

Towards a European Qualification for Solid Waste Facilities' Managers
SWFM-QF

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External Evaluation Report

P6 –Szent István University

prepared by

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Gödöllő

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Executive summary

1. Introduction

1.1. Brief overview of the report

The main purpose of the present report is to create and express an objective professional evaluation of the materials developed within the frame of the SWFM-QF Leonardo project called “Towards a European Qualification for Solid Waste Facilities’ Managers“. The report is based on the external evaluator’s opinion after having studied all the regarding materials.

The evaluation process passed off in August 2014 in Hungary.

Szent István University organised the evaluation process as the responsible project partner in Hungary, Gödöllő.

1.2. General information about evaluation method

1.2.1. Methods of conducting the external evaluation process

The external evaluator was selected on the base of professional competence that was validated by the curriculum vitae. Experiences on the field of waste and environmental industry and also on education were the main criteria. Being well informed in the developing process of the SWFM project was also an advantage. Price of the tender was not allowed to exceed the maximum value for this task in the project.

The evaluator was out of considering all the important VET aspects that are in force on the environmental and waste management education in Europe.

1.3. Information about author/evaluator

Szabó Krisztina (19.04.1972) is an expert on the field of environmental management. She has been working for a year as a project manager at the FKF Non-profit Ltd. Her main activities and responsibilities are the supply business, public procurement, and

professional functions of public waste management services in Budapest agglomeration.

She worked for four years as the Head of engineering and asset management division at the Urban Management Non-profit Ltd in Gödöllő. She has experience on the field of education as well, as she worked as university lecturer teaching different subjects connecting to the environmental protection. Numerous national and EU granted projects were coordinated by her.

She is educated as a geography and biology teacher, has a MS.c. engineer degree on the field of environmental management in agricultural engineering, and also a post-graduate degree on the field of Municipal engineering and management. She is also a registered accountant.

2. Description of the evaluation process

2.1. Overview of external evaluation process

All the parts of the developed material were evaluated by the evaluator, because she has an adequate professional experience and education on the field of waste and environment industry. She fulfilled a manager position in different companies and has experience on the field of project management and team working in different volume EU tenders.

The evaluator followed a template during her work. The template was developed on the base of common suggestions of the project partners and finalised by the appointed responsible partner. Both of the Hungarian evaluators used this uniform format.

The evaluator was asked to make a tender for the evaluation task indicating the price as well. Only those potential experts were selected, who assumed responsibility for studying the materials, expressing opinion and by this playing a role in the further development of the project materials. This can verify the reliability and the authentic work.

2.2. Criteria in the evaluation process

Professional experience on the field of waste management and education, and the price not exceeding the limitations were the main criteria to choose the evaluators. Furthermore familiarity with the project, the development process is also advantages. The evaluator as a registered professional has the adequate knowledge about the project and the materials that have been developed so far.

2.3. Preparation works

The expert was charged by the competent management of the project partner within the frame of a contract. The project manager played a role in the selection process.

All the parts of the developed material (the info training toolkit and the qualification frame) were evaluated by the external expert. The developed materials could be found on the official homepage of the project, and were downloaded (or studied at place) by the expert. The evaluator is a registered professional on the project homepage, so has permission to log in and study all the materials there.

In the contract conditions of the work was determined (volume in A/4 page format, terms of evaluation). The evaluator could follow a template as a guideline, so the content, the main aspects were predetermined.

The above mentioned can guarantee the sufficiency and reliability of the evaluation.

2.4. Outcome/findings of the evaluation process

General evaluation

The developed material that can be found on the official homepage of the project can be divided into two groups:

- Common subjects
- Technical subject

The common knowledge is that all the professionals fulfilling a manager position in a waste/environmental (or any) company has to possess, because the success of the business, and the safe operation very much depend on the preparedness of the management and of course the staff as well.

The common knowledge, subjects are the followings:

1. Environmental management
2. Financial and contractual management
3. Health and safety management
4. Human resource management
5. New projects management
6. Operational management

The technical areas are all those specialities that can cover the solid waste industry. According to the project developers, the solid waste management sector is represented in the following technical subjects:

1. Anaerobic digestion and mechanical treatment
2. Composting
3. Land filling
4. Recycling
5. Thermal treatment
6. Municipal solid waste sorting

Both the general and the technical modules are presented in a uniform structure and format.

