

Result 2.2 Three-level centres of professional excellence "Green Economy for SMEs" and transnational platform

Part A Concept

Development and Implementation of Three-level Centers of Excellence of Vocational Training in Green Economy

Prepared by:

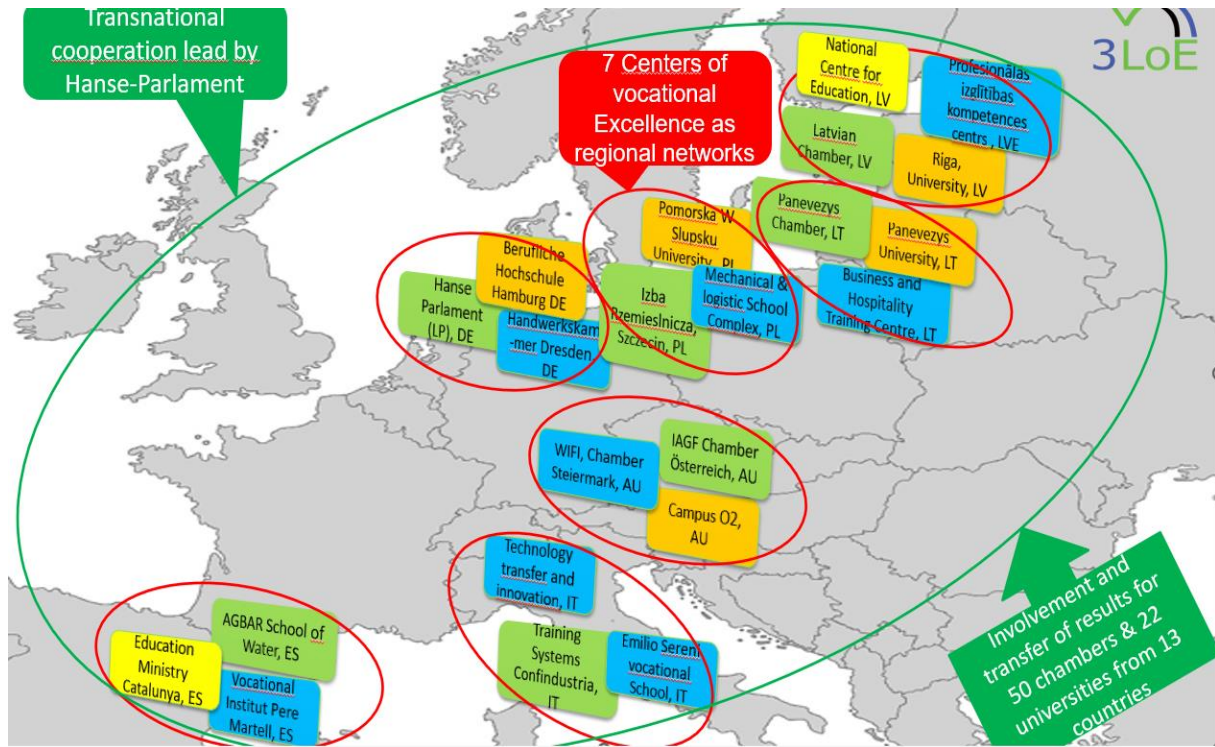
Hanse-Parlament



This work is licensed under the Creative Commons Attribution 4.0 International License.

"The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

Partner



Language

English

Table of Contents

1	Introduction.....	4
1.1	Summary of the Project.....	4
1.2	Communication and cooperation of project implementation.....	8
1.3	Preparation of the result.....	9
2	Findings and Solution Strategies.....	10
2.1	Background.....	10
2.2	Quantitative and qualitative bottlenecks.....	10
2.3	Reorientation in vocational education.....	13
2.4	Consistent introduction of dual vocational education.....	15
2.5	Intensification of further training and dual studies.....	17
2.6	Quantitative and qualitative bottlenecks in the Green Economy.....	20
3	Design and Structure of Three-level Centers of Excellence.....	23
3.1	Challenges and objectives.....	23
3.2	Tasks, structure and organisation.....	27
3.3	Notes on the third stage of the centers of professional excellence.....	33
4	Implementation of Concepts and Activity Planning.....	38
4.1	Development and permanent operation of regional centers of excellence.....	38
4.2	First center level "Vocational Training".....	40



4.3	Second center level "Continuing Vocational Training"	42
4.4	Third center level "Higher Education"	44
4.5	Quality management.....	45
4.5.1	Quality assurance of educational measures.....	46
4.5.2	Quality assurance of cooperation, dissemination, implementation advice and project execution	46
4.6	Dissemination and implementation advice.....	47
4.7	Project management.....	49
5	Compliance of the planned activities and directions of work with the European Union level vocational education and training priorities	51
6	Foundation and start of work of the Center of vocational Excellence	56
6.1	Template	56
6.11	Background.....	57
6.12	Objectives of the Center of Vocational Excellence	57
6.13	Tasks, structure and organisation.....	59
6.2	Foundation and start of operations	63



1 Introduction

1.1 Summary of the Project

Around 99% of all EU businesses are SMEs, creating up to 70% of all jobs. In general, SMEs have good growth prospects for the future and are particularly well equipped to solve environmental problems and to enhance the green economy. However, in most of the project countries, SMEs are confronted with a shortage of skilled workers and young entrepreneurs. This shortage of skilled workers is even more alarming taking into account that due to aging of current entrepreneurs, a large and growing number of companies will have to be handed over to the next generation. Furthermore, young specialists and entrepreneurs often lack the qualifications and skills needed in order to respond to contemporary developments in the fields of energy, climate and environmental protection. The following problems have been identified in SMEs working in the fields of green economy, energy and environmental protection:

- Blatant and growing shortage of skilled workers.
- Large qualification deficits, especially in the Green Economy.
- Loss of attractiveness and low qualification of school-based VET.
- Low rates of further training and insufficient orientation of offers to SME needs.
- Ageing of entrepreneurs and increasing shortage of young people (demographic change).
- Failure of business transfers and low rates of business start-ups.
- Low innovation rates and insufficient productivity.
- Not enough cooperation between universities and SMEs and a lack of teaching geared to SME needs.
- Comparably low internationalization of SMEs and vocational training providers.
- Lack of national level support for SMEs”.

To meet these challenges, work-based learning and new paths in vocational training must be provided through cooperation between educational institutions, economic chambers and SMEs. University graduates are often well-qualified in theory, but lack practical knowledge, skills and abilities that are crucial for SMEs. For this reason, VET reforms must also involve higher education, and should implement dual bachelor's degree programs that combine a bachelor's degree with vocational training and on-site work in companies.

In the 3LoE project, an innovative and complex project structure with 22 project partners from 7 countries as well as 60 associated partners from 13 countries was designed. In each country, centers of vocational excellence (COVEs) in Green Economy will be established, managed and their permanent continuation ensured. A transnational cooperation of the centers will be developed, extended to 60 education stakeholders from 13 countries and operated permanently in an institutionalized form. The centers will offer a wide range of dual education measures in vocational training, further education and higher education, that are being developed, tested and evaluated in the project. These educational measures on EQF levels 3-7 focus on Green Economy, Digitalization and Entrepreneurship. Furthermore, vocational and educational consulting and innovation support for SMEs will be developed and implemented. In total, seven Train-the-Trainer programs will be developed and implemented permanently by the project partners. All results will be transferred to the 60 associated partners together with implementation advice.

The objectives and aimed outcomes of the 3LOE project can be summarized as following:

1. Foundation of a three-level Center in each project country

1.1 Building the "Green Economy" skills alliance for qualifications in SMEs with educational and economic actors from the 7 project countries; development of information and cooperation tools.

1.2 Expansion of the skills alliance to the 60 associated partners from 13 countries, comprising chambers of commerce, SME associations, as well as universities of applied sciences/colleges.

1.3 Development, testing and evaluation of a curriculum and teaching materials for Train the Trainer courses for personnel and center management (vocational school-teachers, trainers in SMEs and lecturers in further and higher education institutions).

1.4 Evaluation of the construction and operation of the seven centers of Excellence and of the transnational cooperation.

1.5 Development of business and financing plans and ensuring the long-term continuation of the seven centres and transnational cooperation.

1.6 Development, consulting and introduction of political strategy program.

2. Implementation and realization vocational training

2.1 Development and implementation of a tool for vocational and qualification counseling as well as a training for consultants and teachers to use the tool.

2.2 Implementation of the dual system, so that work-based learning is put into practice in the project countries.

Preparation and transfer of curricula and examination regulations for dual vocational training for different professions and implementations in Poland, Lithuania, Latvia and Spain.

Development, test and implementation Trainings for teachers to conduct dual vocational training as well as Training of trainers in SMEs.

2.3 Development political concept for the training and integration of young people with learning difficulties for young people with learning difficulties (EQF level 3).

Development, test and implementation of a dual vocational training "Specialist for Building Insulation".

2.4 Development, testing and evaluation of education programme, teaching materials and examination regulations for the provision of sector-specific qualifications already during the initial vocational training for stronger learners. Implementation in the dual system, so that work-based learning is put into practice in the project countries.

2.5 Development and implementation five-year technician training „Ecologic Solutions in Logistics”.

3. Implementation and realization of further vocational training

3.1 Development and implementation of concepts and instruments for the management of continuing vocational training.

3.2 Development, test and implementation of a Train-the-Trainer program for teachers to conduct further training.

3.3 Development and implementation of a concept "SME-fair digitalization" as well as development, test and implementation of two train the trainer programs "Basic and advanced digital skills".

3.4 Transfer and implementation of four further trainings Energy Saving and Renewable Energies.

3.5 Preparation, transfer and implementation of six further trainings in the Green Economy.

3.6 Development, testing and evaluation of different training programs and teaching material for owners, managers and qualified workers of SMEs (EQF level 5 and 6). The trainings are specifically tailored to SME needs and different qualification levels and combine the transfer of technical, professional and management know-how.

- Training Enterprise and Entrepreneurship in Green Economy
- Training Energy Service Manager
- Trainings vocational Master Carpenter and Electric
- Training Construction Technician
- Training Service Technician
- Training Sustainability in foodservice industry

3.7 Development of regulations for new continuing education occupational profiles with a focus on the green economy.

3.8 Development of an integration programme for the unemployed (EQF level 4) in order to be able to place the unemployed in permanent jobs through further training seminars and a further training qualification.

4. Implementation and realization of higher education

4.1 Preparation and transfer of curricula, evaluation and examination regulations for two existing dual Bachelor degree programmes "Management of Renewable Building Energy Technology" and "Business Administration for SMEs".

4.2 Development and beginning of implementation of new dual Bachelor degree programs

- Business Administration & Sustainable Management of SMEs
- Entrepreneurship and Innovation in Green Economy
- Logistics - Green Supply Chains
- Service technician
- Tutorial "Sustainable management Climate neutrality for companies"

4.3 Development, test and implementation of four study modules (EQF level 6) on SME management in the Green Economy sector, which will be carried out in the dual study system and integrated into existing Bachelor degree programmes.

4.4 Development and implementation of concept for innovation promotion Solutions for manageable R&D tasks of SMEs and conducting manageable R&D projects for SMEs-

4.5 Development, testing and implementation of Training program for university lecturers and SME advisors.

5. Dissemination, transfer and use of the project results

5.1 Development of a concept and summary evaluation of the dissemination results of all partners

5.2 Transfer of all educational measures to 60 educational institutions in 13 countries and needs-oriented implementation consultations as well as realization of a bundle of measures for further dissemination of the project results.

5.3 Further dissemination activities such as presentations online, at third-party events, press releases and conferences.

5.4 Book with all results of the project and distribution via book trade.

For each of the three levels of educational measures there will be:

- Target-group-specific educational programs.



- Curricula, teaching materials, etc. developed in a leading role by the educational institutions of the respective level, whereby the educational institutions of the other levels (in particular universities) participate in an advisory and supportive manner.
- Representatives of the participant target groups involved in the development work.

All educational measures will be tested with the respective target groups under different national conditions in the countries, evaluated and completed on the basis of the evaluation results with application notes.

Analyses of the economic and demographic development, the education and labour markets as well as the qualification needs of SMEs in the Green Economy were conducted to provide the basis for a common point of departure for carrying out the project work. A summary of the analyses results is presented below. They form the starting point for the subsequent development of concepts for the establishment and permanent operation of seven regional centers of excellence in seven EU countries. In the development of these strategic concepts, the experience gained from already operating VET centers of excellence in Germany and Poland were taken into account.¹

In order to realise development concepts for seven centers of excellence, implementation and activity plans were discussed by all project partners in fifteen online meetings at the beginning of the project lifetime. The following points were discussed:

- The development and operation of the seven centers of vocational excellence.
- The development and implementation of educational measures at EQF 3 - 6.
- Quality assurance, dissemination of all results and project management.

The following report presents the results of these plannings, which form the course of action of the project.

In coordination with the present implementation concept, a differentiated activity plan was developed and bindingly agreed with all partners, which includes in particular for each individual activity:

- Responsible partner
- Participating partners
- Deadlines for the production of drafts and finished results
- Result to be produced
- Quantitative and qualitative information

The activity plan is constantly monitored by the lead partner, discussed in detail with all project partners every six months and updated as required.

Based on the present implementation concept, the seven centers of vocational excellence started their operations on July 01, 2021. As a founding act and guideline for the future work, a cooperation agreement was concluded for each center and signed by the respective partners of a center.

¹ Establishment of two-stage industry competence centers of vocational education and training, Baltic Sea Academy, Hamburg 2020

Result 2.2 Three-level centres of professional excellence "Green Economy for SMEs" and transnational platform is presented in three parts:

- ✓ Part A Concept: Development and Implementation of Three-level Centers of Excellence of Vocational Training in Green Economy.
- ✓ Part B Development and Implementation of Information & Cooperation Tools and transnational Cooperation by involving associated Partners.
- ✓ Part C Evaluation concept and report as well as business models for the continuation of the centres of vocational excellence.

The present report comprises Part A Concept.

1.2 Communication and cooperation of project implementation

The development and establishment of seven centres of vocational excellence in seven very different countries requires intensive communication and exchange between all project partners involved. Getting to know each other personally, achieving a common understanding and creating a stable basis for cooperation and trust are very important, but not sufficient for a four-year project alone. Rather, the level of words should be quickly transformed into a level of action, namely joint work, operation of the seven centres of vocational excellence as well as development and implementation of educational measures. Therefore, a project approach is realised that directly combines meetings, communication and exchange with joint development and implementation work.

- In the first nine months of the project, the focus is on getting to know each other, communication and a common basis of understanding. To this end, numerous online and face-to-face meetings will be held with
 - a) project partners from one country who will jointly develop and operate a centre of vocational excellence.
 - b) all project partners of the seven countries, in order to coordinate concepts and ensure transnational cooperation.
 - c) 70 associated partners from 13 countries to take up their needs and suggestions, feed them into the project work and familiarise these future transfer recipients and development partners with agreed concepts.
- During this first phase of the project, the lead partner will conduct analyses of the economy, demography, education and labour markets as well as examine qualification requirements and consult and coordinate with all project partners in order to create common foundations and uniform basic data for the further project work.
- From the sixth month of the project, development work by individual project partners or transnational working groups of several partners will begin, initially for seven train the trainer programmes, which will be discussed and agreed upon in the entire project consortium.
- The seven Train the Trainer programmes will be tested, evaluated and implemented during the first eighteen months of the project with the participation of all project partners. In this context, communication and exchange between all project partners involved, getting to know each other personally, reaching a common understanding and creating a stable basis for cooperation and trust will continue intensively.
- A differentiated concept "Development and Implementation of Three-level Centers of Excellence of Vocational Training in Green Economy" will be developed,



discussed and agreed with all partners. On this basis, the seven Centres of Vocational Excellence will be founded and, from the ninth month of the project, will organise their ongoing operation in intensive transnational cooperation.

- Starting in the second year of the project, comprehensive training measures will be developed at all three levels of vocational training (EQF Level 3 & 4), continuing vocational training (EQF Level 5 & 6) and higher education (EQF Level 6 & 7), tested in practice under different national conditions, evaluated and implemented.
- Directly connected to this, personal communication and exchange as well as further strengthening of the basis for cooperation and trust are intensively continued.

This approach of developing national and transnational cooperation in direct connection with joint development and implementation work ensures that the seven centres of vocational excellence will continue after the end of the project, that they will continue transnational cooperation with each other and with 60 associated partners from 13 countries, and that by the end of the project more than thirty, in part very comprehensive, educational measures in the green economy will have been developed, tested, evaluated and implemented.

1.3 Preparation of the result

Result 2.2 Three-level centres of professional excellence "Green Economy for SMEs" and transnational platform is presented in three separate reports:

- Part A Concept: Development and Implementation of Three-level Centers of Excellence of Vocational Training in Green Economy
- Part B Tools & Extension
- Part C Implementation, Evaluation & Business Models

Part A comprises standardized principles and concepts for the structure of the COVEs. Based on bottlenecks and possible solutions for the development of SMEs and vocational education and training, challenges and objectives as well as tasks and structure for the development of the COVE are presented. Particular attention is paid to the third stage "higher education". The concept is then evaluated with regard to the European Union level vocational education and training priorities. The report concludes with a memorandum that the partners of each COVE conclude with binding effect for the development of their centre.



