Measure concept for vocational orientation

in the environmental field
with a focus on digitisation
in the work / professional world

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Introduction

Based on widespread agreement throughout the EU on the trends of the digital challenge towards the use of more advanced technologies and automation of processes to meet targets industry experts have identified a range of current skills gaps including:

Professional and technical roles: Additional need for technically skilled employees to maintain and operate within environmental and recycling sectors is expected as sectoral growth continues. The demand for highly qualified engineers, operational managers and processing technicians is expected to grow significantly in the immediate future.

Operative and maintenance roles: Corresponding to the advancing skills requirements for more senior positions, increasing skill levels are expected for supporting roles.

Elementary roles: The large manual base currently retained within the industry has traditionally required a low level of skills. However, as more technology is deployed throughout the industry, there will be a growing demand for higher environment, recycling and sustainability levels of competence.

In order to meet future labour demands brought about by the digital challenge, growth and changes in the skills needs of the environmental/recycling industry, the following priorities need to be met: Up-skilling the current workforce to meet some of the new skills needs within the industry and an increase in new employees, this is anticipated to be especially appropriate for manual, operative and lower level technical roles.

This unit is intended for learners who are interested in a career in the environmental/recycling sector. Learners will review their performance in specified skills undertaken throughout the course and evaluate their own strengths and weaknesses. Learners will also be involved in investigating careers in the environmental sector.

This unit has been designed with young learners in mind, but may be also be suitable for other learner groups.

1. Initial situation and background of the measure

Traditionally poor image of the environmental/recycling industry is perceived to have hampered recruitment in the past. There is now an acute need to recruit a significant number of new entrants into the environmental/recycling industry over the next decade to meet the digital challenge within the sector. The need to attract young new entrants is widely recognised as the industry workforce ages and employees with a wealth of technical expertise approach retirement.

The sustainable Environmental/Recycling sector training provides a key opportunity to address the current and future skills shortages in the industry. The measure will facilitate the development of occupational competence in a wide range of job roles in the collection, transfer, treatment and final disposal of waste and resources. The measure will attract new entrants by providing a structured route to job competence and career progression and can also be used to up skill existing staff. Training provides the ability for employers to “grow their own” workforce and employ “new staff” where technically competent individuals are increasingly difficult to recruit.

The general aim of this Unit/Measure is to develop skills of scientific inquiry, investigation and analytical thinking, along with knowledge and understanding of sustainability. Learners will apply these skills when considering the applications of sustainability on our lives, as well as the implications on the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit/Measure covers the key areas of: an introduction to sustainability; food; water; energy and waste management. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

This Unit/measure is available as a free-standing Unit. The Unit/Measure Specification should be read in conjunction with the Unit Support Notes, which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for the world of work.

2. Objective of the measure

The general aim/objective/measure concept of this Unit is to develop skills to meet the digital challenges across the environmental sector. Learners will apply these skills when considering the applications of sustainability on our lives, as well as the implications on society/the environment. This can be done by using a variety of approaches, including investigation and problem solving. The measure training can be delivered to young people looking to enter into the Environment Sector as well as those within the sector in need of re-training. This measure includes an introduction to Digital Skills necessary within the sector as the introduction of 4.0 Digital Transformation impacts across the Environmental sector.

The Unit covers the key areas of: an introduction to sustainability; food; water; energy and waste management. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy. The measure concept is created in such a way that it offers room for flexibility with regard to the Environmental qualifications and it allows an individual approach of individual measures for each young person and experienced operators and furthermore, it can also be supplemented by further qualifications

An additional objective of the measure concept is to acquaint young people through practical guidance and work assignments on basic work processes and tasks within the Environmental sector. The practical transfer of professional

environmental/sustainability skills and abilities, theoretical and digital skills should be acquired in order to work in the general context of the Environmental profession.

The training objectives have identified and developed through the delivery of 2 learning outcomes:

Outcome 1
Review and evaluate own performance in specified environmental issues, Learners who complete this Unit will be able to:

Outcome 1
1 Learner will complete relevant sections of the review sheet.
2 Learner will seek and record feedback on own performance.
3 Learner will identify action points.
4 The assessor and learner will sign and date each review sheet.

Performance criteria
(a) Identify and review own strengths and weaknesses in relation to specified environmental skills.
(b) Seek feedback on own performance in specified skills.
(c) Identify action points for improvement of own performance taking account of review and feedback.

Outcome 2
Investigate digital challenge within careers within the environment/recycling sector according to a given brief.

Outcome 2
1 Learner will identify a minimum of three careers within the environmental/recycling sector.
2 Learner will gather digital challenge and information on the three careers identified.
3 Learner will evaluate a selected career against own skills.
4 Learner will check that all steps in the brief have been carried out.

Performance criteria
(a) Gather information from a variety of sources on specified careers within the environment sector.
(b) Use information gathered to evaluate digital challenge on a selected career in relation to environmental/recycling skills.
(c) Check that all steps have been completed in accordance with the given brief.

