DEFRUS WP 1.1

Report on QF Development and Food Sciences Competences

Contents:

1. Qualifications Framework - General Information and Country Examples

(based on the Jagiellonian University Centre for Research on Higher Education report for the Polish Ministry of Science and Higher Education)

The concept of qualifications frameworks is not a new one. They always appear in response to the needs: especially when a national\or regional system of education and/or training becomes too complicated, or if it does not respond to the current social needs. Nowadays, in connection to the globalisation processes, growing role of lifelong learning and dynamic changes on the labour markets, governments and various organisations manifest increased interest in organisation and structuring of different types of education and training. A research carried out by J. Keevy form SAQA (*South African Qualifications Authority*) of September 2008, in which systems of education in 201 countries were analysed, showed that in only 68 countries there were no equivalents of qualifications frameworks

There are overarching frameworks, (like EQF-LLL - *European Qualifications Framework for lifelong learning*) or these related to the subsystem of education, (eg. QFHEA -*Qualifications Framework for European Higher Education Area, or Bologna Framework)*, or sectoral ones (e.g. SQF - *Sectoral Qualifications Framework*, or BQF - *Business Organisation Qualifications Framework*).

Examples of National Qualifications Frameworks:

The decision on the creation of NFQ - *National Framework of Qualifications in* **Ireland** was adopted in.1999. The Framework was officially implemented in 2003. The NQF consists of 10 levels based on the nationally agreed standards defined in terms of learning outcomes. The Irish Framework is an overarching structure, embracing all subsystems, sectors and types of education . It is also characterised by a specific number of levels (10), and different award types: major, minor, special-purpose and supplemental ones.

The framework for higher education qualifications in **Scotland** – **FHEQ** was created by QAA in consultation with the institutions of higher education between 1999 – 2003. The **FHEQ** consists of 6 levels at the same time constituting a part of the framework for lifelong learning, *The Scottish Credit and Qualification Framework* **(SCQF),** which consists of 12 levels. Recognition of prior learning is possible on the basis of allocation of an adequate numbers of credits for the outcomes form either informal or non-formal learning, including experiential learning. It is worth mentioning that it is possible to award certificates and diplomas certifying acquisition of partial competences on each level of learning

The education system in **France** has undergone a major change in compliance with the principles of the Bologna reform. A three cycle system of study (BA,MA,DOC) based on the ECTS and flexible learning paths were introduced. The law *La loi de modernisation sociale* of 17 January 2002 introduced an institution called CNCP (Commission nationale des certifications professionnelles) and RNCP (Repertoire national des certifications professionnelles), which replaced the system of professional qualifications homologation of 1969. A system of validation of learning outcomes from informal and non-formal learning - VAE (*Validation des Acquis de l'Expérience*) is very well developed. All diplomas (inclusive of those in higher education) are registered in RNCP. The framework for higher education includes solely diplomas awarded on completion of 3 cycles of study in higher education.

The decision on the commencement of the works on the qualifications frameworks for higher education in **Germany** was adopted in September 2003. German qualification framework for higher education consists of three levels. The level descriptors are defined in terms of learning outcomes prescribed for respective levels. The following classification of learning outcomes has been adopted: knowledge (knowledge breadth, knowledge depth), skills (instrumental skills, systemic skills, communication skills). The elaboration of the qualifications framework for higher education had preceded works on the qualifications framework for lifelong learning embracing all areas and levels of education and training in Germany. The German framework consists of 8 levels like the European Qualifications Framework. Presently the situation in Germany with respect to the co-existence of the framework for higher education and the framework for lifelong learning is still not clear and different conflicts and problems keep on emerging.

Remarks: Of the four examined national frameworks of qualifications only one (the German one) has been directly inspired by the Bologna Process and the recommendation of the European Parliament. The national frameworks of qualifications in the United Kingdom and Ireland have been being created since mid-nineties. Thus Ireland and Scotland belong to a group of just few countries which have fully implemented their framework of qualifications. On the other hand in France the qualifications structure has existed since 1969 but it is so diverse form the EQF and national qualifications frameworks under construction in other countries that a decision has been made to develop it anew. The first stage of the development in the form of a simplified framework for higher education has already been completed.

Despite a different number of levels the Irish and Scottish frameworks are strikingly similar to each other (several diplomas on the same level certifying the acquisition of different competences). It is quite obvious if we take into consideration educational traditions of these countries, which at the same time emphasises the significance of the cultural context in the process of the development of the qualifications framework.

Although in some countries the frameworks have regulatory function, generally they are a tool of communication and transparency, facilitating understanding of the relations (vertical, and horizontal) between different types of qualifications, diplomas and certificates.

In all the analysed frameworks there are generic levels descriptors. There are no area- or discipline-specific descriptors of levels. The function of a transformer of the concept of the framework onto the programme (curricula) structures may be played the *Benchmark Statement* – type descriptors. *Benchmark Statements* are related to subjects or areas of study. Higher education institutions are free to create programmes of study (curricula) but their outcomes should be referred to the qualifications framework.

In none of the countries in question the development of the qualifications frameworks affected the autonomy of higher education institutions

It has been universally assumed that the framework of qualifications should be based on learning outcomes. Likewise it has been assumed that qualifications should be recognised irrespective of where they had been acquired. However the latter has not been put into effect everywhere.

In the countries in which the frameworks had been introduced earlier its frameworks reflect the existing educational tradition. In the countries in which the frameworks are introduced under the influence of the Bologna process or the recommendation of the European Parliament, the frameworks follow in most of the cases the QFHEA and/or EQF. In such cases comparison of qualifications between different frameworks is much easier than in case of the Irish and Scottish frameworks of different number of levels when additional analysis of documentation certifying the achievements of the diploma holder would be required. (cf different types of *Bachelor* or *Master* diplomas). The development of frameworks based on QFHEA and/or EQF is frequently accompanied by the transformation of the system of education (France, Germany) which does not necessarily mean that the frameworks induced the transformation.

Implementation of the framework of qualifications should be effectuated in an evolutionary way, with different speed for different areas (creation of good practice examples). The framework can (or rather should) be a dynamic structure which undergoes modifications under the influence of feedback from its users and the need to reflect the current changes in the system of education. In order to do that successfully it is necessary to establish experts' support and to provide for cooperation between ministries, rectors' conferences and different stakeholders.

The national qualifications framework (NQF) is first of all a communication tool. It may become a tool of reform . The implementation of the NQF may/should be correlated with the process of solving national problems. The NQF may play an important regulatory and ordering

function in relation to the hitherto system. However it should not serve the purpose of solving problems caused by its introduction...

„*National Qualifications Framework must by tailor-made in reference to the national context. Simple imitation will be counterproductive. Learning on others' successes and errors may prove to be beneficial*". (Cedefop Sept.2009)

2. Competences:

Food-Sciences Related Competences and Standards

Generic Competences

(Examples)

2.1. QAA subject benchmark statement for agriculture, horticulture, forestry, food and consumer sciences (2009)

Degree programmes in **food science and technology** are designed to develop the knowledge and skills required by those who are involved in food supply, manufacture and sale, and associated regulatory and advisory work. Graduates with degrees in food science and technology will have an understanding of the characteristics and composition of major food materials; the microbiology, nutritional quality, chemistry, physical properties and eating qualities of food; and the impact of food storage and processing. In particular, they will be able to identify and respond to technological and economic challenges encountered in food chains; evaluate developing technologies and, where appropriate, apply them to commercial practice; understand the appropriate legislation; identify and evaluate public concerns on food safety; evaluate the wider consequences of food chain activities; and minimise any harmful effects on the environment and on people.

4 Abilities and skills

4.1 Honours graduates of programmes covered by this benchmark statement should be able to:
- demonstrate familiarity with a wide range of subject-specific facts and principles in combination with an awareness of the current limits of theory and applied knowledge
- understand the provisional nature of information and allow for competing and alternative explanations within their subject
- exhibit ownership of the defining elements of the discipline as a result of in-depth study or research
- tackle problems by collecting, analysing and evaluating appropriate qualitative and quantitative information, and using it creatively and imaginatively to solve problems, introduce and develop innovations, and make decisions
- plan and execute research or development work, evaluate the outcomes and draw valid conclusions
- display skills in evaluating and interpreting, in a balanced manner, new information provided by others from a range of fields of study
- display the transferable skills and ability to acquire new competencies required for career progression
- assess the ethical consequences of human activities to optimise community and environmental sustainability.

4.2 The abilities and skills that should be developed during the course of degree programmes covered by this benchmark statement are subdivided into:
- intellectual skills
- practical skills
- numeracy skills
- communication skills
- information and communication technology (ICT) skills
- interpersonal/teamwork skills
- self-management and professional development skills.

4.3 These skills will normally be developed in a subject-specific context, but have wider applications for continuing personal development and in the world of work. The subject skills will encompass

technical knowledge and abilities specific and appropriate to the focus of the degree programme. In addition, each individual programme will develop a capacity for holistic and lateral thinking and an appreciation of both inductive and deductive reasoning.

4.4 **Intellectual skills**

- recognising and using appropriate theories, concepts and principles from a range of disciplines
- collecting and integrating several lines of evidence to develop balanced arguments
- designing an experiment, investigation, survey or other means to test a hypothesis or proposition
- critically analysing information, synthesising and summarising the outcomes
- applying knowledge and understanding to address multidisciplinary problems
- creativity and innovation
- demonstrating awareness of the provisional nature of the facts and principles associated with a field of study
- decision making in complex and unpredictable contexts.

4.5 **Practical skills**

- planning, conducting and reporting on investigations, including the use of secondary data
- collecting and recording diverse types of information generated by a wide range of methodologies and summarising it using appropriate qualitative and/or quantitative techniques
- devising, planning and undertaking field, laboratory or other investigations in a responsible, sensitive and safe manner, paying due diligence to risk assessment; ethical and data protection issues; rights of access; relevant health and safety regulations; legal requirements; and the impact of investigations on the environment
- appreciating and analysing financial and other management information and using it in decision-making.

4.6 **Numeracy skills**

- appreciating issues of sample selection, accuracy, precision and uncertainty during collection, recording and analysis of data in the field, laboratory or collated from secondary sources
- appreciating the difficulties of having incomplete information on which to base decisions
- understanding the nature of risk
- preparing, processing, interpreting and presenting data, using appropriate qualitative and quantitative techniques and packages
- solving numerical problems using computer-based and other techniques.

