Research on Skills Needed for Jobs Related to Renewable Energy
NE(W)AVE: reNEWAble e-Vet learning

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Research on Skills Needed for Jobs Related to Renewable Energy

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Introduction

This overall report is the final result of the research on skills needed for jobs related to renewable energy, conducted in the frame of the project NE(W)AVE: reNEWable e-Vet learning.¹

The main objective of the NE(W)AVE project is to contribute to increase the employability and inclusion of NEETs² and VET learners and young professionals in relevant technical and manual professions by:

- offering a training course for upgrading and converting existing competences according to the demands of the renewable energy sector
- developing VET-business partnerships in the renewable energy field based on work-based learning among the partnership’s countries Italy, Denmark, Greece, Austria and Spain.

Through a comparative research the project aims to provide a general glance on the situation in the renewable energy sector and the process of an appropriate adaptation of trained skills in the project partner countries. Moreover, this research gives a clear view of the skill mismatches between job demands and learning offers in the renewable energy sectors of these countries. It represents an important tool for VET providers, VET trainers and green sector companies,

¹ NE(W)AVE: reNEWable e-Vet learning is funded by the Erasmus+ Programme, Key Action 2 – Strategic Partnership in the field of VET
² The indicator young people neither in employment nor in education and training, abbreviated as NEET (not engaged in education, employment or training), corresponds to the percentage of the population of a given age group and sex who is not employed and not involved in further education or training. (http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Young_people_neither_in_employment_nor_in_education_and_training_(NEET)
providing an important contribution to build the competences table useful to assess and provide the specific skills, knowledge and competencies needed. For the NE(W)AVE project consortium the research findings served as a basis for their decision which contents will be included into the Open Online Course (OOC) to be developed and provided to VET learners with the aim to upgrade and convert existing “green” competences according to the demands of the renewable energy sector.

This overall report is the product of research activities conducted in all partner countries on a two-folded basis: a desk research and in-field researches among companies and VET providers.

In a first stage the desk researches explored the world of VET courses and job opportunities in the field of renewable energy at national levels. The results are brought here to a comparative report where the findings have been analysed in order to get a general glance on each country situation.

In the second stage, the objective of the in-field researches was to receive a deeper look into the VET courses provided and more precisely, the technical and soft skills requested by companies in this sector, the employability opportunities and companies’ recommendations on learning opportunities for future workers, the contents of VET courses on this sector, their designs and structures.

The outcomes arising from these researches will play an important role in the NE(W)AVE project and also in the development of strategies of collaboration among VET learners, VET providers and stakeholders and allowing new synergies at EU level.
Desk Research - Comparative Results

This chapter represents the results of the analysis and comparison of the country desk researches, that have been carried by the NE(W)AVE partners in Italy, Denmark, Greece, Austria and Spain during the first months of the project (December 2017- March 2018) according to commonly developed relevant questions related to the existing VET courses and job opportunities in the renewable energy sector. The professions taken into account here are technical and manual professions in the field of mechanics, plumbers, industry technician/operators, electric & heating installers, electronic/mechatronic technicians corresponding to EQF4 level and, in those partner countries where these professions do not correspond to such a level, to EQF5 level.

The analysed aspects are addressed in the following sections.

1) Existing VET providers and companies in the fields at national level

Regarding the existing VET providers and companies that operate in the renewable energy sector in the partner countries, we can summarize the situation as below:

Denmark: public adult education has a continuing and flexible system. In AMU (adult vocational training programmes), trainings primarily provide skills and competences directed towards specific sectors and job functions in order to meet the changes of the labour market. Only in the region of Syddanmark, in the south of Denmark, there are 309 companies working with energy technology.
Austria: Austrian education system is characterised by early differentiation of vocational education and training pathways from lower secondary level and a broad range of vocational education and training opportunities at upper secondary level. Austria has a qualification-oriented vocational education and training system which, by combining of an apprenticeship system with a comprehensive school-based vocational education and training system (upper secondary level), prepares in a well-structured manner for a wide range of legally defined occupations. Approximately 80% of all employed persons have a vocational and/or university degree.