Context for delivery
If this unit is delivered as part of a course, it is recommended that it should be taught and assessed within the subject area of the course to which it contributes.

It is expected that learners will develop broad, generic skills through this unit. Employability is a key aspect of Skills for Work and is present throughout the unit. In addition, there are a number of other skills that learners will be expected to improve on and develop as they undertake this unit, these can be drawn from the main skills

areas listed below. These must be built into the unit/measure where there are appropriate opportunities.

An Introduction to Digital Skills for working in the Environmental sector**.**

Basic digital skills: Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks.

Literacy: Reading; Writing and Listening and talking.

Health and Wellbeing: Personal learning; Emotional wellbeing; Planning for, and making, choices and changes.

Employability and Enterprise: Employability and Working with others.

Thinking Skills: Remembering; Understanding; Applying; Analysing and evaluating; Creating.

META Skills: Self-Management, Social Intelligence and Innovation.

Environmental/Waste Management/Recycling: Waste streams to categorise waste/environmental/recycling sectors

Primarily these are:

- Municipal waste
- Industrial and commercial waste
- Construction and demolition waste
- Extractive (mining) waste
- Agricultural waste
- Hazardous waste

Core activities within the industry:

- Waste collection and transport;
- Transfer stations and Household Waste Recycling Centres;
- Energy from waste (including thermal recovery processes and anaerobic digestion);
- Recycling, processing and specialist operations;
- Landfill
- Waste Supervisory Management

This training provides skills within:

- Working safely within the waste and recycling industry
- Understanding and following environmental protection laws and guidelines
- Identifying and processing hazardous waste
- Correctly transporting and managing different waste types
- Utilising management systems to plan resource usage effectively
- Understanding a variety of Digital/SMART skills within the Environmental sector

You will also develop the following core skills:

- Information and communication technology skills
- Numeracy
- Communication
- Problem-solving
- Teamwork

Guidance on approaches to delivery of this unit

It is important to stress in the induction to this unit that the skills listed above are generic and valued by employers. Learners will be provided with an opportunity to review how well they have progressed in developing work practices by comparing their own evaluations with that of their assessors.

They will also be asked to demonstrate that they have made progress in their performance after taking account of their own evaluations and the feedback from their assessor. Learners will have a significant degree of ownership in this process. They should be positively encouraged to develop the habit of seeking feedback from their tutors and engaging in discussion about their progress and aspects of their performance that they can, or should, improve. Assessors/tutors should give constructive feedback and support to learners in making improvements.

If a learner's attendance and timekeeping are already very good, positive feedback can be given and the tutor and learner can concentrate on other aspects of the learner's work or performance.

Teachers/lecturers could help to build learners' confidence by giving regular, constructive feedback on generic skills such as: working co-operatively with others, carrying out instructions, and working in accordance with workshop protocols. Such preparatory work will help learners when they come to carry out their formal reviews.

Learners should have easy access to information on careers within the environmental sector. The careers should span the complete range of opportunities

available, e.g. vocational (installation, manufacture), technician (control, installation design), engineer (equipment design, management).

Visits, visiting speakers, videos, and the internet are all good sources of information on careers.

3. Starting position

3.1 Target group

The main target group for this measure/unit is young people interested in a career in the Environmental/Recycling sector, although the training content maybe suitable for the purpose of upskilling existing employees through personal development. However, this measure is predominately aimed at the new entrants to the sector to allow improvement of employability through vocational empowerment.

3.2 Implementing institutions and responsibilities

Training delivery can take many forms under an Apprenticeship system. Some organisations may become Approved Qualification Assessment Centres; others may join a consortium or use peripatetic assessors. Some large training providers will be able to complete all the training and development in-house, but most will find that some of the training and development will have to take place away from the normal delivery. In particular, the underpinning knowledge requirements are often more suited to delivery by outside training providers which might include:

- private training organisations
- colleges / universities
- vocational training institutes and schools
- other employers

Training providers should have the necessary resources to implement the measure concept, both in terms of the necessary specialised personnel and the necessary infrastructure.

Training knowledge could be delivered through training courses or through open/distance learning packages.

3.3 Fields of action

Employment:

- **Waste Operations - Waste Collection Operative**: Performing a range of local environmental services which may include collection and loading of waste and recyclable materials, sorting and preparation of recyclable material for processing, manual or mechanical removal of waste

- **Waste Operations - Waste Collection Driver**: Driving the reuse collection vehicle and the loading and unloading of materials. Collect, loading and unloading of reuse materials. Manual handling usually plays a significant part.

Involves contact with the public and providing advice for reuse and recycling activities. Sort goods and select items for reuse.

- **Waste Operations - Waste Site Operative:** Involves both manual and mechanical handling of waste and transfer to containers for processing. May involve some sorting and reprocessing. Involves both manual and mechanical handling of green waste and transfers to containers for processing. May involve some sorting and reprocessing.