4.7 **Communication skills**

- receiving, evaluating and responding to a variety of information sources (that is, electronic, textual, numerical, verbal, graphical)
- communicating accurately, clearly, concisely, confidently and appropriately to a variety of audiences in written, verbal and graphical forms
- contributing constructively to group discussions
- considering, appreciating and evaluating the views of others.

4.8 **ICT skills**

- using the internet critically as a means of communication and a source of information
- demonstrating competence in the use of computer-based information handling and data processing tools

- using computer software to communicate information to a range of audiences effectively.

4.9 **Interpersonal and teamwork skills**

- organising teamwork and participating effectively in a team
- setting realistic targets
- identifying individual and collective goals and responsibilities
- planning, allocating and evaluating the work of self, individuals and teams
- performing in a manner appropriate to allocated roles and responsibilities
- recognising and respecting the views and opinions of other team members
- having positive intent
- reflecting on and evaluating own performance as an individual or as a team member.

4.10 **Self-management and professional development skills**

- appreciating the need for professional codes of conduct where applicable
- recognising the moral, ethical and social issues related to the subject
- assuming responsibility for one's actions
- identifying and working towards targets for personal, academic and career development
- developing an adaptable and flexible approach to study and work
- developing the skills necessary for self-managed and lifelong learning (that is, working independently, time-management and organisation skills)
- demonstrating the competence, behaviour and attitude required in a professional working life, including initiative, leadership and team skills.

2.2. Core Competencies in Food Science

(2011 Resource Guide for Approval and Re-Approval of Undergraduate Food Science Programs, Institute of Food Technologists, USA)

Core competency	Content	By the completion of food science program, the student should
Food Chemistry and analysis	Structure and properties of food components, including water, carbohydrates, protein, lipids, other nutrients and food additives Chemistry of changes occurring during processing, storage and utilization Principles, methods, and techniques of qualitative and quantitative physical, chemical, and biological analyses of food and food ingredients.	• Know the chemistry underlying the properties and reactions of various food components • Have sufficient knowledge of food chemistry to control reactions in foods. • Know the major chemical reactions that limit shelf life of foods. • Use the laboratory techniques common to basic and applied food chemistry. • Know the principles behind analytical techniques associated with food. • Be able to select the appropriate analytical technique when presented with a practical problem. • Demonstrate practical proficiency in a food analysis laboratory.
Food safety and microbiology	Pathogenic and spoilage microorganisms in foods Beneficial microorganisms in food systems Influence of the food system on the growth and survival of microorganisms Control of microorganisms	• Identify the important pathogens and spoilage microorganisms in foods and the conditions under which they will grow. • Identify the conditions under which the important pathogens are commonly inactivated, killed or made harmless in foods. • Utilize laboratory techniques to identify microorganisms in foods. • Know the principles involving food preservation via fermentation processes. • Know the role and significance of microbial inactivation, adaptation and environmental factors (i.e., aW, pH, temperature) on growth

		and response of microorganisms in various environments. • Identify the conditions, including sanitation practices, under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.
Food processing and engineering	Characteristics of raw food material Principles of food preservation including low and high temperature processes, water activity, etc. Engineering principles including mass and energy balances, thermodynamics, fluid flow, and heat and mass transfer Principles of food processing techniques, such as drying, high pressure, aseptic processing, extrusion, etc. Packaging materials and methods Cleaning and sanitation Water and waste management	• Know the source and variability of raw food material and their impact on food processing operations. • Know the spoilage and deterioration mechanisms in foods and methods to control deterioration and spoilage. • Know the principles that make a food product safe for consumption. • Know the transport processes and unit operations in food processing as demonstrated both conceptually and in practical laboratory settings. • Be able to use the mass and energy balances for a given food process. • Know the unit operations required to produce a given food product. • Know the principles and current practices of processing techniques and the effects of processing parameters on product quality. • Know the properties and uses of various packaging materials. • Know the basic principles and practices of cleaning and sanitation in food processing operations. • Know the requirements for water utilization and waste management in food and food processing.
Applied food science	Integration and application of food science principles (food chemistry, microbiology, engineering/processing, etc.)	• Be able to apply and incorporate the principles of food science in practical, real world situations and problems.

	Computer skills Statistical skills Quality assurance Analytical and affective methods of assessing sensory properties of food utilizing statistical methods Current issues in food science Food laws and regulations	• Know how to use computers to solve food science problems. • Be able to apply statistical principles to food science applications. • Be able to apply the principles of food science to control and assure the quality of food products. • Know the basic principles of sensory analysis. • Be aware of current topics of importance to the food industry. • Know government regulations required for the manufacture and sale of food products.
Success skills (Success skills should be introduced in lower level courses and practiced in as many upper division courses as possible)	Communication skills (i.e., oral and written communication, listening, interviewing, etc.) Critical thinking/problem solving skills (i.e., creativity, common sense, resourcefulness, scientific reasoning, analytical thinking, etc.) Professionalism skills (i.e., ethics, integrity, respect for diversity) Life-long learning skills Interaction skills (i.e., teamwork, mentoring, leadership, networking, interpersonal skills, etc.) Information acquisition skills (i.e., written and electronic searches, databases, Internet, etc.) Organizational skills (i.e., time management, project management, etc.)	• Demonstrate the use and practice of different levels of oral and written communication skills. This includes such skills as writing technical reports, letters and memos; communicating technical information to a non-technical audience; and making formal and informal presentations. • Be able to develop a process for solving and preventing reoccurrences of ill-defined problems; know how to use library and internet resources to search for quality information, and solve a problem; and make thoughtful recommendations. • Apply critical thinking skills to new situations. • Commit to the highest standards of professional integrity and ethical values. • Work and/or interact with individuals from diverse cultures. • Explain the skills necessary to continually educate oneself. • Work effectively with others. • Provide leadership in a variety of situations.

		• Deal with individual and/or group conflict. • Independently research scientific and nonscientific information. • Competently use library resources. • Manage time effectively. • Know how to facilitate group projects as well as be a good team member. • Handle multiple tasks and pressures.

2.3. Texas A & M Department of Nutrition and Food Science Curriculum Review (2011)

8 Program Goals

1. Undergraduates will demonstrate technical knowledge required for a BS in Food Science

2. Undergraduates will demonstrate critical thinking skills

3. Undergraduates will demonstrate effective written and oral communication skills

4. Undergraduates will demonstrate an awareness of personal and social responsibility, ethical behavior, and cultural sensitivity

5. Undergraduates will be prepared with skills to engage in lifelong learning through participation in faculty research activities, experiential learning opportunities and/or corporate internships to refine their career interests, learn essential research skills, and promote inquisitiveness and independent thought

6. Undergraduates will work collaboratively

7. Recruit academically exceptional and diverse freshmen and transfer students to the Food Science curricula

8. Maintain students in the Food Science curricula

12 Program Learning Outcomes (PLO)

Outcome 1 (Problem Solving): Discipline Skill

Apply the principles of food science in practical, real world situations and problem solving

1.01 Define a food science problem

1.02 Independently research scientific and non-scientific information

1.03 Apply food science skills to solve industrial problems

1.04 Characterize food systems (chemical, physical, microbiological)

1.05 Apply various physical methods to foods

1.06 Apply various chemical methods to foods

1.07 Apply various microbiological controls to foods

1.08 Apply process methodologies to foods

1.09 Apply engineering controls and systems to foods

1.10 Apply organoleptic methodologies to foods

12 Program Learning Outcomes (PLO)

Outcome 2 (Food Quality): Discipline Skill

Apply principles of food science to control and assure the quality of food products

2.01 Describe basic quality factors associated with foods

2.02 Apply physical and analytical principles to assure food quality

2.03 Apply microbial testing protocols to assure food quality

2.04 Apply food processing techniques to assure food quality

2.05 Apply food engineering controls to assure food quality

2.06 Apply organoleptic protocols to assure food quality

12 Program Learning Outcomes (PLO)

Outcome 3 (Product Development): Discipline Skill

Apply food science skills in the development of new products and technologies

3.01 Recognize the role of research and development in the food industry

3.02 Evaluate the technical and economic feasibility of new product ideas

3.03 Apply ingredient functionality to formulate and produce new foods

3.04 Evaluate quality implications induced by ingredient substitutions

3.05 Develop and execute a project plan

3.06 Apply sensory science to evaluate food development

3.07 Apply physicochemical and microbial principles to food development

12 Program Learning Outcomes (PLO)

Outcome 4 (Government Regulations): Discipline Skill

Apply government regulations in manufacture, labeling, and sale of foods

4.01 Awareness of food-related federal legislation

4.02 Application of basic terminology in food regulations

4.03 Diagram key steps in the formulation of federal laws and regulations

4.04 Identification of federal agencies governing the food industry

4.05 Identify critical food-related legislation and its industrial impacts

4.06 Apply current food law to front and back of package labeling

4.07 Evaluate regulations related to interstate commerce

4.08 Apply current food law to the processing and manufacture of foods

12 Program Learning Outcomes (PLO)

Outcome 5 (Food Processing): Discipline Skill

Identify variability of raw food materials and their impact on food processing operations and appraise current processing technologies and their impacts on foods and ingredients

5.01 Identify physical and chemical methods for food preservation

5.02. Identify appropriate processing method for a given food type

5.03 Create stable and safe foods with various processing technologies

5.03 Differentiate among intensities of food processes

5.04 Evaluation of food quality based on processing methods

5.05 Identify shelf-life properties of foods based on processing methodology

5.06 Evaluate the impact of processing on nutritional characteristics

5.07 Evaluate the interaction of food ingredients during processing

5.08 Evaluate the physicochemical properties of food with processing

12 Program Learning Outcomes (PLO)

Outcome 6 (Food Engineering): Discipline Skill

Define and measure physical and thermodynamic properties of food materials and their impact by unit operations using fundamentals of engineering sciences

