





# Result 5.5

# Dual Bachelor programs "Entrepreneurship & Innovation in Green Economy"



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# Partner

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# I Summary of the Project and Introduction

### 1. About the 3LOE 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-sight 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 counselling 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

5.2Transfer 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.

# 2. About the Dual Bachelor programs "Entrepreneurship & Innovation in Green Economy"

During the first six months of the project, all partners of the eight COVEs discussed and agreed in detail that:

a) dual Bachelor's degree programmes should be developed and implemented.

b) the following dual Bachelor's degree programmes should be developed and transferred to all seven COVEs

- Management of Renewable Building Energy Technology

- Business Administration for SMEs
- Four study modules "Green Economy"

c) a new dual Bachelor's degree programme "Business Administration & Sustainable Management of SMEs" is to be developed.

This work was carried out, implementation was advised, and realisation began in all COVEs during the project period.

After the eight COVEs had started their work, they were confronted with urgent needs and requests for the development and implementation of further dual study programmes from public administrations, colleges, universities and companies in the countries that had not yet implemented dual study programmes from the second year







of the project. In order to meet these priority needs in the regions; the development and implementation of the following dual study programmes was also included in the work of the 3LOE project:

- COVE Latvia: Entrepreneurship & Innovation in Green Economy
- COVE Lithuania: Electrical and Automatic Equipment
- Cove Poland: Logistics Green Supply Chains
- COVE Austria: Service technician
- COVE Austria: Sustainable management Climate neutrality for companies

As the work could only begin in the second year of the project and the development work and necessary accreditations were very labour-intensive and time-consuming, it was only possible to begin with the first implementations during the project period. However, the further implementation of all five additional study programmes is guaranteed after the end of the project period. In addition, all documents relating to the five additional degree programmes were transferred to all other COVEs during the project period and implementation was discussed and prepared here.

The results achieved by

- COVE Latvia for the dual study programme "Entrepreneurship & Innovation in Green Economy" and by
- COVE Lithuania for the dual study programme "Electrical and Automatic Equipment"

during the project period are presented below.





# II Study Program "Entrepreneurship & Innovation in Green Economy"

# **Concept and Curriculum<sup>1</sup>**

## 1. Executive Summary

First, we worked to understand the architecture and essentials of approaches to Green economy, innovation and by international institutions and governments, researchers, experts, and educators which made up the green entrepreneurship orientation and needs for educational policies and programmes reflecting new trends in labour markets and business environment, development of new knowledge and skills. These interventions are at the beginning of this draft concept.

Second, we shared information on some of issues faced in Latvia related to practices and policies addressed in education. As the realm of education policy is very broad, we focused on five areas:

- socio-economic situation and labour market needs.
- green entrepreneurship and innovation.
- job -related training in EU and Latvia;
- development of a bachelor's degree programme at the RSU and cooperation with business;
- promotion of the programme.

So as not to exclude other issues, the chapters are featured for the draft concept strengthening the perception that all the above-mentioned issues are interconnected and improvements in education and development of a new educational programme must be viewed as a whole.

Third, we tried to synthesize the information available to produce some general views on what could be shared among colleagues.

The objective of the programme and a module development concept is to focus on the importance of green entrepreneur orientation and innovation in education and exchange of practical experiences in Latvia and other partner countries involved in the project as well as visions as well as the interrelations between the economy, labour market, demography and education.

## 2. Introduction

#### 2.1 Understanding of the Green economy and Entrepreneurship

#### Green entrepreneurial orientation

<sup>&</sup>lt;sup>1</sup> Prepared by Dr. Prof. Tatjana Muravska and Dr. Sergejs Stacenko, Rigas Stradina Universitate





Increasing environmental issues are posing serious threats to ecology, humans and economic growth. Governments and businesses focus nowadays on more sustainable productions and integrating sustainable processes in core of their business activities.

Studies suggest that an entrepreneurial orientation (EO) has emerged as a core concept in the field of entrepreneurship<sup>2</sup>. However, in realising environmental, economic, and social performance of businesses, a green entrepreneurial orientation (GEO) and or sustainable entrepreneurial orientation (SEO) are considered as sustainable competitive advantage<sup>3</sup>. For many firms GEO enhances their capabilities to initiate green ventures and improve business performances and sustainability performance.