- **Waste Operations - Waste Weighbridge Operative**: Operation of the weighbridge and associated administrative duties.

- **Waste Operations - Waste Team Leader:** Managing the day to day operational activities of a small team. Supervising reuse operations including collections, storage, sorting and sales activities and responsible for overseeing the work of one or more teams on refuse collection operations, motivating staff and maintaining high standards are key to this role.

- **Frontline Environmental Services**: Responsible for day to day supervision of operations at a transfer station including maintaining compliance with health and safety and environmental standards. Supervising work teams is central to the role. Responsible for overseeing day to day operations on a landfill site. Motivating staff and maintaining high standards are key to this role. A key feature of this job is interfacing with customers, regulators, local residents and other interested parties.

3.4 Regional Reach

The measure can be implemented at all levels, local, regional and national, the measure can be implemented across various educational and private training establishments which can encompass: Apprenticeship providers, Business associations, Training companies, Vocational schools, Chamber of Commerce, Industry Unions, Professional associations, Regional institutions, Employers and Employment Agencies. Due to the wide and diversified training this measure provides an insight into: working with others to improve customer service, contributing to the sustainability, maintenance and preservation of the environment, making sure your own actions reduce risks to health and safety, performing manual handling and lifting of loads, transport of waste, mechanically handling waste, validating waste, collection of recyclable materials, controlling the transfer of recyclable materials and complying with emergency procedures and an insight into the introduction of Digital Skills used within the Environmental Sector.

4. Frame conditions

4.1 Participationg actors – internal

Within a delivery organisation a number of internal actors may be involved, this involvement may initiate from the first contact from the learner. Actors could include Marketing, Student/Learner Services, Student/Learner Finances, Support for Learning, Enrolment Teams, Curriculum Guidance, Curriculum Tutors and Administrative Services, and other

training provider specific services. The staff within the training providers operations should be specialist in their field of provision and be able to guide the learner through the support and delivery facilities of the provider organisation. Currucul staff must be technically competent in accordance with their working field and tasks within the measure. They should have an appropriate qualification as well as experience in dealing with the target group. All specialists should be able to work goal-oriented and result-oriented in a team.

4.2 Involved partners and institutions – external

Many organisations and individuals share the responsibility for ensuring that the measure/unit is implemented to the highest possible standard and the framework of the measure and individual qualification offers, cooperations with other institutions which are involved in training. They may include:

- Awarding/Certification Bodies
- Employers
- Apprentices
- Apprenticeship Group
- Sector Skills Councils
- Skills Development Organisations
- Training Providers; Schools, Colleges, Private Training providers, etc.

Training Providers are responsible for:

- Confirming an appropriate training programme for trainee
- Agreeing the training needs of the trainee
- Agreeing roles and responsibilities for job training
- Agreeing where the training will take place and defining roles and responsibilities for this with relevant Parties (College/School/Work Placement)
- Ensuring trainee has access to the best quality training opportunities available
- Ensuring that the trainee fully understand the principles and processes of assessment
- Registering of trainee with the relevant qualification body
- Compiling and agreeing assessment schedules/assessment plans
- Judging performance evidence
- Completing assessment records
- Reviewing candidates progress at regular intervals
- Submitting records and evidence for moderation

Cooperation with various institutions make a significant contribution to a positive course of the measure, it can ensure a quick and flexible solution to problems that may arise. In addition, such co-operations may have the advantage to find potential employment/apprenticeships or training places or acquire the necessary information regarding the training market, training requirements, career challenges and changes in different professions.

Role of the Trainee

Trainees have a commitment to their training programme.

Trainee responsibilities include:

- Agreeing a training/development plan with training provider
- Undertaking training in line with agreed training plan
- Attending meetings with trainers, assessors as required
- Attending college/school/private provider, job training where required
- Providing evidence of competence
- Developing a collection of evidence (portfolio) and retain ownership of this throughout
- Behaving in a professional manner throughout

4.3 Description of a required infrastructure

Institutes delivering this measure should have a suitable infrastructure to support and ensure suitable delivery, infrastructure could include a number of bespoke support/education departments and external supporing organisations. Infrastructure may include:

- Dedicated Student Advice
- Student Funding Advice
- Mental Health support
- Student Association
- Competent and expert teaching staff
- Student support services
- Qualified curriculum delivery experts
- Links with Qualification and Accreditation Bodies
- Learning and Inclusion Team
- Extended Learning Support
- Guidance and Counselling Support
- Employment and Career Support
- Strong partnerships with employers
- Supportive Management Staff

4.4. Time frame (-point)

The timeframe for the delivery of this unit as part of the overall measure would be estimated at 140 hours, approximately 4 weeks at 5 days per week (8 Hours per day). The delivery is a blend of face-toface teaching supplemented through industrial

visits and on-the-job training/work-experience. Trainees need to have an appreciation of the various skill sectors (Waste Collection Operative, Waste Collection Driver, Waste Site Operative, Waste Weighbridge Operative, Waste Team Leader and Frontline Environmental) as well as classroom/workshop and digital training to cover the theoretical aspect of the training as listed below (The various modules and activities as listed below). The entry to the measure should take place at the beginning as it would be detrimental to the young person if entering mid-way within the measure. However, it may be possible to re-enter the training at the start of a specific phase of training, i.e. at the beginning of a specific training unit.