As far as I can realize the format is based on a common template (chart) that makes to look through and understand the topics easily. The structure of the modules is built up on the below mentioned main information:

- Title
- Work task
- Assessment criteria
- Learning outcomes

- Knowledge
- Skills
- Competences

Within the frame of this, authors of the modules endeavoured to describe the regarding qualification information quite detailed, in every modules on the same manner. All the modules are developed at the EQF-6 level. According to the EQF definitions, level 6 can be described with this:

Knowledge:

- Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles

Skills:

- advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study

Competences:

- manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

Comparing the volume of the different module's description, it can be stated that they are quite uniform, as it is showed in the below tables.

Module (General/common)	Number of professional activities	Number of learning outcomes
Environmental management	4	20
Financial and contractual management	5	25
Health and safety management	3	21
Human resource management	4	22
New projects management	4	20
Operational management	4	21

Module (Technical)	Number of professional activities	Number of learning outcomes
Anaerobic digestion and mechanical treatment	7	25
Composting	4	16
Land filling	8	41
Recycling	5	17
Thermal treatment	8	25
Municipal solid waste sorting	6	22

Studying the chart only in three modules can some positive deviations be realised, as they are described a bit more detailed than the others. The mechanical treatment consists of 7 activities and 25 learning outcomes, while the land filling is showed in 8 activities and 41 learning outcomes and the thermal treatment is worked out in 8 professional activities and 25 learning outcomes. According to my opinion the more detailed description the more chance to approach the real tasks and problems of the professional area.

In the qualification frame the learning outcomes mainly are described from the perspective of the learner, which is a proper attitude.

Generally the knowledge, skills and competences are chosen well, that means they relate to the learning outcomes. They encourage current practice.

Knowledge requirements mainly involve advanced knowledge of a field of work or study, involving a critical understanding of theories and principles. Considering the requirements for writing (wording) the applied verbs should describe measurable or observable actions. **Verbs that can be used describing "knowledge":**

classify, define, describe, determine, explain, express, have knowledge of, identify, know, list, match, measure, name, outline, present, recognize, select, etc.

Skills requirements involve advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study. **Verbs that can be used under the descriptor "skills":**

alter, analyse, apply, appraise, appreciate, argue, assemble, assess, calculate, categorise, choose, clarify, classify, compare, compile, conclude, conduct, connect, contrast, create, criticize, deduce, demonstrate, describe, design, designate, devise, diagnose, differentiate, discover, discuss, display, divide, draft, elucidate, explain, express, find, formulate, generate, identify, illustrate, illustrate by example, indicate, infer, influence, integrate, interpret, investigate, itemize, judge, justify, modify, outline, praise, predict, prepare, present, provide example, recognize, recreate, refer to, regulate, rephrase, report, represent, rewrite, select, separate, shape, show, solve, split, structure, subdivide, substantiate, summarise, synthesise, utilize, verify, etc.

The competence requirements involve the management of complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups. **Verbs that can be used under the descriptor "competence":**

act independently, assume responsibility, lead a team, monitor work processes, etc.

3. Results

3.1. General evaluation of the Qualification framework

Evaluation of the qualification framework was performed considering the below mentioned aspects:

- Structure and appearance
- Learning outcomes
- Knowledge, skills and competences

Charts below express my overall opinion on the qualification frameworks of all the developed professional qualifications.

The main aspects of this kind of evaluation were also studied in the internal evaluations. The questioner developed for the internal evaluation is a well structured and edited, discussing several important features that can characterize the usefulness, up-to-dateness, thoroughness and applicability of the materials developed within the frame of the project.

An overview of the materials may give useful information to help the further development and to create real training materials to use for the prospective education of the professionals existing on the field of solid waste management.

3.1.1. Qualification framework (overall)

QUALIFICATION FRAMEWORK						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
Please rate the suitability of the qualification framework for solid waste facilities managers	X					
Please rate the value that the qualification adds to the candidate/learner	X					
Please rate the effect on candidate's employability prospects within the EU, on completion of the qualification		X				
To what level would the qualification improve the quality of solid waste management professionals within the EU?		X				
Is the qualification current & relevant within the EU?	X					
Please rate how useful you think find the qualification modules.	X					