2 Findings and Solution Strategies

2.1 Background

Small and medium-sized enterprises (SMEs) are the backbone of the economy as well as socio-economic stabilizers. In fact, 99% of all companies in the EU are SMEs, providing about 70% of all jobs. Clearly, they are essential for vocational education and for securing economic prosperity and international competitiveness.

However, SMEs only have potential to succeed in national as well as international competition if they demonstrate the strongest innovation capacity of the highest quality. This requires outstanding qualifications. Already today there is a considerable lack of qualified employees, which will considerably increase in future and thus will dramatically limit growth and innovations. Improving qualifications in general education, increasing the attractiveness, quality and development of vocational education as well as further training must therefore be the main agenda and the most important tasks for SMEs in the EU.

Furthermore, qualitative problems are intensified by quantitative bottlenecks since the number of people leaving the job market for reasons of age is much higher than the number of young people entering it, due to demographic changes. According to current forecasts, the number of young people who are part of the labour force will drop in all European countries, except Sweden and Norway, up to 25% by 2030. At the same time, the demand for employees will grow, leading to a severe competition for qualified young professionals. This poses a significant danger especially for medium-sized companies in that they might not win enough qualified staff and at the same time be driven into a lower qualification level.

In principle, SMEs in EU have the best chances for growth. However, to use these chances they need qualified personnel on a sufficient scale, which already today is more and more difficult to achieve considering the overall increasing lack of qualified staff. These obstacles are especially significant since the increasing importance of knowledge-intensive services and industries is accompanied by a growing demand for qualified employees. In the field of knowledge economy, most EU countries have good structures in place and a considerable potential for development. 'Knowledge' is thus the decisive resource of the future.

2.2 Quantitative and qualitative bottlenecks

As a result of the decline of the birth rate the yearly number of the school graduates has already significantly decreased. According to current forecasts, the number of school graduates will decrease even further. If SMEs will manage recruiting the current proportional number of training beginners in regard to the total number of graduates, the number of apprentices will drop by half, and so will the number of the skilled workers of the next generation. However, the maintenance of such "constant share of apprentices" is already extremely optimistic, if not unrealistic. In the situation of such drastic decline in the number of the school graduates, the SMEs find themselves competing for the next generation of employees with the industry, commerce, services, colleges, universities and full-time study courses. Professions in the field of craftsmanship are in a difficult position during this hard competition because of their relatively low attractiveness. Already today many of the craftsmanship professions face the problem that open apprenticeship positions cannot be filled and the next generation cannot be secured.



This difficult situation is aggravated through several further factors:

- Already today over 30% of apprentices move to the metropolitan regions from countryside areas. However, also in metropolitan areas the number of school graduates is decreasing due to demographical reasons, which means that there is also regional competition for the next generation. Irrespective of this, securing the next generation in metropolitan regions cannot be based in the long run on attracting qualified young people from rural areas.
- In the situation of inevitably low numbers of apprentices in the whole economy the competition at the apprenticeship market amongst the skilled workers will continue. Other fields of economy, in particular industry, will increasingly recruit young specialists from SMEs. The rate of employment of former apprentices by the SMEs after the completion of their final examinations is thus under a lot of pressure and is likely to decline.
- The number of school graduates with the certificate of completion of compulsory basic secondary education is declining disproportionately. However, until now the biggest share of apprentices of SMEs have come precisely from this group. Additionally, due to increasingly higher requirements in almost all apprenticeship professions, a growing share of young people without or with a weak school certificate are no longer able to complete vocational education. At the same time in the situation of growing problems of securing next generation and under current conditions the urgent need for young workforce remain ignored.

Conclusion: Unless the current conditions change, SMEs will have to adjust to the fact that in the long run they will be able to secure only less than 50% of apprentices and only about 40% of specialists which completed training with them, compared to the numbers in the past.

On the other side of the age pyramid of employed people the share of older people is increasing. Nearly 40% of SME employees are older than 50. In the future the number of older employees leaving the job market will be much bigger than the number of young people entering it. The result is a high and fast-growing deficit of qualified employees.

The effects of falling numbers of school graduates will be especially visible in the long term. Currently much more important are the educational backgrounds of young people, which have significantly changed. In Germany, the share of graduates with Abitur examinations after an eight- or nine-year school path has become more has increased considerably. However, SMEs until now have not been able to find convincing ways of attracting these stronger and more successful learners. The trend towards higher level of graduation certificates will continue, even though it does not automatically mean higher qualification. SMEs should do everything in their hands to attract young people with intermediate school certificates and especially Abitur through corresponding education offers, to secure a new generation of workforce.

The extremely low share of highly qualified is reduced even further since many of the students with Abitur certificates use craftsmanship education only as a transit or waiting station in order to start studies later, and do not return to SMEs.

Serious quantitative obstacles become exacerbated when one takes into account qualitative considerations. In the situation of falling numbers of school graduates, the trend continues to be towards the lower and lower qualification level of apprentices in the crafts sector. In connection with that, there is a considerable decline in qualification



level of skilled workers. The process has already reached alarming proportions in some of the branches.

The market developments require a forward-looking strategy, in particular strengthening of innovation capacity, intensive use of new technologies, securing a high-quality level, high level of flexibility, outstanding readiness for communication and co-operation etc. This situation is especially dramatic, since, considering the exceedingly high labour costs at their local market, the SMEs can succeed only through providing the highest quality, productivity over the average level, as well as outstanding Knowhow advancements. However, all of this requires the highest level of qualification, which is ever more difficult to ensure.

As employees of the older generations leave the job market, SMEs lose a lot of their experience and management knowledge. Highly qualified skilled workers and executives at the middle and top level are urgently required, for example as team leaders, supervisors etc.

Even more pronounced is the deficit at the level of the company owners, where over 50% are over 50 years old. Already today, the number of jobs getting lost through company takeovers which fail due to missing successors is higher than the number of jobs being created through newly established companies.

Traditionally the crafts sector obtains their new generation of managers and owners through the master craftsman training. However, since the number of young journeymen and -women is reaching only 40% of the original numbers and is thus falling by more than a half. The number of the new generation of master craftsmen will also inevitably fall at least on the same scale. Considering the circumstances, the decline in the number of master craftsmen is much more serious than that in the number of journeymen.

- In the situation of falling qualification levels of journeymen the potential for master craftsman training becomes lower.
- Due to the high shortage of skilled workers the economic incentive for master craftsman training and establishing one's own business is falling.
- Master craftsman training in its traditional form is losing its appeal among young people.
- The age structure of the currently employed master craftsmen is even more unfavourable, meaning that in the long term it is likely that only less than 40% of the new generation of master craftsman will be secured through this form of training which is specific for the crafts sector.

Conclusion: SMEs in general and particularly the crafts sector, should not become the sole experts of training and integration of weaker learners and people with weaker social skills. While fulfilling this socially important task, SMEs should at the same time turn towards the best ones in the society and recruit strong learners on a much larger scale. The quantitative problems, as well as the loss of qualification, concern not only the first level of vocational education and the journeyman level; they also reveal themselves even more intensely at the level of management and entrepreneurs.

Attracting entrepreneurs and executives from amongst graduates of universities and universities of applied sciences will have to become increasingly important. Yet, also in this case there are significant limitations. On the one hand, there is an increasing competition between all branches of the economy to attract these graduates. On the other hand, these study subjects are mostly very theoretical and scientifically oriented. Thus, the graduates are not exactly over-qualified for the management tasks in a SME,



but rather incorrectly qualified. First and foremost, they are missing the practical skills, the professional knowledge as well as the ability to connect practice and theory. In many ways they are too specialized, for example in the technical or business fields. As opposed to that, executives of SMEs need to be system specialists, combining technical and professional skills with business knowledge and the ability to take care of all the management tasks.

2.3 Reorientation in vocational education

It is necessary that already at later stages of school education, including the graduating class, comprehensive information is provided dealing with the opportunities for vocational education, individual professions, requirements and perspectives for the future. A close contact with companies and economic chambers, presentations by entrepreneurs, master craftsmen and trainers encourage information exchange and the decision-making process. Repeated company internships and practical training dates in companies must be mandatory for all pupils.

Vocational counselling needs to be considerably intensified. It needs to embrace not only formal conditions and entry requirements such as graduation certificate and grades. Much more important is the development of a profession-specific competence profile, which is then matched against the carefully identified individual competencies of individual young people. Careful counselling and preparation for vocational education should also contribute towards considerable reduction of change and drop-out rates in vocational education which are partly too high.

For each individual occupation, different performance and suitability criteria should be determined in accordance with the actual requirements as a basis for individual competence assessment and potential analysis. These criteria will help trainers as well as apprentices; the companies get employees which are able to grasp the task, and the young people gain their experiences of success which positively affects their further development and motivation. The high number of drop-outs during the training and the danger of occupational dead ends are thus considerably reduced.

Vocational education must consider individual skills and potential and requires extensive differentiation. Through the introduction of different levels young people with differing educational backgrounds, competences and level of academic ability get the possibility to receive education which corresponds to their skills:

Level 1: Specific vocational education courses for weaker learners which last 2 years, focus mainly on practical learning and are completed with an independent recognized qualification.

Level 2: Vocational courses of the middle level, which combine practical knowledge with theory, last 3 years and are completed with a recognized qualification as a skilled worker or journeyman.

Level 3: Vocational education courses of a higher level for stronger learners, lasting 3 to 3,5 years providing additional qualifications, further trainings in the first vocational education and are completed with recognized qualifications at the level higher than the current skilled worker or journeyman examination.

In such a differentiated system of vocational education a high level of permeability must be guaranteed. Each graduate of a lower level must have an unrestricted opportunity to achieve a higher level, in accordance with their learning progress and taking into account the parts of the studies that have already been completed. Also, the other way



around a change from a study course of a higher level to a course of a lower level should be possible, considering the study time already covered.

In an open and accessible system, gradual learning according to individual possibilities and skills can take place. Corresponding to the learning success and individual development, everyone can achieve each training and training qualifications, even through different ways.

Further, in the vocational education every young person deserves a second chance. To this end, specific preparatory and promotional measures need to be developed and implemented in close cooperation with companies, inter-company training workshops and vocational schools.

In some of the Baltic Sea Countries the duration of vocational education is extremely short. The result of such insufficient training is a remarkably high unemployment rate among young people. Vocational education must be profound and allow for enough time to practice what has been learnt, until it becomes a natural part of the learner's life. In principle vocational education should last 3 to 3,5 years. The study time can be shortened based on higher level of the educational background or successful mid-term results by a maximum of one year. Also, in case of basic professions or part-time occupation the study time should not be less than 2 years.

Vocational education should preferably be part of the dual system which combines practical training in companies with accompanying theory studies at vocational schools, leading to a recognized vocational qualification. The theory should be taught as much as possible in conjunction with the practical training. In case of comprehensive theoretical subjects which need to be taught in a coherent way, longer blocks of lessons can be chosen, thus representing basic theoretical training.

Teaching of theory (vocational schools) and practice (companies) requires close cooperation and coordination. Also, to this end vocational schools have to demonstrate the highest level of initiative as well as a high level of flexibility in order to develop profession-specific contents and the teaching forms (block- or day lessons, block lengths, project work etc.) and coordinate them closely with the companies. Vocational schools should be operated with the financing from public funds by the economic chambers; this way, close contacts with companies can be developed and cost reductions can be achieved while at the same time improving quality. In the case that maintenance of vocational schools cannot be secured through the private sector, the companies or their representatives have to at least actively participate in their organizational and management tasks.

Vocational education has to prepare for future challenges in the working life. The advantage of the dual system is based in particular on the fact that large parts of the studies are completed in the companies, thus ensuring continuous orientation towards the current and future challenges of the economy. Accordingly, close contacts with companies are also indispensable for school-based vocational education. The teaching staff of vocational schools has to cooperate intensively with the business sector, complete internships in companies on a regular basis and carry out intensive further training.

Further, importance must be given to an internship abroad already during the training. In addition to the general broadening of horizons it allows to gain international experience, strengthen intercultural skills, create new contacts and get to know ways of working and customs abroad. Parts and periods of training completed abroad have to be recognized without restriction and counted towards the vocational education in the home country.



The training qualifications of all three levels have to imply a state examination. Based on that, the regulation of vocational education as well as the acceptance of examinations across the whole EU has to be transferred as a sovereign task to the chambers as the competent bodies for vocational education. The acquired vocational qualifications need to be mutually recognized in all countries.

To this end, the development of the European Qualifications Framework (EQF) and a Qualifications Framework for the Baltic Sea Region is creating the corresponding foundation². These approaches are based on transparency and mutual trust. The focus is the recognition of competencies and learning results. In the implementation process it is important in particular to create unbureaucratic systems, document acquired qualifications and competences, confirm international recognition or the equality of the studies, encourage continuous further learning, encourage and facilitate training and work abroad as well as provide companies with reliable information and transparency for their personnel decisions.

Not only the formal learning and technical knowledge, but also informal learning and competences acquired during the training are decisive for a high qualification level. They should therefore be documented in certificates as well as references of the companies and self-assessments. An orientation basis is the Euro-Pass, which records personal skills, competences and qualifications and which can be used depending on the profession. The Euro-Pass needs to be intensively supported by the chambers of commerce.

The measures described above contribute at the same time towards the appreciation and increasing the attractiveness of vocational education. In order to achieve this outstanding goal, a full permeability needs to be achieved between vocational and university education, with acknowledgement of the qualifications already acquired earlier. Vocational qualification including professional occupation for 2-3 years should entitle one to university education in all of the member countries.

Young people and their parents should be aware that considering the high and growing proportion of university graduates, skilled workers and executives with completed vocational education will be in demand most of all and therefore have the best chances for the future compared to the many academic qualifications. However, vocational education should not lead into dead ends. Instead, it should entitle one to further qualifications and higher level of studies through an open and fully permeable study system.

2.4 Consistent introduction of dual vocational education³

Due to the demographic development the number of the young people is decreasing more and more. At the same time vocational education has lost a lot of its attractive-

² Hanse Parlament: Baltic Education – Recognition of vocational qualifications in the Baltic Sea Region, Hamburg 2008

³ For detailed justification see the following works:

Flora Antoniazzi und Dr. Jürgen Hogeforster: Das deutsche System der dualen Berufsausbildung mit Beispielen von acht Berufen und Möglichkeiten der Implementierung in Polen, Hanse Parlament, Hamburg Februar 2015

Dr. Jürgen Hogeforster: Die Zukunft der Berufsbildung: Herausforderungen und Strategien für Reformen und Erhöhung der Anpassungsfähigkeit, Hanse Parlament, Hamburg Februar 2015

Dr. Jürgen Hogeforster: Die Zukunft der Berufsbildung: Richtungen der Neuorientierung und neue Tätigkeitsfelder für Berufsschullehrer, Hanse Parlament, Hamburg März 2015



ness, so that the proportion of young people undergoing vocation training has fallen to a frighteningly low level, while the proportion of young people with abitur diplomas and students is constantly increasing. The result is a considerable decline in the number of people in vocational education, meaning that capacities in this field in terms of personnel, premises and technical equipment become increasingly redundant.

Under the current conditions the lay-off of teaching staff from vocational schools and conversion of the existing special and technical capacities is mandatory. Such development would however be fatal since all of these capacities are urgently needed for the vocational education. This in its turn requires reforms of the education policy.

For all countries it is urgently necessary to introduce dual system of vocational education at all levels, meaning from the first level of vocational education to retraining, further training and Bachelor studies. In relation to vocational studies the vocational schools have to take over the comprehensive central tasks at all of the levels of education.

Vocational education has lost much of its attractiveness. In particular in the countries with predominantly school-based vocational education the participation is low; it has dropped to an alarmingly low level and is perceived by many young people as a dead end. Normally only a short internship in companies takes place, if any at all, meaning that Work based learning occurs only in an extremely limited way. The result is a high unemployment rate among 15- to 24-year-olds in these countries. Insufficient professional qualifications lead to long-term unemployment, which reaches up to 20% for people with only primary or low level of secondary education.

At the same time companies complain about the low qualification level of the graduates. School-based vocational education can take into account the conditions of the job market only partially and does not address the qualification requirements of the companies enough. Thus, pupils learn very little about everyday business life. The increasingly important personal and social competencies also cannot be sufficiently presented in a school lesson.

Against the background of the demographic change and the strengthening competition for qualified new generation it is crucially important to perceive the following two goals as part of a whole:

- a) The integration of young people and decrease in youth unemployment and
- b) providing qualified staff for SMEs and considerable reduction of the shortage of skilled workers

The German and Austrian system of the dual vocational education can provide significant long-term contributions towards reaching these goals. In comparison, it leads to a much lower youth unemployment rate, involves the companies in responsibly securing the next generation of workers and connects the vocational education with the requirements of the job market much more closely. However, the German or Austrian system should not be mistaken for a 'patent model' which simply needs to be transferred. The adjustment to the respective regional/national conditions always has to take place. However, the basic principles of the dual model should be retained as much as possible. 'Work based Learning' which consists of a more or less short internship in a company, is in no way sufficient.



