimination or reduction of the obstacles.

The following is an attempt to identify some of the major bottlenecks to innovation:

Bottlenecks relevant to both large companies and SMEs

1. Burdensome regulatory framework – example novel food legislation

Novel foods, currently regulated in the EU by Reg. EC 258/97, are a tool for innovation. Before being placed on the EU market, Novel foods must undergo an authorisation procedure, including a safety assessment. A snapshot of the time frame of such authorisation procedures, in different regions across the world, is outlined below:
As illustrated above, the approval procedures are extremely long in the EU. This, added to the fact that the outcome of the approval procedure is often unpredictable, is a real bottleneck to innovation and prevents the food industry from making use of its research and bringing novel foods to the market in a timely fashion.

2. Coherence between different policies and regulatory requirements

**Environment policy and food safety legislation**

Mineral oil in paper and board:

For ecological purposes, cardboard packaging material is largely produced using recycled paper. Swiss studies have shown that cardboard boxes made from recycled material can contain significant quantities of mineral oils. These mineral oils originate in printing inks that are commonly used in newspaper printing. If certain foods are packaged in such cardboard boxes, it is possible that increased amounts of mineral oils might migrate from the cardboard to the foodstuff.  

**Environment, agriculture and DG Sanco policy**

Inconsistent expectations in agricultural practices:
Minimum tillage is promoted by DG Environment as an environment and biodiversity friendly practice. This growing technique is however contrary to the advice of DG agriculture as it can lead to a highly undesirable increase of fusarium toxins (Don\textsuperscript{1} for example in wheat or other crops).

3. **Uncertainty in decision making**

*Example thrombin:*

Despite a positive risk assessment by EFSA and the suggestion of DG Sanco to approve thrombin as a new additive, the European Parliament rejected this approval saying that there is "a clear risk that meat containing thrombin would find its way into meat products served in restaurants or other public establishments serving food, given the higher prices that can be obtained for pieces of meat served as a single meat product". The advantages and benefits for consumers of thrombin have not been demonstrated, the House added.

Decision-making must be science-based, politics has no role to play; if this is not the case, there is little or no incentive to invest in innovation.

4. **Establishment of advantageous rules for intellectual property rights**

In the food area, many innovations cannot be protected by patents. Innovations that have been granted generic approvals for example, are not protected if there is no applicant-linked approval and can therefore be freely used in the public domain.

If everyone can benefit from such an approval, and can copy the innovation because sufficient information is available, the data protection given to the applicant will not give him sufficient advantage in the marketing of his product.

Our analysis shows that any new legislation in the food area would focus on safety aspects rather then economical aspects. This should change in the future in order to provide greater incentives to innovate.

The draft novel food legislation, as currently encompassed in the Common Position, is a good attempt at adequate data protection. However, this Common Position is unlikely to be adopted at the current time for political reasons (e.g. cloning and other unrelated issues.).

5. **Establishment of a lead market**

The criteria that determine lead markets have been set down by the EU Commission in a Communication to the Council and European Parliament. A "lead market" can be defined as a future market that is demand-driven and has a potentially high economic and social impact characterized by:

- **Innovative products and services with high growth potential**
- **Potential for EU industry to develop a competitive advantage to lead in international markets**
- **The need for action by the public authorities**

Functional foods account for the most rapidly growing sector of the food market in the majority of developed countries. In 2007, it was estimated that the European market for health-giving foods and drinks is worth €12.8 billion with a growth rate of 10%.

More specifically, the UK alone has seen a growth of 143% over the 5 years up to

\begin{footnotesize}
\footnotesize
\textsuperscript{1} DON = Deoxynivalenol
\end{footnotesize}
2005, with other EU member states showing similar trends. Functional foods are wide-ranging, targeting both specific consumer sectors and/or specific health conditions (e.g. foods for the aged; infant foods; foods for children; foods for sportsmen and women; foods for reduction of cholesterol; foods for improved intestinal functioning; foods for delivery of medication; etc.). From within this wide range of markets, the food industry has identified **foods for health** as the specific lead market target for two reasons – (a) the market already exists and needs to be developed, and (b) this market has the potential for very significant growth both within Europe and elsewhere.

Under the guidance of the CIAA, 8 major food companies and 5 universities/research institutions recently submitted a proposal for a project that was unfortunately rejected. It is our belief that this proposal would have helped in identifying bottlenecks as well as finding solutions.

In the **Council conclusions of 8 December 2009, health, food and prevention of diet related diseases** are stated as the way forward to create a successful Joint Programming Initiative. CIAA remains convinced that DG Research should promote the Lead Market Initiative “Food for Health”.

**Additional bottlenecks for SMEs, as already highlight in the Vision Paper of the EU funded project **CONTRACT N°: FOOD-CT-2005-514050 “SMEs-NET”**

### 6. Knowledge transfer

Given the highly complex and diverse make up of the EU food and drink industry, with its multitude of different interests and needs, and the sheer number of food companies across Europe (>320,000) it is extremely difficult to establish a broad, all-inclusive innovation dialogue with real possibilities for technology transfer.

Obstacles to knowledge transfer to SMEs are:

- Insufficient use of modern communication tools;
- Lack of technology efficient and target oriented transfer centres at either national food federations or industry technical research centres, ideally with mediators, who know the specificities of individual SMEs;
- Lack of best practice guides or manuals;
- Food science CVs not adapted to the needs of SMEs or not suitable for larger companies; here a European Academy could help closing this gap.
- Specific SME oriented support terms pf IPR handling and patenting issues related to product and process development.

### 7. Information gaps

- Lack of suitable technical information;
- Lack of awareness of available solutions;
- Lack of clarity of information;
- Lack of market information / information on consumer’s needs;
- Lack of knowledge of contactable research solution providers;
- Low awareness and difficulties to differentiate R+D programs.
8. Gaps in cooperation

R+D is a collaborative process between in-house R+D activities and external research cooperation. Both learning and innovation are interactive processes relying on productive and social networks. Segregated actions of researchers, which are focused on occasional, one-phase, short periods of a project, have limited chance of success. The uncertainty of success in the field of innovation can be reduced by regular feedback from market testing and other disciplines involved in the process of development.

It is important to note that large companies have internal resources to collect and combine the knowledge of different disciplines including R+D, management, production, engineering, finance, legal, marketing, etc., and have capacities and structures for steering the entire process. SMEs, on the other hand, do not have such capacities and resources. They usually need external support and services provided to them at all stages in the innovation process, from idea generation to market launch in order to cope with these issues. These services can be provided by clusters, networks, food federations, industry RTD organisations and project management organisations.

9. Training, education for SMEs

The following are some more bottlenecks faced by SMEs:

- Some lack of understanding of the importance of innovation / value added for the competitiveness of the company
- Product / process development skills
- Skills to identify own research needs
- Definition of R+D project objectives
- Knowledge of preparing / writing a project proposal
- Language difficulties
- Formula/information to communicate benefits of eventual R&D to financial partners.
- Management capabilities / skills to transfer R & D outcomes into successful innovation

10. Encouraging SMEs the participation in publicly funded R&D activities

- Complicated project application and reporting systems
- Complicated administrative procedures
- Payment /prepayment is complicated and often delayed

These are initial reflections to identify some obvious bottlenecks to innovation. The analysis of bottlenecks is an ongoing process and, as such, deserves further investigation.