Comments

- The project partners endeavoured to include all the professional areas by the developed modules that represent the European solid waste industry.
- The developed qualification framework, the determined qualifications cover widely the professional areas of the solid waste industry.
- The qualification framework is based on a painstaking survey, and the modules contain the most important professional activities of the European waste management sector.
- The developed qualification framework is based on real qualifications. All the described qualifications are actual, current and relevant in the European Union waste management industry.
- The professional activities are well defined. The qualification frame describes well the qualifications and the daily tasks that a manager has to face with.
- The professional activities relates the most important problems that a manager has to handle in the decision making process.
- Exact evaluation of the effect on candidate's employability prospects within the EU on completion of the qualification is a bit difficult. Considering only the knowledge that can be gathered by completing a modern training course the answer is absolute positive. But in the real life the chance for getting a job is determined by so many factors and among them for example the professional experience, work references, and the personal attitude sometimes as important as the theoretical knowledge.
- Training courses relay on the developed qualification frame can improve the quality of solid waste management sector by the well educated professionals who has adequate, modern knowledge to fulfil a managerial job at different waste/environmental companies. In the Hungarian waste management sector much more professionals should have such a kind of special knowledge that features this special business area.

3.1.2. Structure of the qualification framework

STRUCTURE OF QUALIFICATION FRAMEWORK						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
Please rate the coherency of the qualifications' structure	X					
To what extent does the qualifications' structure follow a logical progression?		X				
Please rate the size of the qualifications' structure		X				
To what extent are the units/activities appropriate for EQF level 6 learners?	X					
Please rate the consistency of the qualifications' structure	X					

Comments

- The structure of the qualification framework is well designed, can be handled easily.
- The well arranged structure of the qualification frame supports a fast overview of the modules.
- The detailed study of the content can be done easily regarding the professional activities and the connecting knowledge, skills and competences as the structure is based on a table format. The letter type and size and the text edition is “user friendly”, the text can be read on the computer screen well.
- The size of the qualification structure is well determined. All the professional activities are described in learning outcomes that can help the learner to imagine how the training material will improve his/her knowledge.
- The size of the modules is harmonious, divergence can be realised only a small extent. Although the description of the modules a bit differs from qualification to qualification, the difference does not exceed 15-20 %.

- Number of the learning outcomes of the units should be a bit more similar. It can represent the volume of the module, so more uniformity could be achieved.
- Some modules (e.g. Anaerobic digestion, Mechanical and biological treatment, Land filling, and Thermal treatment) are described a bit more detailed than others as the author unblocked the topic in more learning outcomes.
- The coherency of the qualification structure is ensured, the qualification framework were designed in strong cooperation of the developers. They used the common format that makes the study of the whole project materials easy.
- The qualification structure follows a logical progression. In the marking system of the professional activities some mistakes can be found (e.g. Mechanical treatment).
- The units mainly appropriate to the requirements of the EQF level 6.
- The consistency of the qualification framework is essentially ensured.
- Evaluating the competence framework from a pedagogical aspect, the structure and the content volume is quite uniform that helps to develop similar training curricula for the different professional areas of the waste industry.
- The educational system that can be developed on the base of the project materials can help to improve the knowledge of the solid waste management professionals in Europe.

3.1.3. Evaluation of knowledge, skills and competences

EVALUATION OF KNOWLEDGE, SKILLS AND COMEPETENCES (K, S & C)						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
How sufficient are the K, S & C?		X				
To what extent do the K, S & C relate to the learning outcomes?		X				
To what extent do the K, S & C encourage current/best practice?	X					
Please evaluate the consistency of the K, S & C	X					
To what extent do the knowledge requirements involve advanced knowledge of a field of work or study, involving a critical understanding of theories and principles?		X				
To what extent do the skills requirements involve advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study?	X					
To what extent do the competence requirements involve the management of complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups?	X					

Comments

- Learning outcomes are generally defined in terms of knowledge, skills and competences according to the *Recommendation of the European Parliament and of the Council on the Establishment of a European Qualifications Framework for Lifelong Learning* (2008).
- Knowledge, skills and competences encourage the best practice of the solid waste management area.

- Usually the introduction of the knowledge, skills and competences among the qualifications in the qualification framework well describe the practical usefulness of the training programme.
- Precise wording of the knowledge (what does the learner need to know), skills (what does he need to be able to do), and the competences (how does he need to combine his knowledge and skills in order to react autonomously and appropriately) must follow. It means appropriate expressions must be used. Some insufficiencies can be found in the wording of knowledge, as it sometimes does not refer an exact, measurable knowledge that the learner will have. In Hungary many people work in the environment industry not having adequate knowledge and qualification. More definitive expression of the knowledge, skills and competences can help to the potential enquirers choosing the suitable training program.
- In some cases the definition of the skills and the competences is not simple to understand, and sometimes not deeply detailed.
- In some modules the definition of the skills does not follow the generally admitted formulas. Definition of skills must consider that it means the ability to apply knowledge and use know-how to complete tasks and solve problems.
- Competence requirements well involve the management of complex technical, site operational activities, and describes well the decision making tasks that a manager has to face with.