In order to implement a dual system, it is of primary importance to involve the companies in the vocational education process. Countries with predominantly school-based vocational education face a particular obstacle invoking the fact that the companies hardly have experiences and qualified training staff. In order to tackle this problem, it is necessary to urgently carry out further training “Train the trainer” in as many companies as possible, in order to prepare the companies for the implementation of the dual vocational education.

In the case of dual vocational education up to $\frac{3}{4}$ of the entire training period is spent in companies. The inevitable consequence of this is that personnel and spatial capacities of vocational schools will become vacant as a result of transition from school-based to dual training. The fear to lose one’s job is a serious obstacle for the corresponding reforms. One of the possibilities to develop new activities for the vocational schools are further trainings, which are currently in high demand and limited supply in many countries. The further development of vocational schools into technology and consulting centers, which are operated in cooperation with chambers, supports the introduction of the dual system and is in the interest of both the vocational schools themselves and particularly SMEs. Considering this, an intensive further training for teachers of vocational schools has to be carried out. The released capacities of vocational schools should therefore be seen as opportunities, as they are urgently needed for the new tasks of the vocational education.

The integration of employee organizations, chambers or the local administrative bodies is also an important step to make dual training possible. The organizational structures for productive long-term cooperation between vocational schools and companies have to be created at the regional level first. After that, nationwide implementation of legal norms can and should take place in order to enable the functioning of this cooperation and above all reception of funding. Active definition of long-term strategies for dual vocational education has to take place simultaneously at the regional and national level and needs to take into account the developments at the job market. The state should not reimburse the costs for the companies providing the training. In case such funding is necessary in order to increase the motivation and to obtain enough business training capacities, a pay-as-you-go system should be created by the economy itself and managed independently.

2.5 Intensification of further training and dual studies

Vocational further training does not need any state regulation, it should primarily be the task of the economy and administered by it independently. Employers and employees alike must recognize the high and growing importance of further training to a much greater extent and invest into it heavily. Further training improves the supply of qualified workers and increases productivity.

In all the participating project countries, the participation in further training as well as the skills and competences conveyed therewith must strongly improve. According to EU's objectives, at least 15% of adults should participate in lifelong learning each year. This ratio was significantly exceeded by up to 29% in Scandinavian countries in 2016, compared with below 9 % (PL) to 18,5% (AU) in the project countries. In this context,



new models of burden sharing must also be developed in which, for example, the company bears the costs of further training and employees devote their free time to it. Overall, however, further vocational education requires intensive further development and in particular reevaluation. This implies different aspects, such as:

- Systematic development of certified further training modules which can be combined, and which lead to recognized further training qualifications.
- Creation of further training occupations and development of horizontal career paths.
- Establishing equivalence of educational paths and degrees in vocational, general and higher education.
- Complete permeability and more intensive connections between vocational education and further training as well as general education and in particular studies. Vocational further training should be counted towards the course of study in relevant study field.
- Promotion of international exchange, carrying out professional activities and further training abroad while simultaneously ensuring the highest possible level of transparency of the acquired competences.
- International recognition or equivalence of further training qualifications within the framework of unbureaucratic systems.

The training as a master craftsman has proven to be particularly successful. This way a new generation of entrepreneurs and managers with good theoretical and sound practical knowledge and skills is secured. The master craftsman training is indispensable for SMEs; it has to be intensified and made uniform across the EU countries. The master craftsman qualification must entitle the holder to studies without restriction and the qualifications acquired in the process must be fully credited towards the studies. For this purpose, it appears advisable that the master craftsman training is also assessed with credit points, which can then be fully incorporated into a subsequent course of study. By creating permeability of this kind, the attractiveness of vocational education in general and that of the master craftsman training in particular is increased long-term. Any opening up of educational systems with diverse, differing educational careers does justice to individual inclinations and abilities, provides companies with greater opportunities to secure the growing demand for skilled workers and meets the urgent need to involve workers without experience in crafts sector and SMEs much more intensively.

Improving qualifications in general education, increasing the quality and attractiveness of vocational education and the corresponding further development of vocational education and further training systems are key concerns and the central development points of the SMEs.

These challenges find a particularly clear expression with regard to entrepreneurs and managers. In this respect there is already a considerable gap in SMEs. Due to demographic developments and increased competition between sectors of the economy, this entrepreneurial gap will widen considerably in the future.

The requirements with regard to corporate management are high and are constantly increasing. Against the backdrop of globalization and the EU, international knowledge and experience are increasingly in demand. Entrepreneurs and managers in SMEs must have good professional training and practical experience as well as sound theoretical qualifications.



Up to now, SMEs have mainly obtained their young entrepreneurs and management through vocational education and further training. However, in many countries such training paths are becoming much less attractive. In addition, due to demographic changes, SMEs are attracting fewer and fewer young people (quantity problem), while at the same time the proportion of young people lacking previous education is increasing (quality problem). Young people belonging to the latter group are only suitable for performing demanding management tasks to a very limited extent.

In the course of internationalization and liberalization, further vocational education courses have faced difficulties in some of the countries. Young people are increasingly opting for higher education. Since the study courses are predominantly theory-oriented and largely neglect the practical concerns, in particular of SMEs, it means that despite the high number of students not enough suitable entrepreneurs and executives can be attracted. The promotion of entrepreneurship and the qualified training to become entrepreneurs are increasingly becoming the decisive factors.

Securing the next generation of entrepreneurs and managers and strong innovation potential are becoming a decisive question of survival for SMEs and are thus the most important task for SMEs.

Bachelor's degree programs should be offered much more in the form of dual studies. This will mean that studies at the university are closely linked to vocational education or practical work in the company. Vocational education completes with an independent qualification and also leads to a certain extent to credit points that are required to pass the bachelor's examination. Dual study courses can also be optimally combined with a qualification as a master craftsman. The credits earned in that process must be fully credited towards the Bachelor examination.

Dual Bachelor's studies comprise:

- Sound vocational education with journeyman or skilled worker qualification.
- Recognized studies with Bachelor's qualification.

Both parts of the training are coordinated with each other and carried out in parallel. Participants must have sufficient qualifications to attend university; they conclude a contract for vocational education as well as a contract for studies.

Vocational education may cover all technical or commercial professions and may appear in the following forms:

- As dual studies with practical in-company training and a theoretical training in the vocational school or
- As a school-based system with practical and theoretical studies in a vocational school and internships in companies.

During the three- to four-year training period, special emphasis is placed on professional qualification, so that the graduates acquire in-depth practical knowledge and experience.

The studies include at least 1.700 hours. Towards this are counted the hours for independent studies, visiting optional events, writing the Bachelor thesis, exams etc. The studies are completed with an internationally recognized Bachelor qualification.

As part of the dual study courses, students should be strongly urged to complete parts of their studies or vocational education abroad. Priority should be given to vocational



education or work in a foreign company, as this allows at the same time for the establishment of direct personal contacts between the companies.

Universities have to considerably broaden cooperation with SMEs in their teaching and research. In the future, dual study programs can make a decisive contribution to satisfying the high and growing demand for young entrepreneurs, managers and skilled workers who can demonstrate both practical training and sound theoretical qualifications. This training partnership between companies and universities is at the same time a perfect starting point for knowledge exchange, transfer of technology and implementation of practically oriented research and development work.

2.6 Quantitative and qualitative bottlenecks in the Green Economy

The above challenges for SMEs in the education and labour markets are even more pronounced in the Green Economy. SMEs can make outstanding contributions to energy, climate and environmental policy, but indispensable prerequisites for this are that proper environmental management is pursued and that well-qualified entrepreneurs, managers and skilled workers are available. Currently, the exact opposite is the case. In the fields of energy, climate and environmental protection, the lack of skilled workers and the qualification deficits are particularly pronounced in SMEs. The national BUILD UP reports show that in order to achieve the EU energy targets in individual countries, for example, the number of skilled workers must be doubled and qualification levels raised significantly.

A current study "Green Competencies in Small and Medium Enterprises in Europe"⁴ comes to the conclusion that small and medium enterprises have a great need for "green competencies" of their employees. The comparison of the need for competences and the state of competences was different in the companies from different countries, but overall considerable gaps in the area of green competences were revealed. Since it can be assumed that environmental management and tasks in small and medium-sized enterprises will have a strongly growing importance in the future, there is a high demand for targeted qualification and for additional entrepreneurs, managers and especially specialists in the Green Economy.

As part of the Green Jobs Initiative, the ILO Department of Skills and Employability has launched a global research project - 21 countries around the world participated to identify the skills needs of the greener economies. The ILO collaborated with CEDEFOP, whose study with 6 EU countries was included in the results.⁵

Some findings of the synthesis report are the following:

- Environmental protection is about reducing the negative effects of economic activity and increasing the positive effects. This includes a broad spectrum of knowledge and technical, business and conceptual skills. Some of these skills are not green in themselves, but only as green as the context.

⁴ Green Competencies in Small and Medium Enterprises in Europe, Bialystok Foundation for Professional Training, 2020

⁵ Cf. Strietska-Ilina, Olga; Hofmann, Christine; Durán Haro, Mercedes; Jeon, Shinyoung, Skills for green jobs: a global view: synthesis report based on 21 country studies; International Labour Office, Skills and Employability Department, Job Creation and Enterprise Development Department. - Geneva: ILO, 2011; pp. 103



- All in all, economies need well-qualified and broadly-based professionals who can apply their skills in different contexts - green or not green. Green jobs need installers, roofers, engineers and chemists with a wide range of technical skills that go far beyond specific sustainability or green skills.

The list below presents the core skills necessary for green jobs identified in the country reports:

- “Strategic and leadership skills to enable policymakers and business executives to set the right incentives and create conditions conducive to cleaner production, cleaner transportation etc.
- Adaptability and transferability skills to enable workers to learn and apply the new technologies and processes required to green their jobs.
- Environmental awareness and willingness to learn about sustainable development.
- Coordination, management and business skills to facilitate holistic and interdisciplinary approaches incorporating economic, social and ecological objectives.
- Systems and risk analysis skills to assess, interpret and understand both the need for change and the measures required.
- Entrepreneurial skills to seize the opportunities of low-carbon technologies.
- Innovation skills to identify opportunities and create new strategies to respond to green challenges.
- Communication and negotiation skills to discuss conflicting interests in complex contexts.
- Marketing skills to promote greener products and services.
- Consulting skills to advise consumers about green solutions and to spread the use of green technologies; and networking, IT and language skills to perform in global market”.

The country reports show that green transition skills are necessary in all economic sectors and in all industries.

Conclusion: Meeting the major challenges in the fields of energy, climate and environmental protection requires comprehensive reorientation and forward-looking innovations in the economy and in education. These tasks must be mastered by SMEs against the background of the following current problems:

- Glaring and growing shortage of skilled workers.
- Pronounced qualification deficits, especially in the areas of energy, climate and environmental protection.
- Insufficient qualification in school-based vocational education and training and a strong loss of attractiveness of vocational education and training.
- Very low rates of continuing education and often insufficient orientation of continuing education institutions to the needs of SMEs.
- Ageing of entrepreneurs and high and growing shortage of young entrepreneurs.
- Failure of business transfers, too low business start-up rates and threatened job losses.



- Low innovation rates, insufficient productivity and a clearly widening productivity gap between large enterprises and SMEs.
- Too little cooperation between universities and SMEs and a strong lack of orientation in teaching towards the needs of SMEs.
- Comparably low internationalisation of SMEs and many providers of vocational education and training; cross-border knowledge exchange, best practice transfer, joint developments, etc. take place only to a limited extent.

Overcoming these challenges and problems cannot be achieved with individual reforms and partial improvements in vocational education and training. Rather, what is needed are far-reaching realignments and comprehensive reforms that make VET the steering and driving force of change processes, use challenges as opportunities, shape change themselves and develop and use strengths as a prerequisite for coping with dynamic changes. This project pursues these objectives with a variety of innovative solutions. It must necessarily be very complex in order to meet the challenges and the abundance of problems, to holistically cover all levels of vocational education and training, to involve relevant stakeholders and not only to develop concepts and set up centers structures, but at the same time to develop and realise innovative vocational education and training at EQF level 3 - 6.

3 Design and Structure of Three-level Centers of Excellence

3.1 Challenges and objectives

There is a tremendous need to emphatically improve the quality and intensification of vocational education and training. In a number of the countries participating in the project there is a shortage of personnel, spatial and technical capacities. In the interest of vocational schools and training centers and their teaching staff themselves, but also in the interest of economic development, securing existing and creating new jobs, strengthening innovation potential and productivity and reducing high unemployment, existing vocational schools should be developed and expanded into centers of excellence.

Central bottlenecks for further development of small and medium-sized enterprises concern the rapidly growing shortage of young entrepreneurs, managers and skilled workers, the need for product and process innovations as well as the lack of innovation promotion tailored to the specific needs of SMEs. In order to remove these barriers to growth, existing vocational schools, Trainings centers and colleges should be expanded into three-level centers of excellence.

Education represents the biggest bottleneck and the strongest growth area of the future. Qualified specialists are the most important prerequisite for taking advantage of the market opportunities. For example, a survey carried out by Hanse Parlament led to the following results:

- In 10 years 40% of SMEs will need company's successor
- 70% of SMEs need additional skilled workers
- 100% of SMEs cannot recruit the specialists they need or can do it with difficulty
- In the medium term 78% of SMEs need new or additional executive staff
- 96% of SMEs would like to see better practical, and 74% better theoretical vocational education.

Overcoming the major challenges in the areas of energy, climate and environmental protection requires extensive reorientation and forward-looking innovations. These tasks must be mastered by SMEs against the background of the following problems (see Chapter 2):

- Blatant and growing shortage of skilled workers, which has a particularly strong impact in the Green Economy, as there is a high and growing need for additional skilled workers.
- Pronounced qualification deficits, especially in the Green Economy.
- Loss of attractiveness and poor qualifications, especially in school-based vocational training.
- Low rates of further training, a lack of technical and personnel cross-company capacities and insufficient orientation of the offers to SME needs.
- An aging business community and a high, growing shortage of young talent.
- Failure of company handovers and too low business start-up rates, primarily due to a lack of entrepreneurs.
- Low innovation rates and insufficient productivity.

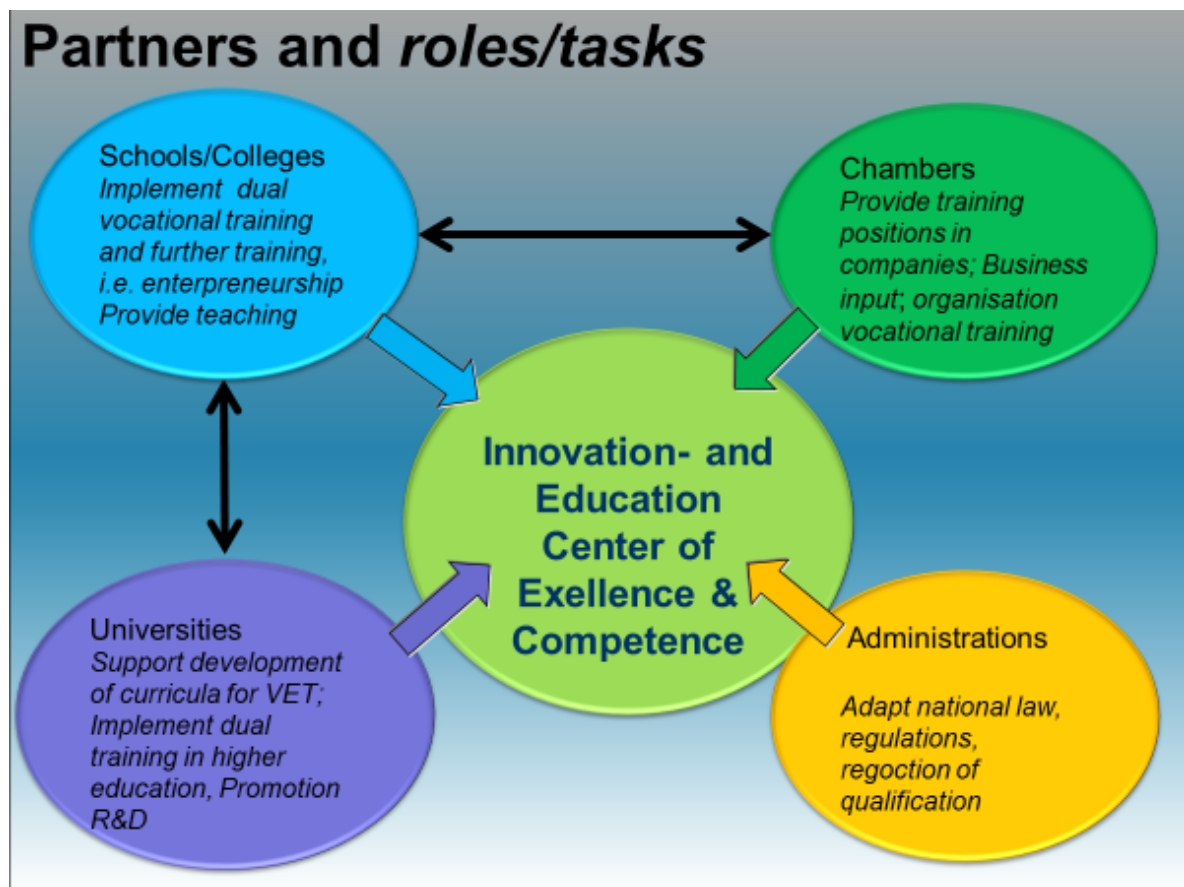
- Too little cooperation between the colleges / universities and SMEs and a lack of orientation in teaching and research towards SME needs.
- Comparably low internationalization of SMEs and many providers of vocational training.

