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Europe's Food Science and Technology on a Fast Track

THE NEW FOOD & DRINK PROFESSIONAL: Industry Growth by Focusing on People

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Introduction

The European Food and Drink (F&D) Industry is:

- The leading manufacturing sector in Europe: exceeding €900 Billion turnover
- A net exporter: the world leader in food exports
- The leading employer in manufacturing: responsible for 4.1 million jobs
- Strongly fragmented: 99.1% are SMEs and 89% are Micro and Small (19 or less employees) companies

This is an industry constantly facing new challenges, for example:

- Feeding a growing population, more than a billion hungry people outside Europe
- Providing for an aging population, and others with special needs
- Working sustainably: environmentally, socially and operationally
- Maintaining consumer trust and understanding consumer behaviour

To stay competitive in a global economy, the European Food and Drink industry must innovate on a daily basis. A motivated and well trained high quality workforce of professionals working in the Food Sector (including not only industry personnel but research and academia institutions, governmental organizations and other sectors like retail or catering) is a key for innovation.

The European Technology Platform, Food for Life, in their Strategic Research and Innovation Agenda[1] recently identified **qualification and training** of F&D professionals as a main driver for "acceptance and application of innovation" and "a key component in increasing competitiveness". However, this document also reports that "**the investment of the food industry in training for its workforce is lower than necessary and this deficiency is even more apparent within SMEs.**"

Moreover, stakeholders report difficulty in attracting the best qualified professionals to the food industry[2] and this fact endangers the competiveness of the sector. The low prestige of the industry in society has been pointed out as one important driver for this lack of professionals.

TRACK_FAST is an EU funded support action (Sep 2009 - Feb 2013), whose main objective is the "Identification of the training and career requirements of future European food scientists and technologists (FST), and implementation of a European strategy to recruit the next generation FST leaders".

This document summarises some of the most important results of the project and present a vision for the future training of food professionals and a continuous strategy for attracting young people to a career in the food industry. This is a result of the work performed under TRACK_FAST (*please visit the project on www.trackfast.eu)* that involved research and analysis of data by the consortium and discussions with stakeholders.

[1] ETP Food 4 Life, Strategic Research and Innovation Agenda (2013-2020 and Beyond). http://www.fooddrinkeurope.eu/uploads/press-releases_documents/SRIA_ETP_Food_for_Life_2012.pdf (visited on 22/01/2013)

[2] http://ec.europa.eu/enterprise/sectors/food/files/high_level_group_2008/documents_hlg/final_report_hlg_17_03_09_en.pdf (visited on 22/01/2013)

The Food and Drink Industry Job Market: Key Results

What skills are needed by the food sector?

Training food scientists and technologists (FSTs) to have appropriate skills begins with identification of those skills most desired by employers. In 2010 - 2011, 16 workshops in 16 EU countries had the participation of 315 local FST employers contributing with ideas of ideal skills for FSTs at their organizations. A year before, a questionnaire-based study had gathered information from 281 respondents on skills found in their currently employed FSTs, and this allowed a comparison of the current and ideal situations.

The ideal skills desired by the four employment areas addressed in the study (Governmental organisations, Industry, Research and Development (R&D), and Other, e.g. retail) were statistically different; as were those desired by the four geographic regions (North, East, Central and South Europe, grouping the 16 participating countries). Additionally, the suggested places to learn these ideal skills were specific to the skills, and preferences for where to learn them also appeared to vary with geography and employment areas**.** Employers in all areas mentioned soft skills with higher frequency than food science and technology skills. This may reflect a general satisfaction with the food science and technology specific skills found in current FSTs, not that employers do not want these skills in their ideal FST, but they are no longer 'looking for' them. However, the fact that soft skills were mentioned three times more than food S&T skills surely indicates a need for more and better skills in this area.

Overall, the most desired skill was *Communicating*, representing 13% of the over 3300 ideal skill ideas collected. Among the other most frequently mentioned ideal skills were *Demonstrating Positive Attitudes & Behaviours* and *Thinking & Solving Problems*. Food S&T skills totalled 19% of all ideal skills mentioned, and among these *Product Development*, *Food Safety* and *Food Legislation* were the most desired.

Finally, the comparison with the current situation showed that in general FSTs have the skills that are considered ideal. This is good news! *Communicating* is the skill most commonly found everywhere and *Product Development* is number one or two (except among Government employers). However, current FSTs have almost the same competence level in soft and food S&T skills while, ideally, FSTs should have many more soft skills. Additionally, repeated training is suggested for all desired skills but especially for soft skills; on a scale of 1 to 4 where 1 = a single training and 4 = continuous training, responses averaged 3.3 for soft skills and 2.5 for food sector-specific skills. The message seems to be that our FSTs need higher level and more varied soft skills, acquired through repeated training.

Who are the Food Science and Technology professionals?