#### The concept of green innovation

The concept was first proposed by Fussler and James already in 1996<sup>4</sup>, which refers to improvements and innovations in product processes that enhance the environmental performance of the firms. In addition to this, Borghesi et al. (2015)<sup>5</sup> refer to green innovation as processes of the use of innovative resources that may reduce the cost of production and improve a company's performance. In studies that are relevant to green innovations (Ratten Vanessa, Ramirez-Pasillas Marcela, Lundberg Hans, 2019)<sup>6</sup>, the importance is given to economic, environmental, and social performance of a company, which in turn, could enhance the strength and competitiveness of the organizations.

Green Entrepreneurship (GE) is a system that reflects company's strategic actions to accelerate green innovation and improve sustainable business performances (environmental, economic, and social). Green Entrepreneurship leads to Green Innovation, which in turn gives rise to three variables which include Green Social Performance, Green Economic Performance and Green Environmental Performance as it is presented in the scheme below.

#### Scheme 1

#### A System of Green Entrepreneurship

<sup>&</sup>lt;sup>2</sup>Lumpkin, G. T. Pidduck, R.J. (2021) "Global Entrepreneurial Orientation (GEO): An Updated, Multidimensional View of EO" in Corbett, A.C., Kreiser, P.M.m Marino, L.D., Wales, W.J./Ed. *Entrepreneurial Orientation: Epistemological, Theoretical, and Empirical Perspectives, Advances in Entrepreneurship,* Firm Emergence and Growth, Vol. 22, Emerald Publishing Limited, Bingley, pp. 17-68.

<sup>&</sup>lt;sup>3</sup> Afum, E., et al., (2021) The missing links of sustainable supply chain management and green radical product innovation between sustainable entrepreneurship orientation and sustainability performance. *Journal of Engineering, Design and Technology*. DOI: https://doi.org/10.1108/JEDT-05-2021-0267

<sup>&</sup>lt;sup>4</sup> Driving Eco-innovation: A Breakthrough Discipline for Innovation and Sustainability. Fussler, C., James, P., Pitman Publishing, 1999.-364p.

<sup>&</sup>lt;sup>5</sup>Linking emission trading to environmental innovation: Evidence from the Italian manufacturing industry. Borgesi, S., Cainelli, G., Mazzanti, M., Elsevier, Research Policy, Volume 44, Issue 3, April 2015, pp.669-683.

<sup>&</sup>lt;sup>6</sup> Athanasios Hadjimanolis. Drivers and Barriers in SMES in the Context of Small Countries in Managing Sustainable Innovation.Routledge,2020, pp.60-67.

3LoE

Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy





Entrepreneurship has an important role in delivering more radical green innovations that challenge existing firms and business models.

Policy needs to create the room for such new firms by enabling their entry, exit and growth, ensuring fair competition and improving access to finance, which remains a major constraint for the entry and growth of new businesses and firms.

#### Facilitating transition to green growth in SMEs

SMEs face additional problems in adopting green innovations, as they often have weak innovation capabilities. Policy can help to improve access to finance, enable small and medium-sized enterprises to participate in knowledge networks, strengthen the skills that can lead to innovation, and reduce the regulatory burden on firms.

#### EU position

The EC proposes transformation of EU economy and society to meet climate ambitions and on 14 July 2021, the European Commission adopted a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels. Achieving these emission reductions in the next decade is crucial to Europe becoming the world's first climate-neutral continent by 2050 and making the European Green Deal a reality.<sup>7</sup>

The EU Commission's vision for a European Education Area

The Commission's vision for a European Education Area (EEA) is guided by several dimensions. In terms of quality:

- improvement of basic skills (digital competences, and transversal skillsentrepreneurship, creativity and civic engagement);

<sup>&</sup>lt;sup>7</sup> European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions. Press release 14 July 2021 https://ec.europa.eu/commission/presscorner/detail/en/IP\_21\_3541





- facilitatation of mobility for learners and educators and international cooperation between education institutions;
- promotion of language learning, multilingualism and support the discovery and management of cultural diversity;
- enriching education with a European perspective encouraging understanding of and critical thinking about what Europe means in regard to citizens' daily lives;
  - ensure that education and training institutions are safe, inclusive, and disinformation-free.