To meet these challenges, a regional center of professional excellence in the Green Economy is being set up and operated permanently in each of the seven project countries. The three-level centers are intended to perform vocational training and innovation support tasks for SMEs at the following levels:

First Level: Vocational training (EQF Level 3 and 4)

Second Level: Further training (EQF Level 4 to 6)

Third Level: Higher education (EQF level 6 and 7)



In order to be able to fulfil these tasks, the centers of excellence function as a cooperative network of vocational schools, chambers of commerce with their training and further education institutions and colleges / universities (without necessarily establishing a (new) centre). The cooperation is coordinated by one partner. Each location / part is independent and economically autonomous. In terms of cooperative collaboration, the goal is not to develop fundamentally new systems, but to build on and develop existing cooperation mechanisms in each country.

A transnational cooperation between the centers of the seven countries is being developed, expanded by 60 educational actors from 13 countries and operated permanently in an institutionalized form.



The 7 centers of professional excellence in the Green Economy will pursue the following objectives:

- ✓ Consistent introduction of work-based learning through the implementation of dual education at all three levels of vocational training, further education and higher education.
- ✓ Through dual education and new, tailor-made qualification programs, a significant increase in the skills and competencies of entrepreneurs, managers and specialists in SMEs.
- ✓ Due to the lower number of young people in vocational training as a result of demographic change and the introduction of dual education, personnel, spatial and technical capacities are freed up in the vocational schools, which may under no circumstances be withdrawn from the educational sector. Rather, they are used to build up the urgently needed capacities in continuing vocational training.
- ✓ Existing technical and spatial capacities of the vocational schools, chambers of commerce and universities are practically used jointly for all tasks and result in an increase in capacity for the performance of tasks at the individual educational levels.
- ✓ Through the overarching cooperation, knowledge transfer, innovations and quality of the educational offers are sustainably strengthened. For example, university lecturers participate in the development of curricula in vocational training and further education or provide teachers for further education measures. Vocational schools contribute their experience and contribute to the implementation of dual study programs. Chambers convey the needs of SMEs at all educational levels and involve them as training partners in the dual implementation.
- ✓ At all three levels of education, management, teaching and administrative staff are trained to perform their tasks. These train the trainer programs are carried out on a permanent basis by the colleges and universities involved, so that sufficient qualified staff is available in all regions.
- ✓ With the creation of a uniform, continuous system of vocational training, further training and higher education, a very high degree of permeability between vocational training, further training and higher education is achieved. At the same time, the recognition of competences already acquired on the qualifications of the next level is actually implemented in practice.
- ✓ Maximum permeability and crediting of already acquired skills lead to a sustainable increase in the attractiveness of vocational training, so that additional entrepreneurs, managers and specialists can be won.
- ✓ Permeability and recognition of competencies as well as the attractiveness and quality of professional training are comprehensively promoted through the development of official training professions. For this purpose, legally binding ordinances are being developed for new advanced training professions with a focus on the Green Economy, which lead to recognized educational qualifications at EQF Level 4 and 5.
- ✓ Through specific educational programs and targeted support for young people with learning difficulties on the one hand and young people with strong learning skills on the other, differentiated offers are created for everyone in vocational

training, the number of participants is increased and the urgently needed young people are made available to SMEs.

- ✓ Companies, colleges / universities and chambers of commerce are training partners in the dual further and university education programs. This intensive cooperation is used at the same time to effectively promote innovation in SMEs
- ✓ Small and medium-sized enterprises suffer from bottlenecks in operational management and information processing. They need tailor-made services - without delay and from a single source. Networks are of outstanding importance to them. Unlike large companies, they cannot have internal staff functions that perform a wide range of corporate management tasks. In the SME sector, such staff functions and support tasks must be performed externally. The centers of excellence are the central service providers who, through cooperation between vocational schools, chambers and universities, provide SMEs with the necessary reliable support tailored to the company and from a single source, thus offering monetary benefits.



To achieve these goals, the tasks, structures, and organization for the seven centers of vocational excellence are described below. They are intended as guidelines that must be adapted by the individual centers in accordance with national conditions and legal foundations. For example, regarding the way how the VET excellence centres should operate, how collaboration among VET institutions, HE institutions and Chambers should be ensured, how dual approaches should be implemented. These national adaptations ensure the feasibility of the planned implementations, provided that



specific basic elements are adhered to. Ongoing discussions are being held with project partners on the basic elements that should be adhered to wherever possible, how adjustments can be made, and coordination with relevant authorities at the national level to ensure full information sharing and compliance, as well as the smooth running of the project.

3.2 Tasks, structure and organisation

The innovative strength of SMEs is strongly limited by the availability and qualification of entrepreneurs, managers and specialists. Due to the lack of qualifications and shortage of entrepreneurs and employees, innovations in SMEs are already much lower than they actually could and should be. At the same time, qualification requirements are becoming higher; alongside specialized knowledge, personal and social skills are gaining equal importance. However, the so-called soft skills require a great deal of catching up and development. Improving qualifications and eliminating the shortage of skilled workers is the most important task and the central key to sustainable strengthening of innovation capacity, competitiveness and growth of SMEs. The most important tasks of the centers of excellence in this respect include in particular:

- Improving the quality and attractiveness of vocational education and introduction of dual education system.
- Career guidance and integration of young people with learning difficulties and social disadvantages.
- Integration of all young people and creation of specific training courses for school leavers with practical talents.
- Carrying out courses for strong learners with the provision of additional qualifications in innovation-oriented topics.
- Strong intensification of vocational further training.
- Qualification of managers and entrepreneurs, in particular through training as master craftsmen or technicians.
- Strengthening innovation capacity through comprehensive promotion of increased employment for women and older people and entrepreneurship for women.
- Carrying out dual Bachelor's degree programs in which studies are combined with parallel relevant vocational education in order to meet the high demand for innovative entrepreneurs and managers for SMEs.

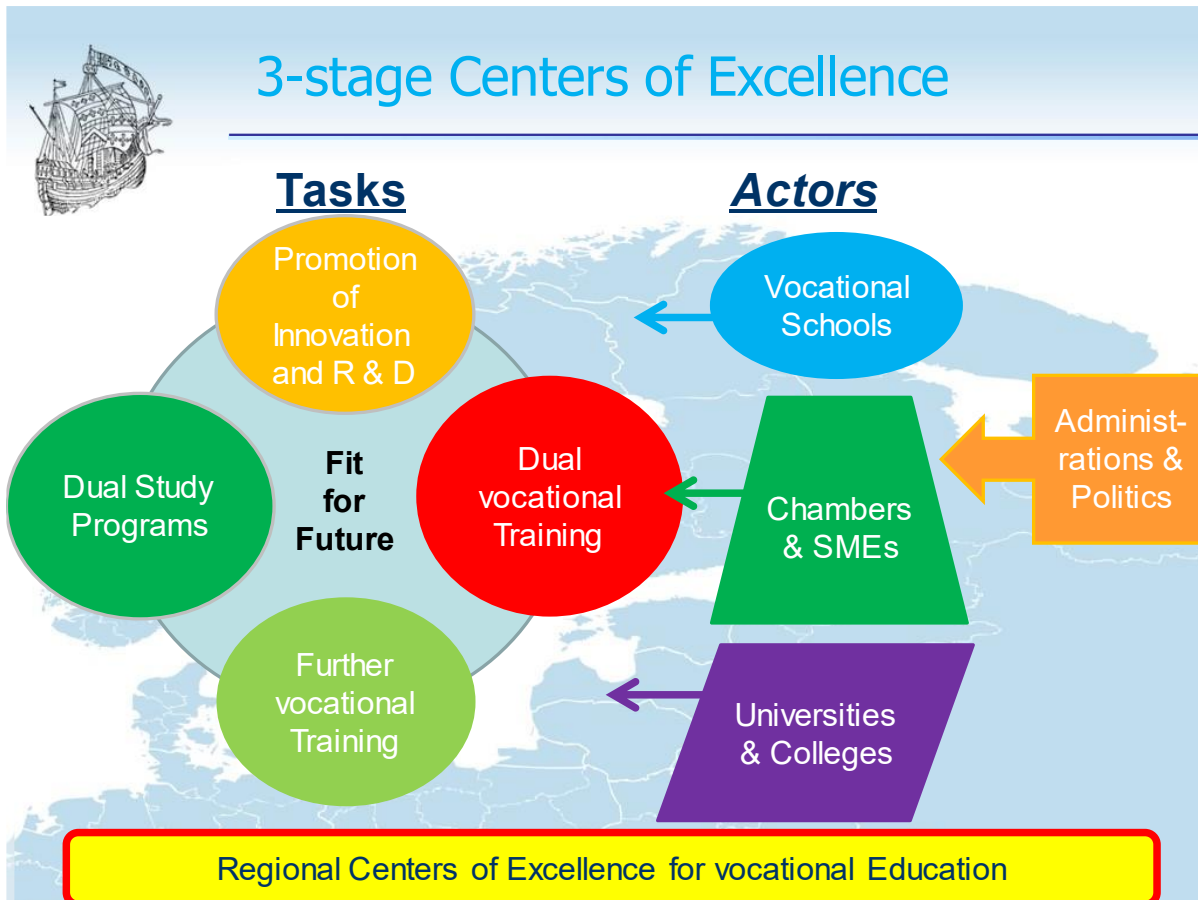
In a region, the centers of excellence must cover all areas and topics relevant for SMEs on the basis of job-sharing. They should be operated in close cooperation with vocational schools, economic chambers and associations as well as with universities in order to jointly carry out educational and counselling tasks, such as:

In Level 1 Vocational education

- Comprehensive career counselling for young people and their parents.
- Providing regular vocational school classes within the framework of dual vocational education.
- Extensive qualification, support and counselling tasks for young people with learning difficulties or social disadvantages who until now have been pushed

away and who get integrated into regular vocational education via these channels.

- Development and implementation of special staged vocational education courses for people with learning difficulties in cooperation with companies
- Development and implementation of vocational education courses for strong learners who receive additional qualifications and early further trainings in the centers of excellence with a scope of 500 - 700 hours already during the vocational education.



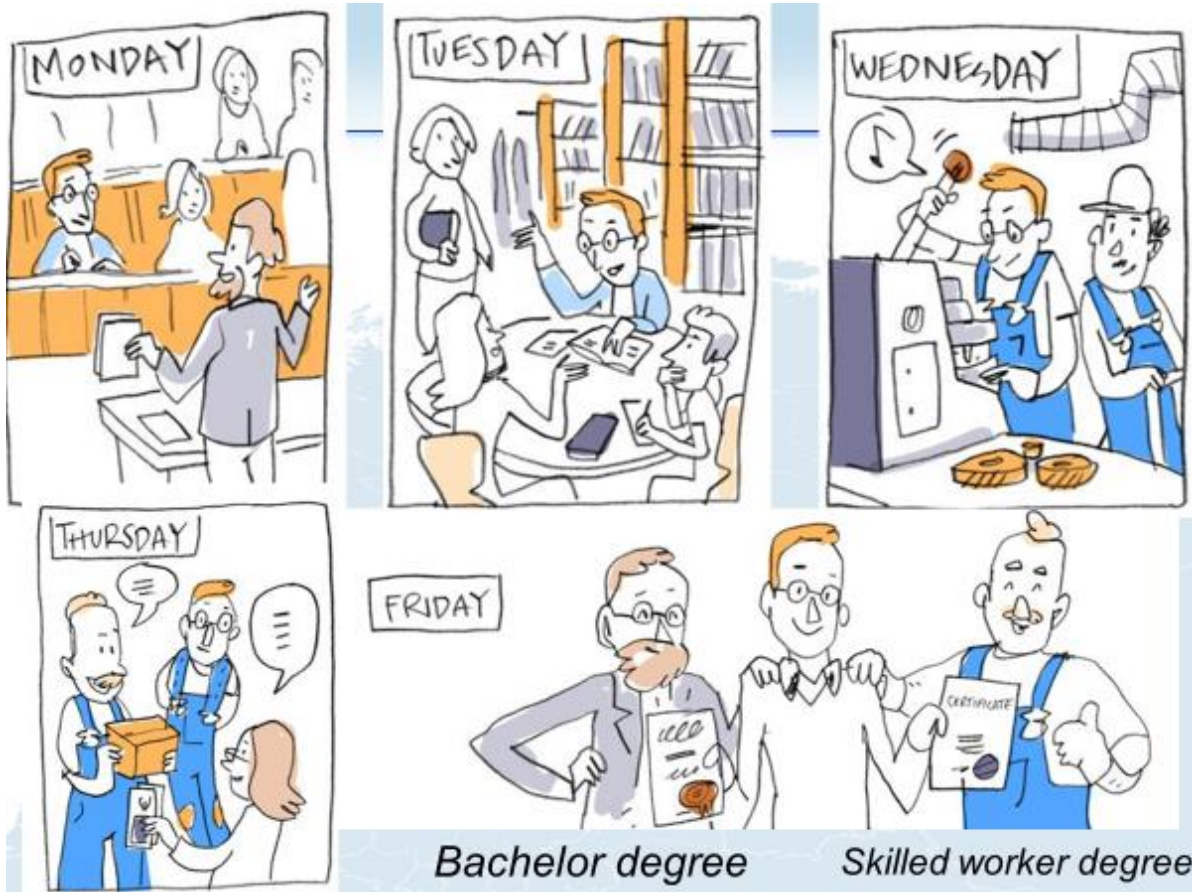
In Level 2 Further training

- Training the trainers in companies and accepting the trainer aptitude examination in order to enable companies to provide vocational education within the framework of dual systems.
- For persons with completed vocational education, training to become a technician or master craftsman while at the same time obtaining a qualification enabling one to attend university.
- Execution of business start-up courses and accompanying consultation by business founders up to the establishment or takeover of a business.
- Demand-oriented development and realization of further training programmes covering all relevant aspects of the strongly growing need for further training of entrepreneurs, managers and skilled workers.

- Targeted further training for women and men during the family phase as well as qualification and counselling tasks during the re-entry into the working life.
- Conducting further training and counselling programmes for older people
- Carrying out retraining, qualification and integration measures for the unemployed together with employment services.

In Level 3 Higher education and innovation promotion

- Together with colleges or universities, vocational schools as well as with companies, realization of dual study programs.
- Ensuring the exchange of information and experience as well as the transfer of knowledge and technology in writing and electronically, and in particular through the personal exchange which is so important for SMEs, in the form of meetings, information and training courses, group coaching, etc.
- Comprehensive promotion of innovations for SMEs as well as implementation of R&D tasks in and with SMEs.



Within the framework of dual study programmes, the training locations "college/university" and "company" must cooperate intensively with each other. This is also an excellent foundation for the mutual exchange of knowledge and for the promotion of innovations of SMEs.



About 40% of the courses offered at the college/university are run by practitioners, ensuring that there is constant exchange of experience, and that entrepreneurial thinking is carried into the colleges/universities.

The participants of dual study courses are at the same time apprentices/employees in companies. The topics for Bachelor and seminar papers that the student must complete in order to obtain his or her degree are determined by the companies in consultation with the full-time professors/lecturers and dealt with within the company. In this way, tailored development work and knowledge transfer for the companies are realized by the students in cooperation with professors, lecturers and other teaching staff directly in the company. On the basis of this intensive cooperation, it is much easier to jointly identify R&D tasks of SMEs, to design concepts and to carry out tailored R&D projects in and with SMEs.

In carrying out the comprehensive tasks, the personnel, technical and spatial capacities of vocational schools, colleges/universities and chambers of commerce are used on the basis of job-sharing. The spatial and technical capacities are used simultaneously for all tasks of the centers of excellence, for example modern technologies in the training workshops during the day for vocational education and in the afternoons, evenings and weekends for further vocational education and technology transfer. This achieves high-capacity utilization and profitability and ensures mutual benefits and strengthening effects in the performance of various tasks.

The development of centers of excellence requires high public investments, which, however, are offset by considerable savings in vocational education through the implementation of dual education systems. Additionally, it will achieve effective promotion of education, innovation and business, which will pay off in several ways through higher growth with rising tax revenues on the one hand and savings of public funds in labour market and social policy on the other.

It is much more appropriate and economical to use the facilities of the existing vocational schools for this purpose than to create much costlier new facilities from scratch. In this respect, the personnel, spatial and technical capacities of the vocational schools that become available under status quo conditions are a unique opportunity that must be used actively in the interest of all.