6.01 Define fundamental knowledge in the physical properties of foods

6.02 Demonstrate control and modeling of dynamic food systems

6.03 Apply material and energy balances to food operations

6.04 Characterize unit operations and engineering controls thereof

6.05 Evaluate physical properties of solid and liquid foods

6.06 Apply engineering controls to enhance food quality

6.07 Apply engineering controls to steady and unsteady state problems

6.08 Evaluate heat and mass transfer properties of foods

6.09 Model thermal and non-thermal food processing methods

6.10 Create effective solutions to food engineering problems

12 Program Learning Outcomes (PLO)

Outcome 7 (Food Chemistry): Discipline Skill

Identify the underlying properties and reactions of various food components and describe how processing, handling, and storage may alter chemical reactions and food quality

7.01 Recognize key structural components in food chemicals

7.02 Apply fundamentals of food chemistry to different foods

7.03 Evaluate major reactions occurring in foods

7.04 Evaluate food components as they apply to food stability and quality

7.05 Apply functional properties of proximates to new food systems

7.06 Relate chemical interactions to specific food systems

7.07 Describe how processing impacts physicochemical reactions in foods

7.08 Apply food additives and ingredients to food systems

7.09 Evaluate remediation/enhancement steps for major reactions in foods

7.10 Apply food chemistry principles to solve quality problems in foods

12 Program Learning Outcomes (PLO)

Outcome 8 (Food Analysis): Discipline Skill

Identify the chemical or physical structure of food components in effort to quantify in a food and determine the principles, methods, and analysis techniques for qualitative and quantitative physical and chemical analyses of foods and food ingredients

8.01 Evaluate and develop food testing protocols for foods

8.02 Apply food analysis techniques to various food matrices

8.03 Complete experimental procedures for quantitative analysis of foods

8.04 Apply experimental parameters to ensure food safety

8.05 Apply experimental parameters to evaluate food quality

8.06 Evaluate the strengths and weaknesses of analytical tests

8.07 Select the proper analytical test for a given food matrix

8.08 Quantify, report, and interpret data from analytical tests

12 Program Learning Outcomes (PLO)

Outcome 9 (Food Microbiology): Discipline Skill

Identify important pathogens and spoilage microorganisms in foods and the

conditions under which they will grow and apply the principles of microbial

inactivation, adaptation, and environmental factors (i.e. Aw, pH, temp) on growth and response of microorganisms in various environments

9.01 Describe the types of microbes commonly present in foods

9.02 Describe the significance of various microbes in foods

9.03 Evaluate food quality and safety concerns with various microbes

9.04 Describe factors affecting microbial growth and survival in foods

9.05 Describe methods by which microbes are inhibited in foods

9.06 Describe methods by which microbes are destroyed in foods

9.07 Identify the types of microbes characteristic for various food types

9.08 Describe food processes that preserve food quality and safety

9.09 Describe analytical tests for quantifying microbes in foods

12 Program Learning Outcomes (PLO)

Outcome 10 (Culture and Ethics): Professional Skill

Collaborate and interact with individuals from diverse cultures and backgrounds; work effectively with others; provide leadership in a variety of situations; commit to the highest standards of professional integrity and ethical values

10.01 Work collaboratively in diverse teams

10.02 Participate in group projects and make meaningful inputs

10.03 Demonstrate respect in and interact with others in a group effort

10.04 Conduct team-based research

10.05 Participate equally on project with group

10.06 Exercise leadership skills, lead an aspect of a team project

10.07 Present work in a technically, socially, and ethically sound manner

10.08 Divide field work equitably and switch out duties

10.09 Demonstrate the ability to assign work to all team members

10.10 Demonstrate professional and ethical behavior

12 Program Learning Outcomes (PLO)

Outcome 11 (Critical Thinking): Professional Skill

Illustrate critical thinking and problem solving skills in oral and written format environments

11.01 Application of current knowledge to novel situations

11.02 Willingness to integrate knowledge outside of one's experiences

11.03 Display the ability to think outside of personal biases

11.04 Apply critical thinking elements to demonstrate intellectual integrity

11.05 Predict outcomes and forecast changes in the food industry

11.06 Recognize problematic situations and predict possible outcomes

11.07 Identify the critical variables in a given problem

11.08 Identify and defend your assumptions and those of stakeholder groups

11.09 Critically evaluate technical/scientific literature and oral presentations

11.10 Identify problems and apply novel solutions

12 Program Learning Outcomes (PLO)

Outcome 12 (Life-Long Learning): Professional Skill

Obtain the skills necessary to continually self-educate

12.01 Participate in a professional or trade organizations

12.02 Learn to evaluate team members and encourage participation

12.03 Perform tasks that are beneficial to a team and larger organization

12.04 Develop a vision for a group or organization that other will follow

12.05 Awareness of professional standards relevant to the food industry

12.06 Awareness for a need to continually self-educate

12.07 Desire to continue education and self-advancement

12.08 Identify major sources of scientific literature

12.09 Ability to read scientific literature and apply this knowledge

12.10 Ability to write or contribute to the scientific literature

12.11 Ability to peer review based on current knowledge of a field

2.4. TUNING Competences

Aurelio Villa Sanchez & Manuel Poblete Ruiz, Competence-based learning. A proposal for the assessment of generic competences. The University of Deusto 2008

- Instrumental competences
  - Cognitive
    - Analytical thinking
    - Systemic thinking
    - Critical thinking
    - Creative thinking
    - Reflexive thinking
    - Logical thinking
    - Analogical thinking
    - Practical thinking
    - Deliberative thinking
    - Team thinking
  - Methodological
    - Time management
    - Problem solving
    - Decision making
    - Learning orientation
    - Planning
  - Technological
    - Computer skills
    - Database Management
  - Language
    - Oral communication skills
    - Written communication skills
    - Foreign language proficiency
- Interpersonal
  - Individual
    - Self-motivation
    - Diversity and interculturality
    - Adaptability
    - Ethical sense
  - Social
    - Interpersonal communication
    - Teamwork
    - Conflict management and negotiation
- Systemic
  - Organisation
    - Objectives-based management
    - Project management
    - Quality orientation
  - Enterprising spirit

- - - Creativity
    - Enterprising spirit
    - Innovation
  - Leadership
    - Achievement orientation
    - Leadership

For each competence the following scheme was developed:
- Description of the competence
- Interaction with other competences, attitudes, interests and values
- Importance of this competence for academic and professional life
- How to incorporate it into the academic curriculum
- Definition of the competence
- 3 Levels of Mastery
- Indicators (usually 5-6)
- Descriptors (5 for each indicator at each level of mastery)

2.5. CDIO (Conceiving-Designing-Implementing-Operating)

CDIO Syllabus

1   Technical Knowledge and Reasoning

     1.   Knowledge of underlying science

     2.   Core engineering fundamental knowledge

     3.   Advanced engineering fundamental knowledge

2   Personal and Professional Skills and Attributes

     1.   Engineering reasoning and problem solving

     2.   Experimentation and knowledge discovery

     3.   System thinking

     4.   Personal skills and attitudes

     5.   Professional skills and attitudes

3   Interpersonal Skills and Attributes: Teamwork and Communication

     1.   Multi-disciplinary teamwork

     2.   Communications

     3.   Communications in foreign languages

4   Conceiving, Designing, Implementing and Operating Systems in the Enterprise and Societal Context

     1.   External and societal context

     2.   Enterprise and business context

     3.   Conceiving and engineering systems

     4.   Designing

     5.   Implementing

     6.   Operating

3. Sectoral Qualifications Frameworks:

Projects

Examples

(based on desk research and CEDEFOP materials, including "**Dealing with frameworks, searching orientation. *Sectoral experiences in LdV pilots" by* Loukas Zahilas, Cedefop, Senior Expert, Qualifications and Learning Outcomes,** Thessaloniki January 2011)

Diversity of qualifications

Qualifications are not exclusively awarded by public, national authorities, but also by industry sectors, multi-national companies, single enterprises and professions. This diversity of qualifications represents a challenge for individual citizens, for employers and for education and training authorities.

Increasing diversity of qualifications, triggered by the internationalisation of markets and technology may lead to a lack of transparency which threatens their role as trusted currencies in the labour market and education and training systems. The question is thus whether - and how - the EQF, as a common European reference point for qualifications, can help to increase the transparency of all qualifications, irrespective of their institutional or geographic origin. While we can observe a broad agreement that the EQF can be helpful in this respect, opinions vary considerably in terms of how to achieve this.

When providers establish sectoral qualifications frameworks (or, alternatively, individual qualifications), they may decide to seek to link these to an overarching qualifications framework, such as the EQF or the QF-EHEA. Alternatively, providers may decide not to seek such linkage. The sectoral dimension is substantial in the various test and pilot projects (funded by the Lifelong Learning Programme) that systematically experiment and explore the EQF implementation. Sectoral referencing scenarios can be identified in these projects although the methodologies followed differ a lot.

Cedefop's work on EQF projects

Cedefop supports the Commission on the challenges involved in the future implementation of the EQF at European, national and sectoral level and provides insights into sectoral dynamics and cross-sectoral developments at national and international level. An important part of this implementation is the systematic testing and piloting – within the Leonardo da Vinci programme – which started in 2006 and will go on until 2012. This testing was seen by national governments and other involved stakeholders as a pre-condition for supporting the EQF Recommendation.

For Cedefop, the testing and piloting projects provides a good opportunity to systematically observe and analyse the challenges involved in the implementation of the EQF. Three EQF projects workshops have been organised by Cedefop in an effort to strengthen our common basis for understanding learning outcomes developments and sectoral dynamics so as to offer important feedback to the projects work and support the Commission to face the challenges involved in the future implementation of the EQF at European, national and sectoral level. The first workshop *"Testing the European Qualifications Framework (EQF): Relating international, national and sectoral qualifications to the EQF"*, Thessaloniki 10-11 November 2008, focused on the 2006 and 2007 projects and also addressed the challenge of valorisation of the project results.

The 2nd Cedefop EQF projects Workshop *"Testing the EQF"* was held in the Education Audiovisual & Culture Executive Agency, Brussels, 5 - 6 November 2009, built on the results of the 1st workshop and continued the follow up and analysis of the 2008 and 2009 test and pilot projects as regards the shift to learning outcomes and the use and relevance of the EQF/ NQFs for sectors. The third workshop *"Building synergies and common understanding"* took place in Thessaloniki on 15-16 December 2010 and had a broader view to projects including those developed in the period before the specific EQF calls. The workshop focused on closely linked projects and groups of projects examining concrete practical outcomes implemented at European and national level as well as the value added from the synergies created.