3.1.4. Evaluation of learning outcomes

EVALUATION OF LEARNING OUTCOMES (L.O.)						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
Please rate the sufficiency of the L.O.		X				
To what extent are the L.O. directly relatable to the units/activities?	X					
To what extent are the L.O. in line with current & best practice within the corresponding target industry (e.g. landfill, composting, etc.)?		X				
To what extent are the learning outcomes achievable?						X
Please evaluate the coherency of the learning outcomes		X				

Comments

- The learning outcomes are in consistence with the professional activities. They are well defined, and understood.
- The learning outcomes support to understand the main tasks that a manager has to complete fulfilling a job.
- Number of the learning outcomes should be a bit more in every module in order to describe more detailed the objectives and requirements of the training program. More detailed description of the learning outcomes may help to evaluate more accurately the practical usefulness of the training program.
- Studying the learning outcomes, the knowledge that the training courses will give is easy to estimate. Effective course programme can support professional activity of the candidate contributing to his/her successfulness.

3.2. General evaluation of Info-training toolkit

3.2.1. Evaluation of the training courses' curriculum

EVALUATION OF TRAINING COURSES' CURRICULUM (TCC)						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
Please evaluate the sufficiency of the material within the TCC	X					
To what extent is the TCC relevant to the activities and learning outcomes? Please evaluate.	X					
To what extent is the TCC appropriate to the qualifications?	X					
Please evaluate how easy the TCC is to access		X				
Please evaluate the coherency of the TCC		X				

Comments

- The curricula describe the program of the training courses are sufficient, proper detailed, and help to get information on the content of the courses.
- The training course curricula is relevant to the activities and learning outcomes, only small deviation can be detected comparing with the qualification framework.
- The structure of the curricula follows the structure of the qualification frame. Topics of the units are mainly based on the professional activities of the modules of the qualification frame.
- Structure of the training course materials is quite uniform, the modules are presented in the same (table) format.
- The volume of the training courses can be evaluated as almost the same, following the qualification frame. Only small differences can be detected between the modules.

- A main chapter of the curriculum of the different courses follows the qualifications determined in the qualification framework.
- The training course materials are uploaded to the official homepage of the project. Internet supported information sharing is an up-to-date educational solution that very much supports the e-learning concept.
- Some popup windows sometimes are hard to handle as scrolling makes some difficulties because the window disappears just before getting to the bottom of the list of modules not making possible a successful clicking.

3.2.2. Evaluation of the informative training material

EVALUATION OF INFORMATIVE-TRAINING MATERIAL (ITM)						
	EXCEL- CEL- LENT	GOO D	AVER- AGE	FAIR	POO R	N/A
Please evaluate the sufficiency of the material within the ITM	X					
To what extent is the material within the ITM relevant to the activities and learning outcomes? Please evaluate.	X					
To what extent does the material within the ITM promote current and best practice within the industry?	X					
Please evaluate how easy the material within the ITM is to access		X				
Please evaluate the coherency of the material within the ITM		X				

Comments

- The informative training material is modern. Most of them are prepared less than 5-6 years ago, so they transfer up-to-date knowledge. In the case of older materials (more than 10years old) changes recommended, except those discussing theoretical knowledge.

- The learning materials are relevant to the learning outcomes determined in the qualification framework and also adequate to the training courses. Mainly refer to the current practice of the solid waste industry.
- As the suggested literature mainly developed for practising professionals, they are understood, and can be studied easily.
- A continuous development, freshening of the training materials is recommended –mainly in the case of the technical modules- because the technology, and the applied machines, technical equipments are continuously developed. New technologies arriving to the market are more efficient and economical, and the manager of a company is advisable to be well informed.
- The online access of the informative training material refers to a modern educational system that can be not only a face to face, but a distance education as well.
- The internet based teaching materials are very much welcomed nowadays, but they appear in a static form. Interactive materials support much more the successful learning process giving possibility for self control and a flexible contact with the tutor.
- In the case of disappearance of the internet links the informative training material cannot be used.