In each of the countries involved in the project, the Centers of excellence are founded by the respective three project partners: vocational school, chamber of commerce and college/university. In this regard, a partner agreement will be concluded which will agree on the rules of cooperation. A center of excellence is established as a cooperative network consisting of three locations / parts:

- Vocational school or other educational institution
- Chamber or association (with its educational institutions)
- College or university

Each location / part is independent and economically autonomous. The cooperation is coordinated by one partner. Other educational institutions, public administrations, etc. can be integrated into the center of excellence.

The centers for vocational excellence, which are intensively involved in the areas of energy, climate and environmental protection (Green Economy) with tasks of vocational education and training, further and higher education, promotion of entrepreneur-



ship and promotion of innovations, develop lasting partnerships with companies, because all educational measures are carried out at EQF level 3 - 7 according to dual principles with the learning locations "company" and "center for vocational excellence". The chambers/associations organise and secure cooperation with companies. The activities of the centers are directed at all SMEs (according to the EU definition, companies with up to 250 employees). This addresses SMEs that:

- a) are not active in the Green Economy themselves but want to implement measures in their own company to save energy and use alternative energies, and to protect the climate and the environment.
- b) are commercially active in the Green Economy and, for example, carry out corresponding orders or manufacture relevant products. The focus is particularly on this second group.

Other regional institutions that are of crucial importance for vocational training for SMEs (e.g., public administrations, employment agencies, business incubators and innovation centers, etc.) are involved in the work of the centers of vocational excellence as partners or through participation in curatorial bodies or advisory boards.

The Centers of Excellence will start their work at the beginning of the second half of the project period, will be further developed in a process-oriented manner and will ensure their permanent continuation after the end of the project. To this end, the individual centers will carry out the following activities in particular:

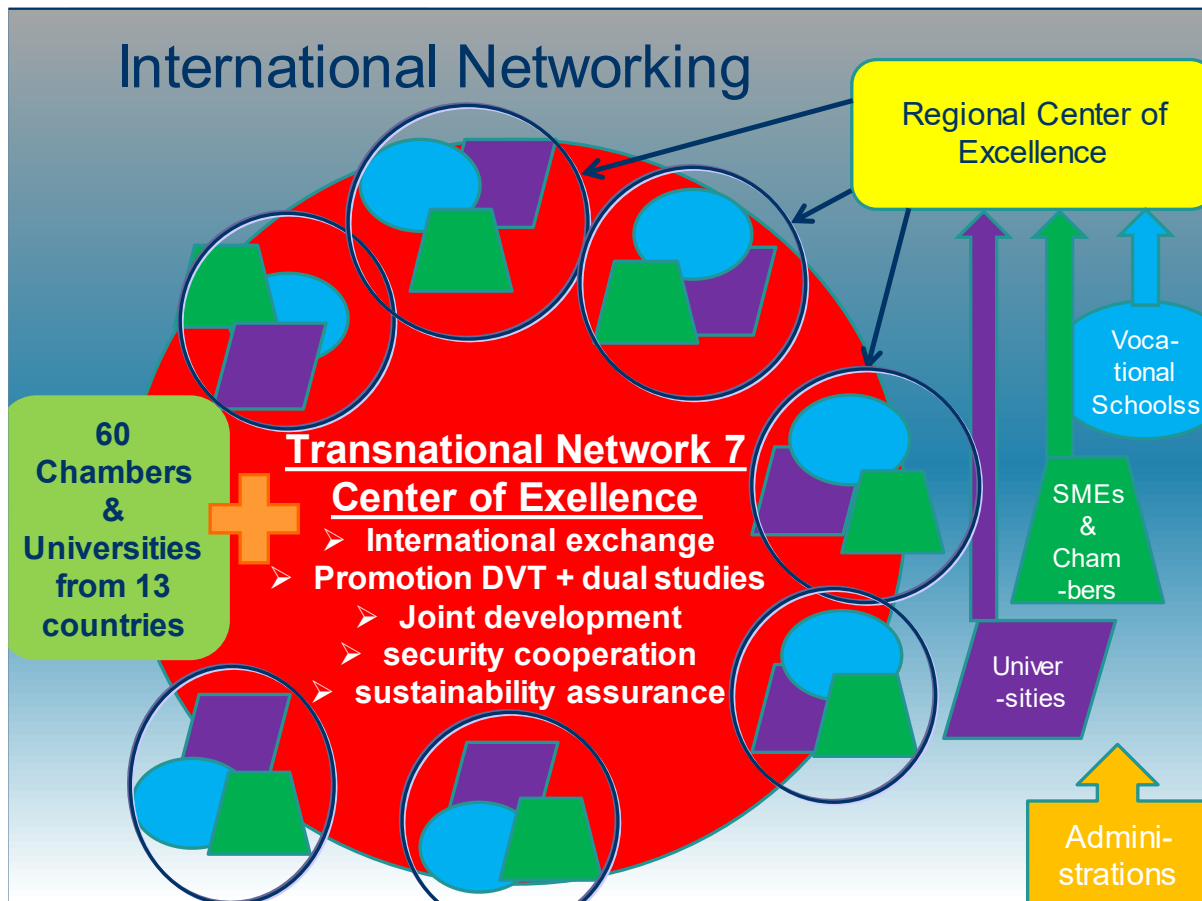
- Development and implementation of information and cooperation tools.
- Networking and cooperation with relevant actors in the region/country.
- Expansion of the cooperative network to include other educational institutions and especially educational administrations.
- Implementation of regional events.
- Development, testing and evaluation of training program for personnel and center management.
- Development of business and financing plans for each center of professional excellence.
- Towards the end of the project, development and conclusion of a binding agreement for the permanent continuation of the center of Excellence.

Coordination by Hanse Parliament, a transnational cooperation between the seven centers of excellence is being established and developed, with ongoing exchange of information and experience, transfer of knowledge and best practice, implementation of development work based on division of labour, joint implementation of train-the-trainer programmes, mutual personnel support as needed, for example provision of lecturers or assumption of advisory tasks. The international cooperation of the 7 centers of vocational excellence also concerns the joint implementation of educational programmes, e.g., Bachelor's programmes with a double degree.

In the transnational cooperation of the 7 centers of vocational excellence of the project, teachers and other staff of the centers are intensively involved and short internships and study visits are organised in centers in other countries, especially in the more advanced countries Germany and Austria. In addition, teachers sit in on the trials of educational measures in other countries in order to gain experience for their own implementations.

The SMEs involved in the project are also included in the transnational cooperation so that initial experience can be gained, contacts established, and international cooperation opportunities explored.

In the plans and binding resolutions for the permanent continuation of the 7 centers of vocational excellence, active promotion of the mobility of teachers, staff and learners as well as of international cooperation between SMEs are explicitly stipulated as mandatory tasks.



The transnational cooperation of the 7 centers of vocational excellence will be greatly expanded by the inclusion of 60 educational institutions from 13 countries that are already involved as associated partners. In addition to expanding the spatial and content-related basis, the aim is to directly involve the associated partners in the work, to transfer and implement results and to create centers of vocational excellence in their regions/countries through these partners.

International cooperation is supported by an information and learning platform. Towards the end of the project, business and financial plans are developed and an agreement is concluded with all project and associated partners to ensure the continuation and further operation of the cooperation platform.

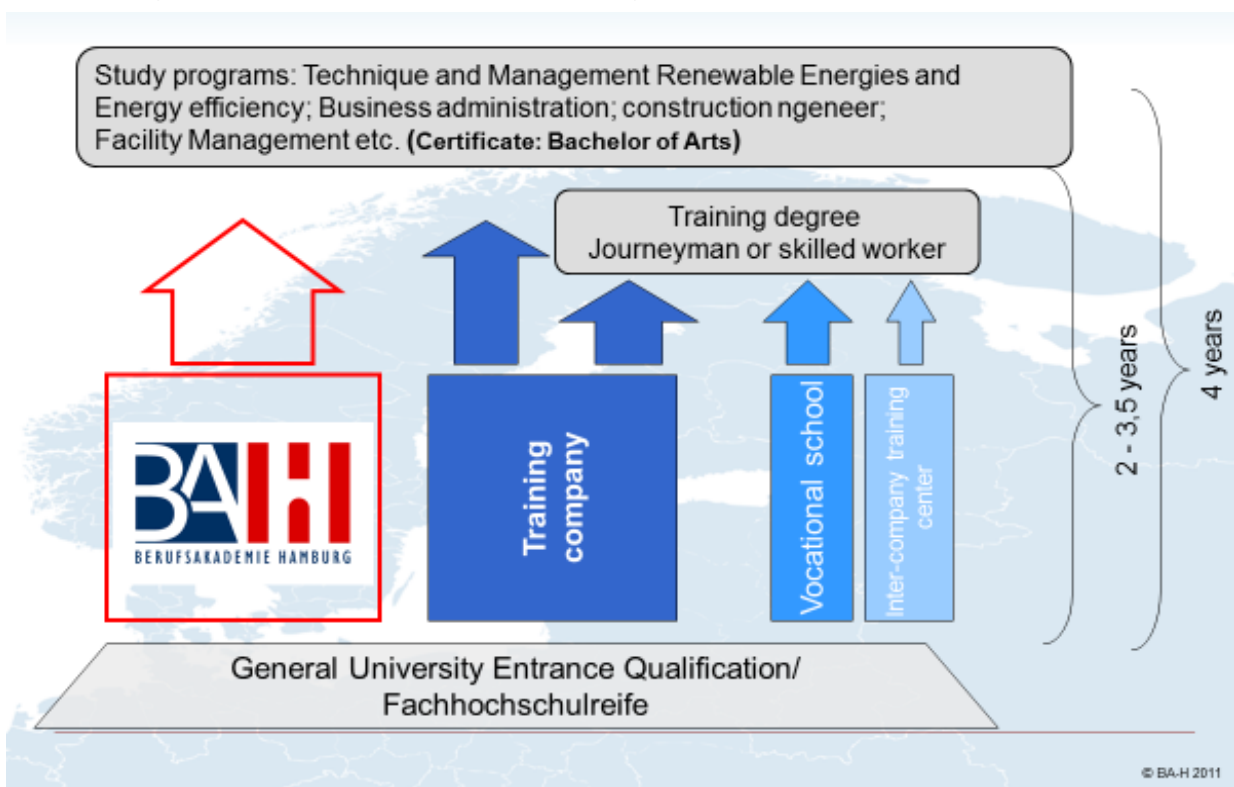
3.3 Notes on the third stage of the centers of professional excellence

Since, with the exception of Germany, dual Bachelor's degree programmes are largely unknown in the other partner countries and new ground must be broken in this regard, some application tips are given below.

The precondition for the third level "Higher education and innovation promotion" is that vocational schools, chambers of commerce and colleges/universities cooperate in the excellence centers. However, this cooperation should not only begin in the 3rd level, but from the 1st level onwards. The joint work of the three partners from the very beginning strongly facilitates the implementation of the tasks of the 1st and 2nd levels and prepares intensively for the cooperation in the 3rd level.

A dual bachelor study programme is composed of the following basic elements:

- Admission requirement: higher education entrance qualifications (i.e., A-levels) or advanced technical college certificate. Within the framework of full permeability, this entitlement is acquired in the centers of excellence through continuing vocational education and training at EQF Level 4 & 5.



- Duration: 3 to 4 years maximum (depending on subject).
- About 50% of the educational period as practical training or professional activity in a company. Vocational education takes place in dual form in companies and vocational schools.
- About 50% of the educational period takes place at the university.
- Both parts of the training are coordinated with each other and are carried out in parallel. Theory can be taught in longer blocks (e.g. 3 months) or 3 days a week with shorter additional blocks.

- About 60% of the courses offered at the university are taught by full-time professors and lecturers and about 40% by practitioners from companies.
- The participants sign a contract for vocational education/activity with the company and a contract for study with the university.
- Degree: Journeyman/skilled worker and Bachelor.

Alternative implementation:

- After completing general education with a degree "University Qualification" 3 - 4 years of vocational training and Bachelor's degree in the center of excellence.
- If a course of study is only started after completion of the vocational training (first stage of the center of excellence), the Bachelor's degree can be combined with a professional master's or technician's training in higher education and companies, so that recognized Bachelor's and professional master's or technician's degrees can be acquired in an integrated manner.
- If a course of study is only started after the Technician or Master training (second level of the center of excellence), shortened Bachelor courses of study with crediting of the acquired competences within the scope of the Technician or Master training are recommended.

4 Years 1.800 hours every year	7.200 hours
Training time in the company	4.100 hours
Specific vocational school education: 500 lessons of 45 minutes each	400 hours
Study at the college or university 1,750 lecture hours of 45 minutes each	1.400 hours
Self-study, Bachelor Thesis, Visit to optional offers	1.300 hours

All courses must fully comply with the objectives and requirements of the Bologna Process, to which more than 40 countries have now joined.

The study programs are modularized. Credit points are awarded both for the study modules and for practical training. The study programs are examined and certified by recognised accreditation institutions. To promote cross-border cooperation between study locations and the ex-change of teachers and students, the study programs should be standardized. This is also intended to support international cooperation between companies involved in vocational education.

The excellent qualifications acquired in the dual study programs are also decisive prerequisites for high innovations. In addition, the participating universities/colleges should also take part in practice-oriented research and development projects for medium-sized companies and thus promote innovations in the long-term. The study programmes and innovation promotion are aimed at the identical target group, namely

high-performing, medium-sized companies and their management personnel. As companies are always included in the dual study programmes, there is direct cooperation between companies and universities, which can be used for knowledge and know-how transfer as well as for research and development work by companies. Research and development tasks can be carried out in various ways, for example:

- Work as part of semester or bachelor theses of the participants/students.
- Targeted individual assignments of the companies or consulting/know-how transfer by professors and teachers.
- More complex projects with public funding (especially from the EU).
- Joint work on projects with several companies in one industry (industry association projects).



In any case, it makes sense to train entrepreneurs, managers, and specialists within the framework of dual Bachelor's degree programs:

- In centers of excellence.
- With a direct link of vocational and continuing education to the promotion of innovations.
- To gain synergy effects and achieve cost reductions.
- To provide small and medium-sized enterprises with all necessary services and assistance from a single source, tailored to the specific needs of the sector.

The Bologna-compliant degree programs are developed on the basis of the respective national law. Within this framework, the universities themselves decide on all details of the implementation, e.g., studies in block or day form, credit points acquired in the practical phase, etc.

In order to meet the needs of companies and to win them as training partners, it is essential to consult with companies and their interest groups (chambers or associations). For this reason, the chambers must also be involved in the centers of excellence as shareholders or permanent cooperation partners.



Since 2004, the Hanse Parliament has developed and very successfully implemented dual Bachelor's degree courses with two members "Berufsakademie Hamburg" and "Hochschule 21", which combine vocational training or work in a company with a Bologna-compliant course of study. Of these more than ten courses of study programs, two best practices are:

- Business Administration for SMEs and
- Management of Renewable Building Energy Technology

These study programs are transferred and implemented by the centers of excellence. In addition, four new dual Bachelor's degree programmes are being developed, accredited, tested, evaluated and implemented:

- Business Administration & Sustainable Management of SMEs
- Entrepreneurship & Innovation in Green Economy
- Logistics - Green Supply Chains



- Service technician

Developed, accredited, tested, evaluated and implemented is a course “Sustainable management Climate neutrality for companies” based on continuing vocational education and training, which is completed at EQF level 7 with the Master professional.



4 Implementation of Concepts and Activity Planning

In order to develop implementation concepts for the seven centers of excellence and education measures at EQF 3-6 that will be implemented within these centers, the following tasks were carried out as part of a sophisticated preparation and planning phase:

- The lead partner developed a concept for the organizational and financial implementation of the project as well as an Activity Plan draft, listing all tasks with the respective responsibilities, content-related information, qualitative and quantitative criteria as well as intermediate and final deadlines (Activity Plan).
- Consultations and coordinations at a kick-off workshop with all project partners, which unfortunately had to be carried out online due to the pandemic.
- On the basis of this, differentiated plannings of all activities were carried out by each participating country taking into account the country-specific conditions and needs.
- Existing training measures in the Green Economy were analyzed, adapted and transferred to all partners so that these best practices could be considered in the country-specific plannings.
- During this planning phase, the lead partner held two online meetings per project partner country, carrying out comprehensive consultations and coordinations.
- At the same time, the respective country-specific plannings were coordinated among each other, so that an overall coordinated, integrated planning of all activities up to the end of the project was created for all project partners and all participating countries.
- Furthermore, the lead partner carried out analyses of the economic and demographic development, the education and labour markets as well as the qualification needs of SMEs in the Green Economy, which represent the basis of a common point of departure for carrying out the project work.
- Finally, a concept for the development and structure of the centers of excellence (see Chapters 2 and 3) was developed as a target for the corresponding implementations.

The preparation and planning phase were completed in early February 2021 with the submission of a differentiated, coordinated Activity Plan. The Activity Plan, being the binding basis for the implementation of the project is presented below in detail.