One of the guided EC's visions for the EEA is Higher education<sup>8</sup>

- support closer and deeper cooperation between higher education institutions, in particular international higher education alliances;
- co-create, together with Member States and stakeholders, a transformation agenda for higher education institutions;
- develop a European approach to micro-credentials to help widen learning opportunities and strengthen the role of higher education and vocational education and training institutions in lifelong learning;
- promote focus on specialised education programmes on advanced digital skills related to cutting-edge technologies, such as artificial intelligence and high-performance computing.

#### Latvia position

According to the OECD Report<sup>9</sup>, Latvia has managed to decouple several environmental pressures from its sustained economic growth, although challenges remain. It has significant opportunities for accelerating the transition towards a low-carbon, greener and more inclusive economy.

Latvia is on a good pathway towards reaching many of the Sustainable Development Goals (SDGs)<sup>10</sup>. It has significant opportunities for accelerating the transition towards a low-carbon, greener and more inclusive economy, especially by investing in energy efficiency, renewables, sustainable forestry and sound waste and material management.

To seize these opportunities, it should make better use of economic instruments, remove potentially perverse incentives, and improve the quality of its environment-related infrastructure and services.

<sup>&</sup>lt;sup>8</sup>Towards a European Education Area by 2025. https://ec.europa.eu/education/education-in-the-eu/european-education-area\_en

<sup>9</sup>OECD (2019), OECD Economic Surveys: Latvia 2019, OECD Publishing,

Paris, https://doi.org/10.1787/f8c2f493-en

<sup>&</sup>lt;sup>10</sup> OECD (2019), *Measuring Distance to the SDG Targets 2019: An Assessment of Where OECD Countries Stand*, OECD Publishing, Paris. https://doi.org/10.1787/a8caf3fa-en





Sustaining growth in the long term will also require more investment in education and innovation to further diversify exports towards products and services with higher technological content and value added.<sup>11</sup>

Latvia has a well-developed and comprehensive framework for sustainable development. It is defined by law and adopts the principle of vertical (hierarchical) and horizontal co-ordination of planning documents.

The Sustainable Development Strategy of Latvia until 2030 includes long-term priorities, goals, and action lines, and is broadly consistent with the SDGs. It is based on a capital approach to sustainable development, which primarily focuses on wealth creation within the planet's ecological limits, with an emphasis on the correlation between environmental and economic systems.

Latvia 2030 has a higher political standing than the previous sustainable development strategy. It is the result of a multi-stakeholder participatory process and was adopted by the Saiema (Parliament) in 2010. The broad public participation helped the strategy gain the legitimacy of a social contract and the broad support needed for its implementation.

All SDGs are being integrated into the planning system and Latvia is making progress towards achieving them. However, the country needs to conquer economic, environmental, and social opportunities of moving towards a circular economy, enhancing innovation and eco-efficiency, reducing inequality and improving access to education and health.<sup>12</sup>

Several areas for action have been identifies:

- increasing productivity of the economy, including through more efficient use of resources and larger investment in research and innovation
- improving labour market performance
- improving the health care and social welfare systems
- improving service provision to low-density areas, including road infrastructure, public transport and housing
- adapting to climate change, reducing GHG (greenhouse gases) emissions and promoting wider use of renewable energy sources.

#### 2.2 Importance and promotion of innovation in the Green Economy

The European Skills Agenda<sup>13</sup> is a five-year plan to help individuals and businesses develop more and better skills and to put them to use, by:

 <sup>&</sup>lt;sup>11</sup> OECD (2019), OECD Economic Surveys: Latvia 2019, OECD Publishing, Paris, https://doi.org/10.1787/f8c2f493-en
 <sup>12</sup> Latvia. Cross-Sectoral Coordination Centre (2018), Implementation of the Sustainable Development Goals.
 https://sustainabledevelopment.un.org/memberstates/latvia

<sup>&</sup>lt;sup>13</sup> COMMISSION STAFF WORKING DOCUMENT Accompanying the document Proposal for a COUNCIL RECOMMENDATION on Key Competences for LifeLong Learning. Brussels, 18 January 2018. (OR. en)





Strengthening sustainable competitiveness, as set out in the European Green Deal ensuring social fairness, putting into practice the first principle of the European Pillar of Social Rights: access to education, training and lifelong learning for everybody, everywhere in the EU building resilience to react to crises, based on the lessons learnt during the COVID-19 pandemic. <sup>14</sup>

Climate change and environmental degradation are an existential threat to Europe and the world. To overcome these challenges, the European Green Deal will transform the EU into a modern, resource-efficient and competitive economy, ensuring:

no net emissions of greenhouse gases by 2050 economic growth decoupled from resource use no person and no place left behind.

