INSTITUTO DE FORMACIÓN Y ESTUDIOS SOCIALES

IFES

Education and Culture

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SITUATION OF THE FOOD INDUSTRY
EUROPEAN ANALYSIS
Food-skills project
ES/08/LLP-LdV/TOI-149065

INDEX

1. INTRODUCTION

The food industry encompasses all those companies which carry out activities related with the processing, conservation and/or handling of products mainly intended for food.

One of the characteristics of the sector is its great diversity and heterogeneousness where large and small companies, multinationals and family companies co-exist. The companies in the sector have begun to be aware of the need for a radical change in their concern for research and technological development so as to be able to maintain their current market share.

The food sector includes in the NACE code has the following activities:

C10. Food Industry.
C10.1. Production, processing, preserving of meat, meat products.
C10.2 Processing and conservation of fish, crustaceans and molluscs.
C10.3 Processing and conservation of fruit and vegetables.
C10.4 Manufacture of vegetable and animal fats and oils.
C10.5 Manufacture of dairy products.
C10.6 Manufacture of milling products, starches and starch products.
C10.7 Manufacture of bakery products and pastas.
C10.8 Manufacture of other foodstuffs.
C10.9 Manufacture of products for animal feed.
C11 Manufacture of beverages.

In the EU the sector accounts for over 4 million people and bill around 800,000 million Euros. Production is led by France, Germany and the UK. Italy is in fourth place followed by Spain.

At European level, the food sector shows some common characteristics. One of them is its businesses configuration, mainly composed of SMEs (small and medium size enterprises). These types of enterprises, together with cooperatives, are majority in the sector and show common problems.

Another shared characteristic of the food sector is that it is less affected by the economic crisis than other industries. Nowadays, this fact is important because many economic sectors (its enterprises and its workers) are damaged by the world economic crisis, while the rules of Economy are quickly changing. The food sector is less sensitive to this situation, and its main challenges are related to the innovation of the productive process, the new and continuous advances in subjects like new technologies (also applied to raw materials) or food safety.

In **France**, food industry has a paramount economic weight because of its central position in the food chain, between agriculture for producing raw materials and mass distribution for selling products. Its specific identity differs from other industries in features such as seasonal work, size of companies, location in rural areas, and homogeneous dispersion on the French territory.

The Food industry sector in **Italy** is characterised by a wide range of products, with a total contribution of about 2% of GDP *(ISFOL-REF).* The manufacture of food products is one of the most important industrial sectors and it is one of the most relevant economic branches both for the turnover volume and for tradition.

Germany is, with more than 82 million people, the largest market in Europe with retail sales of EUR 150 billion in 2007. The German food processing industry has grown steadily over the past five years with a compounded annual growth rate of two per cent.

Bulgaria is a traditional agriculture country but the food sector is not a main economic activity. It contributes to 2.6% of GAV, 3.5% of the employment and 15% of the total industrial production. During the last twenty years, the food industry was marked by the transition period of the country. Twenty years ago, Bulgarian economy was a planned economy, the food manufactures were big companies, owned and managed by the government. During the transition period those companies have been privatised or went bankrupt. New opportunity to develop own private business appear and thousands small enterprises came forward.

In **Spain**, the food industry presents its own peculiarities, which define its configuration. Said configuration is shown in the business profile and its socio-labour situation. The following table shows weaknesses and strengths of the Spanish food sector. The following table shows the food sector weaknesses and strengths in Spain.

Weaknesses	Strengths
Atomisation of the sector and its small corporate dimension. Heterogeneousness in the sector. Rural location of the companies. Poor qualification of employees. Low productivity and skills. Business structure chiefly made up of SMEs.	Less vulnerability to crisis situations. Demand for more labour. Growth in billing and the trade balance. Potential for economic development. Importance of exports.

2. SOCIO-LABOUR SITUATION OF THE FOOD INDUSTRY

In **Italy**, the distribution of the food industry and companies is settled in the local production systems. Typical products played a critical role in the development of SMEs and large industries, just think of the dairy industries in the Padana area (with parmesan cheese and Grana Padano) or the Caserta and Salerno area in Campania where Mozzarella is produced and also to the Pecorino in Sardinia. Another remarkable example is the meat processing and preservation industries with the Parma Ham and San Daniele Ham areas.

The analysis of food processing industries is strictly connected to the growing importance of the agrofood districts. In the last 50 years there has been a strong concentration of food industries and geographic agglomeration in the richest areas, which led to the formation of big national groups and some international companies. The main concentration, around 70% of the value added, is in northern Italy close to the main markets.

In the following table a short overview of the manufacturing industry for food and beverages.

Food industry overview

Year	2008 forecast	2007	2006
Turnover	120 billion €	113 billion €	110 billion €
Numbers of firms	6.400 (with more than 9 workers)	6.450 (with more than 9 workers)	32.400 (with more than 3 workers) 6.500 (with more than 9 workers)
Nr of workers	386.000	390.000	400.000 of which 260.000 employees
Export	19,57 billion €	17,84 billion €	16,65 billion €
Import	16,05 billion €	14,93 billion €	13,82 billion €
Total consumption	212 billion €	203 billion €	197 billion €
Range in the industry sector	13%	12%	12%

Source: Rapporto Federalimentari Ismea (2007)

There is an identity crisis in the food sector in Italy that can be seen on three levels:

- From a structural point of view it is an organisational crisis. The firms have difficulties to cope with the changes and approve new regulations.

- The difficulties that firms face to find workers with appropriate qualifications.

- The loss of Italian products competitiveness in comparison with their corresponding foreign products, on both domestic and foreign markets.

In **France**, numerous businesses still have a cooperative structure and are located in rural areas. Cooperatives represent 1/5th of the sector's turnover and 16 out of the 40 biggest French agro-food groups are cooperatives. Many SMEs are now being closer to bigger groups, and mergers are more and more numerous. This network of very little companies spreads on the whole territory. A line sharing French regions appear according to the weight of the sector in local economy that is heavier in the West of the country than in the North or in the East. It induces recruitments based on geographic proximity of employees and of production sites.

One of the most important characteristics of the French food sector is that the unemployment rate is very low in the sector and shortage in workforce is recurrent for many factories. It can easily be explained by the lack of enticement for the sector: image deficit, low wages, and hard work conditions. Besides, the sector is featured by a lack of geographical and inter-occupation mobility due to the structure of the sector and the low qualifications of workers.

The demand has evolved and induced the creation of new market segments and new products to answer the matter about nutritional balance. Sanitary crises (mad cow disease, foot-and-mouth disease, and avian flu) encouraged a strict demand for sanitary quality in products. Since then, efforts to be certified ISO 9001 or to implement methodologies such as HACCP (Hazard analysis critical control points) were carried out. It increased the need for deeper specialisation and speeded up the financial integration of companies. Companies of the sector tend to be more concentrated than ever at a financial point of view, being integrated with agriculture (through subcontracting) and mass distribution. This integration does not reach production sites where, despite a progressive concentration of workforce towards big SMEs, the number of employees per establishment remains low.

The improvement of production occupations is inferred by the reorganisation. It encompasses the wind-up of automation of production lines and the redefinition of activities. It implies a diversification of operators' tasks that should be able to hold any position in the line. They should develop new skills (technical culture, tool mastering, product-oriented more than occupation-oriented trade, just-in-time working, normalisation and maintenance) and new know-how (communication skills and ability to team-working).

In **Bulgaria**, the most promising and important sectors from the economic point of view could be identified from the information in the following table.

Data about the food sector in Bulgaria

C10	Turnover (MioEuro)	Avarage-salary (BGN)
C10.1	466,4	2.323,6
C10.2	15,1	2.335,8
C10.3	190,9	2.571,2
C10.4	206,8	3.087,8
C10.5	185,5	2.861,4
C10.6	177,9	3.128,8
C10.8	638	2.786,2
C10.11	558,1	4.493,6

Source: EUROSTAT and National Statistical Institute

The most important three sub-sectors in the food industry are: manufacturing of other food products; manufacturing of beverages; production, processing and preserving of meat and meat products.

The dairy products and fruits and vegetables have a high importance from social and economic point of view.

- Manufacturing of dairy products is a very important sector for the Bulgarian yoghurt (one of the most widespread food). Distinctiveness for this sector is that there are a lot of smalls producers, mostly regional represented.

- Manufacturing of fruits and vegetables. Because of the good climate conditions, long traditions and the many research centres existing, this subsector is historically strong in the food industry. Most of the farms are small and many times the farmers do not mention this activity as their main income. The average age of the people working in the fields is 55 years and they are more than 50% of farmers[1].

A SWOT analysis on the whole industry indicates some main problems that are common in the food sector:

- Lack of any planning. In this point, the Ministry of Labour and Social Policy and the Ministry of Economy have adopted two funding programmes: "Development of Human Resources in SMEs" and "Increasing the Competition of Bulgarian SMEs". Main objective of those programmes is to enhance SMEs' resources (industrial and human) in order to enable them to plan better and transform this business in main incomes for farmers and small producers. The investments of these programmes are focused on equipment and qualification of workers.

- Low qualified personnel. The number of less skilled personal (up to 4 level of EQF) is 76%. Generally, the employers are more interested in

[1] Annual Report of Bulgarian Ministry of Education on vegetable and fruits manufacturing (2008)

skills and labour experience of the hired personal than in diplomas and certificates.

- Lack of young professionals. There are many professional schools that issue young professionals with 3 and 4 level of EQF qualification but most of them do not continue working in their professional field. Those professions have low social prestige and very low profitability. Sometimes it is very hard to find professionals in rural regions for working in the food industry.

Germany is, with more than 82 million people, the largest market in Europe with retail sales of EUR 150 billion in 2007. The German food processing industry has grown steadily over the past five years with a compounded annual growth rate of 2%.

Germany was a net importing country of food and beverage products. Currently it is developing a balance between export and import. The import has a value of EUR 38.7 billion and exports generated EUR 36.3 billion in sales in 2007. The food processing industry is reaching an export quota of 24.6 percent. Around 80% of all exports are to other EU member states.

Data about the food sector in Germany

Activities	Sales in billion €
Food industry[2] total	**138,5**
Butcher and meat processing	31,1
Milk processing and production of ice cream	23,2
Beverage production	17,8
Production of pastries (w/o dry baked goods)	10,3
Production of confectionery (total)	13,9
Production of vegetable and animal fats and oils	5,8
Milling and hulling mills	3,7
Production of feeding stuffs	5,2
Production of seasoning and sauces	4,0
Fruit and vegetable processing (w/o juice production)	9,0
Production of dry baked goods	3,7
Coffee and tea processsing, production of coffee substitutes	3,8
Sugar industrie	2,7
Fish processing	2,2

[2] Companies with 50 or more employees.