3.3. Detailed evaluation of the Qualification framework

3.3.1. Anaerobic digestion and mechanical treatment

The developed professional activities are the followings:

1. Ensure efficiency and continuous improvement during the mechanical treatment
2. Manage the process for biological treatment
3. Check performance and trends of parameters - Maintenance
4. Store the waste resulting from the treatment process in compliance with the regulations in force

5. Manage entering and outgoing waste streams in compliance with the legislation
6. Oversee the proper functioning of the anaerobic digestion process in order to reach the wanted biogas quantity
7. Employ the biogas produced

Comments:

- The professional activities cover almost entirely the professional area.
- Formally it is a bit disturbing that the first three modules are signed MTB1-3, and from the fourth module the sign starts from 1 again, and from the sixth module from 1 again.
- Handling and storage of the input material, and the prevention of foaming -as a critical point of the technology- is not mentioned.
- Somewhere the description of the knowledge a bit general, and cannot be measured exactly (e.g.: Demonstrate an advanced knowledge of basics of chemistry, agronomy, genetics, thermodynamics, biology).
- In the MZB-2 activity under the LO2 the terminology of “understanding” is not right verb to use as it hardly can be measured as knowledge. “Understanding” is used as a knowledge also in the AD-1 activity in the LO-2
- Verbs and expressions used for the skills and competences are correct.

3.3.2. Composting

The developed professional activities are the followings:

1. Plan and develop a non-hazardous waste composting facility
2. Plan and schedule treatment/production for a waste composting facility
3. Manage the composting process on the waste composting facility
4. Manage incoming and outgoing waste and material streams

Comments:

- The professional activities are chosen well in accordance with the real practice.
- The size of the module –measured in the number of activities- is a bit smaller than the others, as only 4 activities are described. Otherwise the professional activities are presented deeply as the number of the learning outcomes is not less than the average.
- The learning outcomes describe the professional activities well.
- The learning outcomes are in line with current practice within the corresponding target industry.
- The learning outcomes are introduced quite detailed, but the knowledge is differently detailed (e.g. the LO-2 and LO-3 in the first module are described by only one knowledge).
- Definition of the knowledge, skills and competences are correct, and well detailed.

3.3.3. Landfill

The developed professional activities are the followings:

1. Plan landfill infrastructure construction
2. Manage waste landfill daily operations
3. Supervise the Landfill Mechanical Equipment and Infrastructure Operation
4. Manage monitoring processes and equipment
5. Supervise the Facility's Mechanical Equipment and Infrastructure Maintenance
6. Implement systems and procedures to prevent delivery of unauthorised waste
7. Manage fire prevention and control processes
8. Describe, Monitor and Control Environmental Consequences

Comments:

- The professional activities are chosen well in accordance with the real practice and cover the whole range of the managers' task.
- The learning outcomes are detailed enough, and support the professional activities well.
- This module has the highest number of the learning outcomes that represents the author endeavoured a very much detailed introduction of the professional area's needs.
- Learning outcomes directly relatable to the units.
- The knowledge, skills and competences are sufficient, and relate to the learning outcomes.
- The LO-s relate to the real practice.
- Definition of the knowledge, skills and competences are understood and mainly correct. The adequate verb usage for describing the knowledge in some units is not realised (e.g.: "critical understanding of different components" as knowledge cannot be measured).

3.3.4. Recycling

The developed professional activities are the followings:

1. Monitoring energy consumption
2. Management of all operations across the site
3. Manage permission regimes
4. Control the incoming and outgoing streams following the legislative requirements
5. Treatment and transportation of waste in accordance with the law requirements

Comments:

- Size of the qualification frame is well planned representing the average volume developed in the project.

- The sufficiency of the qualification frame is indisputable, as this segment of the waste management sector is getting to be more and more considerable.
- Although the described learning outcomes directly relatable to the professional activities, some important knowledge is not focused (knowledge on materials to be recycled, state of art production technologies).
- The learning outcomes are in line with the current practice.
- The knowledge skills and competences are defined almost well, only some mistake can be found, e.g.:
 - “Ensure the control and maintenance of the facility machinery” is a competence instead of being a skill
 - “Define the operational procedures and rules for the treatment derived from legislative requirements” should be knowledge instead of being a skill.