This paper builds on the results of Cedefop's workshops examining scenarios and ideas on referencing sectoral qualifications frameworks to the EQF as presented in a number of EQF sectoral projects, on Cedefop's study *"The relationship between sectoral qualifications and the European Qualifications Framework (EQF)"* and additionally to the work carried out within the EQF Advisory Group – Sectoral Subgroup.

Conceptual issues

A sectoral qualifications framework1 covers qualifications for – sometimes even required for - professional activities of relevance to a sector of economic activity. In principle, sectoral frameworks may be overarching (covering several systems) or system specific.

While a lot of efforts have been given to the clarification of conceptual issues and the technical dimensions of the referencing scenarios (linking via NQFs or direct linking to the EQF) the core question is how EQF can cover all types of qualifications. The answer is not simple and it is closely related to the capability to define sustainable linking scenarios which on one side reduce the effort a worker/learner experiences in order to take advantage of mobility opportunities and of capitalizing his qualifications, while on the other hand also contribute to enhance frameworks and systems organization making transparency an empowered practice. This can be undertaken at different levels: regional, national, international. The growing importance of lifelong learning - taking place in a wide range of learning settings and resulting in a diversity of certifications - explains why individual learners as well as employers need a framework using transparency to facilitate access, transfer and progression across institutions and education and training areas.

The diversity in sectoral approaches and qualifications arrangements is closely linked to the specificities of the sectors and therefore it is very difficult to categorise all sectoral initiatives and projects developed through the years, in some cases before the EQF recommendation was in place.

Types of frameworks and referencing scenarios

There is agreement that the quality of the processes the extent to which they are transparent and generate trust, is of critical importance for sectors or companies operating outside the formal, national education and training systems. We can observe a clustering of sectors sharing common problems, approaches and mechanisms leading to sectoral frameworks based on competence (e.g. automotive and financial) and sectoral frameworks based on qualifications (e.g. construction and personal services). In the case of competence frameworks projects describe learning outcomes in terms of performance expectations on the part of the employers with regards to the employee's contextualized abilities to act (whereas qualification frameworks describe learning outcomes providing evidence of the individual's capacity to meet these expectations).

The development and implementation of national qualifications frameworks will support these approaches, already presented in a number of pilots, as it will provide more practical evidence and will allow more reliable conclusions on the inclusiveness of all types of qualifications, especially those that exist outside formal systems.

The learning outcomes approach has also been tested in different ways across sectoral projects2 and mainly when developing qualifications frameworks, qualifications profiles, curricula and accreditation and assessment procedures. Although projects confirm the need to use learning outcomes for referencing purposes we can still observe that referencing methods in some cases are based on the use of broad descriptors derived from professional tasks, duties and expectations (automotive sector) and not necessarily encompassing all the EQF categories The EQF Advisory Group – Subgroup C3, report provides information on relevant developments within sectors, largely based on EQF pilot projects, considers reasons why sector based organisations may seek "linking" their qualifications or qualifications frameworks to the EQF or not seek it and how this could be done, including through national qualifications systems or through "direct linkage" to the EQF. The four main scenarios presented in the graphic below (see graphic 1) are:

• Scenario 1: no possibility for referencing

• Scenario 2: linkage via NQFs

• Scenario 3: "soft" direct linkage to the EQF

• Scenario 4: "hard" direct linkage to the EQF

(1): The sectoral qualifications (frameworks) in question are a part of an NQF and will thus be referenced to the EQF through this NQF.

(2): This situation could come in two forms. Either a sector qualification is transposed into a national qualification in several countries or it is a truly transnational qualification with an international awarding body.

(3): A competent national authority might decide not to incorporate a sectoral qualification into its NQF. The provider(s) might in turn resort to linking the qualification directly to the EQF– either by itself or via an international sectoral organization.

(4): In this situation it is not the national authorities that decide not to incorporate a sectoral qualification into the NQF but the provider or the responsible sector body itself that does not want to negotiate with up to 27 different national authorities to go via the NQF.

In situations (5) and (6) the term "soft linking" is a bit of an euphemism that may also open possibilities for "QF mills". There is of course the danger of abuse, but there are also limits to what may be done to prevent non-serious4 providers from claiming an EQF level for their qualifications. It may also well be argued that the danger of abuse is not necessarily linked to a formal possibility for linking sectoral qualifications (frameworks) directly to the EQF. Regardless of what the formal possibilities are, it seems likely that some providers will claim a direct link and the main challenge may be to raise awareness among learners as well as employers and other users of qualifications of what they need to look out for when faced with a qualifications or a learning programme with which they are not familiar.

The EQF AG subgroup report entails no further organizational or procedural issues, since there would be nothing further to organise. In this paper we will focus only on scenarios 2 and 3.

A common case: linking via NQFs (scenario 2)

This scenario is at first sight straightforward in formal terms: linkage is obtained through established procedures and arrangements at national level established by the competent national authorities. Linkage to the EQF follows from linkage to NQFs.

Providers may, however, find this procedure cumbersome if they need to link to a high number of NQFs.

A practical measure to avoid this is the use of learning outcomes for the definition and description of qualifications. In practical terms this means that while NQFs remain the main instrument for referencing, a systematic strategy promoting the learning outcomes approach outside the formal frameworks could become a valuable instrument for promoting overall transparency. This strategy would, first and foremost, require development of and agreement on a common template for describing qualifications, no matter whether they are awarded through the formal education and training systems or not.

The issues are essentially the same for the "sub-variety" referred to in the report: a sector takes due account of EQF standards in developing its equalization (framework) and uses this as a basis for seeking linkage through NQFs.

Personal services (hairdressing) – using the EQF to link to the NQFs

The analysis of the personal services sector5 could be addressed by many perspectives, based for instance on the different points of view offered by alternative classification systems and sector categorization approaches. Thus, the NACE6, ISIC7 and ISCO8 categorizations could be considered (in their various versions).

Furthermore, established frameworks, e.g. in the European sectoral social dialogue, could be taken into account. Thus, if on one side NACE and ISIC personal services sector encompass multiple activities and related professions, on the other side, in the ISCO classification, a specific hair and beauty group of occupations is defined.

Furthermore, European sectoral social dialogue involves two main parties, i.e. the

Hair and Beauty section of UNI-Europa (9) and Coiffure EU (10), representing employees and employers in the hairdressing trade (not including cosmetics industries).

The hairdressing sector represents a particular case as the referencing strategy of the European certificates to the EQF is "determined" by an established qualification structure recognized by the European stakeholders through a European agreement on the implementation of the European hairdressing certificates. In this European perspective the future training of the hairdressing trade can be divided into three levels, namely 'level A' that corresponds to the national training standards, whereas 'level B' and 'level C' to the European. The issue of regulation which dominates other sectors is not present in hair dressers as transnational regulation does not exist, in spite of a de facto-certification which suggests the existence of a real sectoral reference standard at the European level.

Looking at the practical examples of projects developed over the years in the sector in the EUC Hair, the European social partners in the sector agreed on the fact that, by relating the European Hairdressing Certificate 'level B' and the management training programme 'level C' to the EQF they place the training programme in a European standard system, that was expected to be equivalent to recognition of the existence and quality of the training programmes at the European level. In fact, the fundamental principle behind the sectoral standards in the hairdressing sector is that, in the European Hairdressing Certificate, each country is expected to decide how to get from 'level A' (the national training programme) to 'level B' and 'level C'.

The approach used in the EQF Hair project for referencing the European Hairdressing Certificate with the EQF consisted in testing the three types of learning outcomes in the EQF (knowledge, skills, and competences) against the same three types of learning outcomes in the European Hairdressing Certificate 'level B'. Based on this, EQF level 4 was selected as the best fit for the European Hairdressing Certificate (EHC) 'level B'. Through a comparable methodology, referencing of the European Hairdressing Certificate 'level C' to the EQF was evaluated. According to the analysis, 'level C' would have to be considered as equivalent to EQF level 5. In summary, besides having the three levels of the European Hairdressing Certificate directly linked to the EQF, the hairdressing sector provided a way for verifying to what extent national qualifications are equivalent to European levels.

In the EUC Hair study the quality assurance system for the European standards in hairdressing was divided into a *de facto* certification system, and accreditation procedures and recommendations. Hair project partners decided that training institutions offering (the updated) European Hairdressing

Certificate 'level B' are accredited by the national authorities announcing that the institutions concerned are able to teach national 'level A' and European 'level B'.

Construction sector – a competence framework

Construction is the largest industrial sector in Europe, contributing almost 10% to GDP. It is highly labour-intensive and it is characterized by marked differences across European countries (i.e. in terms of work organization, salaries, qualification requirements, etc.). Although relatively small in percentage points, cross-border activities in construction have become an important economic factor in certain regions and, because of heterogeneity mentioned above, do not meet with much enthusiasm in countries with high requirements.

The most relevant transnational initiative related to the referencing of sectoral qualifications in the construction sector to the EQF is represented by the SQF developed in the frame of the project SQF-CON – "Developing and Introducing a Sectoral Qualifications Framework for the European Construction Industry" funded under the Leonardo da Vinci programme. The approach adopted in the definition of the framework was based on the logic, the principles and the structure of the EQF.

However, while the EQF, in order to be applicable to all the sectors of the economy, describes knowledge, skills and competences by levels at a high degree of details, the sectoral framework designed in the SQF-CON project introduces learning outcomes which are specific for the construction industry. According to the methodological approach of the project, the levels of a SQF in the construction industry have to be expressed according to the demands of the working positions in the considered sector.

On site and within construction enterprises there exists a structured division of labour encompassing different tasks. Their levels can be defined by referring to the range and complexity of operations someone has to execute, by the degree of detailing of instructions necessary to enable someone to fulfil a task, and by the intensity of the control required. In the field of the project, only qualifications up to level 5 were considered (although construction processes could also require learning outcomes at level 6 and higher). Specifically, six levels were defined, i.e. level 5, level 4, level 3a, level 3, level 2 and level 1. One of the principles adopted in the definition of the SQF refers to the need for a (low-level) sector-specific description of learning outcomes.