Production of starch and starch products	1,5
Pasta production	0,6

Source: German Federal Statistics Office (2008)

The food industry continues to be characterised by large structural challenges:

- Domestic demand is still too weak, which has an effect on the demand for food products in general.
- Strong competition through overcapacity in most areas of the food industry.
- Increasing the concentration pressure through more European and international competition.
- Increasing competition and price pressure through more demand power of the food retailers.
- Recurring food scandals (BSE, foot-and-mouth diseases, feeding stuffs, rotten meat) and the treatment of food products with harmful substances which lead to generating anxiety among many costumers.
- Categorical competition of agricultural resources for energy production and food production.
- A worldwide decreasing demand for agricultural resources and processed food products.
- EU agricultural reform to more market: reduction of price support, export refunds and production subsidies and consequently more pressure on production costs, employment and regional locations.
- Claims-Regulation. EU-wide stricter conditions for food products which have a provable health benefit, consumer-friendly labeling and increasing health and wellness trend.

The concentration pressure in the food industry remains. From 1960 to 2006 the number of businesses in the food industry has decreased by 25 %. Corporate cooperation, mergers and acquisitions particularly took place in branches such as butcher and meat processing, pastry industry, sugar industry, tobacco industry as well as the brewing industry.

In **Spain,** the distribution of the employees from the sector in line with their employment situation and their progress over the last four years is shown in the following table:

Mean of employees in accordance with their employment situation

	Years			
Employment situation	**2005**	**2006**	**2007**	**2008**
Active	520.820	527.400	528.800	548.650
Occupied	490.700	496.900	495.600	509.000
Salaried workers	451.800	435.500	431.200	445.600
Unemployed	30.150	30.470	33.150	39.650

Source: UGT-Agri-food. "The Food industry in Spain" (2009).

The number of active food industry employees during the last four years has undergone a progressive increase: 27.830 people from 2005 to 2008. The same trend can be observed in the variables relating to the numbers of occupied employees and the number of unemployed in the sector. The salaried worker situation has undergone further changes, falling between 2005, 2006 and 2007, but increasing in 2008.

The distribution by gender in the Spanish food sector is the following:

Male employment: 62%

Female employment: 38%

2.1. Business situation

As previously mentioned, the most numerous type of food companies correspond with SMEs. This is a common characteristic in Europe, thus, it can be applied to Bulgaria, France, Italy, Germany and Spain.

In **Italy**, the food industry with an annual turnover in 2007 of around 113 Billion Euros, counts more than 36 thousand companies, although companies with more than 9 workers are 6.450. According to data from Istat, in 2005 Italian companies working in the food industry, beverages and tobacco are around 70.911. There are around 6.500 companies which have more than 9 employees and 2.600 which have more than 20 employees. The average dimension of the companies working in the food industry, beverages and tobacco is 6.5 workers, higher than the national average size of those companies which in 2005 were made up of 3.8 workers (5,9 workers in the industry and 3.1 in services). In the companies with less than 20 workers representing 96.2% of the total, there are 52.8% of the workers, 39.2 of the employees, 24.9% turnover and 31.8 % of the value added.

The following table shows the number of companies (depending on the NACE code) of the food sector.

Number of companies by NACE code

Activities	Companies
C10.1 Production, processing, preserving of meat, meat products	3.854
C10.2 Processing and preserving of fish and fish products	445
C10.3 Processing and preserving of fruit and vegetables	2.024
C10.4 Manufacture of vegetable and animal oils and fats	4.031
C10.5 Manufacture of dairy products	4.339
C10.6 Manufacture of grain and mill products, starches and starch products	1.578
C10.8 Manufacture of other food products	51.224
C10.9 Manufacture of prepared animal feeds	593
C11 Manufacture of beverages	2.822
C10 Manufacture of food products	68.088
Total Food sector (C10+C11)	70.910

Source: Istat, Nota congiunturale sull'industria alimentare in Italia (2005)

The functional dimension of the Italian industry is peculiar, mainly based on SMEs, and is also reflected in the food industry where around 90% is companies and enterprises with a maximum of 9 workers. These companies are generally family-run companies where besides the owner one or more relatives are active in the enterprise. The sector with the highest percentage of small companies is the manufacture of other food products (67,6% less than 9 workers). This is a sub-sector (C10.8) that agglomerates the production of bread and pastry, a highly dynamic sector with the traditional presence of family-run and closely held companies. On the contrary only 0.2 % of the companies operating in the food industry have more than 250 workers and only 1 % has between 50 and 249 workers.

The territorial distribution of the food industry reflects the general picture of an industry where the majority of the manufacturing plants are located in the north part of Italy.

30 % of the food enterprises are found in the North West

22 % in the North East

21 % in the Center

19 % are in the South

9 % are in the Isles

There are more than 6.000 registered small and medium enterprises operating in the food manufacturing sector in **Bulgaria**. The distribution of these enterprises as the NACE code is shown in the following table.

Number of companies by NACE code

Activities	Companies
C10 Manufacture of food products	
C10.1 Production, processing, preserving of meat, meat products	610
C10.2 Processing and preserving of fish and fish products	35
C10.3 Processing and preserving of fruit and vegetables	315
C10.4 Manufacture of vegetable and animal oils and fats	89
C10.5 Manufacture of dairy products	424
C10.6 Manufacture of grain and mill products, starches and starch products	259
C10.8 Manufacture of other food products	3.377
C11 Manufacture of beverages	871

Source: EUROSTAT and National Statistical Institute

In **France**, the number and distribution of the enterprises by NACE code are shown in the following table.

Number of companies by NACE code in France

Number of companies		
C10.3	408	
C10.4	49	12% of cooperatives 1 company sells 90% in volume of overall production of food
C10.5	302	15% of cooperatives 6 big groups=60% invoicing
C10.6 and 7	476 active mills	75 mills have more than 20 workers
C10.8	274	Most of them are SMEs, independent or related to family-run businesses and subsidiaries of cooperative groups
C10.9	464	
C10.11	1.736	

The data set out below relate to the NACE codes in **Spain**. The distribution of the number of companies in line with the distinct activities has been set out in the table below[3].

[3] The present project does not include data relating to the tobacco industry.

Number of companies in the food sector in Spain

NACE Code and activity	Number of companies
10 Food industry	26.027
10.1 Processing and conservation of meat and manufacture of meat products	4.416
10.2 Processing and conservation of fish, crustaceans and molluscs	741
10.3 Processing and conservation of fruit and vegetables	1.338
10.4 Manufacture of vegetable and animal oils and fats	1.607
10.5 Manufacture of dairy products	1.629
10.6 Manufacture of milling products, starches and starch products	678
10.7 Manufacture of bakery products and pastas	11.867
10.8 Manufacture of other foodstuffs	2.827
10.9 Manufacture of products for animal feed	924
11 Manufacture of beverages	5.255
Total	**31.282**

Source: DIRCE (August 2008)

As can be seen in the table, the total number of companies in the sector stands at 31,282, whereof 26,027 are from the food industry (83%) and 5,255 the manufacture of beverages (17%). Bearing in mind the different sub-activities going to make up the sector, that which has the highest number of companies is the manufacture of bakery products and pastas (11.867, 40% of the total), followed by the manufacture of beverages (5.255 companies, almost 17% of the total) and the processing and conservation of meat and the manufacture of meat products (4.416 companies, 14%).

In **Germany**, on the production side, the food industry is characterised by medium-sized enterprises. Most of the companies are still family-owned. 93% of the enterprises in the food industry have less than 250 employees. The average number of employees per company was 89 employees in 2006.

Activities in the food sector in Germany

Activities	Number of Companies
Butcher and meat processing	555
Milk processing and production of ice cream	159
Beverage production	333
Production of pastries (w/o dry baked goods)	772
Production of confectionery (total)	206
Production of vegetable and animal fats and oils	26
Milling and hulling mills	52
Production of feeding stuffs	62
Production of seasoning and sauces	39
Fruit and vegetable processing (w/o juice production)	161
Production of dry baked goods	78
Coffee and tea processsing, production of coffee substitutes	41
Sugar industries	25
Fish processing	33
Production of starch and starch products	14
Pasta production	17
Food industry total[4]	**2.573**

Source: German Federal Statistics Office (2008)

2.2. Workers' situation

In **Italy**, according the data from Istat (2005) there were around 463.580 people working in this sector (2,8% of the total) among which:

43% work directly in the production
22% are involved in quality and security management
19% in sales
9% in logistics
7% in finance and business administration

[4] Companies with 50 or more employees.

The labour market in the food sector presents very peculiar characteristics linked to the typology of companies operative in this sector and the typology of workers and contractual forms. The most relevant features of the food labour market are:

- There is the presence of a higher number of workers with respect to employees and managers.

- There is the prevalence of fixed term contract forms.

The labour force is not professionally adequate for the current demand of the sector, namely in those more dynamic sectors, characterised by innovative products and high quality standards, which require a more specific and professional labour force.

In **Bulgaria**, in accordance with statistics of the Ministry of Social and Labour Policy, the number of workers in the food sector (food and beverage industry) represent 2,2% from all hired labour force in the country and 14% in the whole manufacturing sector.

The average education level of employees is ISCED 3 (ISCED version of 1997). That implies the finalisation of secondary education in a professional or general school (from 15 up to 18-19 years).

The distribution of the workers as NACE code in the food sector is the following.

Number of workers in the food sector

C10 Manufacture of food products	Employment
C10.1 Production, processing, preserving of meat, meat products	15.000
C10.2 Processing and preserving of fish and fish products	927
C10.3 Processing and preserving of fruit and vegetables	8.804
C10.4 Manufacture of vegetable and animal oils and fats	2.720
C10.5 Manufacture of dairy products	8.037
C10.6 Manufacture of grain and mill products, starches and starch products	4.802
C10.8 Manufacture of other food products	43.298
C11 Manufacture of beverages	17.985

Source: EUROSTAT and National Statistical Institute

The official document for definition of any professional occupation is National Framework for occupations. It is developed in accordance with ISCO-88 and defines the professional structure of the population. It is

composed by 9 grades and their definition takes into account the national education system with the qualification and prequalification system of labour force, and the general organisation and remuneration of work.

The official document for definition of professions is the National List of Professions. It concerns only the first four levels of qualifications (EQF) and does not include the higher levels. Each food employer is obligated to hire personal in accordance to this list. The first four levels of professional qualifications are regulated by the National Law for Professional Education and the higher levels by the Law for Higher Education.