3.3.5. Thermal treatment

The developed professional activities are the followings:

1. Implement procedures for the reception of waste
2. Select appropriate management option for waste delivered on site
3. Implement systems and procedures to prevent the utilisation and/or further handling of unauthorised waste
4. Implement and maintain systems and procedures for traffic management on site
5. Implement and maintain systems and procedures for the combustion process
6. Manage the procedures for the energy recovery process
7. Manage the procedures for the flue gas cleaning and comply with the emission regulation.
8. Implement and maintain systems and procedures for site process management

Comments:

- The developed qualification framework, the determined qualifications cover widely the professional area of the waste thermal treatment.
- The qualification framework is based on a thorough survey of the required qualifications. The modules contain the most important professional activities of a manager fulfilling a job in an incinerator plant.
- The qualification framework is based on actual, current and relevant qualifications.
- The professional activities are well defined, relate the most important problems that a manager has to handle in the decision making process.
- The number of learning outcomes is enough to describe the needed professional knowledge and skills.
- Knowledge, skills and competences mainly defined appropriately, but small correction is needed in some definitions (“understanding” is not a right verb for the knowledge).

3.3.6. Sorting facilities

The developed professional activities are the followings:

1. Implement procedures for the reception of waste
2. Select appropriate management option for waste delivered on site
3. Implement systems and procedures to prevent delivery of unauthorised waste
4. Implement and maintain systems and procedures for traffic management on site
5. Manage the process for mechanical treatment
6. Implement and maintain systems and procedures for site process management

Comments:

- The qualification framework consists of 6 professional activities which covers widely the real practice.

- Although the activities are chosen well, maybe the machines', and equipments' operational theory, and management tasks should be focused a bit more.
- The professional activities divided by adequate number of learning outcomes that describe the requirements well.
- Learning outcomes are defined clearly, only one is a bit hard to understand: *“Understand the options for the management options of waste types, and why some options are more appropriate than others”*
- The knowledge, skills and competences are well defined not only professionally but in the andragogical manner as well.

3.3.7. Environmental management

The developed professional activities are the followings:

1. Manage and implement policies and procedures for environmental protection on site
2. Manage environmental aspects of sustainable business practices
3. Ensure staff complies with organisational policies and procedures for environmental protection on site
4. Monitor and maintain legislative compliance for environmental protection

Comments:

- The competence frame deals with the most important professional activities.
- Maybe the importance of the environment industry, the environmental protection and the consequences of the lack of adequate environmental protection, and the responsibility of a manager should be presented more emphasized.
- The knowledge, skills, and competences introduce the learning outcomes well.
- The knowledge, skills, and competences encourage the best practice.
- Definition of the knowledge, skills, and competences is adequate, the accepted terminology is applied.

3.3.8. Financial and contractual management

The developed professional activities are the followings:

1. Yearly budget management
2. Manage the economic aspects of sustainable business practices
3. Manage and develop contracts in line with specific, established criteria
4. Monitor contract performance
5. Manage contingencies and deviation from contractual obligations
6. Manage procurements

Comments:

- The professional activities are focused a bit more to the contractual management.
- Among the financial management part of the module, the management aspects of some important areas should be mentioned, e.g.: supporting financial decisions, financing methods and strategies, financial supporting forms and systems.
- The learning outcomes support the professional activities
- The definition of the knowledge, skills and competences are correct.

3.3.9. Health and safety

The developed professional activities are the followings:

1. Implement policies and procedures for health and safety on site
2. Monitor and maintain legislative compliance for health and safety
3. Manage Occupational Hazards

Comments:

- Number of the professional activities is less than in the other modules (only 3).

- The professional activities requirements are described in 21 learning outcomes that mean the qualification module is detailed enough.
- The learning outcomes are in line with the current practice.
- The knowledge, skills and competences are sufficient, and relate to the learning outcomes.
- Definition of the knowledge, skills and competences are understood and mainly correct. Adequate verb usage for describing the knowledge in some units is recommended (e.g.: “understanding” as knowledge cannot be measured).

3.3.10. Human resource management

The developed professional activities are the followings:

1. Develop and maintain effective working relationships
2. Ensure staff development
3. Provide leadership and direction to teams and individuals
4. Communicate in an appropriate manner within the business environment

Comments:

- The structure and the size of the qualification framework are well designed.
- All the professional activities are described in understood learning outcomes.
- The learning outcomes are in consistence with the professional activities.
- Knowledge, skills and competences encourage the best practice.
- In some modules the definition of the skills does not follow the generally admitted formulas.