Initial vocational training in accordance with EQF 4 comprises vocational secondary schools (BMS) and the particular important dual vocational training (apprenticeship, apprenticeship training - from the 10th school year onwards). At EQF level 5, VET colleges offer vocational training in combination with access to universities.

In the field of renewable energies, there is a very diverse range of courses on renewable energies in Austria, distributed relatively evenly across the federal states. More and more traditional technical and economic training courses have included renewable energies in their regular curricula. In the field of continuing vocational education and training, the offerings are very strongly and flexibly adapted to the demand, but repeatedly also rather short-lived due to insufficient success.

Austrian companies are among the international environmental technology and market leaders in several areas. With regard to renewable energies, hydropower, biomass combustion, heat pumps and solar thermal energy as well as energy efficiency (especially passive houses) are particularly successful. Employment in the field of technologies for the use of renewables is estimated at a total of approx. 41,600 jobs in 2016.
Greece: the continuous educational reform the country has gone through in these last decades leads to structural educational changes and to a climate of instability that discourage students to choose VET. VET provided from both public and private schools, belongs to the non-compulsory part of the system. Three types of VET schools: Vocational Education Schools or Vocational Apprenticeship Schools (EPAS) and Vocational Upper Secondary Schools (EPAL) that provide qualification corresponding to EQF Level 4, and public and private Post-Secondary VET Schools (non-formal, IEK) that provide Diplomas at EQF Level 5.

Italy: there are two main VET schools: 1) Technical schools (istituti tecnici) where learners can choose among two sectors (Technological and Administration) and acquire knowledge, skills and competencies to carry out technical and administrative tasks; 2) Vocational school (istituti professionali) where learners are trained in a variety of craft and industrial skills, such as: carpentry, mechanics and engineering, building and construction, food and catering, secretarial and office work. In Italy there are over 102,000 companies in the sectors involved in the renewable energy supply chain.

Spain: The access to Specific Vocational Training is divided into two grades, which have different access requirements: 1) Middle Grade Training Cycles (Ciclo Formativo de Grado Medio) that corresponds to EQF level 4. 2) Superior-level Training Cycles (Ciclo Formativo de Grado Superior) that corresponds to EQF level 5. Only in the region of Castellón there 19 companies in the field of renewable energies.

Most of the VET providers in these countries include a theoretical and a practical part realized through an apprenticeship or an internship and have a short duration (mostly 2 or 3 years).
Relating to VET, decision-making power belongs to the national level, but in almost all the research countries, this competence is shared with or depends on local authorities, as it happens for instance in the federal states of Austria, in Italy, in the Autonomous Communities in Spain and in the municipalities in Denmark.

The institutions providing these courses can be either owned by public bodies or are private and independent, like in Greece, so they can be followed without paying high fees too; while in Denmark the biggest majority of VET institutions are public-founded and controlled, they are public bodies managed like companies.

2) VET courses available on the field at national level and related learning outcomes

- In Italy, Spain & Greece there is no specific VET on renewable energy
- In Denmark and Austria, the renewable energy topic has been integrated in VET branches or lessons but not specific yet.

In every country involved in this research, there are a few courses or trainings on at least one branch of renewable energy but they start from another level like in Spain or in Italy (from EQF5).

3) Level of competences of VET learners and young professionals who are completing or have completed a specific VET learning pathway

The level of competences reached by VET learners after completing a specific VET learning pathway seem to be similar in all the research countries. Here both hard skills and soft skills are considered as very important and complementary.
4) Information on the regional labour market in the field

- Denmark and Austria, are among the leaders in the energy turnaround;
- Italy, Greece & Spain, the investments on renewable energy field increased and are expected to continue to do so in the next years.

In Denmark and Austria, a lot of companies give work to a huge part of people working in the energy sector; and as the production of renewable energy and their part in the energy mix is expected to keep on growing in the next decades, a lot of job opportunities should be created (for example they may even double in Denmark until 2020), in particular for positions which require high technical training.

5) Profile of workers in the sector and identification of skills requested especially by renewable energy companies

According to the results of the country desk research, some of the competencies workers should have in order to work in this sector seem to be:
Practical experience in the sector is considered an important criterion for the companies.

According to the desk research results, renewable energy-specific skills are gaining more and more importance so investing and focusing on them among the highest priorities in most countries at the moment.