The European Green Deal is also our lifeline out of the COVID-19 pandemic. One third of the 1.8 trillion-euro investments from the NextGenerationEU Recovery Plan, and the EU's seven-year budget will finance the European Green Deal.<sup>15</sup>

#### 2.3 Economic and Demographic situation in Latvia

#### **Economic situation**

Latvia has a small open economy, with a small industrial base, a large agriculture and forestry sector. Until the outbreak of Covid-19 pandemic, Latvia's economic growth remained stable, exceeding the EU average. From 2011-2019, GDP on average increased by 3.3% annually. In 2019, economic growth moderated. GDP increased by 2%. The slight economic slowdown was driven by both internal factors (investments from EU funds have peaked, developments in the financial sector, etc.) and external factors (review of global trade tensions, Brexit, slower growth in other EU countries).

The Covid-19 crisis has had a significant impact on consumption. With rising employment and wages, private consumption has grown steadily in recent years. In 2020, the increase in unemployment and the fall in income caused by the Covid-19 crisis have significantly reduced household consumption. In 2020, private consumption was 10% lower than a year ago. The government's support measures to mitigate the negative effects of Covid-19, which have been largely financed at the expense of increasing the general government deficit, have maintained positive growth in government consumption.

A relatively more moderate impact on investment by the Covid-19 crisis. In previous years, the increase in investment was largely due to the acquisition of EU funds.

The Covid-19 pandemic has a significant impact on the global economies as well as on the economy of Latvia. Overall, in 2020, GDP decreased by 3.6%, compared to 2019. With the epidemiological constraints remaining, the economy is declined in the

<sup>&</sup>lt;sup>14</sup>European Commission. Employment, Social Affairs & Inclusion. European Skills Agenda. https://ec.europa.eu/social/main.jsp?catId=1501

<sup>&</sup>lt;sup>15</sup>European Commission. A European Green Deal. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal





first quarter of 2021 as well. However, with the resumption of seasonal work in the spring and the improvement of the epidemiological situation, which will be facilitated by vaccination, economic activity is expected to increase gradually.

The Ministry of Economy forecasts that in 2021 economic growth could exceed 3%. However, the uncertainty remains elevated.<sup>16</sup> The competitive advantages of the Latvian economy mainly rely on technological factors, improvements in production efficiency and innovations; however, to a lesser extent on low labour and resource prices.

#### Labour market

Considering the decline in labour demand, which was affected by the overall downturn in economic activity due to the Covid-19 crisis, in 2020, the number of employees decreased by approximately 17 thousand or 1.9%, compared to 2019, thus representing the largest decrease in the number of employees since 2010.

Along with declining employment, unemployment has also risen. Unemployment rates remained almost 1/3 higher than before the Covid-19 crisis. Overall, in 2020, the average unemployment rate increased to 8.1%, which is 1.8 percentage points higher than in 2019.

The share of registered long-term jobseekers (i.e., unemployed for more than a year) from the end of April 2020 to the end of February 2021 has risen by 7.8 percentage points (from 17.2% to 24.9%). In February 2021, 18.6 thousand jobseekers were unemployed for more than a year.<sup>17</sup>

#### Scheme 2



#### Occupation by Sector in 2020 in per cent

<sup>&</sup>lt;sup>16</sup> Macroeconomic Review of Latvia. April 2021. Ministry of Economy of the Republic of Latvia. https://www.em.gov.lv/en/media/8918/download

<sup>&</sup>lt;sup>17</sup> Ministry of Economy, The Republic of Latvia, 2020.







The labour market is also affected by the negative demographic situation in the country for a long time, leaving an impact on both unemployment and the dynamics of the number of employees.