There are three professions in the food sector that can be considered unskilled, and they correspond to the three EQF levels. They are the following:

Worker (seasonal worker) in food production and agriculture → EQF level 2

Operator in food industry → EQF level 3

Technician-technologist in food sector → EQF level 4

Those three levels and three professions represent the biggest proportion of the human resources in the sector.

In **France**, the food industry workforce kept stable at 400.000 employees. In fact, this stability hides uneven situations depending on enterprises' size: employment decreases 10% in companies of less than 100 employees, whereas it grows in SMEs of more than 200 employees. The cereal industry's workforce increases in number whereas in oil, beverage or dairy sectors, workforce decreases.

Occupation in French food industries are also featured by the number of people in charge of production (more than 2/3 of the whole workforce of the industry) and the very low rate of supervision.

The food industry workforce is:

- Young. 15% of food workers are under 27. They benefit from favourable conditions for a first work experience but the insecure nature of employment contracts is a deterrent for career building.

- Feminised. Females are more numerous than in other industries (41% against 28%) and are less part-time employed (12% against 16%).

- Low qualified. 3/4 of them are employed for factory works. 50.6% of the activity concern people under EQF level 4.

- Low paid. The average cost per worker is lower than in other industries.

Illiteracy issues should be observed in food industry with attention: 12% of employees could be concerned. This circumstance is crucial in a sector in which written communication is getting essential because of the traceability demands and the multiplication of written instructions at work.

The instability of work is also an important feature of the food industry which has consequences on training. Temporary work contracts and fixed term contracts are more used than in other sectors (37 entries per 100 employees) and the labour turnover rate is twice higher than in other industries. Yet, this last figure can be slightly moderated by the seasonal timing of food industries and commuting of hired workers. Anyway, a link between turnover and investment in training can be noticed. The instability of low qualified workers keeps them away from vocational training.

A structural analysis of workforce features underline similarities which go beyond traditional distinctions between branches. A typology of workforce management was established with 4 models[5]:

- Industrial workforce model (eg. industrial bread industry) = low capitalistic intensity and concentration; employs 50% of food workers; low qualified; low supervision rate; high labour turnover rate; hard work conditions.

- Cooperative model (eg. dairies, canned food, cereals industries) = average concentration rate and trainings are more "agricultural" than industrial.

- Food income model (eg. chocolate, beverage) = high added value production; high supervision rate; bipolarisation of qualifications (EQF 3 vs. EQF 7); high capitalistic intensity but low concentration.

- Heavy industry model (eg. sugar, fruit juice, beer) = high capitalistic intensity and high concentration level; qualified workforce.

This analysis details the degree of "intern" heterogeneity of the sector. It seems that the intern heterogeneity of required skills is less decisive than the economic environment, cost structures, strategies and constraint of businesses in every subsector. That is why, in terms of skills needs, food sector is more homogeneous than the diversity of its subsectors could imply, compared with other industries.

In **Spain**, the number of workers in the food sector (Industrial Survey of Companies, 2007) is 377.894. Their distribution in the NACE codes is as the following table shows:

[5] Albert, 1995, updated in Lamanthe, 1996 and 2001.

Occupied employees in the food industry by subsectors

NACE			Occupied workers
10		Manufacture of food products	326.174
	10.1	Processing and conservation of meat and manufacture of meat products	87.936
	10.2	Processing and conservation of fish, crustaceans and molluscs.	22.798
	10.3	Processing and conservation of fruit and vegetables	34.414
	10.4	Production of vegetable and animal oils and fats	11.479
	10.5	Manufacture of dairy products	25.941
	10.6	Manufacture of milling products, starches and starch products	6.857
	10.7	Manufacture of bakery products and pastas	79.592
	10.8	Manufacture of other foodstuffs	43.090
	10.9	Manufacture of products for animal feed	14.067
11		Manufacture of beverages	51.723
		TOTAL	**377.894**

Source: Industrial Survey of Companies (2007)

By region, those which occupy the largest number of employees are Catalonia (75.746) which makes up 20% of the total; followed by Andalusia (52.501), 14%, and by Castilla-León (38.204), with 10%.

As regards unemployment, in the last quarter of 2008, 41.800 food industry employees were in this situation. This accounted for 1,53% of the total unemployed in the national economy in this period and 18,56% of the total unemployed in the industry. By gender, 52% were women and the remaining 48% men.

As regards the distribution of unemployment by activity subsector during 2007 (the last year for which there is data broken down into sub-activities), 34% of the unemployed were to be found in the manufacture of other foodstuffs (11.025), 18% in the meat industry (6.050) and 16% in the activity of the processing and conservation of fruit and vegetables (5.425).

The occupations to be found in the food industry sector in Spain are related with the technological evolution of the sector. Company production lines require increasingly automated control panels and computers. All these changes are producing the need to find skilled workers in these areas and with the right professional competences for the optimum performance of the specific duties in these work posts.

A further cause of the appearance of emerging occupations is the introduction of new rules. These relate to traceability, food safety and the conservation of the environment. These changes affect qualifications which must increasingly cover the control of totally automated processes and include more normative and legislative contents. Emergency occupations in the sector are basically related with health and safety.

In **Germany,** the distribution of the employees by activity in the food sector is shown in the following table.

Employees subject to social insurance contributions (2008)

	Women	Men	Total
C10.1 Slaughtering and meat processing	81.288	80.146	161.434
C10.2 Fish processing	4.106	4.064	8.170
C10.3 Fruit and vegetable processing	9.360	15.880	25.240
C10.4 Manufacture of vegetable and animal oils and fats	1.355	3.465	4.820
C10.5 Manufacture of dairy products	12.235	26.723	38.958
C10.6 Manufacture of grain mill products, starches and starch products	3.595	10.227	13.822
C10.8 Manufacture of other food products (excluding beverages)	186.469	132.366	318.835
C10.9 Production of prepared animal feeds	2.974	8.402	11.376
C11 Manufacture of beverages	15.586	53.319	68.905
C10 Manufacture of food products	316.968	334.592	651.560

Source: Federal Labour Office: Employees subject to social insurance contributions by industrial group WZ 2003

Beside the industry group of slaughtering and meat processing that is excluded in this project, the food industry groups with the most employees in Germany are:

- Manufacture of dairy products.
- Manufacture of other food products excluding beverages.
- Manufacture of beverages.

Regarding the food sector employees' profile in Germany, the main characteristics are the following:

- There is a relatively high percentage of employees in the food industry who are subject to social insurance contributions do not have professional training (more than 17%).

- 14% of employees has different professional training or without appropriate training.

- The percentage of low-skilled employees with no or different professional training differs in the particular sections (up to 40% in some branches).

- The percentage of women and immigrants as unskilled and trained employees is disproportionately high.

- The percentage of employees with a degree of a university or a technical school is comparatively low.

- There is a high proportion of: unskilled and semiskilled workers or workers with low professional qualifications; workers with migration background and related language deficits; and women who have to make family and work compatible.

The majority of employees work in the following occupations:

Food maker

Beverage and food manufacturers

Sugar, confectionery and ice-cream manufacturers

Milk and fat processors

Currently, there are a total of 75 occupations in the German food industry that can be subdivided into:

- Recognised Professions (23). As a rule, a 3-year apprenticeship has to be served in the Dual System. Some of them are: baker, assistant chef, brewer and malster, distiller, specialist-food products technology, cook, confectioner, dairy specialist, ice cream maker, wine cooper.
- Professions with different entrance levels / specialisations (33). A completed apprenticeship (entrance level) as a skilled worker is usually required for a further professional specialisation. Some of them are: bakery machine operator, ice cream confectioner, fish-processor, meat cutter, beverage manufacturer, cheese-maker, dairy consultant, frozen food manufacturer, pizza baker.
- Continuing vocational training occupations (15). Advanced vocational training is regulated by the German Vocational Training Law or by the law regulating the conduct of craft trades or by federal law: master baker, master distiller, dietary chef, cellarer, master confectionery, miller master, wine cooper master.
- Professional assistant jobs and unskilled occupations (4). An education is not assumed. Unskilled workers are trained on the job. Some of them are: assistant food and beverage production, assistant for food production, assistant for beverage production.

3. QUALIFICATIONS IN THE EUROPEAN FOOD SECTOR

The need for food sector employees to have qualifications is *de rigueur* in the current economic climate. The competitiveness of companies in the sector is at risk in view of the economic crisis. It is important to have skilled, multifunctional workers who perform their duties effectively and whose professional competences are officially recognised. The qualification of the sector employees is necessary and imperative to achieve the European objectives of Lisbon.

In **Bulgaria**, the employers are more interested in skills and labour experience of the hired people than in diplomas and certificates. This is why most of the unskilled workers (level 2 and 3 of level qualification EQF) are not certified and do not possess any professional education for their particular job; thus, now they have to follow formal courses (often paid by the employers) in order to obtain the request by Europe certificate and keep their job. In the hiring process, employers do not require any certificate for professional qualification for the professions that request levels of qualifications 2 and 3. A diploma is only requested for higher levels of qualifications.

The EQF qualification level of the hired personal in food industry (including beverages production) is the following:

- 29% of workers has 2nd level of qualification EQF and has finished low secondary education (workers).

- 38% of workers has 3rd level of qualification EQF and has finished secondary education (operators).

- 9% of workers has 4th level of qualification EQF and has finished secondary education (technicians).

Nowadays there is not any established NQF but there are several laws, acts and strategies that represent the system for qualifications. The levels of qualifications are linked with appropriated education level. The following table shows the level of these professions (worker, operator and technician) in NQF level, EQF level and ISCED 97 level.

Professions by levels in Bulgaria

Professions	NQF level	EQF level	ISCED 97 level
Technician and other applicable specialist	3,4	4	3 at least, accomplished secondary education
Skilled production workers and related crafts	2	3	3 at least, accomplished secondary education
Operators and mounting workers	2	3	3 accomplished X Grade in secondary school
Professions that don't demand a special qualification	0-1	2	2 lower secondary education-accomplished VIII Grade

Professional qualification in food industry could only be obtained in specialised professional institutions or vocational training centres. When a student enters a professional school, he/she chooses the final level of qualification and that defines the courses that he/she will have to follow for the next 5 years. Students with levels 3 and 4 of qualification have equal diplomas for secondary education but different levels of qualification.

In **France**, despite a trend to increase qualification levels[6], the share of unqualified workers is higher than in other industries (50% against 34%). A **disconnection between initial qualification and occupation** can be observed. 2/3 of factory workers and 40% of technicians have an initial education lower than EQF level 4 (against 3 unqualified workers out of 4). Those facts prove that the skills of this population have been acquired through field work experience.

The qualifications of food industry employees (as in any other activity) in **Spain** stem, first and foremost, from the formal training of employees. Informal training (or learning) too provides qualifications to employees. And finally, labour experience is a further source of qualifications for all the employees from the various specific economic activities.