6) Skill mismatches between job demands and learning offers
In every partner country there are gaps between the learning offer and the job demand.
There are gaps due to adjustment delays, or in some cases the mismatch between the job demand and learning offer is more evident and due to structural limits of the education system.
This mismatch can be caused by:

- lack of attraction of some VET pathways that as a consequence causes a lack of skilled workers;
- lack in the learning offer;
- the attempt to answer quickly the companies’ needs and the rapid changes and the continuous educational reform a country can go through (as it happens in Greece).

It can be noticed that the renewable energy sector is a young and rapidly growing sector so it can be difficult to understand and match the companies’ current and future needs at the same time and in a flexible way. Moreover, new professions are expected to appear in the next years but can hardly be predicted.

7) Which are the existing skills of a specific VET learning pathway that the learners can upgrade?

It is not so simple to identify how VET learners can upgrade the skills already acquired as the renewable energy sector is a complex sector composed of many elements (equipment manufacture and distribution, project development, construction and installation, operations and maintenance, plus cross-cutting/enabling activities) and the green jobs supply chain is very fragmented.

In Denmark, once a VET training is completed, if adult learners want to upgrade their skills, they can decide to continue with further adult education (EQF 5) or with Academy professions programmes (EQF 5) and Bachelor programmes (EQF 6).

In Austria training providers follow quite different strategies, whereby the issue of personal certificates plays an important role. Well-known institutions that are
involved in the development and provision of relevant qualification, certification and accreditation services:

- Universities of Applied Sciences (HTL)
- the WIFI (Economic Development Institute)
- the AIT (Austrian Institute of Technology)
- the AMS (Austrian Labour Market Service)
- the BFI (Vocational Training Institute)
- Climate active, sets quality standards and introduces innovative content into existing educational programmes and creates new job profiles.

In Greece, businesses in the renewable energy sector are at some level aware that students coming from VET may not have all the appropriate skills and competences to cope with job demands. As a result, they usually choose either to hire employees that are under-qualified and train them on-the-job, or to employ people who are certified in a close field and may partially cover their needs.

In Spain, the EQF level 5 equivalent to Superior-level Training Cycles (Ciclo Formativo de Grado Superior) can be accessed after having obtained the Baccalaureate degree. Another option is to make a specific test of access to a higher degree for which it is necessary to be 19 years old, or to be 18 years old and holding a degree of EQF level 4 (Grado Medio) related to the one you wish to access.

In Italy, it is not easy to identify what skills can be upgraded since the renewable energy sector has a very fragmented chain (equipment manufacture and distribution, project development, construction and installation, operations and
maintenance, plus cross-cutting /enabling activities). While the patterns of employment in operations and maintenance are more stable for example, at the peak of the job’s pyramid (project developers; service technicians; data analysts; electrical, computer, mechanical and construction engineers) labour shortages are more evident. At the bottom, improving and upgrading cross cutting/enabling activities and an education in sustainability issues could be the best choice at this level (EQF 4) of qualification.

8) Identification of the target group’s learning needs in terms of enhancing employability

While some actual learning needs have been identified through this research, future needs are difficult to be determined.

The learning needs emerging from the desk researches are very diverse in all the involved countries and some of them can be very specific and technical:

- soft skills
- power electronics and electrification skills;
- troubleshooting or calculation skills;
- ability to measure & evaluate installations for export and self-consumption of renewable energy.

Regarding the strategy to be adopted in order to include these needs in the learning paths, the analysis of the research results indicates the necessity to integrate the development of new skills into a wider training and skills development policy, putting emphasis on the interdisciplinary character and on “in-field” learning solutions in the courses.

Field Research Comparative Results
The field research, addressed respectively to VET provider and company representatives, has been realized in each partner country (Italy, Denmark, Greece, Austria and Spain) in order to provide a more detailed analysis of the renewable energy sector and the needs of VET providers and companies working in this field. This research has been conducted between March and May 2018 through two different questionnaire templates in English, one for VET providers and one for companies. Each partner translated the questionnaires in their national languages and created an online form, apart from Danish partner, EUC Syd, who preferred to use the English templates and conduct interviews with the involved targets.

