WWW.EFMN.INFO The European Foresight Monitoring Network

The Food Industry in Flanders – Towards 2010

Foresight Brief No. 026

Authors: Arnold Verbeek of IDEA Consult arnold.verbeek@ideaconsult.be

Sponsors: The FSTPC - Flemish Science and Technology Policy Council,
FEVIA - The Federation of the Flemish and Belgian Food Industry

Type: A Regional-national foresight process covering various subfields of S&T relevant to the food sector, taking account of socio-economic and cultural trends

Organizer: Arnold Verbeek, Koenraad Debackere, and Raf Wouters at the R&D Division of INCENTEM at the Catholic University of Leuven in Belgium

Duration: 2002-2003 **Budget:** €35,000 **Time Horizon:** 2003-2010

Motivation

The food sector is one of the most important industrial sectors in Flanders. The aim of this foresight exercise was to identify and map future scientific and technological developments in the food sector from a socio-economical perspective and to identify future needs for industry working in the sector. The outcome of the study directly feeds into the strategic policy making process of the Flemish Government. At company level the aim is to provide managers, R&D managers and researchers with a 'window of opportunity' through which to 'benchmark' their own company strategy.

Shaping the Future
A Collective Process

Future studies are a recent phenomenon in Flanders. They were first introduced about six years ago with a large initiative to describe and analyse worldwide trends and developments in foresight, and to develop a foresight methodology tailored to the Flemish environment. This study relates to a strategic ambition of the FSTPC – the Flemish Science and Technology Policy Council to develop a long term strategy for (technological) innovation in Flanders; hereby keeping into account worldwide trends and the Flemish socio-economic context. Strategic prioritization and the creation of a 'common ground' for future decision making should be facilitated.

The objectives of the study were to:

- Identify and map possible future technological developments from a socio-economic and from a consumer perspective that takes account of shifts in consumer preferences and behaviour.
- Identify and analyse those factors that would facilitate timely anticipation on these developments such as research capacity, infrastructure and other economic issues such as labour cost.
- Offer companies and policy makers in and around the food sector a shared 'window of opportunity' based on a consensus model.

The project was divided in two phases:

- An internal analytical phase that aimed to identify topics and developments of major importance for the future of the food sector.
- An external phase to refine and assess the feasibility of recommendations arising from the first phase. In this

The **EFMN** is financed by the **European Commission Directorate General for Research** as part of a series of initiatives intended to provide a **Foresight Knowledge Sharing Platform** for foresight practitioners and policy makers in the European Union. More information on the EFMN and on the Foresight Knowledge Sharing Platform is provided at **WWW.EFMN.INFO**

phase consensus-building, communication and awareness creation play an important role.

In phase one about 20 face to face interviews were carried out with experts from academia, the private sector and from NGO's. This was done in parallel with a detailed analysis of the available literature. The interviews touched upon issues such as:

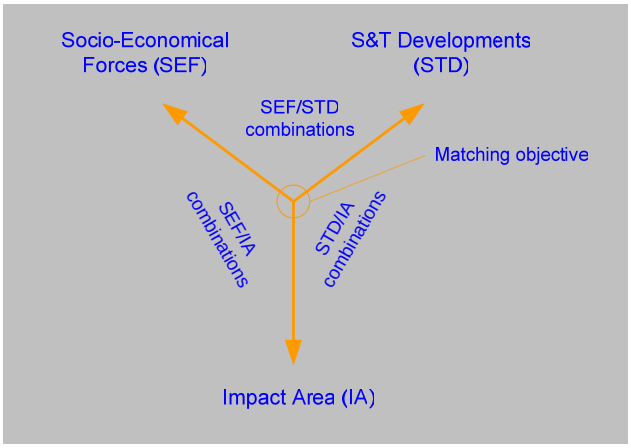
- Technological and scientific developments and trends,
- Market trends,
- Knowledge needs and knowledge gaps, and
- Other socio-economic factors.