The proportion of unskilled and semi-skilled workers in the food industry in **Germany** has decreased because of the increasing mechanisation. This trend varies from one section to another and is dependent on the extent of mechanisation and corporate concentration. Generally, the qualification requirements in all sections and on all hierarchical levels increase, but two parts are particularly important:

[6] Whatever the occupation, qualification of people under 35 is higher than the one of other workers from the same socio-professional category. It shows the structural rise in qualifications because of the renewal of workers generations. (CEP 1991)

- To operate the production lines. The progressive mechanisation of the production processes implies the decline of manual work and changes in the organisation of work. There is a need for flexible workers who can operate a number of machines. They have to obtain qualifications which enable them to operate, maintain as well as troubleshoot the highly complex machines.

- To fulfil with hygiene standards. This subject requires qualifications as well: enterprises must provide certifications and, correspondingly, employees need to receive the necessary training.

The food industry needs more managers and executives with branch-specific knowledge as well as high-qualified workers for research and development and also quality management in order to comply with the rapid change of the industry. Internationalisation in some sectors of the food industry is already on the rise, and employees need to adapt to the language requirements. In some companies English is used as the working language on all levels.

In **Italy**, the food industry is generally characterised by a large number of low-skilled workers, mainly employed in a labour intensive system. 57, 7 % of the total active labour force in the sector is made up of workers and clerks. Higher standard professional profiles (managers and employees) represent less than 15 % of the labour force, while apprentices account for about 3 %.

By the NACE code, the higher percentage of managers and employees is present among the manufacture of other food products (NACE code C10.8) with a share of 32%, of which the 34% are women. For lower levels of employment, such as workers and clerks, half of the total labour force works in the manufacture of other food products (NACE code C10.8), where also the presence of women is quite high (68 %).

4. EDUCATION/TRAINING LEVEL OF WORKERS FROM THE FOOD SECTOR

Formal learning

Formal learning in **Germany** is a vital and successful component of the regulated educational system, the dual system. The need for workers in the food industry is hardly covered by the pupils who eventually decide to be trained for an occupation in the food industry. The branch has a problem of finding new recruits. It does not have enough applicants.

The pre-requisites for a vocational education in the food industry are: good grades in Sciences (Mathematics, Chemistry and Biology), as well as being able to communicate and being goal-oriented. Subject-specific and social competences are equally important. Many managers say that one can acquire subject-specific competences later or in the process of being employed but missing social competencies cannot be compensated for.

There are career opportunities, for example training for Meister (master craftsman), training as a technician, training as technical business manager in the food industry, as well as specialised engineering study programs focusing on food production and processing. But unfortunately, not many people know about the possibilities for making a career in the food industry.

Today the system for vocational training in **Bulgaria** is regulated by the Vocational Education and Training Act from 1999. The institutions which have the legal right to issue certificates and diplomas for vocational education and training have to be registered following the current Law for Vocational Education and Trainings. These institutions are as follows:

- Vocational Schools. To carry out initial vocational training with acquisition of 2nd and 3rd degree of professional qualification (EQF). Training period is 4 years.

- Vocational Secondary Schools. To carry out vocational education for the acquisition of 3rd and 4th degree of professional qualification. Training period is between 4 and 6 years. They can also carry out vocational training of individuals who have turned 16 years old.

- Vocational Colleges. To carry out vocational training for the acquisition of 5th and 6th degree of professional qualification. Only individuals who have completed Secondary Education shall be admitted for training. Training period is up to 2 years.

- Vocational Training Centres. To carry out vocational training of individuals who have turned 16 years old.

The Vocational Education shall be completed by taking State Matriculation Examinations upon completion of Secondary Education and State Examination as for the acquisition of a degree of professional qualification.

Vocational education shall be certified by: Diploma of Completed Secondary Education; Certificate of Professional Qualification; Certificate for capacity to perform certain professions which require such capacity.

Vocational training with acquisition of a degree of professional qualification shall be certified by: Certificate of Completed Lower Secondary Education; Certificate of professional qualification; Certificate of capacity to perform certain professions, which requires such capacity.

Training organisations in **Italy** today can be schematically identified through two main training sub-systems:

- School and university education, regulated by the government through the Ministry of Education. As far as the food sector is concerned, those which fall into the first training sub-system are: professional institutes, agro-food polytechnic institutes and university faculties that deliver agriculture courses, forestry, and similar sciences.

- University and Scientific Research Board. After a 12 year period of compulsory school in Italy (until the age of 18), secondary school (or polytechnic and professional agro-food institutes) follows, ending with university.

The Italian education system allows the acquisition of licenses and training certificates of different levels and types in the education system and the system of vocational training.

- At national level.

  National certificates of education.
  The education system issuing qualifications (diploma of technical education, vocational training qualification) whose value is applicable in the labour market, and/or for further education.

  Diploma in technical education.
  Duration: 5 years; corresponds to ISCED level 3. Access to university and technical education and training paths to higher education, the inclusion in the lists of services for employment and participation in competitions in which it is required to hold the diploma of upper secondary education.

Sector	Work possibilities	Postgraduate diploma of higher secondary education with technical specialisation (single Diploma) and relevant title certificate
Agriculture	General	Agricultural Expert
	Agricultural expert with specialization in viticulture and enology	
Industry	Food Technology	Food Technology

All graduates on industrial subjects achieved the title of "Expert industrial chief-technician - specialisation".

National certificates of vocational training
Under the system of vocational training there are two ways to certify this: the Diploma of Vocational Training and the Qualification of vocational Training which is granted in cases of premature exit or part fruition of the course.

Diploma of Vocational Education
The diploma of upper secondary school is obtained after a course of upper secondary school lasting 5 years and corresponds to ISCED level 3. It allows access to university courses and Higher Education and Technical Training, entry to the lists of employment services, and participation in competitions in which a diploma of higher secondary education is required.

Qualification in vocational training
The diploma is a professional qualification with legal value and it is achieved after 3 years of professional studies in State institutes, corresponding to the ISCED 2A level. This license allows for the continuation of studies in the two years of vocational post-qualification for the purpose of obtaining the final diploma of secondary education, enrolment in the lists of services for employment and participation in competitions in which it is required to hold this type of diploma.

Sector	Work possibilities	Qualification Diploma (3 years)	Diploma in upper secondary vocational education (Diploma only) and corresponding certification (5 years, 3 +2)
Agriculture	Agrarian	Agro-environmental operator	agro-technician

- At regional level

  Certification for vocational training is issued at regional level
  The system of vocational training is the responsibility of the individual Regions and Autonomous Provinces. The qualifications and other certificates issued at the regional level can also be recognised by other regions or at national level on the basis of agreements.

The need of professional training in order to have an adequate workforce in the food sector is not high (barely 12%), while in certain sectors, such as meat and fish manufacture and industrial manufacture of food and dairy products specialist, the need of further professional training reaches 30%. Training classes for employees is a prerogative for large enterprises, with more than 50 employees.

There are more opportunities of hiring in those companies that innovate in their products or services. The larger the company, the higher is the probability to innovate and to hire new personnel. This factor is much more present in the Italian food sector than in industry in general.

In **Spain,** the administration of the Spanish Educational System follows a decentralised model, distributing the competences between the State, the Regions, the local Administrations and the teaching centres. The Ministry of Education is the body of the Central Administration of the State charged with the proposal and implementation of the general directives of the Government as regards education policy.

In each Region, the State Administration has a body with executive capacity to undertake those educational competences which lie solely with the State.

The Education System affords the following types of education:

Infant Education. Two cycles with three academic years each which take place until six years of age

Primary Education. This is compulsory and includes six academic years which usually take place between 6 and 12 years of age and are organised into three cycles of two years each

Compulsory Secondary Education (E.S.O.). This constitutes the first stage of Secondary Education and includes four academic years which usually take place between 12 and 16 years of age

Baccalaureate. This is the final stage of Secondary Education. It is compulsory and it lasts two academic years, usually between 16 and 18 years of age

Professional Training in the Education System. This encompasses the set of teachings which provide the tools for the skilled performance of labour activity specific to each work post. At present, it consists of 142 official titles

University education

Other educational programmes: artistic, language, sports and adult education

Non formal and informal learning

A very important part of training which is on offer to the food sector is Professional Training which encompasses a range of teachings which provide the tools for the skilled performance of specific professions. This training is essentially geared towards facilitating the incorporation into working life of young people, although it is accessible to anyone (with some minimum qualification requirements). It is aimed, first and foremost, at the younger population, but it is also open to the adult population which wishes to obtain the corresponding academic titles within the concept of permanent training.

In recent years there has been a total overhaul of Professional Training in the Education System. This overhaul sets out to driving forward an alternative model of economic growth based on knowledge which ensures sustainable economic development and a growing well-being and social cohesion. It intends to promote ongoing or lifelong training, the overlapping of some professional activities with others and the recognition of the professional competences acquired by way of work experience or non-formal training methods.

The current Professional Training in the Education System is structured into 26 professional families and into two levels:

- Medium level training cycle. This involves the obtaining of the title of technician. In the food sector, the following training cycles can be followed: Technician in vegetable, meat and fish canning; Technician in slaughterhouse and butchery-pork butchery; Technician in milling and cereal industries; Technician in the manufacture of dairy products; Technician in Bakery, Cakes and Confectionery; and Technician in olive oils and wines.

- Higher level training cycle. This involves the obtaining of the title of Senior technician: Further Technician in Vitiviniculture; Further Technician in Food industry; and Further Technician in Quality Control and Analysis Laboratory (new title).

Another of the educational areas included in the Education System are the Initial Professional Qualification Programmes (P.C.P.I.). They are aimed at students aged over 16 who have not obtained the title of Graduate in Compulsory Secondary Education (compulsory level of education in Spain). They are organised into professional profiles (associated with the various production sectors). The various professional profiles already established at present for the food industry include the following: Agro-food processing Auxiliary, Food industry Auxiliary, Agriculture and First Processing Operations Auxiliary, Meat Industry Auxiliary, Pastries and Bakery Auxiliary, Food industry Worker, Food Warehouses Auxiliary, Abattoir and first meat transformations Auxiliary, Daily Industry Worker, Fish and Seafood Conserves and Semi-conserves Industry Worker.

Regarding the training needs in the Food Industries sector, they are essentially related with the modernisation of the production process and the introduction of the new rules. Hence, part of the training provided at companies is related with the themes of health and safety at work, the environment, waste management etc.

The greatest difficulties faced by employees to be able to attend courses derive in some cases from shift work (it is endeavoured to ensure that the schedules and lecturing are flexible to avoid these problems, but it is not always possible), from the work-life balance and from the type of course which has been scheduled.