4.1 Development and permanent operation of regional centers of excellence

The foundation for the development and operation of 7 centers of excellence is provided by already existing competence centers (in Germany and Austria) or by vocational schools (in the other project countries), which in the future will be operated jointly by the vocational schools, chambers of commerce and universities of the consortium. The joint operation is organized in the individual countries according to regional conditions and development strategies. The CoVEs are established as a cooperative network consisting of three locations/parts:

- Vocational school or other educational institution.
- Chamber or association (with its educational institutions).
- College or university.

Each location/part is independent and economically autonomous. One partner of each country oversees the center coordination and all three/four partners of the country sign a cooperation agreement. Other educational institutions, public administrations, etc. can be integrated into the CoEs.

The centers of professional excellence will be developed and reinforced on three levels:

1. **Level: Vocational training** (EQF Level 3 and 4)
2. **Level: Further training** (EQF Level 4 to 6)
3. **Level: Higher education** (EQF level 6 and 7)

The following actions will be taken in order to realize educational programs on the three levels:

- a) Transfer of best practices concepts, curricula, teaching materials, examination regulations etc. that can be adapted to the respective national conditions, implemented and evaluated.
- b) Development of concepts, curricula, teaching materials, examination regulations etc. as well as implementation and evaluation of these in accordance with the respective national conditions.
- c) Continuation of existing activities in the Green Economy within the individual centers of excellence that can be offered for implementation to the other centers of excellence.

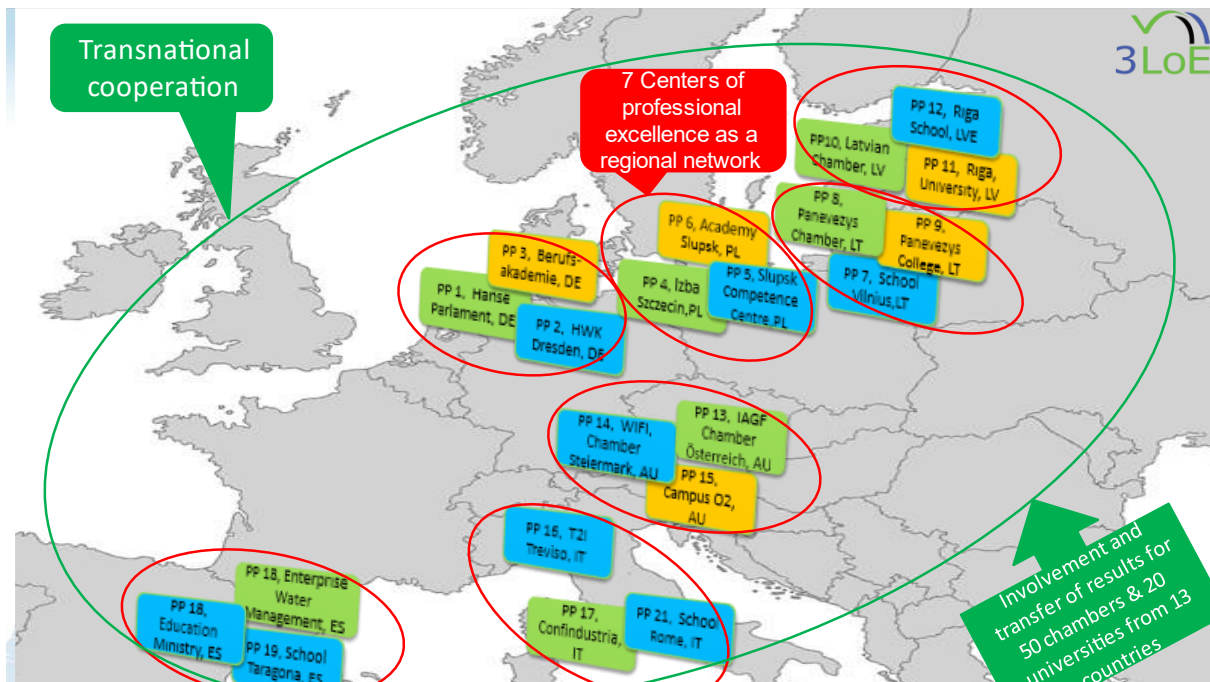
The project partners are active in all three levels:

- Vocational schools / professional competence centers that implement dual vocational trainings and further trainings at EQF Level 3–5 as well as EQF Level 6 within the framework of dual study programs.
- Chambers of Commerce that act as cooperating bodies for professional education at EQF Levels 3 - 6, carrying out vocational trainings and further trainings, examinations, consultations, and in particular representing SMEs, advising and integrating them as training partners for dual education.
- Colleges / universities at EQF Level 3 - 5 that participate in the development of curricula and new learning methods, provide lecturers, trainings for teachers and managers, etc. At EQF Level 6 they will implement dual Bachelor programmes and innovation projects for SMEs.

Within the centers of excellence, fruitful cooperations with SMEs are facilitated through the chambers on a regional level, to secure a successful introduction and long-term operation of dual education on all three levels. An intensive regional cooperation is also realized with administrations, employment agencies, business incubators, etc., which are integrated in the CoEs as advisory board members.

Coordinated by the lead partner, a sustainable, transnational cooperation of all centers of professional excellence is developed, securing ongoing exchange, joint development work, best practice transfer, innovation promotion, etc.

This international cooperation also includes staff, learners and SME workers from the individual centers, so that cross-border mobility of teachers, learners and SMEs are strongly promoted.



To develop and strengthen regional and international cooperations as well as to train the new tasks and educational measures, a total of five train the trainer programs are being developed, tested and evaluated, which will be permanently implemented by the participating colleges / universities in their regions. To ensure this permanent implementation of the trainings, business plans will be developed with the seven centers of excellence as well as the transnational cooperations.

For the development and long-term operation of the seven centres of excellence, a differentiated activity plan was developed and bindingly agreed with all partners, which includes in particular for each individual activity:

- Responsible partner
- Participating partners
- Deadlines for the production of drafts and finished results
- Result to be produced
- Quantitative and qualitative information

The activity plan is constantly monitored by the lead partner, discussed in detail with all project partners every six months and updated as require.

4.2 First center level "Vocational Training"

Tools for well-founded and competence-oriented vocational and qualification consultation are being developed for all project countries. The teachers and advisors are trained to use the tools and to carry out the consultations appropriately.

In countries with predominantly school-based vocational training, dual vocational training is being introduced in order to realize intensive cooperations with SMEs. The Ger-



man system of dual vocational training is being adapted and extended with recommendations for use, checklists and information on further adaption to national conditions. Presentations are being developed for broad information communication in the countries.

The introduction of dual vocational training is enforced through one exemplary profession, which is selected individually in the partner countries according to the national demands and conditions of the partners.

For the selected professions, curricula for the practical part and curricula for the theoretical part of vocational training from Germany or Austria are prepared, translated, adapted to national conditions, implemented and evaluated. The procedures, experiences, etc. will later serve as blueprints for implementing dual trainings in other professions.

For the qualification of vocational schoolteachers with regard to the implementation of dual vocational training and cooperation with companies, two training programs for teachers are developed, tested and evaluated. The curricula and teaching materials will be revised and completed on the basis of the evaluation results and supplemented with application recommendations. These trainings are implemented by the universities involved in the project, which continuously carry out the trainings according to their demand.

In order that companies can participate as training partners by facilitating 70-75% of the training time in the company, two alternative programs are being implemented for training trainers in SMEs resulting in a recognized qualification. These trainings are implemented by the chambers involved in the project, which continuously carry out the trainings for SMEs according to their demand.

For the integration and qualification of people with special learning needs,

- a unique training course will be transferred and implemented.
- a two-year dual vocational training "Sustainable restaurant worker" will be newly developed, implemented in one country and transferred to all other centers of excellence for implementation.

Since these people primarily face problems in the theoretical part of the vocational training, a two-year, mainly practical vocational training with a recognized qualification is carried out. Within a permeable system, this qualification and other credited competences in a related profession can be used to obtain regular three-year vocational training as well as all further professional training with corresponding qualifications at EQF Level 4 - 6.

In order to attract more young people with strong learning skills (e.g. with a high school diploma, „Abitur“) for vocational training, additional qualifications are developed that are already offered during the initial vocational training. Alternatively, the implementation of these additional qualifications takes place directly after the completion of the initial vocational training or even regardless of the initial vocational education, at a later stage in professional life as further training. A recognized qualification can be acquired by completing various additional qualifications.

Furthermore, led by the Italian partner Sistemi Formativi Confindustria, the Italian center of excellence will carry out a competition on business ideas in the Green Economy for pupils (Latuaideadimpresa®). The competition is aimed at supporting the development of new talent, acquainting them with business culture and motivating them to start vocational training. This competition is regarded as best practice for corresponding activities in the other centers of excellence.

A differentiated implementation concept was developed and agreed on the basis of the activity planning. In the area of initial vocational training, the following educational measures are developed and implemented with a focus on Green Economy:

- Two train the trainer programs for vocational schoolteachers
 - Training for consultants & teachers to use tool for vocational and qualification counselling
 - Training for teachers to conduct dual vocational training
- Preparation and transfer system dual vocational training and of German curricula and examination regulations
- Introduction of dual vocational training in four countries with exemplary five professions
 - Poland: “Electrician” and „Fitter of fixtures and fittings in building industry”
 - Lithuania: “Cook”
 - Latvia: “Motor vehicle mechanic/Car mechanic”
 - Spain: “Electromecanico”
- Two training courses for the qualification of trainers in SMEs.
- Two two-year dual training courses for young people with learning difficulties
 - Specialist for Building Insulation
 - Sustainable restaurant worker
- Six additional qualification training courses for young people with strong learning skills
 - Technologies water supply
 - Technologies water saving
 - Greywater and rainwater utilization technologies
 - Technologies decentralized wastewater treatment
 - Fundamentals of the circular economy
 - Systemic solution-oriented consulting
- A five-year technician training "Ecologic Solutions in Logistics"

4.3 Second center level "Continuing Vocational Training"

A differentiated implementation concept was developed and agreed on the basis of the activity planning. The objectives of the further training programs at EQF Level 4 - 6 are:

- To strongly promote the economic development of small and medium-sized enterprises in the Green Economy.
- To significantly improve qualifications of SME entrepreneurs, managers and specialists.
- To increase the number of qualified entrepreneurs and competent specialists for tasks in the Green Economy.

- To provide the centers of excellence with curricula, teaching materials and instruments and to train their staff so that they can prepare and support small and medium-sized enterprises for performing tasks in the Green Economy in the best possible way.

Since continuing vocational training means breaking new ground for several project countries, a comprehensive concept with instruments for the management of further training, is being developed, which is based primarily on the extensive further training experience in Germany and Austria. On this basis, regular consultations take place, in particular through PP1 Hanse Parliament, PP2 Handwerkskammer Dresden and PP14 Wirtschaftsförderungs-Institut.

In various further training courses, the successful KAIN method (Knowledge According to Individual Needs) is used, which facilitates gaining professional qualifications at the workplace by realizing topic-specific development projects involving fellow employees.

To apply further training tools and the KAIN method, a train the trainer programs are developed, tested, evaluated and implemented: Train-the-Trainer program for teachers to conduct further training.

For all 7 centers of professional excellence, consultation and qualifications in the field of digitization and the use of digital technologies in teaching represent largely uncharted territory. For that reason, the following activities will be realized in the project:

- a) Development and implementation of a concept “SME suitable digitalization”, which is coherently used by all centers of professional excellence in all participating countries.
- b) Development, testing and evaluating two training courses for teachers and consultants on digital skills, namely:
 - a. Training A: Basic skills in the field of digital data processing systems, digital training, digital communication and digital media.
 - b. Training B: Advanced skills in the field of digital data processing systems, digital training, digital communication and digital media (European computer driving license (ECDL BASE and STANDARD modules).

To significantly raise the qualifications of specialists and managers, SME-specific training measures are developed and implemented:

- Four training courses on energy saving and the use of renewable energies with a duration of several days
 - Energy Efficiency and Renewable Energies
 - Solar Energy – Technology and Applications
 - Energy Efficient Construction and Application of Renewable Energies
 - Waste and Wastewater Management and Energy Production
- Six training courses on management and technologies in the areas of water, sewage, waste and recycling management
 - Preparation and management of SMEs for work in the Green Economy
 - Waste reduction and recycling management
 - Wastewater treatment and recycling management
 - Water supply and saving
 - Cradle to Cradle in SMEs



- Energy generation from wastewater and waste

To promote entrepreneurship and to open new market segments in the Green Economy for SMEs, comprehensive trainings for entrepreneurs are being developed and implemented. To eliminate the shortage of specialists, managers, experts and young entrepreneurs, six different, longer further training courses with recognised further education qualification (EQF Level 5 & 6) are being implemented.

- Training Enterprise and Entrepreneurship in Green Economy
- Training Energy Service Manager
- Training Environmental Manager & consultant
- Training Vocational Master
- Training Construction Technician
- Training Service Technician
- Two two-year courses “Agronomic productions and techniques for sustainable products in bioconstruction” and “Oenology sustainability”

Based on the developed further training programs, a specific program for the unemployed is developed, which presents a decisive contribution in attracting additional workforce to perform tasks in the Green Economy in SMEs.

In most countries involved in the project, there are no further trainings with a recognized qualification. For this reason, using one country as an example, legal regulations for four further training professions with a focus on the Green Economy are being developed and coordinated, which become legally effective based on a regulation, enabling officially recognized further training qualifications. These legal regulations are transferred as best practices to all centers of excellence, where implementations will be examined and prepared.

4.4 Third center level "Higher Education"

Teaching and research in the higher education sector are to be increasingly oriented towards the conditions and needs of small and medium-sized enterprises in order to:

- Secure the urgently needed new generation of, both in theory and in practice, very well qualified entrepreneurs, managers and specialists.
- Intensify the cooperation between universities and SMEs and to achieve effective innovation promotion for SMEs.

A decisive precondition for achieving these goals is the implementation of dual education systems in higher education with coordinated cooperation and intensive networking between the universities and SMEs.

During dual study programs, the students spend around half of the time in the enterprise and the other half of the time at the university. They conclude an apprenticeship or employment contract with the enterprise and a study contract with the university. Credit points for obtaining a bachelor's degree are awarded for the studies at the university and to a certain extent for the time spent in the enterprise. Finally, both an academic bachelor's degree as well as an official vocational training or recognized training degree are achieved.



To enable a mutual exchange of knowledge and technology transfer between the higher education institutions and the SMEs, practitioners from the enterprises give lectures at the university. This personnel exchange of students and lecturers between enterprises and universities further facilitates the implementation of manageable R&D projects in SMEs.

Two dual bachelor's degree programs that have been successfully implemented in Germany together with SMEs for many years are prepared and transferred to all 7 centers of excellence:

- Business Administration for SMEs
- Management of renewable building energy technology

Four new dual bachelor's degree programs are being developed, accredited and implemented:

- Business Administration & Sustainable Management of SMEs
- Entrepreneurship & Innovation in Green Economy
- Logistics - Green Supply Chains
- Service technician

Moreover, the training "Sustainable Management Climate Neutrality for Companies" is developed, accredited and implemented, which concludes with a master's professional degree at QF Level 7.

As best practices, four comprehensive study modules in Green Economy are prepared, transferred, implemented and evaluated for integration into existing bachelor programs, for postgraduate studies or for further training of university graduates, entrepreneurs and managers.

- Management & Technologies of the Water and Wastewater industry
- Waste Management & Technologies
- Management & technologies of the circular economy
- Management of sustainable economic activity

Finally, a concept with instruments for knowledge exchange, technology transfer and innovation support for SMEs, is developed and implemented by all centers of professional excellence.

On this basis, manageable R&D projects (e.g., as part of semester and bachelor theses) are carried out by students and lecturers in SMEs.

In the course of a train the trainer program, university lecturers and SME consultants are trained to carry out dual study programs and innovation support in SMEs.

4.5 Quality management

Regarding evaluation and quality assurance, a distinction is made between:

- Educational products and
- Collaboration, dissemination, implementation advice as well as financial control.



4.5.1 Quality assurance of educational measures

The implementations in vocational training are based on the standards of the dual system.

The further trainings are designed with a high proportion of the learning in the enterprise and modern pedagogical methods.

The development of curricula for study programs takes place in accordance with the guidelines of official certification bodies.

Target groups are young people in vocational training, students, owners and employees of SMEs as well as teachers of educational institutions. To fully understand the needs of the target groups, they are included in the project work from the start. The chambers involved in the project bring in experience, SME interests and knowledge about regional conditions.

In order to gain experience on the national conditions, all qualifications and trainings are tested and scientifically evaluated in the different countries with at least 15 participants each (evaluation through written participant surveys and interviews with participants, lecturers and SMEs as well as accompanying observations). Based on this, all documents are revised before the transfer.

The evaluation of the educational measures by colleges or universities takes place in the work packages 2 - 5 based on concepts for evaluations and quality assurance, which are specifically developed for each educational measure. Each of these evaluations is summarised within an evaluation report and recommendations for future uses are given.