Please find the questionnaire templates in the following links:

For companies:
https://www.dropbox.com/s/f4dbdjhmnppuiw8/IO1_%20Questionnaire%20for%20enterprises_final.output.pdf?dl=0

For VET providers:
https://www.dropbox.com/s/utbzl2cxsqvmb5/IO1_%20Questionnaire%20for%20VET%20institutions_final.output.pdf?dl=0

Field Research Results from VET Providers

In the interviewed VET providers’ institutions, VET courses related to the renewable energy sector are:

<table>
<thead>
<tr>
<th>Italy</th>
<th>Denmark</th>
<th>Austria</th>
<th>Greece</th>
<th>Spain</th>
</tr>
</thead>
</table>

General content of VET courses

Most of the VET providers who answered this question (in total 46 in the involved countries), have courses in all countries in the following domains related to renewable energy field.

<table>
<thead>
<tr>
<th>Domain related to R.E.</th>
<th>No. of interviewed VET providers who have courses in this domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar photovoltaic</td>
<td>33</td>
</tr>
<tr>
<td>Wind Power</td>
<td>18</td>
</tr>
<tr>
<td>Solar thermal</td>
<td>15</td>
</tr>
<tr>
<td>Hydropower</td>
<td>12</td>
</tr>
<tr>
<td>Biomass</td>
<td>11</td>
</tr>
<tr>
<td>Geothermal</td>
<td>11</td>
</tr>
<tr>
<td>Biofuel</td>
<td>4</td>
</tr>
</tbody>
</table>
From these results it seems that solar photovoltaic, wind power and solar thermal are amongst the general domains the responding VET providers mostly address to. While Biofuel seems to be rarely included in courses.

In the below chart there are the key subjects taught in the interviewed VET institutions in the main domains of renewable energy sector:

<table>
<thead>
<tr>
<th>Solar thermal</th>
<th>Geothermal</th>
<th>Solar photovoltaic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanic &amp; Application Technologies</td>
<td>Electric and Electronic Technologies &amp; Applied Sciences</td>
<td>Installing &amp; Maintenance techniques</td>
</tr>
<tr>
<td>Installation &amp; Maintenance Techniques &amp; Technologies</td>
<td>Installation-Maintenance Techniques &amp; technologies</td>
<td>Electrotechnics &amp; Electronics</td>
</tr>
<tr>
<td>Solar Thermal Systems</td>
<td>Plumbing</td>
<td>Solar Energy &amp; Systems</td>
</tr>
<tr>
<td></td>
<td>Geothermal Power Systems</td>
<td>Solar Panel Maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Design of Solar Photovoltaic power systems</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Biomass</th>
<th>Hydroelectric Power</th>
<th>Wind Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plumbing &amp; Energy Installation</td>
<td>Application of Underwater Engineering</td>
<td>Wind Turbin operation &amp; Wind farm maintenance</td>
</tr>
<tr>
<td>Installation of a small biomass boiler</td>
<td>Hydraulic automatisms</td>
<td>Maintenance and installment of wind turbines</td>
</tr>
<tr>
<td>Biomass potential, exploitation opportunities,</td>
<td>Key concepts on the Hydroelectric Power</td>
<td>Basic Electronics &amp; Hydraulics</td>
</tr>
</tbody>
</table>
Key concepts on the Biofuel Installations Design

Assembly and Maintenance of Biofuel Power Systems

### Biofuel

#### Key concepts on the Biofuel Installations Design

#### Assembly and Maintenance of Biofuel Power Systems

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### Key skills for the successful employability of learners

The table below shows the list of skills considered as most important by the VET providers who answered this question (46 in total) for the successful employment of learners:

<table>
<thead>
<tr>
<th>Key Skills</th>
<th>No. of VET providers who consider this skill important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Technology</td>
<td>24</td>
</tr>
<tr>
<td>Technical Design</td>
<td>22</td>
</tr>
<tr>
<td>Mechanics</td>
<td>20</td>
</tr>
<tr>
<td>Arithmetic, algebra, geometry, calculation, statistics and their applications</td>
<td>16</td>
</tr>
</tbody>
</table>
Cross-functional/soft skills considered important for this job sector

The skills listed in the chart below are the cross-functional and soft skills considered important by the responding companies in order to enhance successful employment of learners.