In **France** the food business is mainly composed of medium or small companies. In small companies, people are more suspicious concerning professional training. Indeed, most training is built on a big company model, which is formal trainings outside the office.

It does not fit with small companies because:

- Many of their workers were failing in school and fear formal trainings.

- The functioning of a small company is threatened if part of its limited workforce goes out for training.

- Because of its size, it workforce has to be multifunctional, which complicates the identification of their training needs.

That is why they prefer learning on the job through "osmosis", "immersion" or "impregnation". Qualification is gained through a process of repetition, use, and attempt-mistake.

The matter in professional training in French food industry partly comes from the complexity of the professional structure of the sector. Indeed, there are more than 50 subsectors organised in Federations by raw material. Even if the production process itself is identical in two different subsectors, there are as many subsectors as products. It also implies that there are a lot of collective labour agreements that consider differently professional training.

It mainly deals with a will to affirm its identity and this situation has consequences on certificate of professional qualification (CQP) that can be redundant. For example, there are 9 different CQP for machines drivers, 5 for line drivers. Yet, it could be gathered under less than 10 kinds of occupations: machine drivers, line drivers, process driver, maintenance agent, etc. This complexity also leads to an eviction effect of trainings leading to a qualification.

On top of that, abilities' sharing in dealing with professional training is written in the law but is freely applied between State services, regions, economic actors and social partners; there is no specific service at the French employment agency for food industries. This dispersion of competences in food industry complicates the action of public powers and explains why the system is so criticised.

The financial effort for professional training is lower than in other industries but is better shared. The discriminating element is the size of the company and the level of qualification of workers. In fact, the training effort is lower but better spread than the average. A great number of employees have access to professional training under cover of short and cheap internships. This effort is much higher than in other sectors with similar features.

But it is difficult to underline structural determinants, whether economic or social, that explains those intra-sectored differences. In particular, comparisons between branches cannot systematically be associated to a given production mode: sugar and beverage industries that pertain to the heavy industrial model are featured by long and expensive trainings with very different access rate for training or internship program.

Regarding the workers training needs, they are identified on a passive way and react to a punctual or isolated necessity. For instance, it can be a new law, new equipments, promotion of team-working, proceedings of certification... Because of its emergency, actions implemented to face those needs are usually limited in scope and in time**.** Yet, more and more companies infer their training needs from a global strategic analysis. In that specific case, the training is in line with a pluri-annual plan and becomes an important lever to anticipate evolutions.

Training on the workplace is less frequent than in other industries but it tends to progress, above all for production operators. They are more quickly operational, less expensive (catering, transport…) and more adapted to specific needs, in particular to acquire behaviour skills. It is also less disturbing for the production organisation and helps to avoid long absences of workers.

According to the impact of trainings, from beneficiaries' point of view, existing qualitative and quantitative studies underline a high level of satisfaction, especially for low qualified workers. The most popular trainings are leading to a qualification and have a valorising impact on the concerned workers.

Non formal and informal learning

Formal education for a recognised vocational occupation is the basis for being successful in **Germany**. Acquiring competences through non-formal or informal learning has no significance. In the positions above and below skilled workers, working experience, non-formal and informal learning are important and facilitate particularly professional progression/permeability.

Workplace learning or professional experience is usually compensated for changes in the production flow or new machines. Some companies offer specific seminars when new machines are incorporated into the production process for the workers who are affected by the changes.

Continuing education in the food industry was reserved predominantly for executives/management and was not offered for production workers or senior staff. But in the last couple of years this has changed and continuing education and training is now offered to all employees. A continuing Human Resources development is only happening in a few businesses within the food industry.

The term "vocational training" includes:

Vocational training preparation. Vocational training preparation has to serve to impart basic skills required for the acquisition of vocational competence and thus facilitate placement in initial training in a recognised training occupation

Initial training has to, through a systematic training programme, impart the vocational skills, knowledge and qualifications (vocational competence) necessary to engage in a form of skilled occupational activity in a changing working world. Initial training is largely carried out within the so-called "dual training system" and usually takes three years

Further training provides maintaining, extending and adapting qualifications which have been already acquired through the training process. Furthermore these qualifications are extended in order to adapt to technical changes and consequently enable career advancements. There is a distinction between updating and upgrading training. The acquired qualifications are usually examined by the responsible institutions (chambers of crafts and trades, chambers of industry and commerce)

Retraining is one possibility to qualify for a new profession if one is not able to exercise the old occupation due to health issues for example. Retraining can lead to a IHK (German Chamber of Commerce) vocational qualification or a certificate of apprenticeship. Courses and continuing education are generally considered as retraining and do not lead to a vocational qualification

Regarding the training needs in the food sector, there are different tendencies currently in the sector: in some areas production and engineering/maintenance are strictly separated from each other as for example in brewery.

In other areas the transitions between production and maintenance are fluent (locksmiths, electricians, mechatronics engineer). Employees with technical education background are more often used on the shop floor, especially in the pastries industry. Technical know-how is brought to the machines. A versatile training is necessary.

Training regulations in the food industry are continuously reformed. All occupations were re-organised in the last couple of years (except the specialist for conveyor belt technique and the specialist for fruit juice technique). Processing technologies become more and more important, even in the general training plans. The focus is not on the product anymore and therefore not the centre of the training but the processing technologies of the particular products are important.

The occupation "food specialist" was reorganised in 1998 and since then it has been a central occupation in the food industry. The 2-year training as

an ice cream maker exists since 2008. The training regulations of the occupations "malster and brewer" are currently updated.

Regarding the barriers and difficulties in training access for workers, many people do not know that the food industry is a highly mechanised sector and many occupations of the food industry are unknown. The food industry does not seem as attractive as other sectors because of shift operations and the bad image of some industry sections.

The future of some occupations is minimised because of the concentration processes. The number and the availability of dairies will further decrease as well as the breweries. Brands and quantity are more important than regionalism. The appeal of training occupations as maltster, brewer or dairy specialist decreases because mobility with regard to its effects on the personal life planning is essential/necessary.

Unfortunately there are not many production workers who make use of continuing education possibilities. Unskilled and semi-skilled workers have problems to access institutionalised continuing education measures and they are not well enough informed about qualification possibilities. Learning can also imply frustration because of negative experiences at school. Immigrant workers may also have language problems.

Unions and management agree on the need for continuing education in the food industry. But companies and employees have not fully implemented this need. Human resources planning have to be implemented as an important issue in the industry. Continuing education equalled up to now with the enhancement of managers and executives.

It is important that employees are willing and able to learn in order to apply the newly acquired knowledge. Therefore it is important to already learn in the initial training. It is particularly important for not well-educated workers to be offered low-threshold possibilities. Individual advice and assistance facilitate the access to continuing education and help to feel comfortable with the unknown requirements and reduce the fear of failing.

A modulation of qualification possibilities facilitates the participation in qualification measures for inexperienced workers. Achievable goals and experiencing one's own competencies as well as experiencing learning outside the workplace have a motivating effect. A certificate and transparency of the development possibilities strengthen quality and acceptance of the qualification. Formal accreditation of professional experience and competences would increase the participation in continuing education.

In **Bulgaria**, the Ministry of Education and all stakeholders recognise the need of a system for validation of non-formal and informal learning. The question is how it will work in practice. The results of non-formal and informal learning are increasingly perceived as equivalent to those of formal educational programs. The labour experience is more requested than diplomas. Tool for recognition of such knowledge, skills and competences is their validation. This question occupies an increasingly important role in

national policies for education, training and human resources development. There are not special rules and tools for validation of knowledge and skills and competences acquired through non-formal and informal learning.

Nowadays, a system, a prototype for accreditation and evaluation of non-formal learning is being developed. The procedure for validation of results from non-formal and informal learning will be the following if this prototype is officially approved:

- First normative conditions for validation of the results from non-formal and informal learning shall be created.

- The individual will submit a statement for declaring its interest to validate officially his/her skills acquired from non-formal or informal learning.

- The individual will present all necessary information for the treatment of his/her dossier.

- After a full evaluation of this documentation a decision for finalisation of the procedure will be taken.

- The evaluation of his skills will be made in accordance with national standards for formal learning in the same profession.

- If the results are positive, a legal document will be issued.

The establishment of a National Qualifications System (NQS) is in an initial stage yet and there is not any official document explaining the current operating system. Many laws, acts and articles describe the operating system:

- Law on Vocational Education and Training (VET Act);
- Education Act (PDO);
- Law for Promotion of Employment (EPA);

Additional legislation is also applicable:

- National Strategy for vocational education and training (2007-2013).

- Updated Employment Strategy of the Republic of Bulgaria (2008-2015).

A serious problem for the establishment of the National Qualifications system is that the current system is not organised by sectors or NACE codes**,** and the levels are the same for all productions.

The qualifications in NQS are organised as follow:

Level 1 (NQS) is equal of Level 2 EQF

Level 2 (NQS) is equal of Level 3 EQF

Level 3 (NQS) is equal of Level 4 EQF

The higher levels (4th, 5th, 6th, 7th and 8th,) are not considered as vocational education and are not subject to the National vocational education system; they are regulated by the National Low for Higher Education. Therefore, when speaking about Vocational training, the references are only the first three levels (from NQS) that could be obtained in Vocational schools, Vocational Secondary Schools and the other institutions.

Regarding the workers training in the food sector, a survey on the academic programme of the biggest training centre in Bulgaria for professional education (National Centre for professional education in the frame of Bulgarian Chamber of Commerce and Industry) shows that it offers only 8 courses in food field out of 110 (7%) . Another survey on all registered trainings centres shows that most of the centres offering courses in food maintain only courses for one level of qualification (mostly 3rd) and there are two (2) institutes that offer and maintain courses for all four levels of qualification.

Another example, form employers' point of view, is that in the biggest dairy production company in Bulgaria, training for qualifications were never been organised. The training, organised and paid by the company concern hygiene practices, work with some specific chemical products, as well as all trainings, requested by the implemented ISO standards.

The trend is that the need of professional qualification grows-up because of requested standards and existing funding opportunities for professional trainings. Derived from the adhesion to the European Union, the Bulgarian government has began to insist that people who works in the production sectors should possess an appropriate level of qualification and should be trained and certified. In many cases, the companies turn to training centres for certificate their staff because they cannot recruit anymore a person who is not certified.

Regarding the barriers and difficulties in training access for workers, the biggest problem, is that people are not motivated to learn. They want to have a diploma for keeping their job or get bigger salary. Most of the cases, it is the company that wants to certify the personal.