4.5.2 Quality assurance of cooperation, dissemination, implementation advice and project execution

The quality assurance consists of three areas:

- centers of professional excellence and cooperation
- Transfers and implementation advice
- Project execution

An evaluation concept and quality plan "Centers of Professional Excellence and Cooperation" is created in work package 2. This concept includes regulations, standards, procedures, instruments, etc. concerning the establishment and long-term operation of the 7 centers of professional excellence as well as the cooperation on:

- a) Regional level in the 7 countries between the respective project partners involved (vocational schools, chambers, universities) as well as with SMEs and other relevant actors.
- b) International level between the 7 centers and all project and associated partners.

A quality plan "Transfer and Implementations" is created, containing regulations, procedures, indicators, etc. for the written and personal transfer of results as well as for individual implementation advice and is therefore an important basis for the implementation of work package 7.

Another important quality tool is the dissemination plan for each project partner containing individual actions, target figures, dates, etc., which is regularly monitored by the lead partner, discussed at meetings and updated. Evaluations are carried out:

- a) Regularly by Partner 1 Hanse- Parlament and
- b) by a neutral expert in the last third of the project period with a focus on the procedures and successes of the transfer, implementation advice and further dissemination.

The quality plan "project implementation" is based on two decisive monitoring and control instruments:

- Differentiated activity plan with responsible and involved partners, goals, expected results, intermediate and final deadlines. The activity plan is constantly monitored by the Partner 1 Hanse Parlament, discussed at meetings and updated.
- Project accountancy with sub-budgets for each partner, that are categorised into different types of expenses and tasks according to which the budgets are disbursed. The partners receive payment based on the work progress.

These instruments are supplemented by further regulations, procedures, methods, indicators, etc. and are applied on an ongoing basis. Project workshops, conferences, etc. are evaluated through verbal feedback, written participant surveys and personal interviews. The evaluations are carried out:

- Through Partner 1 Hanse Parlament on a regular basis. The results are continuously fed into ongoing work so that there is a constant improvement process.
- In the last third of the project duration by a neutral expert regarding the quality of cooperation in the consortium and with associated partners.

The quality assurance is concluded with a report including:

- a) A summary of all evaluation results of all educational measures.
- b) A summarized evaluation of all results of the quality assurance.
- c) A comparison of the planned and the achieved goals and results.
- d) An assessment of the results and their long-term use.

4.6 Dissemination and implementation advice

A dissemination plan is developed and coordinated for each project partner respectively with individual activities of transfer, consultations and further dissemination, target groups, dates, etc. The plans are continuously monitored and updated by Partner 1 Hanse-Parlament and carried out by the project partners as advised in the project consortium.

The 60 associated partners (transfer recipients) are informed in writing and personally by Partner 1 Hanse-Parlament at conferences, general meetings, workshops, etc. Their needs, suggestions, etc. are continuously integrated into the project work.

During the process of development of concepts and curricula, representatives of the target groups are involved via the project partners. All qualifications are tested and evaluated under the respective regional conditions. The implementing partners receive advice.

The project results will be disseminated in the following ways:

- Dissemination (analog & digital) of curricula, teaching materials, instructions for the implementation etc. of all instruments and educational measures by Partner 1 Hanse-Parlament.
- Associated partners attend tests in order to gain experience for their own implementation.
- Implementation of seven train-the-trainer programs on the application and implementation of the project results targeted at center staff, lecturers and consultants with the participation of all project partners as well as representatives of associated partners.
- Implementation of workshops and conferences with project partners, associated partners and further stakeholders in order to personally advise on the use of the educational and consulting products and to develop business models for their own realizations.
- When required, associated partners receive individual implementation advice from Partner 1 Hanse-Parlament.

Politicians, administrations, employment agencies and other stakeholders are involved in the work of the center of excellence by personal contacting, invitation to workshops and the conference. The chambers involved in the project are official members of political advisory bodies at regional and national level and will forward information on the project and bring in the project results.

In order to achieve long-term implementations with a large regional impact and high numbers of participants, continuous individual consultations and support is given by Partner 1 Hanse-Parlament.

As more than 500,000 SMEs are connected to the project and associated partners from 16 countries, large regional disseminations and high numbers of participants are achieved for all educational and consulting measures.

Further dissemination and communication actions of the project activities take place in various ways:

- Results, materials, etc. are published on the project website (www.3-loe.eu), two other publicly accessible platforms, all partner websites as well as social media.
- In order to achieve in-depth reporting on the project and its results, at least 7 press conferences will be held and at least 22 press releases will be published.
- The project partners publish articles and reports in print and digital media and inform about the project in member magazines and newsletters.
- Result videos are created and disseminated via digital media and during personal lectures.
- The project and associated partners feed in project results to political decision-making processes as part of their day-to-day business.
- The project results are printed in a manual and published digitally.
- Presentations of project results, possible uses, etc. take place during at least 25 third-party events in different countries.

- The seven centers of excellence cooperate with other educational institutions, public administrations, etc. in their respective regions, organize regional workshops and conferences and ensure that the project results are widely disseminated at regional level.
- As an international organization, Partner 1 Hanse-Parlament is involved in political committees and continuously reports on project objectives and results.

4.7 Project management

The lead partner is responsible for the overall project management, coordination, the information exchange, the implementation of all workshops, meetings, conferences, etc. With this centralized project management, the lead partner relieves the project partners of administrative and organizational tasks as far as possible, so that the partners can concentrate on the content-related work. Partner 1 Hanse-Parlament ensures communication and prepares interim and final reports.

At the beginning of the project, four central coordination and monitoring instruments are developed and coordinated:

- a) A binding Partner Agreement containing the fundamentals of the project implementation, responsibilities and consequences in the event of non-compliance with agreements, which is signed with all partners. Attachments to the Partner Agreements are the following:
 - A description of the objectives, activities and intended results; tasks, obligations and budget of each partner; binding rules on project management, billing and writing of reports.
 - Templates of work reports, timesheets etc.

- b) A differentiated activity plan, which lists responsible and contributing Partners, quantitative and qualitative goals, expected results as well as intermediate and final deadlines for each and all project activities throughout the entire project duration. This plan is continuously coordinated, monitored and updated Partner 1 Hanse-Parlament and discussed with all partners in meetings. On this basis, Partner 1 Hanse-Parlament undertakes ongoing coordination and clarification with the individual partners, in particular to the following intervention levels:
 - Control of the content.
 - Accuracy and quality of the results. All results are evaluated, discussed and then completed.
 - Meeting deadlines.

The lead partner intervenes and decides in the event of problems, e.g. if a partner does not perform its tasks (on time), in order not to hinder the work of other partners. A joint solution will be found at the respective next partner meeting.

- c) An individual communication & dissemination plan for each partner with specific target groups, dates, indicators, responsibilities, etc., which is regularly monitored and updated.



- d) A separate project accountancy with sub-budgets for each partner containing specifications for tasks taken on. Each partner requests pre-financing rates from the lead partner according to the work progress.

Important personal communication takes place during biannual meetings with all partners and bilaterally between the lead partner and the individual partners.

Extensive written information and bilateral communication take place continuously by e-mail, telephone, sending of work drafts and instructions as well as interim results. In addition, online meetings are held via different video communication platforms.

With the associated Partners, involvement and exchange take place at least during the annual two-day meeting, as well as through participation in 8 workshops and one conference, observation of practical tests and participation in trainings for trainers. In addition, information is provided in writing.

Other actors (e.g. politicians, administrations, employment agencies) are constantly addressed personally by the partners of the countries at local, regional and national level. Furthermore, they receive intermediate and final results in writing / electronically, are invited to the conference and are involved in the work of the regional centers of excellence.

The lead partner is responsible for decision-making. In the event of a conflict, a solution is proposed by Partner 1 Hanse-Parlament with the respective partner; in case of doubt, the lead partner decides. If no solution is found, the conflict will be clarified with all partners at the respective next meeting.

Partner 1 Hanse-Parlament own capacities for the evaluation and controlling of the project management and implementation are reinforced by a specialized office that is subcontracted. The evaluation results are continuously fed into the project work and lead to a continuous improvement process.



5 Compliance of the planned activities and directions of work with the European Union level vocational education and training priorities⁶

1. The concept “Development and permanent operation of regional centers of excellence and transnational platform” (hereinafter – Concept) addresses high level priorities of the European Union (EU) vocational education and training (VET) policy. The new EU VET policy framework - the Council recommendation on VET for sustainable competitiveness, social fairness and resilience (adopted on 24 November 2020)⁷ and the Osnabrück Declaration on VET as an enabler of recovery and just transitions to digital and green economies (endorsed 30 November 2020)⁸ define the VET policy priorities for the years to come.

The proposed Concept clearly addresses the key issues of the present EU VET policy. Namely, the VET Recommendation invites the Member States to work towards implementing their VET policy in order to: (a) equip young people and adults with the knowledge, skills and competences to thrive in the evolving labour market and society, to manage the recovery and the just transitions to the green and digital economy, in times of demographic change and throughout all economic cycles; (b) foster inclusiveness and equal opportunities and contribute to achieving resilience, social fairness and prosperity for all; (c) promote European vocational education and training systems in an international context so that they are recognised as a worldwide reference for vocational learners and (d) achieve by 2025 three quantitative objectives – among them (to be achieved by 2025) are the share of employed graduates from VET to be at least 82%, and 60% of recent graduates from VET benefiting from exposure to work-based learning during their vocational education and training; 8% of learners in VET benefit from a learning mobility abroad.

The project aims at developing and permanent operation of regional centers of excellence and a transnational platform. Thus, also the EU VET policy priority (the Erasmus+ programme in particular) regarding (the platforms of) VET centres of excellence has been addressed⁹. The initiative on Centres of Vocational Excellence (CoVEs) defines a bottom-up approach to excellence where institutions for vocational education and training (VET) are capable of rapidly adapting skills provision to evolving economic and social needs. It aims to foster transnational collaborative platforms, which would be difficult for isolated member states to establish in the absence of EU incentives, technical support, and mutual learning opportunities. Thus, it can be concluded that the envisaged concept and approaches are in line with the very latest and most topical EU VET policy developments.

2. The project and the Concept is innovative in nature, since it aims at implementing educational measures on Green Economy, Digitalisation and Entrepreneurship in an

⁶ Prepared by Partner 22, National Centre for Education, Latvia

⁷ Council recommendation on VET, Vocational education and training (VET) for sustainable competitiveness, social fairness and resilience 2020/C 417/01, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020H1202%2801%29>

⁸ Council recommendation on VET, Vocational education and training (VET) for sustainable competitiveness, social fairness and resilience 2020/C 417/01, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020H1202%2801%29>

⁹ Centres of Vocational Excellence, https://ec.europa.eu/programmes/erasmus-plus/programme-guide/part-b/key-action-2/partnerships-cooperation/centres-vocational-excellence_en



integrated mode. It proposes to address European qualifications Framework (EQF) at levels 3-6 in a comprehensive way, which is an ambitious goal. Moreover, the focus is on SMEs which in most countries provide a considerable share of jobs (but due to various reasons may be subject to disadvantages). As stated in the Concept - 99% of all companies in the EU are SMEs, providing about 70% of all jobs. Thus, they are essential for vocational education and for securing economic prosperity and international competitiveness. Moreover, it is pointed out in the Concept that SMEs only have potential to succeed in national as well as international competition if they demonstrate the strongest innovation capacity of the highest quality. This requires outstanding qualifications. Thus, the Concept proposes measures to address these challenges in a comprehensive way.

3. It should be noted that the project aims not only at developing and implementing comprehensive measures for the development of a competitive labour force for SMEs but have a deeper insight regarding the demographic challenges that demand more proactive measures regarding the consulting and innovation support for SMEs – to enable the SMEs for competitive strategies for attracting and training the needed workforce.

4. It is important that the Concept is based on the analyses of the economic and demographic development, the education and labour markets, as well as the qualification needs of SMEs in the Green Economy, to provide the basis for a common point of departure for carrying out the project work. This allows for an objective starting point for the subsequent development of concepts for the establishment and permanent operation of seven regional centers of excellence in seven EU countries. Moreover, the approach is not purely theoretical but based on the experience gained from already operating VET centers of excellence in Germany and Poland.

5. A major input for the future work is the discussions and consultations held with partners in fifteen online meetings at the beginning of the project lifetime – regarding the three main directions of activity: 1) the development and operation of the seven centers of vocational excellence; 2) the development and implementation of educational measures at EQF 3 – 6; 3) quality assurance, dissemination of all results and project management.

6. The main challenge for SMEs is clearly presented – stating that today already there is a considerable lack of qualified employees, which will significantly increase in future and thus will dramatically limit growth and innovation. It is pointed out that improving qualifications in general education, increasing the attractiveness, quality, and development of vocational education as well as further training must therefore be the main agenda and the most important tasks for SMEs in the EU.

7. Apart from challenges, also the bottlenecks have been identified - qualitative problems are intensified by quantitative bottlenecks, since the number of people leaving the job market due to their age is much higher than the number of young people entering it, due to demographic changes. This poses a significant danger especially for medium-sized companies as they might not win enough qualified staff and, at the same time, be forced into a lower qualification level.



8. The strategic approach in the project is clearly defined, pointing out the potential strength of SMEs: In principle, SMEs in EU have excellent chances to grow. However, to use these chances they need qualified personnel on a sufficient scale, which is already more and more difficult to achieve considering the overall increasing lack of qualified staff nowadays. These obstacles are especially significant since the increasing importance of knowledge-intensive services and industries is accompanied by a growing demand for qualified employees. In the field of knowledge economy, most EU countries have good structures in place and a considerable potential for development. 'Knowledge' is thus the decisive resource of the future.

9. The drawn conclusion projects the optimal place and role of SMEs in the future labour market: SMEs in general and particularly the crafts sector, should not become the sole experts of training and integration of weaker learners and people with weaker social skills. While fulfilling this socially important task, SMEs should at the same time turn towards the best ones in the society and recruit strong learners on a much larger scale. The quantitative problems, as well as the loss of qualification, concern not only the first level of vocational education and the journeyman level; they also reveal themselves even more intensely at the level of management and entrepreneurs.

10. A clear link is being provided with the higher education sector and its potential role in securing high-level staff for SMEs – pointing out the challenges and potential solutions. As stated in the concept: attracting entrepreneurs and executives from amongst graduates of universities and universities of applied sciences will have to become increasingly important. Yet, also in this case there are significant limitations. On the one hand, there is an increasing competition between all branches of the economy to attract these graduates. On the other hand, these study subjects are mostly very theoretical and scientifically oriented. Thus, the graduates are not exactly over-qualified for the management tasks in a SME, but rather incorrectly qualified. First and foremost, they are missing the practical skills, the professional knowledge as well as the ability to connect practice and theory. In many ways they are too specialized, for example in the technical or business fields. As opposed to that, executives of SMEs need to be system specialists, combining technical and professional skills with business knowledge and the ability to take care of all the management tasks.

11. There is a clear awareness regarding the need for individualised approach. It is pointed out in the Concept that the development of a profession-specific competence profile is needed, which is then matched against the carefully identified individual competencies of individual young people. For each individual occupation, different performance and suitability criteria should be determined in accordance with the actual requirements as a basis for individual competence assessment and potential analysis. The high number of drop-outs during the training and the danger of occupational dead ends are thus considerably reduced. Vocational education must consider individual skills and potential and requires extensive differentiation. Through the introduction of different levels young people with differing educational backgrounds, competences and level of academic ability get the possibility to receive education which corresponds to their skills.

12. It has also been pointed out that careful counselling and preparation for vocational education should also contribute towards considerable reduction of change and drop-out rates in vocational education which tend to be too high.



13. Attempts have been made to provide a structured approach towards levels (training schemes) for studies (level 1 to level 3, aiming at EQF levels 3-6 depending on the chosen training scheme) for the training and its content.

14. There is a strong awareness on the importance of permeability. As stated in the Concept - in such a differentiated system of vocational education a high level of permeability must be guaranteed. Each graduate of a lower level must have an unrestricted opportunity to achieve a higher level, in accordance with their learning progress and taking into account the parts of the studies that have already been completed. Also, the other way around, a change from a study course of a higher level to a course of a lower level should be possible, considering the study time already covered.

15. The preferences of the dual approach have been presented. It has been stated in the Concept that vocational education should preferably be part of the dual system which combines practical training in companies with accompanying theory studies at vocational schools, leading to a recognized vocational qualification. The theory should be taught as much as possible in conjunction with the practical training.

16. Due recognition has been given to the broader international approach for gaining a broader approach and training options. As stated in the Concept - additionally, importance must be given to an internship abroad, which should happen during the training. In addition to the general broadening of horizons, it allows the student to gain international experience, strengthens intercultural skills, and creates new contacts and getting to know ways of working and customs abroad.

17. There is a clear awareness regarding the need for transparency. It is stated in the Concept that parts and periods of training completed abroad have to be recognized without restriction and counted towards the vocational education in the home country. This is clearly an important aspect. At the same time additional reference to the possibilities by Europass might be beneficial.

18. Quality assurance issues have been addressed and approaches might be revised in the course of the project after piloting the proposed activities, since the targets are highly ambitious and innovative.