In 2020, population in private households aged 15-74 declined by 9.5 thousand, compared to 2019. It should be noted that high long-term unemployment can lead to an increase in structural unemployment, i.e., the longer these people remain unemployed, the greater the risk of losing their previous skills.<sup>18</sup>

It becomes increasingly difficult for them to adapt to new labour market needs. Risks that some of the unemployed may have difficulty finding a job matching their skills in the future remain elevated, as recovery in the sectors directly affected by the Covid-19 crisis may be only gradual, or the previously acquired skills may not be in demand.

#### Demographic

The Central Statistical Bureau of Latvia (CSB) show at the beginning of 2021 the population of Latvia accounted for 1 million 893 thousand people, which is 14.5thousand people fewer than in 2020.<sup>19</sup> In 2020, the population decreased more rapidly - by 0.76% compared to 0.64% 2019, including a decrease of 0.59% due to negative natural growth and 0.17% due to migration.

In 2020 the lowest birth rate in the last hundred years was registered- 17.6 thousand children were born in Latvia - by 1 234 or 6.6 % less than in 2019, which is the lowest indicator over the last hundred years.

The demographic situation in Latvia is characterized by a negative natural rate of increase and by ageing. Depopulation started in the early nineties and still continues. In particular, the size of younger age cohorts has decreased. This is connected to the fact that at the beginning of the nineties the birth rate fell sharply. Eighteen to twenty years later the smaller youth population is about to enter the higher education system and the labour market.

Demographic processes are inert compared to financial markets and the economy, so there are no quick solutions in demography.

The higher education system has to adjust to two forthcoming changes arising from demographic changes – a decrease in total enrolment volume and a change in the age structure.

In its current form the present size of higher education system is not sustainable. Clearly, there are no solutions to increase the size of cohorts as a way to rescue the higher education system, at least not in the nearest future.

<sup>&</sup>lt;sup>18</sup> Ministry of Economy, The Republic of Latvia, 2020.

<sup>&</sup>lt;sup>19</sup> CSB https://stat.gov.lv/en/statistics-themes/population/population-number/press-releases/6935-number-population-latvia-2020





The demographic decline not only affects the student population, but also the labour market, and working age people will be needed to cope with an increasing old-age dependency problem as well as by structural and technological changes in economies and businesses in the 21st century and post-Covid-19 times.

Opening up new types and models in education could be part of the solution, for example to consider a trend of vocational education and professional educational programmes at HE institutions in the country.

#### The need for updates in education

According to the research conveyed by the World Economic Forum (WEF), today's education system does not meet the needs of young people. "I feel like I am learning all the theory, but not the practical skills I will need later in the field, which is a huge miss" - is a though shared by one of the interviewers conducted by the WEF researchers. Young people in general need to become more adept at seeing opportunities where others see problems, more willing to take risks, and more willing to accept failure. Governments, private companies, universities, incubators, and accelerators are all increasingly looking to cultivate the next generation of entrepreneurs. Many educational programs are taking an increasingly innovative approach to developing richer "human capital" and fostering greater entrepreneurship. In general, three primary aspects are now being emphasized in entrepreneurial education programs.<sup>20</sup>

Technological changes and demographic shifts require reskilling to meet labour market demands. However, lifelong learning opportunities, for example, modular short-cycle courses, experience on the job, and exposure to new projects are necessary to help more people gain skills that match labour market demand. Businesses need to recognise and invest in their "human capital" as an asset, rather than see it as a liability.<sup>21</sup>

The programs acquaint the prospective entrepreneurs with the broader mechanisms at play at both a national and regional level that can be leveraged to support entrepreneurship and growth - and introduce these young people to tools and resources necessary to increase the scale of their ventures.

Specialized education should focus in particular on skills that are in demand in the real world and address the disconnect between employer needs and available talent pools.

More dialogue and cooperation among companies, regulators, investors, consumers, and workers will be necessary to earn and sustain public trust.

<sup>&</sup>lt;sup>20</sup> We asked young people about work and skills. World Economic Forum (WEF). https://www.wefo-rum.org/agenda/2021/07/we-asked-young-people-about-work-and-skills/?utm\_source=sfmc&utm\_me-

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<sup>&</sup>lt;sup>21</sup> Ibid.