<table>
<thead>
<tr>
<th>Cross-functional or soft skills</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving</td>
<td>13%</td>
</tr>
<tr>
<td>Communication Skills</td>
<td>13%</td>
</tr>
<tr>
<td>Organization Skills</td>
<td>12%</td>
</tr>
<tr>
<td>Analytics Skills</td>
<td>9%</td>
</tr>
<tr>
<td>Business Skills</td>
<td>7%</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>7%</td>
</tr>
<tr>
<td>Project Management Skills</td>
<td>7%</td>
</tr>
</tbody>
</table>

Does your institution organize internships in companies?

Almost 90% of the VET providers who answered this question said to organize internship in companies. This important data underlined the connection existing
between VET providers and companies and need to cooperate to enhance the successful employability of learners in the renewable energy sector.

Field Research Results from Companies

Key competences for the success of your company and to the renewable energy sectors today and for the coming 2-5 years

Considering the renewable energy industry today and in the next 2-5 years, the companies have been asked to list the skills and competences they consider most valuable and important for the success of their business. The result is a miscellany of diverse technical and soft skills.

• Adaptability, flexibility, reactivity
• Innovative holistic thinking
• Networking
• Qualification and training of staff members
• Team work skills
• Project management skills
• High technical & economic understanding
• Capacity to explore new markets
• Problem solving skills

The biggest developments that will influence the renewable energy sectors in the next 2-5 years

Considering the relevance renewable energy sector is gaining in the last years, the interviewed companies have been asked to focus on the factors which will influence and determine the biggest development in this green industry.

• Increase of specific solution demand & of an eco-friendly awareness
• Increasing prices on fossil fuels
• European and national low-carbon agenda
• Increased demand on sustainable energies and materials
• Increasing demand for smart home automation equipment and electric vehicles
• Development of a sharing economy/collaborative consumption
• Electricity/energy storage
• Increased demand on energy-efficient photovoltaic systems - manufacturing and maintenance
• Development of integrated electricity-heating systems
• Growth

Did these companies come across any difficulties in finding suitable candidates?

In the graphics below it is possible to see all the answers given by companies per each options to this multiple choice question.
Denmark
5 companies responded

- Yes, candidates did not speak a foreign language
- Yes, the candidates had insufficient professional experience
- Yes, not enough applications were received
- Yes, the candidates did not have sufficient education
- Yes, the candidates did not have the appropriate education

Greece
10 companies responded

- Yes, the candidates had insufficient professional experience
- Yes, lack of hands-on-experience
- Yes, not enough applications were received
- Yes, the candidates did not have the appropriate education

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As shown in the graphics above, most of the responding companies seem to have difficulties in finding the right candidates in renewable energy sector due to different reasons, such as their insufficient education or professional experience or because companies do not receive enough applications, as it happens in
Denmark. Lack of foreign language skills is a big limit too when recruiting new employees.

**What jobs are searched by the company of the sector?**

The responding companies have been asked for what job positions they mostly search new employees, according to the different fields the very fragmented renewable energy sector is composed of, such as for example, equipment, manufacture and distribution, construction & installation, operations, maintenance, ownership and enabling activities.

**Equipment, manufacture & distribution:**

- Engineering/Electrical engineers
- Marketing
- Technologyst Researcher
- Quality Controller
- System Monitoring
- Mechatronics
- Planning managers
- Service & Building technologies

**Cross cutting/enabling activities:**

- Electrical & Structural Engineers
- Project Developers
- Energy Transmission Engineers
- Mechanical Engineers
- Environmental Consultants/Engineers

**Construction & Installation**

- Construction Manager
- Installers
- Sales & Marketing Manager
Plumbers
Pipefitters
Electricians
Laborers

Operations, maintenance, and ownership

Field technicians
System monitors
Recycling services

Which cross functional/soft skills do you consider important?

Analytical Skills
Organizational skills
Problem solving
Project management skills
Interpersonal skills
Ability to learn
Creativity
Adaptability
Team work abilities

Do you cooperate with secondary vocational schools?

The answers coming out from the research shows a very different framework among the responding companies. So in countries, such as Italy and Denmark companies cooperate with VET schools, while in others, such as in Spain and Greece they do not.