4.5 Structure of the measure

Due to the diversity across the training elements of this section (Work-Experience/Stand-Alone Units) of the measure it should be recognised that training can be flexible and delivered to suit the needs of the individual. This will allow for training to be taylored towards each participant is aimed according to his or her abilities vocationally prepared for an apprenticeship. As the measure has a fixed basic structure and the content can be created/delivered flexible the participants have the possibility of cross-border training opportunities.

Introduction to Digital Skills for working in the Environmental sector (list is not exhaustive)

Internet of Things

The internet of things is a technology which is utilised to enable the communication and exchange of information between different devices in real-time. These devices may be machines, tools, operation systems and many more, which are considered to be the elements which make up a production system. Within future production systems the need to exchange information and messaging requests in real-time, hence it is essential to be knowledgeable of the technologies which allow for the implementation of the Industrial Internet of Things (IIoT).

Automation

To increase efficiency on the shop floor it is increasingly important to automate processes which were previously performed by humans. These processes range from decision making processes, such as product quality decisions, to manufacturing processes, such as assembly processes. To enable the development of highly automated environments one must be knowledgeable of the technologies which allow for automation of decision making, such as data analytics and production processes, such as robotics or CNC operations.

Big Data

The use of an increasing number of sensors within smart machines on the shopfloor, or in smart products, which are continuously collecting data and information of their environments, means that a large quantity of data is being continuously generated.

When this quantity of data grows beyond the possibilities of either humans or traditional computer systems to analyse within a reasonable timeframe, we refer to the creation of Big Data. It is therefore important to be knowledgeable of how this type of big data may be analysed in order to provide operators and managers with useful information to manage the processes or improve their products.

Cloud Computing

The use of cloud computing facilitates both the exchange and retrieval of real-time data and information from the smart products and machines on the shop floor. Furthermore, it allows for the deployment of remote processing, without increasing the information processing load on singular devices. This makes it increasingly efficient to share services between multiple devices, such as product location and production process information being recorded and collected using RFIDs on the shopfloor. Knowledge of the implementation requirements and different types of setups of cloud computing architectures is therefore required to drive the innovative use of these services within industry.

Digital Design, Production & Marketing

The journey of a product and production system from the initial stages of design towards completion and use is a complex set of activities. Greater pressures are being placed upon stakeholders to minimise the time it takes to develop a product from the conceptual to development and sales. Furthermore, the digital transformation is also changing the way in which we sell and market products and also the way in which we provide additional services to our products. Being able to understand the different technologies which are used with product design, production and marketing is therefore required to make the best use of these technologies to increase the competitiveness of a company.

Software Packages

The increasing use of digital technologies within production and sales is supported by an increasing number of software packages provided by different suppliers, which support different activities within a company. These include software packages such as Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), Manufacturing Execution Systems (MES), Augmented and Virtual Reality (AR & VR) and many more. It is therefore required to be knowledgeable of the different tools which are available to support the different functions of the production and sales processes and how these interact with other elements of the digital eco-system.

Cyber-Security

The increase creation, availability and exchange of data together with an increased reliance on automation means that the security risk associated with such transaction increases if one does not take appropriate measures to limit vulnerabilities within a system. With data being stored within cloud based systems and the connection of

industrial network systems to the internet to allow for the use of remote access and services further increases this risk. Therefore, it is essential for stakeholders who are developing and implementing such systems to be aware of the risks but also the approaches which may be utilised to mitigate and/or eliminate exposure to cyber-attacks which may hinder or damage the competitiveness of an enterprise.

Digital Models

A central enabler of Industry 4.0 technologies is the use of digital models. These are used both for the transfer of knowledge and information, and also to enable real time modelling of a system such as a machine or factory. It is therefore essential to be knowledgeable of the different types of Digital Models which are used within Industry 4.0 such as 3D Models, information models, digital twins, etc.