#### 2.3 Promotion of innovation in the Green Economy in HE programmes

According to the Curriculum "Preparation and management of SMEs for work in the Green Economy" by the Satakunta University of Applied Sciences (SAMK), project partner number 11 Compiled by Dr. Kari Lilja, Dr. Sirpa Sandelin and Sanna Lindgren, concrete goals of education towards green economy are the following:

- "To give participants an understanding of environmental issues that will affect our societies and businesses in the near future.
- To give participants an understanding of sustainability and sustainable development and how these concepts can help to tackle the challenges caused by changing climate and other environmental and societal threats.
- To give participants a common information concerning the European and national policies concerning the environmental issues, sustainability, and green economy.
- To give participants a basic knowledge of green economy and its benefits and challenges for an enterprise and business.
- To help participants innovate new ideas how they and their companies will find the best ways to respond the challenges".<sup>22</sup>

Educational programmes that support entrepreneurships and innovation in the green economy programmes have been developed in many countries, for example, Germany, Austria, Belgium, France.

Examples of educational programmes in Germany<sup>23</sup>, and Austria<sup>24</sup>, Belgium, France.

Box 1. Dual educational programmes in Germany (example)

https://www.mygermanuniversity.com/articles/dual-study-programs-in-germany

Similar to the training-integrated programmes, the practice-integrated dual programmes include a mix of practical elements in a company or an institution and academic education. Like in the training-integrated programs, the practical and theoretical portions are linked in content and coordinated.

The big difference is, however, that the practical elements do not encompass an officially recognized vocational training. Therefore, graduates of practice-integrated dual programs graduate with an academic degree, typically a bachelor's or in some cases a master's degree, some practical work experience under their belt but NO official vocational training certificate in a recognized profession. In 2019, nearly 50% of study programs were offered in this form.

Students of this model are either employed as interns or as regular employees but not as apprenticeship trainees. Most often, students of this model cooperate with only one company throughout this time, however, there are also practice-integrated dual study models that allow you to change companies each semester and intern in various companies. In this latter case, it may be that you only receive a salary during the months that you work.

<sup>&</sup>lt;sup>22</sup> Preparation and management of SMEs for work in the Green Economy. Curriculum. Satakunta University of Applied Sciences (SAMK), project partner number 11 Compiled by Dr. Kari Lilja, Dr. Sirpa Sandelin and Sanna Lindgren, p.4.

<sup>&</sup>lt;sup>23</sup> Preparation and management of SMEs for work in the Green Economy. Curriculum. Satakunta University of Applied Sciences (SAMK), project partner number 11 Compiled by Dr. Kari Lilja, Dr. Sirpa Sandelin and Sanna Lindgren, p.4.

<sup>&</sup>lt;sup>24</sup> Curriculum F-Energy Generation from Wastewater and Waste. WWW&CE and WIFI Steiermark.-425p.

# 3LoE

#### Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy





Students typically start this program type after high school graduation or after graduating from a bachelor program. Some students of this type also have started a career before deciding to get additional qualifications under this study model.

#### Examples of educational programmes in Belgium

Box 2. Educational programmes in Belgium Vlerick Business School Public Utility Foundation, Gent, Belgium - https://www.vlerick.com/en/contact Entrepreneurship and innovation- https://www.vlerick.com/en/management-expertise/entrepreneurship-and-innovation-overview Start-ups; Scale -ups; SME; Family business; Corporate innovators Short and focused programmes address today's most relevant business issues in a short but intense programme's format. The number of programme's days varies from 2 to 6 days, dependent on the programme. Growth through Innovation Ensure your competitive advantage by formulating your innovation strategy Product management Launch new products and services successfully New Business Development Realise sustainable growth by exploring and implementing new business opportunities **Project Management** 

In line with your strategy

#### Examples of educational programmes in France

Box3. Educational programmes in France, Lyon Entrepreneurship &Innovation Management <u>https://masters.em-lyon.com/en/Specialized-Pro-gram-Entrepreneurship-Innovation-Management</u>

The programme is focused on management and entrepreneurship

Management combines both innovative and entrepreneurial dimensions, allowing you to carry out a wide variety of projects and acquire a more global perspective.

Students will be able to specialise in entrepreneurship and innovation and technology to acquire more knowledge about family business, social entrepreneurship, strategic management of technology, etc.