Based on the developed vision that 'shaping the future is a collective process' we carried out a short e-mail Delphi-survey. This involved a group of 29 experts. More than 100 statements were evaluated by our experts on factors such as:

- Feasibility and timing,
- Impact on society and competition,
- Confidence to realise and implement, and the
- Expected role of government - for example in terms of support for R&D funding or infrastructure development.

This resulted in a detailed insight into the overall feasibility of possible future developments. Essential to this study was the development of a three-dimensional conceptual viewpoint illustrated below and involving:

- Socio-economic forces around the food industry,
- S&T developments and the impact of developments in upstream sectors,
- Impact Area or sub-sector involved.



Impact Factors: The Consumer as a Major Driver…

The food sector employs more than 85,000 people in Flanders and with a turnover of more than €30B per year it is one of the largest sectors in Flanders and Belgium.

It is rather a soft sector in terms of technology due to the fact that to a large extent it tends to adopt and internalize technologies developed in other sectors. It is also highly susceptible to public opinion. The biggest identified challenge is that of maintaining and in some cases re-establishing a relationship of 'trust' with the consumer in terms of the quality of its products.

The trend analysis was carried out on two levels:

- A *meso-macro* level to identify industry-wide drivers, developments and trends,
- A *micro* level of the consumer and changes to consumer preferences and habits.

On the *meso-macro* level the following drivers of change, and accompanying developments were identified:

- **Internationalisation:** A process whereby food products – ingredients and final products - from all over the world enter the European market.
- **Societal Change:** For example the increased participation of women in the work-force reduces time available for cooking and new demands have to be met in terms of the nature and availability of pre-cooked foods.
- **Agricultural Developments:** The classic example is the production of GM crops.
- **Political Change:** This includes the re-organization of subsidies for food production.
- **The Environment:** Society now demands environmentally friendly methods of production.
- **The Regulatory Framework:** The application of law to quality assurance, novel foods, GMO, labelling and other activities relating to the food industry.

'Alienation' of the Consumer and the Role of 'Trust'

Of specific interest is the *alienation* of the consumer; it seems increasingly problematic for consumers to follow and understand the various developments in and around the food industry. This translates into uncertainty about the safety and the quality of the food products. Consumer *trust* which is crucial to the future development of the sector is being affected as a consequence of alienation.

On the micro-level, that is the level of the consumer, 10 major trends and developments were identified:

- **Do-It-for-Me foods:** These correspond to an increasing demand for highly personalised food products.

- **Taste and Sophistication**: There is an increasing demand for tastier and more complex food products in line with increasing purchasing power of the consumer.
- **Balanced Nutrition**: Food products should be nutritive, healthy and tasty, all at the same time.
- **Form follows Function**: Food should look good and should be user friendly on every occasion. This includes the provision of personalized portions.
- **Social Character:** Food and food products should stimulate and facilitate social gathering. This puts demands on aspects such as packaging and the time required to cook or to prepare.
- **Children's Segment**: Growing importance of the children's segment appeals on the development of new techniques and approaches.
- **Light and Fresh**: Increasingly food products should look fresh and should be light to consume and digest.
- **De-structured Eating Patterns:** This requires flexibility in food consumption.
- **Personalised Nutrition**: Do-it-yourself health food products enriched with nutritive functions.
- **Clean, Pure and Safe**: Consumers want trustworthy food.

All of these trends influence scientific, technological and even commercial aspects of the food production and distribution cycle.

As a result, new capabilities and expertise are needed in a range of food related areas such as formulation of ingredients, processing and packaging.

Promising fields and Anticipated Developments

Seven promising scientific and technological fields have been identified with respect to the future developments in the sector. The table below illustrates these fields and presents some of the main underlying trends and expected developments.

Ingredients Production and Raw Materials:
- The replacement of natural ingredients by artificial ingredients.
- The development of ingredients to compensate for the loss of organoleptic characteristics in 'healthier' foods.

Food Processing:
- Up to 50% of the thermal processes used in food processing will be replaced by non-thermal processes such as use of high pressure processing techniques.
- New processes will be based on scientific insight and computer based models instead of laboratory research.