A Europe-wide survey was conducted, to circa 3000 professionals, from governmental organisations, R&D, industry and other, asking about their personality, skills and career paths. Overall, in terms of personal character, Food Science and Technology professionals have a self-image of responsibility, flexibility and liking to solve problems. Results from the biggest cluster show they consider themselves challenge-driven, not particularly ambitious and do not consider work a way of making money but instead a field of creativity.

Education, preliminary professional and social experiences played an important role in the professional choice of the food industry employees. The respondents reported having being

influenced by teachers throughout their education, being exposed to inspiring environments while growing up, and having practical experiences during their education. On the other hand, the respondents evaluated with low scores the influence of family tradition and international experiences on the profession. Most noticeable was the fact that food professionals reported a weak social recognition of their job and, moreover, they reported difficulties in finding a "favourable job".

From this study it was possible to conclude that food industry professionals self-evaluated their skills very high, showing a good self-image of their professional capabilities. However, this image was inversely proportional to the reported satisfaction with their career. i.e., the food professionals consider themselves "too good for their job".

The questionnaire to 281 food organisations, covering all four food sectors, showed that only 50% of the employees working as Food Scientists and Technologists have a degree in Food Science/Technology/Engineering. Moreover, circa 10% of FSTs currently employed started without a higher education degree. From our questionnaire to the professionals, we could observe that the most typical education of the remaining professionals was in related fields like agriculture, chemical engineering, nutrition, environmental engineering, etc.

From the TRACK_FAST questionnaires to both organizations and professionals, it is estimated that more than 85% of the food professionals working in industry are in 3 main functional areas: 1) quality and safety management, 2) production and 3) research and development (including consumer/marketing studies). These seem to be the most important areas of activity of the food and drink professionals, and future efforts on identifying skills should focus on these activities.

How to attract young students to the food sector-related professions?

Young people tend to assume that for the food they eat every day, no technology or science is required. Food grows and can be found in shops. However, during TRACK_FAST, we learned that if we confront young, high potential students questioning about food production, nutrition and safety, they become interested and even consider for the first time a career in Food Science and Technology.

To show high-school students that food science and technology are fascinating and that working in the food industry and related areas can be interesting and exciting, an attractive website has been (and will continue to be further) developed. Because of the immense numbers of food products, processes, research subjects, engineering requirements, etc. the name chosen for that website is "Food Galaxy". It shows young people how a traditional product like mustard is made or why the food they like is there when they want it … or why not (yet).

The website has (links to) many interesting and often fascinating videos, showing what is involved in getting something in your stomach that is safe, healthy, nutritious and then also palatable. In addition, there are videos of interviews with food professionals of all ages, who are pleased with the career choice they have made, or the career in which they ended up unintentionally. Finally, the website provides an extensive survey of food science and technology studies, in all European countries, complete with contact details and links to websites.

The Challenges and The Vision

The right skills and career planning: a tool for innovation in the European Food and Drink Industry

The EU food market share in global exports has been decreasing since 2000, the R&D expenditure is lower than 1%, and only 2% of the EU patent applications in the manufacturing sector are from the food and drink industry.[3] The food sector needs professionals with the right skills for each role who continuously update current skills and develop new ones. Improving skills in F&D sector employees may be a part of the formula for breaking the decline in innovation and the decreased global importance of the European food industry.

Soft skills are critical for knowledge diffusion (an outgoing person is more likely to cooperate with others both inside and outside the organization); and this is one of the bottlenecks for innovation

Additionally, soft skills are likely related to successful entre and intrapreneurship. Thus more professionals with more and better soft skills may be just what the F&D (and other) industry needs. However, this cannot be done by imposing more regulations in a sector many consider already struggling with an excess of legislation and red tape. The professional development of Food Industry personnel will not only be beneficial for the professionals – who reported difficulties in finding favourable jobs - but also for the industry - who may operate more efficiently in a flexible labour market.

Another bottleneck for innovation in the Food industry is the fact that professionals tend to spend their careers in the same employment area. i.e., once an FST starts a career in government, research or industry he/she will stay in that employment area for the rest of their working life.

Tools for continual professional development must be constantly updated, aiming at responding to the needs of an ever evolving industry. This continual professional development includes not only an **update of skills by the professionals, but also the planning of their careers**. In times of unemployment in Europe, especially among youth, it is crucial that young graduates (and also the not so young!) carefully plan their careers. Such career planning is only possible if information on career paths and forecasts on job market needs at an EU level are available and continuously updated. Such resources would increase the mobility of qualified personnel and recognition of training across Europe and hence be a key to future sourcing of labour. Moreover, clear guidelines and incentives for **promoting cross sector career pathways** should be established.

The European Food and Drink Industry Professional: building an identity

The weak social recognition of the role of a "Food Industry Professional" is a threat to the industry that faces problems in attracting a highly qualified workforce. This was clear in many of the discussions promoted under the framework of TRACK_FAST and in the questionnaires to the professionals. One good example is the non-existence of food related job titles for professionals by the International Standard Classification of Occupations.