The methodology does not show any application of the framework to national education and training systems in the construction sector. However, project partnership underlined that this step is essential in order to make most use of the framework itself. Two approaches are envisaged, either top-down or bottom-up. The top-down approach is based on the involvement of and acceptance by institutions and organizations responsible for education and training in the construction industry in the respective country (taking into account relevant stakeholders, e.g. public authorities, social partners, chambers, etc.). With respect to the bottom-up application, one of the possibilities relies on the development of equivalent grids enabling for comparison of certificates with respect to the sectoral framework (possibly exploiting learning outcome-based descriptions in diploma supplements). An additional possibility is related to the recognition of former non-formal and informal learning, that could be achieved by defining rules and procedures for linking knowledge, skills and competences acquired at the workplace to descriptions in the framework and by defining suitable assessment tests (to be jointly designed by training institutions and construction companies).

Sports sector – creating a framework

The sports sector represents a group of varied activities and services ranging from organized competition within clubs as a means of training and education to events put on by professional sports people, leisure sporting pursuits practiced for pleasure or fitness purposes, and the use of sports to boost social integration of population groups in difficult circumstances. Together, these largely interdependent practices concern over half of all EU citizens, with nearly a million employees working in the field as their main professional activity (employment has grown by nearly 60% in 10 years) and almost 10 million volunteers throughout the European Union.

At the end of the year 2005, a strategic committee called the "European Sport Workforce Development Alliance" (ESWDA) was created to bring together the key European stakeholders and network organisations working in the sport sector to share and discuss issues around the development of the European Sport Workforce. The stakeholders active in this alliance were coordinated by EOSE (European Observatoire of Sport and Employment).

Since 2002, EOSE has been actively involved, as promoter or partner, in several EU projects funded by different Directorates-General (DGs) of the European Commission and so EOSE has been able to develop a strong expertise in project's development and management. The project activities which can be considered crucial to strengthen the EU Network have the main objective to improve the development of the whole Sport and Active Leisure sector including employment, sport systems, standards, qualitative and quantitative data, competences, qualifications and Vocational Education and Training (VET).Of course, this European cooperation with large partnership also gives the opportunity to promote a dialogue and synergies between all key stakeholders of the sector.

Three areas of activities, related to the EQF process, have been considered as priorities by the sports sector stake holders:

1) Develop a European framework of activities, standard occupations and related competences for the sports sector based on the EQF levels and descriptors;

2) Establish and strengthen relationships between National Qualifications Authorities and the sports sector representatives at national and European level to promote a common view on qualifications and qualification framework in the sports sector;

3) Develop and disseminate the principles and mechanisms supporting the implementation of the EQF in the sector following an evaluation of the actual situation.

According to EOSE the Lifelong Learning Strategy of the sector has been developed inline with the EU Education and Training plan 2010, the ratified Lisbon Treaty and the EU White Paper for Sport. Central to the methodologies involved in the Lifelong Learning Strategy are key European initiatives in the field of vocational education and training including the European Qualifications Framework (EQF) European Credit System for Vocational Education and Training (ECVET) and European Quality Assurance in Vocational Education and Training (EQAVET). Linking to these initiatives will ensure that the sport sector and sport more widely is seen as a leading sector at the European level. The sectoral approach covers all dimensions starting from the definition of the sector and ending up in the quality assurance processes.

The development of the links between the qualifications of the sports sector and the National Qualifications Authorities is a major issue for this sector and were examined within the EQF Sports project. In economic terms, Sports sector is in full growth and still characterized by a large number of specificities like volunteer actions, the national representation or even by goals more social than economic. That is why the constructions of qualifications, the authorities and the processes are not only very distinct depending on the countries, but especially characterized by a high degree of complexity and specificity, in particular with regard to the authorities and national frameworks. This project did not have the ambition to discuss the validity of the EQF proposal. The strategy, thus, aimed at including specificities of the qualifications in the sports sector, the processes and relationship which they maintain with VET or the NQA's. That is why the different qualifications were examined from an external point of view, this means from the trades which are reachable through them, as well as their positioning within a specific or non-specific architecture of qualifications.

"Implementing EQF-Sports" project is part of a process lasting more than ten years intending to link all stakeholders of the sports sector (public authorities, social partners -employers and employees representatives-, the European sport movement, the education and training providers, and support organisations such as EOSE) to specific European networks/organisations collaborating with each other in the field of vocational education and training.

Retail trade sector

Almost all companies in the retail trade sector are small (up to 10 employees). A lot of these small companies even consist of the owner itself. The number of large enterprises with 100 or more employees (large enterprises) is a very small percentage.

In terms of economic significance large companies are however important. The big companies employ almost half of all workers in the retail trade sector. Small businesses and medium sized businesses (10 to 100 employees) are both well over 25% of the total number of employees.

The attention of the retail trade sector to the creation of common reference points for qualifications is witnessed by a number of experiences addressing the above issue from multiple points of view (e.g. Professionalization Durable, Cominter, EUREMA, TIPTOE, EuCoCo, etc.). Specific indications concerning weaknesses as well as opportunities associated with the election of EQF as a common reference point for all qualifications (and specifically for qualifications in the trade sector) in a transnational perspective are provided by the TransEQFrame project. In this project, the partners agreed on the fact that the national documents are not easy to be interpreted in EQF terms. Assignments to EQF levels were found to be difficult because of the national concepts that go not necessarily along with the EQF descriptors. Specific matching difficulties arose in several countries where competences are formulated in a very operational way for specific occupations. It was found in many cases that the official documents describing national qualifications cannot supply the information that corresponds fully to EQF criteria. Therefore, an aid, which was developed within the project, is the concept of "core activity" areas. Levels of qualifications across the countries seem to be different at the first glance. Looking at it through a more substantial perspective, they have similar core activities as a common basis for comparison. The TransEQFrame concluded that the process of applying the EQF in its current form (and its further development) carries a genuine value itself and might contribute to develop a common understanding of qualifications and learning outcomes across Europe.

Many occupations tend to have many ways of presenting themselves: that is, companies use different job titles to designate the same job, use different terms for the same activities or assign different types of activities to the same function. To get a first impression of the sector Tiptoe project started with desk research. The TIPTOE project intended to discover how and why these interpretational differences occur and, especially, how they can be overcome, or better, prevented. It tackled the problem of interpretation and application of EQF principles within the trade sector and moreover, proposed to overcome not only the gap between the different European VET- and qualification systems, but also the (cultural) differences in the content and interpretation of occupations on the European labour market in the trade sector. The TIPTOE project started from the assumption that the labour market and the educational field both have their own truths and values. That's why labour market and educational investigations are conducted separately, giving as much room as possible to the interpretation and argumentation of allocating occupations or qualifications/VET-programmes to an EQF-level. Partners worked on the composition of occupational profiles and educational profiles (in Knowledge, Skills and Competences) in each partner country. These profiles were referenced to EQF by each partner.

This information was the groundwork for the mapping of the occupations on EQF levels.

For each sub-sector, retail and wholesale, a ruler was developed. The ruler gives an overview of all tasks and subtasks in the sector on EQF-level 2, 3, 4 and 5.

The idea of a ruler is that it can on one hand serve the determination of the EQF level of a certain profile, but on the other side it can give guidance to develop a (new) profile. The rulers help with referencing (parts of) occupations and VET-offers to an EQF-level, it is actually a communication tool for labour market and education field, in national and international contexts and a referencing tool e.g. What does EQF-level 2 mean in retail and which are the activities of someone working at EQF-level 4 in wholesale?

Trying the "soft" direct linkage to the EQF (scenario 3)

Under this scenario, the sector uses the EQF levels, principles and methodology and claims a certain EQF link but there is no verification through a final formal European referencing process. This scenario then seemingly raises no procedural issues since it is up to the sector to claim linkage for its qualifications (framework) and to demonstrate the basis for the claim to the satisfaction of those concerned. Essentially, it is then up to the users of the qualifications (framework) to decide whether the claim is accepted or not. This situation could end up with the same qualifications (framework) being recognized at different levels – or refused recognition - by different users, and recognition will here be by individual users (e.g. employers or, if the application is for further study, education institutions or providers) rather than by competent national authorities since there is no linkage to NQFs. For the same reason, it will be difficult to maintain a transparent overview of recognition decisions.

Financial services sector

The financial service sector is of main importance in Europe. The financial and insurance activities include financial service activities, insurance, reinsurance and pension funding, except the compulsory social security and activities auxiliary to financial services and insurance services. These services are offered by banks, financial planners and insurance companies.

An interesting consideration referring to the need for transparency in the sector arising from the survey by the European sectoral social dialogue is related to the emergence of employment profiles: Recruitment is more and more standardized in terms of the level of training required: short vocational higher education, predominantly legal or commercial for sales management; long higher university education or higher technical college or business school, for other core job activities. Social partners underlined the fact that one of the first routes to be followed could be the definition of criteria allowing for clear and precise equivalences to be established for competences and qualifications, the aim being to achieve European certification for equivalent national qualifications without seeking the systematic harmonization of diplomas designed within complex national systems, which correspond to specific economic and social cultures.

One of the first examples of a unique certification leading to uniform qualifications within Europe in the broad financial services sector is represented by the system of the European Foundation Certificate in Banking (EFCB). The EFCB is a business-oriented qualification designed within a Leonardo da Vinci funded initiative by the EBTN, the professional association of leading banking institutes in Europe. EBTN has a central role in accrediting training programmes and certifying knowledge and/or competences in the financial services sector. The EFCB system that was officially announced in 2003 is composed by two main elements: the Standard Examination Model (SEM) and the Accreditation Model (AM). The SEM is the quality model of the EFCB, as it sets the examination profile and requirements for validity, reliability, acceptability and transparency of the examination. Specifically, in the SEM the Exam Form defines the method in which the examination is to be organized, while the Exam

Profile describes the knowledge to be tested (thus, the EFCB is a knowledge-based qualification). The AM guarantees that the SEM is observed by organisms that have been accredited to provide the EFCB examination at the national level; in particular, a set of accreditation requirements is established, encompassing the syllabus content of the training programme underlying the EFCB, the examination approach and procedures, the envisaged strategies for handling recognition of prior learning (including non-formal and informal achievements), etc. The EFCB, based on national study programmes and qualified national examinations, is recognized by all accredited institutes. At the present time there exist 17 accredited institutes that issued more than 7500 certificates.