19. Specificities of green approach have been analysed.

20. Concrete and detailed action plans for implementation of all main directions of work has been proposed.

Conclusions

The Concept "Development and permanent operation of regional centers of excellence and transnational platform" fully complies with the EU level VET policy priorities. It addresses the topical issue of centres of VET excellence proposing concrete measures for the activities to be implemented in order to ensure labour market relevant qualifications, with a focus on green agenda and especially for SMEs.

The planned activities are comprehensive, systemic and clearly described. They are based on prior discussions and analysis. The roles of partners are distributed accordingly.



An ambitious goal is set to implement a holistic approach regarding labour force development – by initial and further training schemes at EQF levels 3-6. Even though piloting of the approach may require some revision of the original plans due to some unpredictable circumstances (e.g. restrictions by existing VET systems or legal frameworks), the piloting will allow for identifying potential bottlenecks for further systemic approaches of the proposed scheme.

An important aspect of the concept is the dual approach. Given the developments of EU member states over the past decade regarding dual approaches (implemented as apprenticeship type schemes or work-based learning), some revision of the proposed dual approach might be necessary, due to the existing VET systems and legal frameworks not compatible with substantial changes and also not along with the existing tradition in the project partner countries. Stattdessen könnten die vorgeschlagenen Systeme von jedem Projektpartner überdacht und angepasst werden, um Wege zu finden, wie die vorgeschlagenen innovativen Lösungen unter Berücksichtigung der Besonderheiten der nationalen Berufsbildungssysteme auf praktikable Weise eingeführt werden können.

The above references to the latest EU level VET policy documents might add additional power to the Concept, given the fact that these documents address the newly emerging challenges of the global training process and labour market and the proposed actions have been discussed by and agreed by member states through a democratic procedure, reaching the best possible consensus on new education and training developments and measures.

6 Foundation and start of work of the Center of vocational Excellence

For each Center of Vocational Excellence (COVE), a partner was appointed by mutual agreement to coordinate the respective center:

- COVE Austria: Partner 14 Wirtschafts-Förderungsinstitut der Wirtschaftskammer Steiermark (Styrian Chamber of Commerce)
- COVE Germany Dresden: Partner 3 Chamber of Crafts Dresden
- COVE Germany Hamburg: PP24 Hamburg Vocational University
- COVE Italy: Partner 21 Vocational school Emilio Sereni
- COVE Latvia: Partner 23 Vocational Education Competence Centre "Liepāja State Technical School"
- COVE Lithuania: Partner 7 Vocational Training Centre Zirmunai
- COVE Poland: Partner 5 Zespól Szkól Mechanicznych i Logistycznych im. inż. Tadeusza (Vocational competence centre)
- COVE Spain: Partner 20 Vocational school Institut Pere Martell

A template for a cooperation agreement for the establishment and ongoing operation of a Center of vocational excellence was developed.

6.1 Template

Template

Cooperation Agreement on the Establishment of a Center of Excellence in the Green Economy in *country*.....

Logo Project Partner A of the Country

Logo Project Partner B of the Country

Logo Project Partner C of the Country

Logo Project Partner D of the Country

..... July, 2021

6.11 Background

Meeting the challenges in the fields of energy, climate and environmental protection requires comprehensive reorientation and forward-looking innovations. These tasks must be mastered by SMEs against the background of the following problems:

- Blatant and growing shortage of skilled workers.
- Large qualification deficits, especially in the Green Economy.
- Loss of attractiveness and low qualification of school-based VET.
- Low rates of further training and insufficient orientation of offers to SME needs.
- Ageing of entrepreneurs and increasing shortage of young people (demographic change).
- Failure of business transfers and low rates of business start-ups.
- Low innovation rates and insufficient productivity.
- Not enough cooperation between universities and SMEs and a lack of teaching geared to SME needs.
- Comparably low internationalisation of SMEs and vocational training providers.

To meet these challenges, the following institutions are establishing a center of vocational excellence in Green Economy within the project "Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy (3LoE)":

- *Name and address Project partner A of the country*
- *Name and address Project partner B of the country*
- *Name and address Project partner C of the country*
- *Name and address Project partner D of the country*

6.12 Objectives of the Center of Vocational Excellence

The center of vocational excellence in ... *name of country*.... will pursue the following objectives:

- Consistent introduction of work-based learning through the implementation of dual education at three levels: initial vocational training, further education and higher education.
- A significant increase of the skills and competencies of entrepreneurs, managers and specialists in SMEs through dual education and new, tailor-made qualification programs.
- Due to a decreasing number of young people in vocational training as a result of demographic changes and the introduction of dual education, freed personnel, spatial and technical resources in vocational schools are under no circumstances to be withdrawn from the educational sector. Rather, they are to be used as the urgently needed assets for continuing vocational training.
- Existing technical and spatial resources in the vocational schools, chambers of commerce and universities are practically and jointly used, resulting in an increase of the performance capacity of all tasks at the individual educational levels.

- Educational offers are sustainably strengthened through the overarching cooperation, knowledge transfer, innovation and quality. For example, university lecturers participate in the development of curricula in vocational training and further education or provide teachers for further education measures. Vocational schools share their experiences and contribute to the implementation of dual study programs. Chambers convey the needs of SMEs at all educational levels and involve them as training partners in the dual implementation.
- At all three levels, education, management, teaching and administrative staff are trained to perform their tasks in the frame of train the trainer programs. These train the trainer programs are carried out on a permanent basis by the colleges and universities involved, so that sufficient qualified staff for all education measures is available in the region.
- With the creation of a consistent, continuous system of vocational training, further training and higher education, a high degree of permeability between vocational training, further training and higher education is achieved. At the same time, the recognition of competences already acquired is made possible in practice.
- Maximum permeability and crediting of already acquired skills lead to a sustainable increase in the attractiveness of vocational training, so that additional entrepreneurs, managers and specialists can be won.
- Permeability and the recognition of competencies as well as the attractiveness and quality of professional training are comprehensively promoted through the development of official training professions. For this purpose, legally binding ordinances are being developed for new advanced training professions with a focus on the Green Economy, leading to recognized educational qualifications at EQF Level 4 and 5.
- Through specific educational programs and targeted support for young people with learning difficulties on the one hand and young people with strong learning skills on the other, differentiated offers are created for everyone in vocational training. By doing so, the number of participants in vocational education is to be increased and the urgently needed young people in SMEs are secured.
- Companies, colleges, universities and chambers of commerce are training partners in the dual further and university education programs. At the same time, this intensive cooperation is used to effectively promote innovation in SMEs.
- Small and medium-sized enterprises suffer from bottlenecks in operational management and information processing. They need tailor-made services - without delay and from a single source. Networks are of outstanding importance to them. Unlike large companies, they cannot have internal staff functions that perform a wide range of corporate management tasks. In the SME sector, such staff functions and support tasks must be performed externally. The center of vocational excellence is the central service providers who, through cooperation between vocational schools, chambers and universities, provide SMEs with the necessary reliable support, tailored to the company and from a single source, hence enabling monetary benefits for SMEs.

- Embedding the centers in regional and national strategies and achieving high levels of impact to promote the Green Economy, improve skills and attract skilled workers and entrepreneurs.

6.13 Tasks, structure and organisation

The innovative strength of SMEs is strongly limited by the availability and qualification of entrepreneurs, managers and specialists. Due to the lack of qualifications and the shortage of entrepreneurs and employees, innovations in SMEs are much lower than they could and should be. At the same time, qualification requirements are rising; alongside specialized knowledge, personal and social skills are gaining more and more importance. However, the so-called soft skills require a great deal of catching up and development. Improving qualifications and eliminating the shortage of skilled workers is the most important task and the central key to sustainably strengthen the innovation capacity, competitiveness and growth of SMEs. The most important tasks of the center of excellence in this respect include in particular:

- Improving the quality and attractiveness of vocational education and introduction of dual education system.
- Career guidance and integration of young people with learning difficulties and social disadvantages.
- Integration of all young people and creation of specific training courses for school leavers with practical talents.
- Carrying out courses for strong learners with the provision of additional qualifications in innovation-oriented topics.
- Strong intensification of vocational further training.
- Qualification of managers and entrepreneurs.
- Carrying out dual bachelor's degree programs during which theoretical studies are combined with relevant vocational education in parallel so that the high demand for innovative entrepreneurs and managers for SMEs can be met.
- Embedding the centers in regional and national strategies and by doing so, strengthening their impacts regarding the improvement of skills and attraction of professional in the Green Economy.

The center of vocational excellence *name of the country* will be developed and reinforced on three levels:

1. Level: Vocational training (EQF Level 3 and 4)
2. Level: Further training (EQF Level 4 to 6)
3. Level: Higher education (EQF level 6 and 7)

In the region *name of the region or cities covered by the center of excellence* the center of excellence will cover all areas and topics relevant for SMEs on the basis of job-sharing. They should be operated in close cooperation with vocational schools, economic chambers and associations as well as with colleges / universities in order to jointly carry out educational and counselling tasks, such as:

In Level 1 Vocational education

- Comprehensive career counselling for young people and their parents.

- Providing regular vocational school classes within the framework of dual vocational education.
- Training the trainers in companies and accepting the trainer aptitude examination in order to enable companies to provide vocational education within the framework of dual systems.
- Extensive qualification, support and counselling tasks for young people with learning difficulties or social disadvantages who until now have been pushed away and who get integrated into regular vocational education via these channels.
- Development and implementation of special staged vocational education courses for people with learning difficulties in cooperation with companies
- Development and implementation of vocational education courses for strong learners who receive additional qualifications and early further trainings in the center of excellence already during the vocational education.

In Level 2 Further training

- Demand-oriented development and realization of further training programmes covering all relevant aspects of the strongly growing need for further training of entrepreneurs, managers and skilled workers.
- Development of a system with official, recognised continuing professional qualifications as well as development and implementation of curricula and examination regulations for the implementation of these longer further training courses and achievement of the recognised continuing professional qualifications.
- Within the framework of further training, realisation of intensive learning on the job wherever possible.
- In connection with the further training and learning at the workplace, implementation of targeted innovation promotion and realisation of development projects in SMEs.
- Targeted further training for women and men during the family phase as well as qualification and counselling tasks during the re-entry into the working life.
- Carrying out retraining, qualification and integration measures for the unemployed together with employment services.

In Level 3 Higher education and innovation promotion

- Together with colleges or universities, vocational schools as well as with companies, realization of dual study programs.
- Ensuring the exchange of information and experience as well as the transfer of knowledge and technology in writing and electronically, and in particular through the personal exchange which is so important for SMEs, in the form of meetings, information and training courses, group coaching, etc.
- Comprehensive promotion of innovations for SMEs as well as implementation of R&D tasks in and with SMEs.

In carrying out the comprehensive tasks, the personnel, technical and spatial capacities of vocational schools, colleges/universities and chambers of commerce, industry and crafts are used on the basis of job-sharing. The spatial and technical capacities are used simultaneously for all tasks of the center of excellence, for example modern

technologies in the training workshops during the day for vocational education and in the afternoons, evenings and weekends for further vocational education and technology transfer. This achieves high-capacity utilization and profitability and ensures mutual benefits and strengthening effects in the performance of various tasks.

The center of vocational excellence *name of the country* is established as a cooperative network consisting of different locations / institutions:

- Vocational school or other educational institution
- Chamber or association (with its educational institutions)
- College or university

The partners of the center of vocational excellence *name of the country* are active in all three levels:

- Vocational schools that implement dual vocational trainings and further trainings at EQF Level 3–5 as well as EQF Level 6 within the framework of dual study programs.
- Chambers of Commerce, Industry and Crafts that act as cooperating bodies for professional education at EQF Levels 3 - 6, carrying out vocational trainings and further trainings, examinations, consultations, and in particular representing SMEs, advising and integrating them as training partners for dual education.
- Colleges / universities at EQF Level 3 - 5 that participate in the development of curricula and new learning methods, provide lecturers, trainings for teachers and managers, etc. At EQF Level 6 they will implement dual Bachelor programmes and innovation projects for SMEs.

Each location / institution is independent and economically autonomous.

The center of excellence is coordinated by *name of the project partner who will coordinate the center of excellence according to the Activity Plan.*

Other educational institutions, public administrations, etc. shall be integrated into the center of vocational excellence. Other regional institutions that are of crucial importance for vocational training for SMEs (e.g. public administrations, employment agencies, business incubators and innovation centers, etc.) are involved in the work of the center of vocational excellence as partners or through participation in curatorial bodies or advisory boards.

The center of vocational excellence, which is intensively involved in the areas of energy, climate and environmental protection (Green Economy) with tasks of vocational education and training, further and higher education, promotion of entrepreneurship and promotion of innovations, develop lasting partnerships with companies, because all educational measures are carried out at EQF level 3 - 7 according to dual principles with the learning locations "company" and "center for vocational excellence". The chamber/association organise and secure cooperation with companies.

The activities of the center concentrate on SMEs that:

- a) are not active in the Green Economy themselves but want to implement measures in their own company to save energy and use alternative energies, and to protect the climate and the environment.
- b) are commercially active in the Green Economy and, for example, carry out corresponding orders or manufacture relevant products. The focus is particularly on this second group.

The following actions will be taken in order to realize educational programs on the three levels:

- a) Transfer of best practices concepts, curricula, teaching materials, examination regulations etc. that can be adapted to the respective national conditions, implemented and evaluated.
- b) Development of concepts, curricula, teaching materials, examination regulations etc. as well as implementation and evaluation of these in accordance with the respective national conditions.
- c) Continuation of existing activities in the Green Economy within the center that can be offered for implementation to the other centers of vocational excellence.

The center of vocational excellence *name of the country*

- a) receives all best practices and newly developed promotional tools and educational measures etc. of the 3LOE project for free use during the project period or after the end of the project.
- b) will provide individual best practices as well as develop, test, evaluate and implement certain support instruments, training measures etc. during the project period.
- c) will carry out all tasks during the project period that have been jointly planned and agreed upon in the project implementation concepts and activity plan and bindingly agreed upon at the project meeting on 12 March 2021.

The center of vocational excellence *name of the country* starts operating on July 1st, 2021, will be further developed in a process-oriented manner and will ensure its permanent continuation after the end of the project. To this end, the center will carry out the following activities in particular:

- Development and implementation of information and cooperation tools.
- Networking and cooperation with relevant actors in the region/country.
- Expansion of the cooperative network to include other educational institutions and especially educational administrations.
- Implementation of regional events.
- Development, testing and evaluation of training program for personnel and center management.
- Development of business and financing plans.
- Towards the end of the project, development and conclusion of a binding agreement for the permanent continuation of the center of excellence.

Coordinated by the Lead Partner of the 3LOE project, “Hanse Parlament”, a transnational cooperation between the seven centers of excellence of the 3LOE project is being established, with ongoing exchange of information and experience, transfer of knowledge and best practices, implementation of development work based on division of labour, joint implementation of train-the-trainer programmes, mutual personnel support as needed, for example provision of lecturers or assumption of advisory tasks. The international cooperation of the seven centers of vocational excellence also concerns the joint implementation of educational programmes.

The transnational cooperation of the seven centers of vocational excellence will be further expanded by the inclusion of 60 educational institutions from 13 countries that are involved as associated partners of the 3LOE project. In addition to the spatial and



content-related expansion of the centers of excellence, the aim is to directly involve the associated partners in the work, to transfer and implement results and to create centers of vocational excellence in the regions/countries of these associated partners. The international cooperation is supported by an information and learning platform. Towards the end of the project, business and financial will be developed and an agreement with all project and associated partners will ensure the continuation and further operation of the cooperation platform.

The 3LOE project started on November 1st, 2020, and will run until October 31st, 2024. Within the project duration, all costs of the center of vocational excellence *name of country* will be financed from the project funding. Towards the end of the project, business and financial plans will ensure the financing for the continued operation of the center of excellence after the end of the project, e.g. through national funding, participant fees, etc.

Date

Date of signing the agreement

Signatures

.....

Name of the signatory
Name Partner A

.....

Name of the signatory
Name Partner B

.....

Name of the signatory
Name Partner C

.....

Name of the signatory
Name Partner D

6.2 Foundation and start of operations

All seven centers of vocational excellence have started operation as of July 01, 2021.

The template of the cooperation agreement was adapted by the partners of each center of vocational excellence according to the national conditions and the wishes of the respective partners.

In Austria, Latvia, Lithuania and Poland, a formal conclusion and signing of the cooperation agreement took place in June 2021.

In Italy and Spain, the respective vocational training centers also started operations on July 1, 2021. In each of these countries, a college / university that is not yet represented in the project consortium will be won as a partner for the respective Center of Vocational Excellence by December 31, 2021, at the latest, so that in these two countries the university level will then also be included in the further joint work.

In Germany, a new state vocational university was founded in Hamburg in the first half of the project term, which offers dual Bachelor's degree programmes. After starting operations, the Hamburg Vocational University was accepted as a partner in the 3LOE project and, together with 36 vocational schools and other business partners, is developing a three-tier Centre of Vocational Excellence for the northern German region.



Another centre of vocational excellence is being developed in Germany for the Saxony region in Dresden. The two German centres of vocational excellence will cooperate closely with each other.