[3] Food Drink Europe, Data & Trends of the European Food and Drink Industry, 2011. http://www.fooddrinkeurope.eu/uploads/publications_documents/Final_DT_2012_04.06.pdf (visited on 22/01/2013)

Increasing the social recognition of food professionals will also improve public opinion of the food industry and of the food products. In the long run, this will be achieved by a **continuous promotion of food science and technology as a core activity for societal development**. This must be done in close partnership with current professionals, educational organizations, industry and policy makers. Actions like the **adoption and dissemination of a food professional code of conduct** or the **recognition of job titles for food industry professionals** by the International Organizations will be key parts for building a professional identity. Moreover, such actions will contribute to a more efficient labour market, thus improving the attractiveness of the profession.

Society's view of the Food Industry

In 2012 the world population reached 7000 million people and it is estimated that 50% of the world's human beings currently live in urban areas – and this percentage is growing. These demographics are only possible because of the food industry, which provides safe and nutritious foods to urban populations all year long. In a more and more health conscious society, the Food Industry is often vilified by the public as businessmen caring about profit and putting the well-being of consumers a distant second. The recent BBC program "The men who made us fat" is a clear example that explores this notion, without showing the massive effort of the food industry in providing healthy foods and meeting consumer demands for convenience and freshness. However, in times of seriously rising unemployment in the EU, the food industry is able to maintain jobs, and this adds to the social dimension of the industry.

It is urgent to communicate to the public the essential role of the food industry and its professionals in their daily life. This must be done repeatedly and consistently over a long period of time and using different media. This general and wide communication to the public is the **key for attracting more students to a career in the food industry and related sectors.** Two main messages are evident: i) **the food security and nutritional issues we are facing can only be tackled using real science and technology in food**, and ii) t**he food industry should be promoted as a job creator and an industry for the future.**

The professionals are themselves the natural ambassadors for the cause and should be involved in this task. The Local, National and European Professional Organizations may play a critical role in involving their members in this ongoing project.

The role of Education and Training Institutions

TRACK_FAST identified those soft skills that F&D employers mostly want, and also presented data indicating that most employers believe that course work before and during the university years is the time to be trained in these skills. Importantly, most also said that repeated training in soft skills is necessary, indicating that workplace training and courses promoted by professional organisations should also play an important role in ensuring that FSTs have the soft (and food-specific) skills needed for success.

Initiatives such as the ISEKI_Food 4 project (http://www.iseki-food4.eu/), where best practices for teaching soft skills as part of food science curricula are being collected, are moving towards making these recommendations a reality. Yet there is a need for **integrated policies that span educational life**, from basic to higher education and beyond, in which development of soft skills in professionals (not only in food) is the focus. This means that, at the EU level, different

Directorate Generals and Agencies may be interested in initiating the **necessary groundwork for such policy change**. The rich and diversified educational background of food science and technology professionals is an important strength: approximately 50% of current professionals do not hold a degree in FST. However, it is important to assure these professionals have the right (soft and food-specific) skills for the job.

The training of professionals with different educational backgrounds in the **skills needed by the industry is an opportunity for higher education and training institutions.** Also, a **continuous effort** for identifying such needs is critical**.**

Recommendations for Future Actions

The main results of the TRACK_FAST project clearly show the need for a continuous and cooperative effort in training food sector professionals, improving the image of the food industry and contributing to an efficient labour market. Such efforts **should build on the many on-going projects in the field of food sector development, minimizing costs and maximizing results**: several organizations already excel in these activities. However, TRACK_FAST consortium agrees there is a need for deeper collaboration on activities in this framework.
Such coordination should focus on **b*uilding a long lasting forum for professionals, academia and industry,*** aiming to:

- Establish a permanent academia-industry dialogue on the skills needed at each moment, and the forecasting of future needs
- Act as a resource centre for careers within the food industry by:
    - Supporting food professionals in their continual professional development
    - Providing a scheme for wide recognition of competences and skills of the professionals
    - Developing knowledge about careers paths
    - Forecasting market needs for specific job profiles
    - Promoting the code of conduct for Food professionals
- Promote the societal role of the food industry and the professionals:
    - Supporting local initiatives targeted at high school students
    - Participating in consumer awareness programs
    - Participating in the development of media content for general public dissemination
    - Producing science-based but accessible material for general public education
    - Promoting practical experience with the food processing industry in secondary school through training of teachers and career counsellors.
    - Supporting Local and National Food Professionals Associations.
- Liaise with policy makers and relevant national and international organizations:
    - Providing input for education and training policies
    - Lobbying for the recognition of food professional occupations at an international level
    - Assuring that the professional development needs of food industry professionals are considered in policy making