3.3.11.New project management

The developed professional activities are the followings:

1. Strategic planning and management
2. Identify and plan new technologies and improvements to waste management operations
3. Implement and evaluate improvements to waste management operations
4. Generate and secure new waste management business

Comments:

- The structure follows a logical construction, and the size of the qualification framework is well designed.
- All the professional activities are collected and presented on the base of the real practice.
- The learning outcomes are in consistence with the professional activities.
- The learning outcomes could rely on some other important area as well, that seems to be missing also from the curriculum.
- Knowledge, skills and competences encourage the best practice.
- Definition of the knowledge should be corrected in some learning outcomes.

3.3.12.Operational management

The developed professional activities are the followings:

1. Manage Daily Operational Activities.
2. Maintain the levels of plant operation in accordance with granted authorisations.
3. Sustainable operations and development-
4. Manage social aspects of sustainable business practices.

Comments:

- The qualification frame based mainly on the real professional activities, but some important topics are missing, e.g.:
 - manufacturing and production systems,
 - factory management,
 - safety and risk management,
 - machines and equipment maintenance management,
 - production control strategic manufacturing policy (they are is important specially in the recycling business),
 - systems analysis,
 - productivity analysis
- The learning outcomes are defined well, and the knowledge, skills and competences support them clearly.

3.4. Detailed evaluation of the Info training toolkit

3.4.1. Anaerobic digestion and mechanical treatment

Comments:

- Structure and the introduction of the curriculum follow the uniform format.
- Most of the professional activities mentioned in the qualification frame are discussed. Mechanical treatment and the management task handling the waste streams are not indicated as units although they are highlighted in the qualification frame.
- Although the storage of the output material at the sites is mentioned, the author does not deal with the handling and storage of the input material, but it can be a critical point of the operation of the plant.
- The course description is understood.

- In the biogas plants foaming is an unpleasant phenomenon. Prevention technologies and the regarding tasks should be mentioned among the LO-s in the 6th task.
- Number of the course materials should be a bit more only one or two is recommended per units. They can be opened easy, and they are useful.
- Among the trainers' requirement 8 years of experience seems to be too rigorous, maybe difficult to meet to.

3.4.2. Composting

Comments:

- The structure of the curriculum is clear, follows the qualification frame.
- The curriculum is relevant to the activities and the learning outcomes that are described in the qualification frame.
- The units are presented very much detailed, the subunits are deeply expounded.
- Remarking the lectures and the practice is useful for the learner very much.
- The unit's description is useful from the learner aspects as shows what will be able to do the student after having finished the course.
- Learning material for acquiring the unit's knowledge is recommended in a wide variety, but some of them are repeated in some units. Some of the uploaded literature's quality is not the best (e.g. scanned material, hard to read).
- Requirements for the trainers and trainees are realistic.
- Good idea to rely on site visits emphasizing the importance of the practice, and enforcing the practical knowledge sharing.

3.4.3. Landfill

Comments:

- Structure and the introduction of the curriculum are clear, follow the uniform format, and well coincide the qualification frame. Only one professional activity is not mentioned as a subunit from those which can be found in the qualification frame (Systems and procedures to prevent delivery of unauthorised waste).
- The learning outcomes can be detected in the subunits.
- Subunits summarise very much detailed the course content.
- The course description is useful as summarises the learning result listing what the student will know after having the subunit studied.
- Although the recommended literature is practical and useful, the course is based on the only one learning material. More course materials could give a wider range of the state of art knowledge of the professional area.
- Very much detailed requirements for the trainers and trainees as well are given. It is a painstaking work.
- Practical knowledge can be gathered from the landfill plants visits as it also a piece of given information.

3.4.4. Recycling

Comments:

- The number and the content of the units correspond to the qualification framework.
- Topics of the subunits cover the requirements described by the learning outcomes.
- Course description is missing.
- The recommended literature is a colourful range of usable learning materials.

- Among the trainees requirement knowledge for the recycling industry is mentioned, but sometimes this kind of expectations are irrational.

3.4.5. Thermal treatment

Comments:

- Structure and the introduction of the curriculum are clear, follow the uniform format, and well coincide the qualification frame.
- The curriculum is relevant to the activities and the learning outcomes that are described in the qualification frame.
- The units are presented well detailed, the subunits are deeply expounded. This shows the training course intends covering all the operational areas of the incineration sites.
- The curriculum is rich in the course material not only in the number, but the scope of the information it reviews.
- Requirements lay on the trainers and trainees are realistic.
- The training environment is well defined.