The "unregulated" Vocational Training system in **Spain** is the Vocational Training subsystem for employment. Said subsystem assumes the

integration of the Occupational Vocational Training System (for the unemployed) and the Ongoing Vocational Training System (for occupied employees).

Vocational Training for Employment (FPE) is based on the principle of lifelong education, with its objectives including allowing a student basic training which facilitates the acquiring or improving of his professional qualifications, boosting his professional insertion or reinsertion and developing his capacity to take part in social, cultural, political and economic life.

Non-formal training is carried out concurrently with the main education and training systems. This type of learning can be acquired at the workpost or by way of the activities of organisations and groups in civil society (youth organisations, trade unions or political parties).

- The training of employees who are unemployed is run by the State Public Employment Service (SPEE), an autonomous body answerable to the Ministry of Labour and Immigration or of the Regions which have assumed the management competences in this regard. There is a catalogue of titles comprising various specialist areas grouped into 28 professional families which include the whole set of production sectors with a national file of 650 specialist training areas. For the professional family of Food Industries there are various courses, some of which are common to all industrial areas and others which are specific to each of the sub-activities which go to make up the sector.

  The professional certificates are the longest specialist areas and include complete training itineraries. At present, there are three professional certificates approved officially for the professional family of the Food Industries:

  - Auxiliary manufacturing operations in the food industry (Level 1).

  - Butchery and the manufacture of meat products (Level 2).

  - Bakery and pastry (Level 2).

- The training of employees. This includes the set of training actions which are undertaken by companies, the employees or their respective organisations, aimed both at improving the skills and qualifications as well as the requalification of the occupied employees which allow the better competitiveness of the companies being compatible with the social, professional and personal promotion of employees. The scheduling and management of the training may be at State level and at Autonomous level.

The Organic Act on Qualification and Vocational Education and Training[7] (LOCFP) sets out to organise a full Vocational Training, qualifications and accreditation system which effectively and transparently meets social and economic demands by way of the various forms of training. Said system seeks to concurrently promote and develop the evaluation and accreditation of the corresponding professional competences, in such a way that the professional and social development of people is promoted and the needs of the production system are covered.

The most important purpose of this LOCFP has been the creation of the National System of Qualifications and Vocational Education and Training (SNCFP). It is a tool capable of achieving the overall, coordinated, consistent and optimum processing of the qualification problems and the Vocational Training of the various groups of people, of the organisations and Spanish companies.

The National System of Qualifications and Vocational Education and Training is designed as a system which affords unity, consistency and effectiveness to the planning, ordering and administration of:

- Skills and professional qualifications to provide their different forms of accreditation and certification.

- The various training offers, seeking their integration and promoting lifelong training.

The main tool for developing the System is the Catalogue of Professional Qualifications. Said Catalogue is associated with the Modular Catalogue of Vocational Education and Training (CMFP) which includes the content of the Vocational Training associated with each qualification.

At present, there are over 400 qualifications approved by the Cabinet and published in the Official State Gazette. Said qualifications are included in the Catalogue under two variables:

By **professional family**, following professional competence affinity criteria. At present, there are a total of 26 professional families

By **levels**. There are 5 qualification levels established which deal with the professional competence required by the production activities in line with criteria of knowledge, initiative, autonomy, responsibility and complexity, from level 1 (less qualified) up to level 5 (more qualified). At present the CNCFP only includes qualifications from levels 1, 2, 3

[7] Organic Law 5 enacted on June 19th 2002 on Qualifications and Professional Training (LOCFP).

One of the professional families which are included in the National Professional Qualifications Catalogue is the "Food Industries" family. This includes 27 professional qualifications, whereof 2 are level 1; 17 are level 2 and 8 are level 3.

In **France**, employers are most of the times more focused on diplomas than experience**.** In food business, an informal learning usually happens for workers from experienced teammates or in family-run businesses contexts. But even in that specific case, their training is often completed with non-formal and formal learning.

There are several devices for the French workers to acquire the necessary competences and skills for carrying out their tasks and functions in their jobs:

- C.A.P (*Certificats d'aptitude professionnelle*). It opened the national education and training system to skills learnt outside formal institutions. CAP gives a qualification for a specific occupation.

- B.E.P. (*Brevet d'études professionnelles).* BEP offers a qualification of "qualified worker or employee" relevant for several activities within the same professional sector.

Both can be obtained through school, apprenticeship or alternative contracts; and both match with the level 4 of the European qualification framework level (EQF).

Occupations in the food sector by CAP and BEP

	CAP	**BEP**
Occupations in the food sector	- Storage agent - Chocolate maker - Industrial system driving Option 1 agro-food industry - Technical employee in a laboratory - Ice-cream maker - Deliverer - Maintenance and premises cleaning	- Food - Bio services, major food technical agent - Logistics and commercialisation - Maintenance of command equipments of industrial systems - Maintenance of automated mechanic systems - Hygiene, cleaning and environment occupations - Proceedings industries occupations: bio-industries

- C.A.P.A (*Certificat d'étude professionnelles agricoles*). In the same condition as for the CAP certifies the training of a worker or qualified employee for a specific occupation.

- B.E.P.A (Brevet d'études professionnelles agricoles. In the same conditions as for the BEP can be obtained B.E.P.A.

Trainings in the food sector

	Trainings
C.A.P.A.	C.A.P.A. option food industry, major in Automated machine driving. This diploma is delivered through apprenticeship or vocational training C.A.P.A. option food industry, major in Adaptable worker in food products manufacturing.
B.E.P.A.	Transformations, major in Agro-food industries. Transformations, major in quality control.

- F.O.A.D. (*Formations ouvertes et à distance*). Workers can also benefit from open and from distance trainings provided by the network of adult training centre and farming promotion. 68 trainings from short modules to comprehensive diplomas can be dispensed for food industry workers.

- D.I.F. (*Droit individual à la formation* /C.I.F). The training reform of 2004 created the individual right to training. It enables workers under full-time and permanent contract after a year of service to benefit 20-hours of training per year. Part-time and temporary contracts holders also have an individual right to training *prorata temporis*. DIF can be used for training for skills development. CIF is the leave people can take to benefit from their DIF. This device is mainly used by qualified workers and does not often reach unqualified workers from food industries.

In **Italy**, extra-scholastic professional training refers to training centres and organisations promoted by the government, trade unions, professional working employees and farmers as well as other private parties. One may be eligible to participate in vocational training courses outside school after completion of primary education (compulsory education), after obtaining a diploma of higher secondary education, or after gaining a degree. All adults, employed unemployed or in search of first employment, regardless of the degree held can participate.

In Italy non-formal and informal learning are diffused in the food sector with different tools and at different stages of development. Therefore, an analysis of the training path presently offered in our country shows how some areas -above all wine-, can count on training which is more responsive to market needs and is able to satisfy the professional demands, compared to the others, that of dairy production, with more difficulty.

Non-formal learning in the food sector is based on:

- The *vocational training system* regulated by the social partners through such as "Fondi interprofessionali" (Inter-professional funds).

In recent years, the realisation of the general lifelong learning system in Italy has been centred on two pillars: the sharing of bilateral action logic and the need for strategic continuing education. The Bilateral Analysis and Research and Inter-professional Funds Bodies were introduced. The analysis of bilateral agencies and research bodies were created by trade unions and employers' organisations to provide services and benefits to labour, in which the various participants undertake implementing policies related to European formative lifelong learning in order to activate cooperation and dialogue processes between worker representatives and entrepreneurs and, more generally, among stakeholders.

With reference to the food sector, companies may join the general fund dedicated to businesses and cooperatives for the sector to which they belong. Then they build a system of vocational and continuing ad hoc training based on three main bodies devoted to farming, which include the production and processing of agricultural products.

The funds dedicated to companies in all food sectors include among others: FONDIMPRESA, FAPI, AGRIFORM, FOR.AGRI.

- *Training supported by European funds*. In the framework of EU funding only a limited part of training for food is financed by the FSE (Fondo Sociale Europa). The most significant resources come from the FEASR (*Fondo Europeo Agricolo per lo Sviluppo Rurale*, European agricultural funds for rural development). At a central level, the PSN (*Piano di Sviluppo Nazionale*, National Development Plan) is managed by the Ministry of Agriculture, Food and Forestry, while delegated agricultural assessors are responsible at regional level, often not coinciding with the assessors for training in the labour market.

Informal learning is mainly based on "on-the-job" training which remains the most widely used learning form in this sector. A third particular tool, explored here, that includes both non-formal and informal learning is represented by types of jobs that combine flexibility of work and training (combination of informal learning during the working hours and time spent in the classroom without receiving a diploma, but only a qualification recognised in the sector).

Regarding the training needs of the sector, according to companies, around 20% of job vacancies are considered difficult to be occupied by workers with adequate qualifications. This is due to these three main reasons:

The lack of skilled labour supply

The competition among employers together with a weak presence of certain profiles

The less-attractive job vacancies in the food sector

Related with the barriers and difficulties in training access for workers, it is probable that the main problem of vocational training for operators in the food industry is the lack of coordination and consistency at the national level and the lack of specific activated courses. This lack of uniformity arises from the fact that the law on vocational training in Italy is the responsibility of regions, which often tend to have a significant gap in terms of content and timing. As for the specific training focused on specific skills it is necessary to say that experiences of this type have been implemented in some regions.

Training in the food sector appears to be of little concern to entrepreneurs in times when the priority is the market. The main requirement of all small and medium food companies, particularly those of southern Italy, is selling the product and in such a context, training of personnel is put in the background. It is probable that the present situation has arisen partly because of the invasion of the Italian market by products from foreign countries, and the dissemination of false Italian products on foreign markets.

In short, the limits to the spread of education in the Italian food sector are:

Poorly qualified workers in the sector

Lack of training and refresher courses for trainers. There is a clear gap between the needs perceived by companies and the availability of courses tailored to promptly meet the needs

Lack of tools for disseminating knowledge of the various existing educational resources and the ability to access these resources

Inefficiency in the use of public grants

It is important to note that the lack of training and the presence of low-skilled or completely unskilled workers is present mainly in small companies, denoting, therefore, a segmentation between the industrial giants (often multinationals) and numerous small and medium-sized companies that need the support of local authorities.

Young people deserve better attention. Although they are not particularly attracted by the sector, there are strong signs of a shift especially by young people who have left their region for training, and have then decided to return to their hometown to bring their contribution and often innovative ideas.