Nonetheless, the representative stakeholders involved in the EFCB initiative realized that in order to comply with the Lisbon objectives, a shift from purely knowledge-based qualifications like the EFCB to competence-based qualifications was needed.

Thus, in the CERTIFIED - "CERTIfication and accreditation for Financial sector Education and Training" project, the partnership coordinated by EBTN designed a functional strategy for analysing typical organizational processes, identifying the key purposes of an occupation and finally descending to the description of competences.

The competence-based system designed in the CERTIFIED project is based on a common and recognized qualification framework for the professions in the financial services sector encompassing EQF levels 4 and 5 (whereas EFCB is positioned at EQF levels 2 and 3). Qualification descriptions make use of the unit of competence concept that is presented through a performance description (key activities, key performance indicators, and type of competence), knowledge, skills and attitudes as well as sector specific and context specific elements. A model for certification of competences and accreditation of training providers is finally designed (with the aim of progressively involving also higher education institutions, trade unions, etc. in order to maximize social dialogue and consolidate mutual trust as a basis for fostering quality assurance principles).

A comparable shift toward competence-based qualification was recorded in parallel also within the €FA - "€uropean Financial Advisor" - project, coordinated by the EFPA. The aim of the project was to review existing qualifications for financial advisors across Europe and design a core competence framework for the so called €uropean Financial Advisor figure. The above projects later converged into the €QUALIFISE - "European Qualifications League in Financial Services" initiative, a project jointly managed by the coordinators of the former initiatives and sharing the common approach based on learning outcomes, i.e. the focus on competence-based qualifications rather than just on qualifications relying on knowledge/skills.

The €QUALIFISE project represents the most relevant referencing initiative in the financial services sector (referring, in broad terms, to a context including banks, insurance providers and other financial institutions). The €QUALIFISE project was funded under the Leonardo da Vinci programme and involved a partnership encompassing 15 countries coordinated by €FPA and EBTN. Project partners agreed on the need to consider all qualifications relevant to the related labour market, whether originated in the academic or professional context.

Transports sector (sea transports)

The sea-related transportation industry plays an important role from an economic point of view since about 90 % of European trade is transported by sea. High percentages of the GDP of several coastal Member States are estimated to be generated from sea-related industries and services by employing lots of workforce.

The sea-related sector includes different economic activities nevertheless professions and qualifications referred to seafaring people represent an example of sectoral qualifications agreed on and recognized at the international level thanks to a well-structured process performed by social partners.

The maritime professions have an international dimension as the sea implicitly represents a "globalized" sector that has led to a marked uniformity in the standards related to safety at sea. Globalization has had an impact also on the traditional qualifications since it has resulted in the need to define new professional profiles and to ensure the transparency of the certification procedures. The sector is an example of sectoral qualifications framework implementation, referring to qualifications that are specific to (a set of) disciplines or fields of activities (functions) and possibly encompassing various levels of qualifications (each standard is referred to an operational level and competences). From this point of view, maritime qualifications can therefore be considered as belonging to a transnational sectoral framework.

The International Maritime Organization (IMO) plays the important role of a sectoral stakeholder operating at the international level. IMO is an international organization established in Geneva in 1948. Since the '60s it has acquired a major role in all matters concerning shipping transportation and safety of ships and human lives. At present, the IMO acts on behalf of the United Nations. In 1978, the IMO adopted the STCW Convention which represents a benchmark at international level for maritime qualifications. It applies to all seafarers apart from those who serve on board warships, wooden ships, fishing vessels and yachting. The STCW sets up the qualification structure which identifies the mandatory minimum requirements to perform a specific profession. Each qualification is divided into a standard of competence, the on board training, near coastal voyages, the special training, the master, the period of seagoing service. The standard of competence indicates the level of proficiency to be achieved for the proper performance of functions on board ships in accordance with the internationally agreed criteria; in the standard, knowledge, understanding and proficiency are specified together with methods for demonstrating and criteria for evaluating the competence itself. Since the qualification process is a top-down one and the STCW represents the main benchmark and tool, each Member State has to implement at national level what has been set up in the Convention.

Thereby, as described in the Convention, national authorities are in charge of establishing criteria and requirements for issuing a qualification.

To support the above steps, the European Commission has enacted several Directives in line with the requirements set up by the Convention on sea-related qualifications, with the 2001/25/EC (defines the minimum level of training of seafarers) and the 2005/45/EC (rules for the mutual recognition of seafarers' certificates issued by the Member States) as the most relevant ones.

The STCW Convention represents an example of an international qualifications framework which was originally set up to guarantee safety at sea. Nevertheless, the STCW Convention is a remarkable tool designed to list the main compulsory requirements for sea-related workers who need to hold a well-structured qualification.

The definition and the implementation of the STCW standards represent a best practice in passing from the STCW (European level) to the NQF of the Member State which then sets up the specific modalities (although an established and transparent procedure does not exist in this sense). The STCW Convention has therefore specific features and strengths which could possibly allow investigating a direct link to EQF since there is an official organisation which represents the sector and the Convention has been implemented by a large number of countries.

However, since the system is well-structured and well-established (and extremely complex, as strongly based on formal, non-formal and informal learning), a clear justification for moving to another international framework such as the EQF is not definitely made explicit. Although it could be supposed that all sea-related qualifications obtained in a formal way will be represented in terms of learning outcomes in the next years, such process will be more difficult when evaluating the on-board period or a specific training course (first aid, rescue at sea, etc.). In case the sea-related qualifications will be directly associated to the EQF levels by the IMO, the further implementation at the national level might raise some problems concerning the level attribution which could be different. Moreover, it is worth pointing out a remarkable contradiction: an engineer without a nautical diploma who starts his/her career will be assigned to EQF level 3 or 4. The weakness is related to the fact that the EQF neither specifies the importance of the formal title in assigning a qualification level nor the role played by the working experience or the professional development.

Therefore it would be important to link the STCW to the EQF but through recognition by the national bodies.

The description of qualifications in terms of learning outcomes can be easily linked to the STCW standards as suggested and experimented by the ORSA MINORE project.

Referencing was carried out through an in-depth semantic analysis involving relevant experts from the sector since a simple translation grid was not enough to implement the designed linking process.

The STCW Convention sets up national objectives and quality standards. The field of application of the quality standards shall cover the administration of the certification system, all training courses and programmes, examinations and assessments carried out by or under the authorities of a party and the qualifications and experiences required of instructors and assessors. At MemberState level, responsible authorities check the compliance of national implementation with what is set in the STCW Convention.

Aircraft maintenance a case of standardisation

Qualifications in the aeronautics sector are characterised by the existence of European standards regarding qualifications of certain professions in this industry (namely regarding maintenance), the fact that aeronautic products for a single airplane are produced in different countries across Europe and have to meet the same quality criteria and the constant changes of work processes and materials used.

The professional group working on aircraft maintenance now comprises approximately 100 000 individuals (EASA, 2007), i.e. 40 % of all maintenance staff.

The remaining 60 % are mainly unqualified technical personnel who undertake maintenance operations under supervision.

AEROnet was an EU Leonardo pilot-projectand had the aim to carry out accompanying work into a possible trend of universalisation of qualification requirements due to the accelerating harmonisation of technical and organisational processes in Europe. Raw material, technologies and processes are not only available in broad regions anymore. In fact globalisation - the demand of global markets - has led to a worldwide move to similar ways of organising work and processes at least in certain sectors of industry. This has had an impact on the qualifications required and in turn means Vocational Education and Training has to adapt to these production-induced tendencies.

The requirements for high-tech professions in the aerospace sector are changing more rapidly than in any other sector. This implies also for the aerospace industry introduction of more identical production processes, especially inside the European market where the production of civil airplanes is almost exclusively in the hands of one company: EADS / Airbus. At the moment, however, production processes are split up where by single major production steps (wings, undercarriage etc.), or even similar production phases, take place in different countries. Training too is devolved and the training of young workers– even if qualified for the same work – takes place according to different training systems under diverse national authorities and legislations. In consequence they are trained in different patterns for similar, if not the same, work.

AEROnet project tried to document the existing diversity, the common contents and methods of training and to define a core of vocational training in France, Germany, Spain and the UK, where there are major Airbus plants. These measures were basically attempting to create a European area of cross-border recognition of qualifications but without having to harmonise the qualification systems.

A move towards the European standardisation of the training content of qualifications involves 'vocational qualifications' required in order practising certain regulated trades. At the moment these basically involve qualifications in the transport sector: seafarers, the Community railway network and civil aviation. The common system, governing aircraft maintenance qualifications was developed by the JAA (Joint Aviation Authorities) in the 1990s. It was implemented by countries in the first decade of the 21stcentury, under the direction of the new European Aviation Safety Agency (EASA). The system comprises three regulations which set out the requirements relating to maintenance organisations ('Part-145'), training ('Part-66') and training organisations ('Part-147'). 'Part-145' sets out the methods for the organisation and operation of maintenance organisations. In particular, it

ensures that the infrastructure allows suitable vocational experience to be gained.'Part-145' came into force in 1994.Part-66' defines the requirements for the awarding of qualifications to engineers responsible for issuing Release to Service certificates (CRS) for aircraft and aircraft components. It establishes a licence (in the sense of 'permit') system for this purpose which comprises a three-tier structure: licences A,B and C, corresponding to line maintenance mechanics, line maintenance technicians and base maintenance engineers. Each licence corresponds to specific training content, specialist subject areas and amounts of experience. The European regulation was adopted in June 1997 following negotiations that began in the late 1980s. Since the system was introduced (in October 2006) the holding of a suitable Part-66 licence has been compulsory for all European CRS personnel.Part-147' sets out operating rules for the training organisations authorised to deliver training in compliance with Part-66 and award qualifications to candidates.