From what schools do you recruit your future labour force?
There is a common situation in all the companies of countries responding this question, since they mostly recruit their labour force from:

![Diagram showing University and Secondary Vocational Schools]

According to these results recruiting workers directly from high schools is not common.

**Main findings**

Through this overall report, result of the desk research and field research on skills needed for jobs related to renewable energy, the project partners of NE(W)AVE tried to provide an overview of the labour market and VET provision situation in their countries. The results show how this sector is differently developed in these European countries and how its importance and involvement of stakeholders is increasing significantly in these last years. The increasing interest towards this sector is the consequence of different factors, such as, for example a higher eco-friendly awareness, an increased demand on sustainable energies and materials and a European and national low-carbon agenda\(^3\). Therefore, many job opportunities are expected to be created especially for positions which require high technical skills.

Regarding the existing VET providers and companies in the renewable energy field at national levels it is interesting to find different systems, from system

\(^3\) [https://ec.europa.eu/clima/policies/strategies/2050_en](https://ec.europa.eu/clima/policies/strategies/2050_en)
which are adaptable and adjustable to the local and companies’ demand to systems which are not very adaptable and can hardly respond to the continuous changing educational system.

In every country involved in the research, there are a few courses or trainings on, at least, one branch of renewable energy. Here both a theoretical and a practical part are realized through an apprenticeship or an internship and have a short duration. Usually, these course offers involve many different learners, low skilled, skilled workers, unemployed people or young professionals, so that they can upgrade their skills or re-qualify their competences in the field of renewable energies.

The results of the here presented research adds weight to the supposition that there is a skill mismatch existing between job demand and learning offer which characterizes all the involved countries. These are gaps between the learning offer and the companies demand. One of its main reasons seem to be that the renewable energy sector is a young and rapidly growing sector so it can be hard to understand and match the companies’ current needs and their future needs in a flexible way and set a proper learning offer accordingly. Furthermore, All the interviewed companies seem to come across some difficulties in finding suitable candidates mostly because of the insufficient education or professional experience of the candidates. This is why learning offer needs to be reformed and adjusted in order to overcome the obvious gap existing between learning offers and company demands and answer the job market needs.

In the case of Denmark there are not enough applying candidates in general. The participating partner organization has started to export relevant education with the aim to attract future staff for the renewable energy sector.
The courses, according to most of the interviewed VET providers, normally include specific domains related to renewable energy fields, that are: Biomass, Solar Photovoltaic, Solar Thermal, Geothermal, Hydropower, Wind Power and Biofuel. These are developed through different sub categories which deepen the topics and help learners to get a clearer overview of each domain.

It must be noticed that courses’ contents are subject to regular reform and they may vary each academic year, especially in Greece where the educational system has to go through continuous transformation due to the current political situation. In general, being the renewable energy sector an constantly changing sector, learning contents need to be adapted regularly, according to the ongoing advancing of new technologies and regulation changes.

While technical knowledge is considered as a very important factor for the successful employability of learners in green energy sector, big importance is given to soft skills too. The interviewed companies listed the skills they consider as most crucial for candidates in order to find a job, such as, adaptability, flexibility, reactivity, innovative holistic thinking, networking skills, team work skills, project management skills, capacity to explore new markets and problem solving skills. So it is important that learning paths consider that and include both technical knowledge and soft skills which can help candidates increase their employability and, as a consequence, companies find the most suitable employees.

According to this research results, the jobs searched by the interviewed companies of this sector that are within the NE(W)AVE project target group are mostly in construction & installation field and the requested positions are: construction manager, sales & marketing managers, plumbers, pipers, electricians and laborers.
These research results set the ground for the content and design of the NE(W)AVE learning offer, trying to comply with the different national needs and backgrounds.

**Recommendations for the NE(W)AVE OOC Development**

After having collected, compared, analysed and discussed the results of the desk researches and the field researches, the NE(W)AVE project partners can put the bases to design and realize the Open Online Course (OOC).

The OOC aims to provide an innovative training course able to upgrade & convert existing competences of VET learners empowering them to work in the renewable energy sector. Unique Selling Point of the OOC is the offer of carrying out an internship abroad and the development of key competences in carrying out placement abroad for 2 weeks.