5. RECOGNITION OF QUALIFICATIONS IN THE FOOD SECTOR

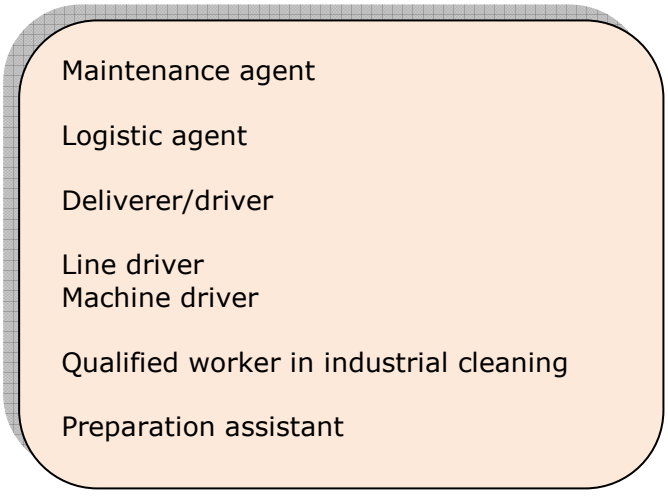
In **France**, companies complain about recruitment difficulties, above all for low qualification levels, accusing the capacity of initial training not to answer actual needs of the sector. Even if they officially declare being satisfied with the initial training, they prefer employing someone coming from an agriculture school, having a CQP or having field work experience.

The Code of Education admits that knowledge and skills can be acquired in working situations and can be taken into account to obtain a diploma.

France was a pioneer in 1985 when it implemented a device to help low-qualified workers to recognise and highlight their informal and non formal learning. It was called skills' assessment (in French, "*Bilan de compétence*").

CAP and BEP both can be obtained through school, apprenticeship or alternative contracts; and both match with the level 4 of the European qualification framework level (EQF).

Certificate of professional qualification (C.Q.P) (*Certificat de qualification professionnelle*) is a national professional recognition defined and implemented equally by professional branches. It certifies workers' skills on specific occupations. For unqualified workers in food industry, CQP for the following occupations are available:



V.A.E. (*Validation des acquis de l'expérience*). It's an exam that certifies workers' proficiency on specific jobs. This process enables one to get all or a part of a certification (diploma, certificate with a professional end or professional qualification certificate) based on his/her professional experience. Any activity which is salaried or non-salaried or voluntary is considered as labour experience.

This experience, related to the intended certification, is validated by a panel. Diplomas and certificates with a professional end as well as the

professional qualification certificates (CQP) that are registered on the National Repertory of Vocational Certifications (RNCP: *Répertoire National des Certifications Professionnelles*) are available through VAE. The national commission on vocational certification controls the good quality and the updating of the information on the certifications registered on the Repertory that is conveyed to individuals and businesses.

Few certifications were registered for food industry and thus few people used this device. This problem was also underlined in the "Besson report" in 2008 and explained unqualified workers' lack of interest because of the lack of information on this device and the complexity and length of the proceedings.

The following table shows the occupations for low-qualified workers and qualification necessary in the food sector.

Occupations and qualifications

AREA	OCCUPATIONS	QUALIFICATIONS
Production (55 to 68% of agro-food workforce)	Manufacture operator	CAPA Agro-food industries BEP Food BEPA Transformation, major in agro-food industry CQP Qualified worker
	Conditioning or manufacturing machine driver	CAP Industrial system driving Option 1 agro-food CAPA Automatised machine driving BEP Proceedings industries: bio-industries BEPA Transformations major in agro-food industries BEPA Transformations major in Quality control CQP Conditioning or manufacturing machine driving Professional license Agro-food industry
	Line driver	CAP Industrial system driving Option 1 agro-food Professional license Agro-food industry
Logistics (7 to 18% of agro-food workforce)	Deliverer/Driver	CAP Deliverer CQP Deliverer/Driver
	Order clerk	CAP Distribution and stocking BEP Logistics and commercialisation License of Technician for packaging and conditioning
	Logic agent	CAP System driving and handling vehicle BEP Stocking of food products BEPA Option Transformation Certificate of ability for safe trolley driving

AREA	OCCUPATIONS	QUALIFICATIONS
Cleaning and maintenance (3 to 9% of agro-food industry workforce)	Industrial cleaning agent	CAP Maintenance and cleaning of premises CQP Qualified worker of industrial cleaning BEP Bio-services maintenance and cleaning of premises
	Maintenance agent	CAP Electricity, mechanics, electro-techniques BEP Maintenance of automated mechanic systems BEP Maintenance of ordering equipments CQP Maintenance agent

In **Spain**, the need to have skilled workers influences the selection and contracting processes for new staff. The prior education level of the applicant is a requirement which is becoming increasingly important, though this depends on the profile of the post to be covered. Hence, for example, at posts regarded to be of the highest responsibility (technicians, managers, plant managers etc.), the aspirant shall have an academic title in accordance with his performance. At Nestlé the importance is recognised of giving special training to those employees who show better attitudes and skills, which means being able to have skilled workers within their own staff.

A description is to be provided of an experience of recognition of qualifications related with the food sector: the food handler license. Said procedure will allow recognition of the professional competences acquired from work experience of unskilled employees to date.

A new concept of handler training is established by Community Directive 93/43/EEC dated June 14th. This new concept involves food sector companies assuming the responsibility for developing training programmes in questions of food hygiene. This standard establishes the requirements of food sector businessmen to train food handler in matters of food hygiene and, in turn, reserves to the competent authorities the powers to train in food hygiene given groups of handlers.

In accordance with this standard, the food handlers must, among others*:*

- Receive appropriate training in food hygiene. To this end, the food sector companies shall ensure that handlers have appropriate training in line with their working activity. The training programmes shall be developed and/or given: by the company itself or by a company or entity authorised by the competent health authority.

- Comply with hygiene standards as regards attitudes, habits and behaviour.

- Know and comply with the working instructions established by the company to ensure food safety and healthiness.

- Maintain a high degree of personal tidiness, wearing clothing which is clean and solely for this purpose, and wearing, where applicable, protective headgear and appropriate footwear.

- Cover cuts and wounds with appropriate impermeable dressings.

- Wash their hands with hot water and soap or appropriate disinfectant every time they start an activity or have carried out other tasks other than those required at their work post.

For training accreditation:

- The food sector companies which train their employees in food hygiene shall be adjusted to that indicated by the standard and they shall accredit the training level provided in accordance with the documentation which shows the types of training programmes, the frequency with which training is provided and the supervision of handling practices.

- The authorised entities or the competent health authorities shall accredit the taking advantage of training received by the food handlers during the training courses in hygiene by issuing training certificates to those handlers whose companies cannot assume the training.

- For higher-risk handlers, the competent health authorities may require, within their territorial area, that the specific training of the former should be accredited by a handler's license issued under the conditions established by said authorities. This license shall be valid throughout national territory and shall involve, as a minimum, the name and surnames of the handler, his identity number and the activity to which he is dedicated.

On 25th of August, 2009, Royal Decree 1224/2009 was published, recognising the professional competences acquired from work experience determines the unique procedure, both for the education and labour area, for the evaluation and accreditation of the professional competences acquired from work experience or non-formal training methods.

Its aim is to establish the procedure and requirements for the evaluation and accreditation of professional competences acquired by people from their work experience or non-formal training methods, as well as the effects of this evaluation and accreditation of skills. Said procedure has scope and validity throughout Spanish territory.

An evaluation and accreditation procedure for professional competences is intended to mean the set of actions aimed at evaluating and recognising said skills acquired from work experience or non-formal training methods.

In **Italy** there has not been a systematised and coordinated procedure at national level for the certification of skills acquired in general, let alone in the food sector. There is a need to create a national system of skill

standards and certification thereof, to ensure the right of workers for the recognition of acquired skills in different contexts, at national level and, ultimately, in Europe, which requires the recognition of credits and the capitalisation of acquired skills anywhere.

With reference to the provisions of the EU framework on transparency and recognition of qualifications, competences and skills and their rating systems in terms of EQF and ECVET, Italy is preparing a national experiment of the Citizen's Training Booklet and Technical Table to design a national system of minimum standards for the certification of professional skills and training standards. The innovative element of the training booklet is the distinction between professional standards, certification standards and training standards and the definition of the principle of a minimum standard all intended as a set of rules, to be defined later according to territorial specificities.

There are some regions that have made more efforts to create the necessary conditions for the recognition of qualifications. Other regions are about to take the last steps needed to activate this process. All are conducting a debate on the procedures for certification of regional powers, with the objective of developing a proposal that will help to identify a minimum national standard for the certification of competences.

There is not yet a structured system for recognition of competences acquired informally while there is a dialogue between the regions to undertake a structured system for recognition of competences acquired at a non-formal level, through training. The persistent differences of the regional systems of vocational training are driving the institutions to work primarily on a definition of the standard of qualifications which would allow an operator who gains a qualification in a specific region to work in another region.

In **Germany**, there are only a few initiatives on the company level in the food industry for the accreditation of non-formally and informally acquired skills and qualifications of unskilled and semi-skilled workers.

Some necessary subjects about the accreditation of competences:

- The successful implementation of a competence survey of employees depends on the development of a procedure which is transparent for everybody involved. The company actors (company management, executives and works council) have to be involved the whole time. All of the employees have to be informed in time about the goals, procedures and perspectives of the survey.

- A questionnaire for the competence survey which is filled out by the actors is not enough: competences have to be discovered and the right environment and interest in the qualifications of every employee is necessary.

- Work place analyses are important for the identification of competences. The evaluation of skills of the employees has to be carried out in accordance with existing and accredited training plans.

- Certification of qualifications would facilitate new possibilities and chances for professional development for people who have not been integrated into the professional qualification system.

6. CONCLUSIONS

The European food sector shows some common features that determine its functioning:

- Predominance of SMEs in most countries. These companies usually have more problems when facing changes in the sector, and need a greater support from all points of view.

- Continuous and progressive clustering of companies in big groups, encompassing several activities within the food sector. These groups of companies have been more and more internationalised, therefore, the sector problems are, in many cases, transnational.

- Continuous structural changes related to globalisation of economy, introduction of new technologies, changes in work organisation, adaptation to new regulation (quality, environmental aspects, and food safety).

- Less affected by the current economic crisis. This turns the sector into a relatively stable one, from the point of view of number of companies and number of workers.

- Number of unskilled workers within the sector. There are more than 2.5 million workers throughout Europe (Eurostat, 2007), and there is a high percentage of unskilled workers (adults without any officially recognised qualification, temporary workers who shift from one company to another, young persons who dropped-out the educational system, immigrants, etc.). The demand for qualified workforce in the sector is clear in all European countries, and those qualifications will be acquired more from recognising labour experience and non-formal training, rather than from formal training.

- The sector shows a picture which is not always positive. In many occasions, the bad reputation of some food occupations (because considered unpleasant) produce a shortage in the workforce. Thus, sometimes it is difficult to cover these occupations. It is, therefore, essential to provide the sector with the appropriate means to help it show a nice picture, attractive for workers.