The movement to standardise qualifications at European level has so far only been seen in higher education, based on the BMD system, and in the harmonisation of academic qualifications for the liberal professions. Less well-known initiatives were taken first with the European vocational diplomas and, more recently, with the creation of European vocational certificates in regulated activities such as aircraft maintenance, which has been analysed in the paper. *"Vocational training and European standardisation of qualifications: the case of aircraft maintenance"* Dr. Joachim Haas, Maurice Ourtau, EJVT Cedefop 2/2009.

EQF and compatibility of sectoral qualifications between the countries (SECCOMPAT project)

The SECCOMPAT project, launched in the beginning of 2008, examined how the EQF can be helpful for the comparison of sectoral qualifications of different EU countries. The idea had to tackle the complicated process of comparing differences in the structures of qualifications inside the sectors due to sectoral specificities. They used the construction and hospitality sectors in the partner countries, comparing the internal structures of these qualifications and analysing the possibilities of the EQF to be an effective measure in comparing the different sectoral qualifications. The main methods of research were systemic and comparative analysis and the main sources were existing occupational profiles in the sectors, descriptors of the sectoral occupations and qualifications, VET standards and data from different researches of activities available in the partner countries.

They categorised the following cases of comparison: (Fig. 1):

1. Direct comparison and compatibility of sectoral qualifications between the different countries without referencing to the NQFs and the EQF..

2. Referencing sectoral qualifications from one country to the NQF levels of another country.

3. Referencing of sectoral qualifications to the levels of the EQF without the referencing of these qualifications to the levels of the NQF of their origin country.

4. Compatibility and comparison of sectoral qualifications between the countries with the intermediation of the NQFs of these countries and the EQF.

According to the project conclusion:

1. The direct inter-country comparison of sectoral qualifications without referencing to the NQFs and to the EQF face huge problems due to socioeconomic and cultural evolution of the sectors in the different countries, including the different models of the provision of qualifications.

2. Referencing of sectoral qualifications from the one country to the NQF levels of another country involves certain risks and problems as there are big differences in the structures of sectoral qualifications and descriptors and in the understanding of the concepts and definitions of qualifications, competences, etc.

3. Referencing of sectoral qualifications to the EQF without referencing to the NQFs of the countries could be feasible only in those sectors which have developed institutional infrastructure and stakeholder's representation on the European level.

4. Comparison of sectoral qualifications with the referencing through the NQFs and the EQF is the safest way to guarantee quality and transparency .

4. Reference Material:

NQF-SQF Common grounds for referencing NQFs and SQFs to the EQF

http://www.project-nqf-sqf.eu

Executive Summary

Following the philosophy of the *European Qualifications Framework (EQF), learning outcomes* should be basically describable for all qualifications by using the descriptors *knowledge, skills,* and *competence* in a similar way, regardless of their origin in terms of country or organisation responsible for maintaining and monitoring structures in which they are embedded. A mere description in EQF terms, however, cannot dispel any doubts about the real value of these learning outcomes. For the EQF *as such* does not deliver enough criteria for assessment and comparison of qualifications: These descriptors leave a lot of room for interpretations with regard to the *level* to which the qualifications have to be allocated.

It is therefore important *how national and sectoral qualification frameworks are referenced* to the EQF: A *reference* of national or sectoral frameworks to the EQF should deliver a link that needs no further discussion and ensures that everybody understands the relationship between EQF and national/sectoral frameworks in the same way. However, in a situation where qualification frameworks are not available in every European country, every educational area, and occupational sector at the same level of development, it does not surprise that a common understanding of appropriate referencing these frameworks to the EQF does not exist. But as the EQF is not intended to serve as a regulation of European education, institutional aspects do not play a primary role, and organisations responsible for frameworks of any kind are encouraged to reference them to the EQF. Due to non-existent general referencing criteria, this should cause problems especially where qualification systems/frameworks compete or at least exist separately from each other: This is the case for national qualifications frameworks administered by public bodies and sectoral qualification frameworks supervised by (private) sectoral organisations; but it concerns also "isolated" sector-oriented qualifications.

The overall aim of the project NQF-SQF is to *create common grounds for referencing national qualifications frameworks and sectoral qualifications/competence frameworks to the EQF*, thereby providing for *comparability of qualifications* on the basis of learning outcomes defined in terms of *abilities* required by *work processes*.

This shall be enabled by the use of an *instrument to be developed within the project*: the *employability grid.* This grid shall be applicable for the assessment of qualifications as well as for the evaluation of frameworks these qualifications refer to.

It shall test how far descriptions of frameworks and qualifications make visible what the learning outcomes of qualification processes are in terms of work process requirements, thus supporting employment at the European labour market.

Currently available in a draft version, this instrument shall in the second part of the funding period be used in order to design *typologies of national and sectoral* 1 The EQF recommendation of the

European Parliament allows national qualification frameworks as well as sectoral qualification frameworks to be directly linked to the EQF, see *RECOMMENDATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning, p.2.* The EQF Advisory Group, dealing with the described problem of competition, now suggests that sectoral frameworks should in the future only be related to the EQF via national qualification frameworks. This might help to clarify the lines of conflict, but it does not finally solve the problem: If understandings of EQF descriptors differ, this should now become obvious in direct confrontation. This makes it all the more necessary to identify criteria for generally acceptable interpretations.

frameworks, leading to recommendations for enhancing referenceability of frameworks, and encompassing a work process relationship criterion which can be added to the catalogue of referencing criteria already defined by the EQF Advisory Group.

On the basis of this work, a *structure of future collaboration between private/public stakeholders* at European level shall be set up that shall be arranged around a *nucleus of already collaborating stakeholders*: the *EQF Advisory Group* and *EQF national contact points*.

The composition of the project consortium (twelve private/ public partners from nine European countries) reflects the project objectives: Some partners belong to the EQQ Advisory Group or fulfil the role of national EQF contact points, others are closely linked to them: Existing networks should help to mobilise all expertise necessary to achieve the above described goals.

They should not only be useful for reaching *experts* in the field, but also those who are provided to be *end users* of the EQF: *organisations of various origin and individuals*. The project shall help to overcome the "EQF information divide"; it is therefore planned to put considerable efforts into relevant activities and to orient the above mentioned structure of collaboration between private and public stakeholders to this goal.

Project Objectives

The overall aim of the project is to *create common grounds for referencing national qualifications frameworks and sectoral qualifications/competence frameworks to the EQF*, thereby providing for *comparability of qualifications* on the basis of learning outcomes defined in terms of *abilities* required by *work processes*. This shall be enabled by the use of an *instrument to be developed within the project*: the *employability grid*. This grid shall be applicable for the assessment of qualifications as well as for the evaluation of frameworks to which qualifications refer; it shall be able test how far descriptions of frameworks and qualifications make visible what the learning outcomes of qualification processes are in terms of work process requirements, thus supporting employment in the European labour market.

The instrument will be used in order to draft *typologies of national and sectoral frameworks*, leading to recommendations for enhancing referenceability of frameworks. On the basis of these improved framework descriptions, similar national/sectoral qualifications/occupational profiles shall be compared for selected sectors. The results of these piloting activities will be used for final refinement of the employability grid.

The whole process of drafting typologies and comparing qualifications/profiles is considered in order to find out which work process oriented criteria for referenceability of frameworks can be determined, and which can possibly be added to the catalogue of referencing criteria already defined by the EQF Advisory Group.

Using the results of this evaluation as a starting point, a *model of collaboration between private/public stakeholders* at European level will be drafted, to be supported by partnerships at national level. This model shall be flexible enough to match continuously changing work process requirements, but at the same time cover the need of stability in terms of transparent and reliable rules of referencing.

The structure of collaboration will be arranged around a *nucleus of already collaborating stakeholders*: the EQF Advisory Group and EQF national contact points. The project consortium, encompassing some of these stakeholders and further partners embedded in networks which could open doors for extending the planned community, will apply a dissemination strategy intending to overcome the "EQF information divide" between EQF experts and possible users, thereby strengthening the role of the planned community of collaborating stakeholders, and creating a "zone of mutual trust" for smooth future use of the EQF by all kinds of stakeholders.

Project Approach

The project approach can be divided into two areas:

1. The development of a *methodology usable for refining mechanisms of referencing national and sectoral qualification frameworks to the EQF* is the core issue of the project. The main idea that underlies the project activities carried out in order to draft this methodology is to set up an instrument which is called the *employability grid*: Starting from the *work process* that is understood as an ensemble of activities steered by a common goal (to deliver a *produc*t or a *service*), then defining the main issues of the work process understood that way, it can be determined which *abilities* can be identified that correspond to it. Since it is assumed that the EQF descriptors *knowledge, skills,* and *competence* basically include components relevant for this purpose (if this not the case, this would mean that EQF relevant features of qualifications have nothing to do with work), they are analysed from this *work perspective*.

This analysis is led by the following reflection: If a general work orientation of the EQF can be identified, it makes senses to suppose that *differences in EQF levels* correspond to *differences in work position*s. Against this background, it is reasonable to investigate if a *levelling logic* exists which is based on this correspondence. This kind of logic can only be an *implicit* one; otherwise it would have been described together with the EQF descriptors.

The result of this analysis refers to two issues:

- It gives an answer to the question how far the EQF is appropriate as a standard that shall correspond to the requirements of work: to the same extent as it is possible to identify the above mentioned levelling logic

- Making this implicit logic explicit means reducing the opportunities for interest-led assignments of national and sectoral qualifications framework to the EQF– which is one of the main objectives of the project.

Basic developments have already been carried out within Work package 2.

Further development of this methodology will benefit from applying it to sectoral and national *frameworks* (WP 3 and WP 4) which should lead to enhanced (i.e. work process related) framework descriptions delivering a common basis for comparison of similar qualifications/occupational profiles within sectorally oriented cases studies (WP 5)3

2. Creating Ground for a Future Zone of Mutual Trust

A *zone of mutual trust* of EQF promoters and users will be initiated referring to a collaboration model between public/private stakeholders based on the evaluation of project results achieved in the above mentioned work packages dealing with the d*evelopment and application of referencing methodology.* The aim of work is to supplement already existing referencing criteria and to describe procedures for accrediting referencing processes (Work package 6), to be supported by a dissemination strategy which shall help to overcome the "EQF information divide" between experts and potential end users of the EQF(Work package 7).