Digital Skills

The above will provide basic digital skills in how to:

- use most common ICT devices, programs, applications and operating systems.
- use internet, e-mail programs, digital communication, Skype, messengers, chat applications, Microsoft teams.
- use electronic services and forms (filing e-forms, using e-keys, manage passwords)
- implementing basic copyright rules
- use text programs, calculating sheets and presentation programs (e.g. Word, Excel)
- digital image and video editing
- use augmented reality and virtual reality devices
- use cloud services
- search and analyse data in a databank
- share and protect information and documents on cloud services

Environmental/Recycling Skills Training

It is widely acknowledged that the Environmental/Recycling sector in the EU is undergoing a period of substantial change. This is driven by a range of political, economic, social, technological, legal and environmental forces. Core activities within the industry are:

- Waste collection and transport
- Transfer stations and Household Waste Recycling Centres
- Energy from waste (including thermal recovery processes and anaerobic digestion)
- Recycling, processing and specialist operations
- Landfill

Environmental drivers for new skills include:

- Low carbon
- Energy and resource efficiency
- Lack of landfill space/landfill substance bans
- Environmental protection

Industry experts have identified a range of training support current skills gaps including: Waste Collection Operative, Waste Collection Driver, Waste Site Operative, Waste Weighbridge Operative, Waste Team Leader and Frontline Environmental Services. Waste Supervisory Management and Principles of Sustainable Resource Management. This measure/unit will give a basis for entry into the typical job roles as stated above and includes:

Performance Criteria

- Identify the goods or materials and conduct initial checks to determine their suitability for recycling or disposal
- Sort the goods or materials according to the organisation's procedures and specifications for recycling or disposal
- Obtain information and advice from an appropriate person where there is a difficulty in identifying or classifying goods or materials
- Handle goods or materials using the correct handling methods and equipment
- Remove any parts of the goods or materials that cannot be recycled and dispose of them correctly
- Position the goods or materials that are suitable for recycling or disposal into the correct locations
- Prepare the goods or materials for further processing according to the recycling or disposal specifications
- Identify any problems with recycling or disposal, and take the appropriate action to deal with them
- Record work according to organisational procedures
- Comply with the organisation's procedures and all relevant legal, safety and operating requirements relating to recycling or disposal of goods

However, as more technology is deployed throughout the industry, there will be a growing demand for higher levels of competence.

Core Skills
The following Core Skills must be achieved:

- Communication
- Working With Others
- Problem Solving
- Information Technology

Core Skills are skills and abilities which everyone needs in their work. This is true for every job in every workplace. Core Skills also feature in National Qualifications, many trainees may have been issued with a Core Skills profile on their Qualifications certificate. Candidates who have already been certificated as achieving Core Skills at

the levels given above – either in the workplace or at school or college - do not need to repeat these Core Skills as part of the Environmental Training measure.

META Skills

More recently there has been a large push towards META within all industrial/employment/vocational training. META skills are seen as the "Skills for the Future", Timeless, higher order skills that support the development of additional skills and promote success in whatever context the future brings, and includes 3 areas and 12 sub-areas for development:

- **Self-Management:** Taking responsibility for your own behaviour and wellbeing (Focusing, Integrity, Adapting and Initiative)
- **Social Intelligence**: Awareness of others' feelings, needs, and concerns in order to effectively navigate and negotiate complex social relationships and environments (Communicating, Feeling, Collaborating and Leading)
- **Innovation**: The ability to define and create significant positive change (Curiosity, Creativity, Sense making and Critical Thinking)

5. Implementation of the measure concept

5.1 General principles of the action

The results of this measure are based on the information gathered from experts in the field, desk research and information form national training implementation bodies, such as Government Training Agencies, Qualification Authorities, Further and Vocational Educational Institutes and Other Training Providers. The presented fields of action and individual units with the measure are matched to the needs of the Vocational Training orientation, in this case, a Environmental/Green training orientations/pathways. The approach must be created flexible and individually in the context of the personal situation of the each young person, which may mean in certain cases, an individual delivery plan.

5.2 Preparation

Many of the young people entering into training/apprenticeships for the first time often are low-educated and have families who are unable to support them in finding and beginning a training / apprenticeship, and additional support may be necessary through the dedicated guidance counsellor or tutor.

In order to prepare the young people for a possible training / apprenticeship, it is not only necessary to prepare them professionally and practically for a profession, but they must be prepared for working life in general and they must be committed to the training package. This means that a vocational preparation measure for this target group has to cover more aspects then only pure vocational preparation. This new measure concept must take into account different fields of action and includes not only vocational offers but also social and life-practical offers. Furthermore, the focus may be on an intensive and individualised support package, which does not exclude training and qualifications in small groups. The individual platform refers to the creation of the individual support plan, counselling and support throughout the application process. In today's training this means the use of the more recent "Skills for the Future -META skills" support which includes:

Self-Management: Taking responsibility for your own behavior and wellbeing and includes

- Focussing: The ability to manage cognitive load by filtering and sorting information in order to maintain a sense of focus in an age of information overload and constant change
- Integrity: Acting in an honest and consistent manner based on a strong sense of self and person values
- Adapting: The ability and interest to continue to enlarge knowledge, understanding and skills in order to maintain adaptive and resilient as circumstances change
- Initiative: readiness to get started and act on opportunities built on a foundation of self-belief

Social Intelligence: Awareness of others' feelings, needs and concerns in order to effectively navigate and negotiate complex social relationships and environments