In fact, this e-course, which will be hosted in Moodle platform, will be a blended-learning measure including a practical part in form of the internships. This combination of theoretical and practical learning will put the basis for the sustainability of the NE(W)AVE project.

In order to tailor and realize a learning offer which can respond to the country needs and different national frameworks emerging from these researches in an effective way, the e-course should have a versatile structure and contents which will help learners from different countries and backgrounds to acquire the necessary green skills and help them to increase their employability. According to these research results, it will be necessary to focus on technical skills, especially related to the construction & installation field, and in soft skills development too, since transversal skills are considered crucial for learners’ employment as much as technical competences.
As a clear need coming out from the researches, considering the big variety of VET pathways relevant for the renewable energy sector, the NE(W)AVE consortium decided to focus on most 2 or 3 professions, such as electrician, plumbers and mechanics, in order to be able to tailor modules including more specific contents and so more effective lessons. This choice is also due to the level of expertise that the partnership can offer in both the theoretical and practical parts of the course for these above mentioned professions. Thanks to such a tailored course, learners will have the chance to use the soft and specific technical skills they acquired through this e-learning course in a more successful way.

According to the learner level, defined at the beginning of the course through an assessment test, it will be possible to attend or the EQ4 or the EQ5 level course. Both the levels will be designed for all the specific trades.

The course will contain three main modules, as below:

42 hours per course for all trades

- **Soft skills** (12h)
- **Technical skills** (18h for all trades)
- **Employability skills** (12h)

Each module content will be designed following the desk and field research results, and so trying to answer all the involved countries emerging needs and more precisely the interviewed VET providers and companies’ specific recommendations.

This OOC will be accompanied by a 2-week training course in two partner countries, Spain and in Italy, where OOC learners will have the chance to
integrate the theoretical competences acquired in the e-course with essential practical skills.

As a first step, the OOC will be tested by VET learners from each partner country, whose competences will be tested through online questionnaires before starting the course. During this piloting phase, NE(W)AVE partners will be able to collect feedbacks and, as a consequence, improve the e-learning course accordingly.

After piloting, this e-learning course will be available and used by a wide range of targets, guaranteeing its transferability to other training institutions and VET providers as well as companies which need to upgrade their employees’ skills or look for innovative and accessible educational tools. So, OOC’s structure will be easily accessible so that all the interested learners will be able to upskill or convert their competences in renewable energy field through it.

**Annexes:**

Desk Research Template:
https://www.dropbox.com/s/trit3y0of0xg3zd/NE%28W%29AVE_IO1%20TEMPLATE.docx?dl=0

Italy- Desk Research (CESIE):
https://www.dropbox.com/s/ymjd2i8syhv13n8/NE%28W%29AVE_C_desk_report_Italy.pdf?dl=0

Denmark-Desk Research (EUC Syd):
https://www.dropbox.com/s/6d96ocdr176ghpf/NE%28W%29AVE_C_desk_report_Denmark.pdf?dl=0

Greece- Desk Research (EUROTRAINING):
https://www.dropbox.com/s/8mr168i6j7jxyaj/NE%28W%29AVE_C_desk_report_Greece.pdf?dl=0

Austria- Desk Research (die Berater):
Spain- Desk Research (Heliotec):
https://www.dropbox.com/s/gyauuxgloomqdz1/NE%28W%29AVE_C_desk_report_Spain.pdf?dl=0

Comparative Desk Research Summary:
https://www.dropbox.com/s/z5gvxfq6f4ghw67/NE%28W%29AVE-%20Comparative%20Summary%20Report-%20final%2030.05.18.pdf?dl=0

Field Research Questionnaire Template for companies:
https://www.dropbox.com/s/f4dbdjhmnpuiw8/IO1_%20Questionnaire%20for%20enterprises_final.output.pdf?dl=0

Field Research Questionnaire Template for VET providers:
https://www.dropbox.com/s/f4dbdjhmnpuiw8/IO1_%20Questionnaire%20for%20enterprises_final.output.pdf?dl=0

Italy- Field Research for companies (CESIE):
https://www.dropbox.com/s/taj6pdc2fe03ffw/Field%20Research%20Results%20Companies%20-CESIE%20-.docx?dl=0