3 This goes beyond a mere labeling of qualifications by the (necessarily) abstract EQF descriptors which seems to be characteristic for a big part of current approaches relating qualifications to the EQF. It is understood that criteria have to be delivered which help to avoid debates about the relative weight of features identified to be characteristic for certain qualifications; this will end up with (political) agreements on EQF assignment which are arbitrary to a high degree and will not contribute to create "zones of mutual trust" based on transparency for all interested parties.

Project Outcomes & Results

Main results achieved so far belong to work dealing with the *development of the referencing methodology*. This concerns the *employability grid* for which a first version has been drafted (Deliverable 05 within Work package 2). This first draft of the instrument has been presented for further discussion and reflection at different occasions to experts and stakeholders in the field. Nevertheless it has not been made available yet to a wider public and is only available on request from the project consortium because it is a draft for further exploration and elaboration only. It will be refined and be publicly accessible after it has been piloted by applying it to national qualification frameworks and sectoral approaches in the framework of work packages 3 – 5.

The majority of data for this piloting work in the framework of WP 3 (Referenceability of national qualifications frameworks) and WP 4 (Referenceability of sectoral qualifications frameworks) have been collected already by the project consortium.

Initial analysis steps have already been implemented and the consortium has discussed first results in the framework of the 3rd project meeting in February. These results are nevertheless still drafts and are therefore not yet publicly available. They will be published as soon as they are finalised.

Although publication of these project results is not yet provided, project progress is visible and taken into account from outside via the presentations at the Experts' Workshop in Athens and Malta and different other occasions as indicated above.

Partnerships

The consortium is composed of twelve partners from nine European countries:

1. Institut für Technik und Bildung, Universität Bremen (ITB), Germany, Project Promoter, a public research institution

2. DEKRA Akademie GmbH (DEKRA), Germany, Project Coordinator, a training provider

3. 3s research laboratory (3s), Austria, a private research institution

4. Association pour le développement de la Formation (AFT-IFTIM), France; an organisation of the French logistics sector

5. Fundación Laboral de Metal (FLM),Spain; a foundation of Spanish trade unions

6. UECNCFPA (former ACPART), Romania; an educational body of the Romanian government

7. Lux Personal & Kommunikation GmbH (Lux), Germany, a consultancy service in the field of VET

8. Centre Régional pour le développement, la formation et l'insertion des jeunes (CREDIJ), France, a spin-off of the ministry of labour

9. Politecnico Torino (Politecnico), Italy; a public research institution

10. General secretariat for Lifelong Learning (GSLL), Greece; an educational body of the Greek government

11. Malta Qualifications Council (MQC), Malta; an educational body of the government of Malta

12. Kenniscentrum Handel (KCH), The Netherlands; a public body responsible for VET in the trade sector

It can be seen that the partnership encompasses public bodies as well as private organisations dealing with educational issues in specific sectors. With one exception, all partners have already participated in EQF-oriented projects, most of them in more than one, some of them as co-ordinators. The exception concerns the *General Secretariat for Lifelong Learning in Greece;* this public body is the EQF national contact point and deals ex officio with EQF issues.

This shows that the project consortium is familiar with project issues not only in principle, but has achieved a level of subject-related experience in previous work which should allow partners to start project activities not from scratch, but at a level of discussion which refers to problems to be solved while implementing the EQF as a tool for making descriptions of national qualifications understandable abroad.

Apart from these general skills enabling partners to carry out project work, specific abilities to fulfil the tasks provided in the project can be demonstrated as follows:

Overall management and quality assurance

· *WP 1 Project management*: The project will be co-ordinated by *DEKRA Akademie* which has already had this role within three previous EQF-related projects (*Embedding ICT/Multimedia Standardisation Initiatives into Vocational Training Strategies in Europe, European Automotive Sector Competence Meta-Framework – EASCMF, Ways to Sustainability*); currently *DEKRA Akademie* is co-ordinating three EQF-related projects (*VET Stakeholders in the Automotive Sector - VETAS, EQF-adapted educational elements in a predictable framework of change- EQF Predict,* and *Common Grounds for Referencing NQFs and SQFs to the EQF – NQF-SQF)* ·

WP 8 Quality assurance: This workpackage is led by FLM which has relevant experience in quality assurance activities.

Development and Application of Methodology

· *WP 2 Employability grid* : This work package is led by DEKRA Akademie which was strongly involved in developing a work process related approach of interpreting EQF descriptors within the project EASCMF. *ITB*, also involved in this project, having gathered of a lot of experience in describing work processes, contributes to this workpackage as well as the leaders of the other work packages of the group *Development and Application of Methodology,* thereby ensuring that the methodology is properly applied within the WPs led by them.

· *WP 3 Referenceability of national qualification frameworks:* This work package is led by *3s*, co-ordinator of the project *EQF-Ref* which seeks to identify procedures of 'good practice' for referencing (national) qualifications levels to the EQF and deals with testing the referencing criteria defined by the EQF Advisory Group. All partners who are responsible for national qualification systems/frameworks or parts of them will participate in this work package: MQC, GSLL, UECNCFPA, (responsible for qualifications of higher education in Romania), will in this work package especially consider the framework issues of higher education.

· *WP 4 Referenceability of sectoral qualifications, qualifications/competence frameworks*: This WP is led by *Politecnico di Torino*, responsible for the CEDEFOP study, which is currently being carried out, *The relation between sectoral qualifications and the European Qualifications Framework (EQF)* and involved in sector-oriented EQF projects, supported by *DEKRA Akademie* and *Kenniscentrum* which are also involved in this study. Further contributors are *AFT-IFTIM*, the most important French training provider in the sector of transport and logistics, *CREDIJ* (experienced with issues of the construction sector), and *FLM* with relevant experience of the metal sector.

· *WP 5 Case studies piloting the application of methodology*: This work package is led by *KCH* which develops and maintains the national qualification structure for existing and new occupations in the trade sector of the Netherlands. Although being a public body, it works in close co-operation with trade companies. Further participants are *DEKRA Akademie* (experienced by co-ordinating the ICT related project *Embedding standards* and member of the CEN/ISSS Workshop on ICT Skills), *AFT-IFTIM*, and *CREDIJ*.

Creating Ground for a Future Zone of Mutual Trust

· *WP 6 Model of collaboration between sectoral/public stakeholders*: This WP is led by MQC, EQF National contact point for Malta. MQC is confronted with the challenge of reconciling issues of national and sectoral frameworks in the own country. In this workpackage, all partners will play an active role who are sectoral stakeholders or competent bodies at national level. This is the place where silent partners will help to set up the planned community of public/private stakeholders, based on their already existing commitment in the field, using their experience and their networks: the *Federal Ministry of Education, Art and Culture of Austria* - EQF national contact point, *IG Metall*, *European Metal Workers Federation (EMF-FEM*), the *Council of European Employers of the Metal, Engineering and Technology-Based Industries (CEEMET)* – involved in work of the EQF Advisory Group

· *WP 7 Overcoming the EQF information divide*: This work package will have two leaders who will closely collaborate: *ITB* with a lot of experience in the field of VET research and involved in various projects dealing with EQF issues at sectoral level will be responsible for the "scientific" part of this work package, *Lux Kommunikation*, having worked for years as a "professional disseminator" and involved in sectoral EQF projects, is therefore responsible for developing and realising a dissemination strategy for a cluster of EQF projects in the automotive sector. They will take over the task of planning and co-ordinating dissemination activities addressed to a broader audience. All project partners will use their networks in order to contribute to work in this work package.

The project consortium can use the involvement of partners in a lot of EQF-related projects for facilitating work to be carried out: Projects can be considered easily accessible resources of preparatory work. The networks of partners, intentionally developing through project activities, will be a *resource of experts* which can be activated at short notice by subcontracting if necessary.

Plans for the Future

1. The next steps to be taken refer to the activities which have already been started within the work packages that deal with the *development of the referencing methodology*: The currently available version of the *employability grid* has to be tested with regard to its usability as a yardstick of EQF adaptability, and national as well as sectoral frameworks and qualifications will be checked from this perspective. The results of these tests should allow for designing a *final version of the employability grid* usable beyond the limitations of this project.

2. Project results will be exploited for creating a structure of *collaboration between all stakeholders who are relevant for setting up and monitoring qualifications and occupational profiles* at European, national or sectoral level, coming from the public as well as from the private side. These stakeholders shall build a *community* whose structure and composition of this as well as the *system of criteria for recognition of referencing to the EQF* should help to create a *central zone of mutual trust in terms of flexibility and reliability*. For this purpose the following activities shall be carried out:

- Typologies developed within the project and reports related to them shall be evaluated in order to extend the already available catalogue of referencing criteria in a way that comparability of qualifications and professional profiles can be ensured.

- A model of *accreditation* of referencing processes based on the overall set of criteria shall be drafted.

- Methods of monitoring referencing processes shall be established.

- Procedures of accreditation, criteria for recognition of referencing, organisational structure of the community shall be laid down in an agreement of stakeholders which reflects the specific quality of both kinds of organisations.

- The role of the future community within a dissemination strategy shall be defined.

3. These activities will be accompanied by further actions intended to overcome the "EQF information divide".

Contribution to EU policies

Given the different national traditions and backgrounds of training systems, it cannot be expected that scenarios for the application of the EQF and related instruments can be developed in a single national context and then simply be transferred to other countries. Instead, the performance of the research and development activities outlined in the present proposal requires a collaborative effort of partners from a variety of European countries. The transnational structure of the consortium ensures that experiences and perspectives from diverse backgrounds can be integrated into the debate, and that, in turn, a common understanding can be achieved that facilitates the dissemination of results within the various national contexts.

But, it is not only the involvement of partners embedded in a wide spectrum of networks, working in national environments and related to various areas of stakeholders which delivers the specific contribution of the project to EU policies. The position of these partners in these particular networks is a mere condition for achieving the project objective which explicitly refers to the intention of EU policies:

Real referenceabiilty of national and sectoral frameworks to the EQF is a critical issue for the usability of the EQF in the future. If the ambiguity of the EQF cannot be limited, the EQF cannot gain sufficient value to be recognised as translation device between national/sectoral educational systems. Thus the contribution of the project to EU policies has not of a peripheral character: The focus of the project lies exactly in an area where the destiny of some crucial European educational initiatives will be decided.

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