- Communication: The ability to openly and honestly share information in a way that creates mutual understanding about others' thoughts, intentions and ideas
- Feeling: Considering impacts on other people by being able to take arrange of different thoughts, feelings and perspectives into account
- Collaboration: The ability to work in coordination with others to convey information and tackle problems
- Leading: The ability to lead others by inspiring them with a clear vision and motivating them realise this

Innovation: The ability to define and create significant positive change

- Curiosity: The desire to know or learn something in order to inspire new ideas and concepts
- Creativity: The ability to imagine and think of new ways of addressing problems, answering questions or expressing meaning
- Sensemaking: The ability to determine the deeper meaning or significance of what is being expressed and to recognise wider themes and patterns in information
- Criticalthinking: The ability to evaluate and draw conclusions from information in order to solve complex problems and make decisions

The META skills mentioned here are single fields and do not need to be dealt with in a defined order within the framework of the measure. Their use as well as the coordination and interconnection among themselves depend on the individual participant and their support needs.

5.3 Implementation

This measure qualification is available at EQF level 3 and 4 and has been designed to provide the knowledge components in the Sustainable Resource Environmental Apprenticeship with the additional view of challenges through Digitalisation. This

training underpins a broad range of roles in the collection, transport, treatment and final management of waste and resources, at both operator and supervisory levels.

These training provide an entry for young apprentices into the sustainable waste management industry as their first step on the employment ladder as well as persons already employed in this sector. Although intended for use in the apprenticeship training the materials can be used on a 'stand-alone' basis where-upon they offer excellent general knowledge within sustainable waste and resource environment.

The training can be assessed in a variety of ways including for example: on-the-job; formal classroom teaching and learning; tutorials and other appropriate assessment methods. The have been designed to enable continued study to supervisory, management and professional qualifications as required by the individual and the sector. Overall, they could be offered in any of the following modes:

- full-time
- part-time (example: day-release)
- open and distance learning
- infill into existing classes
- evening provision

The training provides progression opportunities into continued study and more formal professional qualifications as required by the individual and the sector.

Entry is at the discretion of the centre.

Description of content:

An Introduction to Digital Skills for working in the Environmental sector**.**

Basic digital skills: Using ICT devices, using digital services and applications, using different digital environments and applications in their work tasks

Literacy: Reading; Writing and Listening and talking.

Health and Wellbeing: Personal learning; Emotional wellbeing; Planning for, and making, choices and changes.

Employability and Enterprise: Employability and Working with others.

Thinking Skills: Remembering; Understanding; Applying; Analysing and evaluating; Creating.

META Skills: Self-Management, Social Intelligence and Innovation.

Environmental/Waste Management/Recycling: Waste streams to categorise waste/environmental/recycling sectors

Time schedule:

The time expectd to deliver this element of the measure is approximately 140 hours which can be delivered through a number of various training delivery modes as stated above.

Process planning:

Process planning for this sector and target group is the development of the full training framework and determining further goals and delivery aims. Once the programme has been fully design, training materials established there should be a development of the assessment materials, this followed by the full implementation of the training delivery. The measure should be complimented with a training plan which the project delivery team can use for the full development, implementation and delivery of the full training programme. The completed training plan should ensure that the training measure is more efficient and responsive to the needs of the learners and the training sector. The training plan could include:

- Instructor-led training
- eLearning.
- Simulation employee training.
- Hands-on training.
- Coaching or mentoring.
- Lectures.
- Group discussion and activities.
- Role-playing

Possible milestones:

There is a requirement for training providers to maintain records and provide reports about the learners/trainees on the training programme. Part of the requirement relates to records that must be retained for compliance with certification and qualification regulations dependent upon funding and local educational authority requirements. Records and reports will be used to both evidence participation and monitor progress of learners on the training programme. This evidence may be collectively being determined as milestones. Milestones provides the learners/trainers with evidence of performance at certan stages throughout the delivery of the measure. This could be at the start of the measure delivery on the signing of a trainee/learner service level agreement onto the programme of learning and followed by a series of milestones that the learner/trainee must complete prior to advancing through the training programme. For this measure it is assumed that the successful completion of each unit within the measure is seen as a milestone achieved.

Used methods:

This would include training through face-to-face delivery supplemented through online and blended teaching. Training would also be expected to complete an element of work-experience and on-the-job training. Other aspects of delivery would

educational visits, guest speakers, attending educational training fayres and Apprenticeship open days, and through the use of training videos across the various Environmental provisions, and the introduction of Digital aspects of working within the sector.

Used materials:

Workshops and workplaces of high standards, quality tools and equipment, if necessary, machines and materials to deliver the planned practical tasks. Technical equipment should be up-to-date to facilitate the start of an apprenticeship. Basic equipment includes: Computer, projector, smartboards, power-point presentation projector, clean warm space, free of obstacles.