3.4.6. Sorting facilities

Comments:

- The units follow the qualification frame's structure and topics.
- The training concept does not deal in depth with the machines' and equipments' operational theory and management. Maintenance tasks and technology is also important in this field as the sorting plants are mechanized and nowadays the sorting technology is more and more based on complicated, automated methods.

- The course description is detailed enough to be acquainted with the results of the learning process.
- Trainers' and trainees' requirements are well and deeply defined just as the training facilities.

3.4.7. Environmental management

Comments:

- The curriculum describe the program of the training course is sufficient, well detailed, and help to get information on the content of the course.
- The training course curriculum is relevant to the activities and learning outcomes.
- The structure of the curriculum follows the structure of the qualification frame. Topics of the units are mainly based on the professional activities of the modules of the qualification frame.
- As I noticed in the qualification frame, the environment industry, the environmental protection and the consequences of the lack of adequate environmental protection, and the responsibility of a manager should be presented more emphasized.
- Content of the course is introduced thoroughly as the curriculum is detailed very much.
- Course description is excellent.
- A lot of course materials are recommended, and all of them are up-to-date.
- Trainers' and trainees' requirement are proper.

3.4.8. Financial management

Comments:

- Among the training units some important topics –as it is mentioned in the qualification framework evaluation- are not mentioned (supporting financial decisions, financing methods and strategies, financial supporting forms and systems).
- In the Course unit 3. “Combined Heat and Power System Management Utilizing Biogas” is a subunit. It is a very much special topic; it is not clear that why the unit deals with it (maybe as a case study?).
- The course description of the Unit 4 is not clear: “In this course financial planning will be introduce, in order to develop a financial planning”.
- Trainers’ requirements are pure.
- Trainees’ requirements are rigorous without reason (5 year experience in enterprise management).

3.4.9. Health and safety management

Comments:

- The curriculum is described in 8 units. In this case the topic is presented more detailed than in the qualification work.
- The material promotes current and best practice within the industry.
- The course description supports to understand the usefulness of the course.
- The recommended learning material is up-to-date, but it is not much, especially because its volume is only 11 pages.
- Trainees’ requirement is well detailed.

3.4.10. Human resources management

Comments:

- The curriculum follows the qualification frame.
- Some topics should be mentioned a bit more detailed (e.g.: HR developing methods and strategies, occupation evaluation methods, occupational environment effects and development, achievement management and evaluation).
- The course description is detailed and useful.
- A lot of professional literature is recommended. Their availability must be checked (“*Management of Workplace Conflicts and Disputes and Unacceptable Behaviour*” link cannot be opened).

3.4.11. New project management

Comments:

- The structure and content follow the qualification framework.
- Description of the subunits is clear and understood,
- Description of the course is correct everywhere, gives useful information on what the students will learn.
- The course content should be completed with some important and connecting disciplines, as e.g.: Basics of strategic planning (methods, schools), Quality management.
- Recommended literature is variegated, but some links cannot be opened: Technology roadmapping, AMA Handbook of Project Management, A guide to project management.

3.4.12. Operational management

Comments:

- The curriculum covers mainly the professional area, but some important topics are missing as it is also mentioned in the evaluation of the qualification frame, e.g.:
 - manufacturing and production systems,
 - factory management,
 - safety and risk management
 - machines and equipment maintenance management,
 - production control strategic manufacturing policy (they are is important specially in the recycling business),
 - systems analysis,
 - productivity analysis
- The human resource management, and financial management as a separate units are not needed here, because they are developed within the frame of the project as an independent modules.
- The marketing management and controlling do not connect strongly to the operational management.
- It is a good idea to deal with the quality management in this curriculum.
- The course description is missing in every subunits.
- Among the trainers' requirements the 5 years experience on the field of training and especially on consultancy is a strong condition.

4. Conclusions

As far as I could become acquainted with the materials of the SWFM-QF “Towards a European Qualification for Solid Waste Facilities’ Managers” project I can state the usefulness of the developing activity done by the project partners is beyond dispute. All the materials that can be found on the official homepage –and especially in the evaluated Qualification framework and the Info training toolkit- are based on real professional activities and requirements of the waste management sector.

After the finalisation of the developed materials the project homepage will be a very much useful and practical information source for managers working on the field of environment/waste industry. The developed materials could contribute to the further education of these professionals.

All the remarks, comments that are detailed in the evaluation are only suggestions, and are not obligatory to consider during the finalisation of the project materials.