Packaging:
- Intelligent packaging.
- Bio-degradable packaging.
- Taste preserving packaging.
- Functional packaging.

Biotechnology as an enabling technology for the food sector:
- Intensive use of biotechnology for the production of ingredients.
- The use of herbicide resistant crops.
- The use of GMO techniques to create new species.
- Functional and nutraceutical food products.

Food Science and Engineering Technology:
- Unraveling the relationship between the structure of food ingredients and their properties.
- A full understanding of the effect of existing food technologies on human health.

Measurement and analysis:
- Online process monitoring.
- The introduction of biosensors.
- Personified testing and analysis of food quality.

Water purification and supply:
- The introduction and application of new purification techniques such as membrane and plasma technologies aimed at generating zero waste.

Recommendations: Increasing Public Acceptance of Modern Food Production Methods

The food sector is one of the most important economic sectors in Flanders and in Belgium. This study has identified the most important challenges faced by the food sector; not only from a technological or scientific perspective but also from a socio-economical perspective.

One of the most important conclusions is that this first sectoral foresight exercise in Flanders has convinced experts from policy, industry and academia about the advantage of using foresight to create:
- A common ground for policy making,
- A shared view of future developments, and

- A window of opportunity for companies and their R&D managers.

The recommendations have been brought to the attention of the Flemish Government and in particular to the attention of the Ministers concerned, thereby influencing policy decisions in relation to the food sector. Several of the recommendations from this exercise have already been implemented or are currently in the process of being implemented. In particular 'Flanders Food' has been created as an innovation platform for the food industry. Companies in the sector along with the sectoral federation have taken several initiatives to implement and further refine the recommendations. This study has stimulated further investigation and thinking about the future of the sector. Let us review the main recommendations.

Based on the expert opinion on scientific and technological developments that could be expected to have an impact on the sector it was judged that the following issues would be critical for the future development of the food industry in Flanders:

- Cross-fertilization with other sector and S&T fields,
- Knowledge and expertise sharing both within the sector and with related sectors.

These results have provided part of the motivation to create what is known today as 'Flanders' FOOD' - the **innovation platform** for the Flemish Food Industry. This platform addresses the need to support small and medium sized industry in their search for innovation in the sector. SMEs account for about 90% of the total firm population in the sector. They need support if they are to adequately address the challenges faced by the sector, challenges that are socio-economic, scientific and technological.

On the socio-economical level the **reputation** of the food industry with the perspective of the broader public is crucial for growth in the sector. Consumers should have available objective and trustworthy information about food, safety, and health. Adequate safety systems need to be put in place. The need to address this will become more urgent with the creation of a European Food Safety Agency.

The **alienation** of the consumer is a second major challenge that all companies face. Consumers and the NGO's that represent them refer to a growing knowledge gap between the industry and the consumer. Experts judge this to be of great importance for progress in the sector. They caution that this will be difficult if not impossible to remediate.

Knowledge from disciplines such as psychology, the communication sciences, sociology and anthropology, will need to be used by the food sector when approaching the consumer and when addressing consumer related issues such as alienation and consumer trust.

Another challenge is that of **sustainable development**. Food related processes must now be redesigned with a view to achieving 'zero-waste'.

The availability of suitable **human capital** is as important as any other challenge faced by the food sector. The decreasing numbers of students in the food sciences worries those involved in the sector. The government together with industry now needs to take steps to promote the sector as an attractive and challenging career option. It may be necessary to provide incentives such as support through scholarships to encourage young people to pursue degrees in areas of importance for the sector.

This study together with other work undertaken by the R&D Division of INCENTIM at the Catholic University of Leuven has stimulated the institutionalisation of foresight studies within the S&T policy system in Flanders.

A larger regional foresight study is currently being carried out in order to further help prioritise policy decisions in the Flanders region.

Sources and References

Federation of the Flemish and Belgian Food Industry
http://www.fevia.be

Flemish Science and Technology Policy Council
http://www.vrwb.be

'Flanders Food' – The Flemish Food Industry Innovation platform is available at
http://www.flandersfood.com/ned/default.asp