Assessment:

Evidence can be generated using different types of assessment. The following are suggestions only. It should be noted that there may be other methods that would be more suitable to the learners.

Example: exercises for learning assessment (multiple choice questions; quizzes; true or false questions; etc.)

Providers are reminded that prior verification of centre-devised assessments would help to ensure that the necessary standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education. Various Assessment types can be utilised:

Observation; direct observation or witness testimony where direct observation is not possible. Where this evidence type has been suggested against Assessment Criteria which require the candidate to explain or describe, the assessor must hear or observe the explanation/description (directly or being delivered to others) or see it in writing. The assessor must not infer that the candidate can explain/describe based purely on observation.

Question and Answer; candidate statements, verbal questioning, professional discussion, written questions, product evidence supported by questioning

Simulation / Realistic working environment; can be used as a last resort where allowed. Please see the Energy and Utility Skills Assessment Strategy for further information.

5.4 Follow-up

We expect training providers and institutions to manage attendance, participation and monitoring on courses effectively to ensure that the learners who are not sufficiently engaged in learning are fully supported on the training activity or guided onto another suitable pathway/orientation. In addition, the qualifications achieved by successful trainees/learner must be monitored and recorded by institutions to ensure that they are suitable rewarded for their achievements. Furthermore, training providers must also monitor learners/trainees who complete their course but do not successfully

achieve a qualification and evidence of their continued engagement in learning until the end of their course (despite their relative lack of success) retained.

5.5. Expected results

There are important monitoring requirements for trainee/learners results/outputs under many funding sources, hence training providers must be able track their trainee/learners destinations and in many situations report on the following specific result indicators, examples:

- Participants in employment, including self-employment, six months after leaving (regardless of their achievements or whether they completed their course)
- Participants with qualifications upon leaving
- Participants who do not move into employment or further training opportunities

5.6 Who Does this qualification suit

The qualifications are suitable for a range of workers within sustainable resource/environmental operator and management - from the new employee to the experienced worker wishing to progress in their career.

The qualifications are suitable for candidates who are entering or training towards an Apprenticeship in Sustainable Resource/Environment Operative.
The EQF level 3 qualification will suit candidates who are working in the sustainable resource management industry and have some relevant knowledge and skills.

The EQF level 4 qualification will suit candidates who are working in the sustainable resource management industry, who have some relevant skills and knowledge and will be hoping to progress to a team leader, supervisory or management role.

5.7 Measure Drivers

It is widely acknowledged that the waste management industry across the EU and UK is undergoing a period of substantial change. This is driven by a range of political, economic, social, technological, legal and environmental forces including:

Political drivers

- European policy and strategy (e.g. European Union Landfill Directive)
- Policy and strategy (e.g. Landfill Tax Escalator and increasing anaerobic digestion capacity)
- Development of waste infrastructure

Economic drivers

- Entrants from the European/UK marketplace
- Global economic downturn
- Price of energy, raw materials and recyclables
- Local authority spending and procurement
- Financial incentives and penalties

Social drivers

- Lifestyle/household structure
- Increased public awareness and concern in relation to environmental issues
- Increased commercial focus on environmental policy

Technological drivers

- Recovering energy from waste
- Improved processing and treatment processes
- Success of new technologies in organisations/abroad resulting in them being adopted on a larger scale

Legal drivers

- Employment legislation
- Health and safety

Environmental drivers

- Low carbon
- Energy and resource efficiency
- Lack of landfill space/landfill substance bans
- Environmental protection

6. Resources and funding

6.1 Personnel requirement and their use

In order to be able to meet the specific needs of the target group, from guidance, consultation and support (e.g. with regard to vocational orientation, training place search) to social education offers, to general competence training and practical vocational preparation, it is necessary that specialists from different disciplines cooperate internally. In addition to the purely supervising and supporting specialists such as social pedagogues, social workers, vocational educators, as well as the professional specialists such as trainers, instructors, teachers also other specialists can also be employed.

Counselling and supporting specialists should not only know the potential deficits and problems of the target group, but should also have experiences in working with the target group. They should have an adequate pedagogical qualification. Either a proven pedagogical study or a corresponding pedagogical training with many years of experience in dealing with difficult young people and / or young people with a migration background. Also knowledge of different cultures, religions, other school / training systems, and the VET system and its possibilities, as well as the regional and national VET / labour market and its challenges is required.

Specialists should be able to cover one or two vocational fields, if possible. They should have many years of vocational experience, as well as experience in dealing with the target group. They should have at least one or more professional trainings as well as the proven ability to train young people (e.g., master craftsman degree, trainer/teacher certificate). Tutors/Trainer/Teachers personnel should be technically competent in accordance with their working field and tasks within the measure, they should also have an appropriate vocational/technical qualification.