All these features are directly related to the need for qualified workers. And said qualification will be determined by the recognition of competences, especially for those workers who do not have any officially recognised qualification. Recognition of labour experience, as well as of other non-formal and informal types of learning, is essential in this process, always taking into account the European framework and the different tools and possibilities that it offers to the workers of different countries. Said recognition and accreditation of competences will make easier the access of workers to the European lifelong learning strategy.

APPENDIX

SPANISH EXAMPLE OF CUALIFICATION

PROFILE (ISCO)	Labourer in the manufacturing industry (ISCO 932)
PROFESSIONAL FAMILY	Food Industries (NACE C10-C11)
PROFESSIONAL QUALIFICATION	Auxiliary operations for preparation in the food industry
GENERAL COMPETENCE	To carry out support operations in the receipt and preparation of raw materials and auxiliaries that takes part in the production processes. To take part in these processes, helping in the routine and simple operations of the preparation and packing of food products in accordance with specific work instructions and hygiene and safety standards. To handle loads with forklift trucks for the loading and unloading of goods, with the due precautions.
COMPETENCES	To carry out tasks supporting the receipt and preparation of the raw materials.
	To carry out tasks supporting the preparation, processing and conservation of food products.
	To operate equipment and installations for bottling, packaging and packeting food products, following work instructions of a standardised dependent nature.
	To handle loads with forklift trucks.
QUALIFICATION LEVEL	Level 1
OTHERS **Professional Environment**	-**Professional Area** Carries out his activity in the small, medium-sized and large food industry, both those who are dedicated to the direct manufacture of processed foods as well as those involved in auxiliary services and products. He is part of a work team with other people and operates automatically with devices, equipment and installations on the production, bottling and wrapping lines. Work always under instructions and with elemental technical autonomy. -**Production sectors** All the subsectors of the food industry and similar.
Associated training (300 hours)	Preparation of raw materials (60 hours). Basic food product process operations (120 hours). Bottling and packeting of food products (60 hours). Handling of loads using forklift trucks (60 hours).

GERMAN EXAMPLE OF COMPETENCES

PROFILE	**Assistant beverage production (ISCO 741)**
ECONOMIC ACTIVITY (NACE)	Food Industry (NACE C10-C11)
PROFESSIONAL QUALIFICATION	Assistant production operations in the Food Industry
GENERAL COMPETENCE (SKILLS)	Beverage production assistants carry out preparatory work for the production of unfermented fruit juice, fruit and vegetable juice and other non-alcoholic beverages. They also work in wine production companies. They operate and monitor machines of various types and according to standardized guidelines, for example filter, mixing and bottling lines. They operate pumping plants and machines or machines which clean, fill, close, label and package bottles. Furthermore they carry out transportation, cleaning, sterilizing and maintenance tasks. They can also be entitled specific designations such as beverage machine operator, winery worker or mineral water worker.

COMPETENCES (SKILLS)	**Competences**
	• bottling
	• loading, unloading
	• manufacturing, production
	• craft skills
	• operating machines and plants
	• quality control
	• cleaning
	• transportation
	• packaging
	• products/ product knowledge:
	  • fruit juice
	  • fruit juice beverages
	  • fruit wine
	  • vegetable juice
	  • lemonade
	  • mineral water
	  • tab water
	  • filtrating
	• fork lift license (floor conveyors license)
	• beverage production
	• food hygiene (training)
	• mixing
	• unfermented fruit juice
	
	Soft Skills
	• accurateness
	• reliability

QUALIFICATION LEVEL (ISCED)	Level 1 + 2

OTHERS Professional Environment	**Professional Area** To perform activities in the small, medium or large scale beverage industry. To be integrated within a team, working with automatic devices, equipment and systems on the production, packaging and wrapping lines, always under instruction and with a basic autonomy. **Productive sectors** Food and beverage • grape juice production, e.g. wineries • production of cider and other fruit wines, e.g. unfermented fruit juice wineries • production of vermouth and other flavoured wines, e.g. wineries • production of natural mineral water, soft drink production • fruit and vegetable juice production
Professional Training	Training is not required. Beverage production assistants are instructed at the workplace. Nevertheless work experience in the beverage and food production or as a kitchen helper is advantageous.

ITALIAN EXAMPLE OF A PROFESSIONAL PROFILE

PROFILE ISCO 88 8272, ISCO 08 8160 - Food and related products machine operators
ECONOMIC ACTIVITY (NACE) C10.5 – Manufacture of dairy products
PROFESSIONAL QUALIFICATION Packaging Manager

GENERAL COMPETENCE (SKILLS) The technician oversees cheese packaging and sorting. Takes care of all stages, from cheese arrival to the warehouse to the release for its final destination. When the finished product arrives at the warehouse, the technician checks the quality, arranging the packaging for each cheese product, sorting and organizing the whole process according to the orders received. In particular, the technician studies, follows and checks the types of packaging that permits the product to reach its destination in the best possible way.
Works on the segment of to the final part of the production process in a highly technological context.

In particular undertakes the following activities:
- For the products arriving in the warehouse, the technician verifies the quality, prepares and organizes the packages according to orders.

COMPETENCES (SKILLS) The packaging manager must have good knowledge of dairy technology, should be well prepared in the biochemistry of aging processes in order to be able to establish the proper packaging technique for each cheese product, and is aware of the labeling rules.
The packing manager works closely with the production and sales managers.

QUALIFICATION LEVEL (ISCED)
Level 2– lower secondary or second stage of basic education.
A high level of education is not required, but a specific training in the field of dairy technology is required. This includes: biochemistry of cheese aging, regulations on labeling, and regulations regarding transport.

OTHERS

Professional Environment

Production context: works closely with production and sales managers.
Area: commercial production
Stage of production: final part of the production process.
Degree of impact of technology: Technology is always present in this stage and it is gaining more importance. Sales take place with greater frequency by courier and, therefore, the product must travel under the best conditions. Hence the innovations that concern packaging systems.

Associated Training

Required Training/Education
-food risks, dangers;
-food preservation and hygiene;
-risk control and identification (HACCP)

DESCRIPTORS DEFINING LEVELS IN THE EUROPEAN QUALIFICATIONS FRAMEWORK. EQF[8]

Learning outcomes	**KNOWLEDGE** In the context of EQF, knowledge is described as theoretical and/or factual	**SKILLS** In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments)	**COMPETENCE** In the context of EQF, competente is described in terms of responsability and autonomy
Level 1	**Basic general knowledge**	**Basic skills required to carry out simple tasks**	**Work or study under direct supervision in a structured context**
Level 2	**Basic factual knowledge of a field of work or study**	**Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools**	**Work or study under supervisión with some autonomy**
Level 3	**Knowledge of facts, principles, processes and general concepts, in a field of work or study**	**A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information**	**Take responsability for competion of tasks in work or study** **Adapt own behaviour to circumstances in solving problems**
Level 4	**Factual and theoretical knowledge in broad contexts within a field of work or study**	**A range of cognitive and practical skills required to generate solutions ot specific problems in a field of work or study**	**Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change** **Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities**

[8] EUROPEAN QUALIFICATIONS FRAMEWORK: http://ec.europa.eu/education/policies/educ/eqf/rec08_es.pdf

Level 5	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change Review and develop performance of self and others
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Management complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts Take responsibility for managing professional development of individuals and groups
Level 7	High specialised knowkledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and /or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches Take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8	Knowledge of the most advanced frontier of a field or work or study and the interface between fields	The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront or work and study contexts including research

THE INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION (ISCED) (UNESCO)

The International Standard Classification of Education (ISCED) is designed to serve as an instrument suitable for assembling, compiling and presenting comparable indicators and statistics of education, both within individual countries and internationally. It presents standard concepts, definitions and classifications. ISCED covers all organized and sustained learning opportunities for children youth and adults including those with special needs education, irrespective from the institution or entity providing them or the form in which they are delivered.

The different levels of this classification are the following:

Level 0-Pre-primary education
Level 1-Primary education or fist stage of basic education
Level 2-Lower secondary or second stage of basic education
Level 3-(Upper) secondary education
Level 4-Post-secondary non-tertiary education
Level 5-First stage of tertiary education
Level 6-Second stage of tertiary education

EQUIVALENCE ISCO-88 AND ISCO-08[9]

	ISCO-88	ISCO-08	
Other craft and related trades workers	74		
Food processing and related trades workers	741		
Butchers, fishmongers, and related food preparers	7411	7511	Butchers, fishmongers and related food preparers
Bakers, pastry-cooks and confectionery makers	7412	7512	Bakers, pastry-cooks and confectionery makers
Dairy-products workers	7413	7513	Dairy-products makers
Fruit, vegetable and related preservers	7414	7514	Fruit, vegetable and related preservers
Food and beverage tasters and graders	7415	7515	Food and beverage tasters and graders
Tobacco preparers and tobacco products makers	7416	7516	
Machine operators and assemblers	82		
Food and related products machine operators	827		
Meat and fish processing machine operators	8271	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Dairy-products machine operators	8272	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Grain and spice-milling-machine operators	8273	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Baked-good, cereal and chocolate-products machine operators	8274	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Fruit, vegetable and nut processing machine operators	8275	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Sugar production machine operators	8276	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Tea, coffee and cocoa processing machine operators	8277	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Brewers, wine and other	8278	3122	Manufacturing supervisors

[9] http://www.ilo.org/public/english/bureau/stat/isco/docs/resol08.pdf

beverage machine operators		8160	Food and related products machine operators
Tobacco production machine operators	8279	3122	Manufacturing supervisors
		8160	Food and related products machine operators
Other machine operators not else classified	829		
Other machine operators not else classified	8290	3122	Manufacturing supervisors
		8183	Packing, bottling and labelling machine operators
		8189	Stationary plant and machine operators not elsewhere classified
		8219	Assemblers not elsewhere classified
Drivers and mobile plant operators	83		
Motor vehicle drivers	832		
Car, taxi and van drivers	8322	8322	Car, taxi and van drivers
Heavy truck and lorry drivers	8324	8332	Heavy truck and lorry drivers
Labourers in mining, construction, manufacturing and transport	93		
Manufacturing labourers	932		
Manufacturing labourers	9320		
Transport labourers and freight handlers	933		
Transport labourers and freight handlers	9330		
		93	Labourers in mining, construction, manufacturing and transport
		932	Manufacturing labourers
		9321	Hand packers
		9329	Manufacturing labourers not elsewhere classified
		933	Transport and storage labourers
		9333	Freight handlers
		9334	Shelf fillers