Italy- Field Research for VET providers (CESIE):
https://www.dropbox.com/s/an2ey5jf2alec61/Field%20Research%20Results%20VET%20-CESIE.docx?dl=0

Denmark- Field Research for companies (EUC Syd):
https://www.dropbox.com/s/evfy3hsds7zoggg/IO1_questionnaires%20_final_companies_Eucsysd.pdf?dl=0

Denmark- Field Research for VET providers (EUC Syd):
https://www.dropbox.com/s/2d5j2hsekiktyih/NE%28W%29AVE_C_desk_report_Austria.pdf?dl=0
This project has been funded with support from the European Commission. This communication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

https://www.dropbox.com/s/ubqesluyziaboxm/IO1_Questionnaire_final_VET%20Eucsyd.pdf?dl=0

Greece- Field Research for companies (EUROTRAINING):
https://www.dropbox.com/s/jqdtmckko1u7iks/Field%20research%20results_VET-%20Eurotraining.pdf?dl=0

Greece- Field Research for VET providers (EUROTRAINING):
https://www.dropbox.com/s/jqdtmckko1u7iks/Field%20research%20results_VET-%20Eurotraining.pdf?dl=0

Austria- Field Research for companies (die Berater):
https://www.dropbox.com/s/vchgvasgd7vo4ec/Field%20research_companies_die%20Berater.docx?dl=0

Austria- Field research for VET providers (die Berater):
https://www.dropbox.com/s/u4fqwecpk8to5i0/Field%20research%20VET_die%20Berater.docx?dl=0

Spain- Field Research for companies (Heliotec):
https://www.dropbox.com/s/qlaa10qef53sxbm/Field%20research%20results_Companies-%20HELIOTEC.PDF?dl=0

Spain- Field Research for VET providers (Heliotec):
https://www.dropbox.com/s/hdtsgqmq7tk67x6/Field%20research%20results_VET%20Schools-%20HELIOTEC.PDF?dl=0

Italian on-line Questionnaire for VET providers:
https://goo.gl/forms/EiRUK7sXCGC1mRfP2
Italian on-line Questionnaire for enterprises:
https://goo.gl/forms/8UMrNMVR8n9KeJbh2

Spanish on-line Questionnaire for VET providers:
https://goo.gl/forms/qecBLY9gvFrZQ2

Spanish on-line Questionnaire for enterprises:
https://goo.gl/forms/b21odYZ1e1SfawXZ2

Austrian on-line Questionnaire for VET providers:

Austrian on-line Questionnaire for enterprises:
https://www.surveygizmo.com/s3/4240250/Erneuerbare-Energien-Umfrage-Unternehmen

Greek on-line Questionnaire for VET providers:
https://goo.gl/forms/KSlggtRZq4XhXnGt2

Greek on-line Questionnaire for enterprises:
https://goo.gl/forms/yEez7PPuV5ainVvG3

Spain- Field Research for companies (Heliotec):
https://www.dropbox.com/s/qIlaa10qef53sxbm/Field%20research%20results_Companies-%20HELIOTEC.PDF?dl=0

Spain- Field Research for VET providers (Heliotec):
https://www.dropbox.com/s/hdtsgqmqlTk67tx6/Field%20research%20results_VET%20Schools-%20HELIOTEC.PDF?dl=0
Italian on-line Questionnaire for VET providers:
https://goo.gl/forms/EiRUK7sXCGC1mRfP2

Italian on-line Questionnaire for enterprises:
https://goo.gl/forms/8UMrNMVR8n9KeJbh2

Spanish on-line Questionnaire for VET providers:
https://goo.gl/forms/qecBLY9vgvFrvFZQ2

Spanish on-line Questionnaire for enterprises:
https://goo.gl/forms/b21odYZ1e1SfawXZ2

Austrian on-line Questionnaire for VET providers:

Austrian on-line Questionnaire for enterprises:
https://www.surveygizmo.com/s3/4240250/Erneuerbare-Energien-Umfrage-Unternehmen

Greek on-line Questionnaire for VET providers:
https://goo.gl/forms/KSiigtRZq4XhXnGt2

Greek on-line Questionnaire for enterprises:
https://goo.gl/forms/yEez7PPuV5ainVvG3
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