6.2 Room and technical equipment

The institutions carrying out the measure should have workshops, laboratories and workplaces, according to the vocational aptitudes and preferences of the participants, in order to prepare the participants as vocationally as possible in the most realistic way. If any workshops and workplaces are not available, the institutions should and can cooperate with other training institutions and can do outsourcing. Therefore, it should be avoided that participants are forced into vocational fields which are not correspond with their aptitudes and inclination, and only because the institution implementing the measure does not have for all vocational fields e.g. workshops. The respective workplaces should comply with the latest standards. Tools and, if necessary, machines and materials must be provided in accordance with the planned practical tasks. The technical equipment should be up-to-date to facilitate the start of an apprenticeship. Basic equipment includes: Computer, projector, smartboards, power-point presentation projector, clean warm space, free of obstacles and the organisation should conduct the necessary risk assessments on workstations and training facilities.

6.3 Costs and possible financing of the measure

The financing of the measure should be ensured by the responsible institutions that are active in e.g. vocational training particularly with regard to vocational preparation, youth work or employment services. The training institution may be responsible for the financing of the measure per participant depending upon the countries national funding system for VET training, this may be through Government Grants, Employers Fees, Social Departments for unemployed, etc. Overall, the measure could be financed by e.g. the chamber of commerce, the National/Regional Government, local employment services, foundations, projects, employers, ministries, etc. The amount of the final costs to be paid are for the institutions implementing the measure ultimately depend on the number of participants and the resources and may need to be calculated individually.

6.4 Required contacts and contact establishment

Contacts within the training provider may vary across vocational establishments, intial contact may be through the organisations learning services and enrolments, this is supported via Tutors/Trainers/Lecturers within the curiculum area. It may also be necessary for various elemnets of student services to be available to guide the learner through through the various funding support options. (Bursary, DPWP, Social Security, etc.).

Delivery establishments:

- Further/Vocational Education Colleges
- Vocational Schools
- Private Vocational Training Provider
- Environmental Training providers

7. Evaluation of the measure

The measure can be measured through the success of the training candidates achieving the stated milestones and ultimately the number of completers on the delivery programme.

- Number of completers
- Participants in employment, including self-employment, six months after leaving (regardless of their achievements or whether they completed their course)
- Participants in employment after 12 months
- Participants with qualifications upon leaving
- Participants who move into further training opportunities

8. Appendix

- Principals of Sustainable Management
- Digital Skills Description
- Basic Digital Skills
- Meta Skills
- Meta skills profiling
- Workplace Standard
- How to provide Workbased Assessment

9. Links

- Career Information, Advice and Guidance in Scotland A Framework for Service Redesign and Improvement: https://education.gov.scot/Documents/CareerInformationAdviceGuidanceScotland.pdf
- Transforming Places Together: Scotland's digital strategy for planning https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2020/11/transforming-places-together-scotlands-digital-strategy-planning
- Shaping the digital future of FE and skills https://www.jisc.ac.uk/sites/default/files/shaping-the-digital-future-of-fe-and-skills-report.pdf
- SCHOOL-COLLEGE PARTNERSHIPS AND EFFECTIVE SKILLS PATHWAYS https://www.cdn.ac.uk/wp-content/uploads/2021/09/School-College-Partnership-Report.pdf
- DIGITAL CAPABILITY A SCOTTISH LANDSCAPE REVIEW https://www.cdn.ac.uk/wp-content/uploads/2021/08/Digital-Capability-A-Scottish-Landscape-Review.pdf
- Preparing Young People for the Future https://education.gov.scot/media/53rcvt3w/preparingyoungpeopleforthefutureseniorphaseinscotlandscolleges.pdf
- Upskilling Scotland The Future of Skills and the Fourth Industrial Revolution https://www.scdi.org.uk/wp-content/uploads/Upskilling-Scotland-The-Future-of-Skills-and-the-Fourth-Industrial-Revolution-Bibliography.pdf

- Skills 4.0 A skills model to drive Scotland's future https://www.skillsdevelopmentscotland.co.uk/media/44684/skills-40_a-skills-model.pdf
- The Future of Work: Baseline Employment Analysis and Skills Pathways for the Circular Economy in Scotland https://www.zerowastescotland.org.uk/sites/default/files/ZWS1543%20Future%20of%20Work%20-%20Emp%20%26%20Skills%20report%20FINAL.pdf
- STEM Strategy for Education and Training in Scotland: Second Annual Report https://www.gov.scot/publications/stem-strategy-education-training-scotland-second-annual-report/documents/
- Women into stem https://www.rse.org.uk/wp-content/uploads/2018/11/Women-in-STEM-report-2018_final.pdf
- Energy: Employability and Careers (National 5) https://www.sqa.org.uk/files/nq/J12X75.pdf
- Pathway Apprenticeships https://www.skillsdevelopmentscotland.co.uk/media/47594/pa-appendix-1-pa-framework-information-phase-1b-v3-2.pdf
- Sustainable Resource Management https://www.skillsdevelopmentscotland.co.uk/media/40660/ma-framework-sustainable-resource-management-at-scqf-level-5.pdf

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