ESCP Business School- foundation https://escp.eu

Executive Master in Digital Innovation and Entrepreneurial Leadership <u>https://www.sayinsti-tute.eu/programme/master-digital-innovation-entrepreneurial-leadership-emdiel-mba/</u>

### 3. Professional study programmes in HE in Latvia

#### 3.1 Institutional Framework: governance of the Education System and study programmes

#### Institutions

The education system is administered at three levels - national, institutional and municipal.





National: The Parliament (Saeima), the Cabinet of Ministers and the Ministry of Education and Science are the main decision-making bodies at national level.

Institutional: the Ministry of Education and Science is the education policy development and implementation institution that oversees the national network of education institutions, sets educational standards, and determines teacher training content and procedures.

At the institutional level operate:

- the National Centre for Education- a public administration institution directly subordinated to the Minister of Education and Science (https://www.visc.gov.lv/en/about-us);
- the Academic information centre (AIC) (http://www.aic.lv)-a non-profit institution, foundation established in 1994 by the Ministry of Education and Science and University of Latvia, Institute of Mathematics and Computer Science.

AIC implements the following functions:

- Latvian representative to the European diploma recognition networks ENIC/NARIC.
- Information institution on recognition of professional qualifications in regulated professions.
- Member of vocational education information network ReferNet established by Cedefop;
- National Europass centre.
- Latvian coordination point for referencing national qualifications framework to the EQF.
- Institution taking the decision about referencing higher education qualifications obtained earlier in Latvia according to the Cabinet of Ministers Regulations No.142 (2012).
- Quality Agency for Higher Education.

Box 4. Laws and regulations https://www.latvijaskvalifikacijas.lv/en/links/?do-ing\_wp\_cron=1628414637.2023830413818359375000

Laws:

Education Law (into effect 01.06.1999.)

Vocational Education Law(into effect 14.07.1999.)

Law on Higher Education Institutions (into effect 01.12.1995.)

Regulations of the Cabinet of Ministers:

1. Cabinet of Ministers Regulations No.141 "Regulations on the state standard of first level professional higher education" (into effect 05.04.2001.)

- 2. Cabinet of Ministers Regulations No. 202 "Procedure by which state recognised education documents certifying higher education are issued" (into effect 19.04.2013.)
- 3. Cabinet of Ministers Regulations No. 332 "Regulations on state vocational secondary education standard and state vocational education standard" (into effect 01.09.2020.)

4. Cabinet of Ministers Regulations No .240 "Regulations on the state academic education standard" (into effect 16.05.2014.)

5. Cabinet of Ministers Regulations No. 416 "Regulations on state general education standard and general secondary education programme samples" (into effect 01.09.2020.)





6. Cabinet of Ministers Regulations No.264 "Regulations on Classification of Occupations, basic tasks for occupations and basic requirements for qualifications" (into effect 01.06.2017.)
7. Cabinet of Ministers Regulations No. 747 "Regulations on state general basic education standard and basic education programme samples" (into effect 01.09.2020.)

8. Cabinet of Ministers Regulations No. 512 "Regulations on the state standard of second level professional higher education" (into effect 12.09.2014.)

9. Cabinet of Ministers Regulations No .322 "Regulations on the education classification of Latvia" (into effect 16.06.2017).

#### 3.2 Study programs

According to the Ministry of Education and Science of the Republic of Latvia there are two groups of programmes that can be distinguished: academic programmes and professional programmes.<sup>25</sup>

Academic higher education programmes are based upon fundamental and/or applied science; they usually comprise a thesis at the end of each stage and lead to a bachelor's degree *(bakalaurs)* or master's degree*(maģistrs)*. Academic degrees are awarded in a certain area of science (there are 8 different thematic groups – education sciences; humanities and arts; social sciences, business and law; natural sciences, mathematics and information technologies; engineering sciences, manufacturing and construction; agriculture; health care and social welfare; services). The duration of bachelor's degree programme is considered a complete academic qualification. A master's degree is awarded after the second stage of academic education and requires at least 5 years total of university studies.

The Law on Higher Education Institutions and the Law on Vocational Education and Training stipulate two cycles of professional higher education – first cycle professional higher education also known as college education (2-3 years) leading to the professional qualification Level 4 and second cycle professional higher education leading to the qualification level 5 (2-3 years following a first cycle programme, or not less than 4 years following upper secondary education).

The first cycle professional higher education programmes or college programmes prepare students to enter complicated professions (e.g. bank staff, business specialists, IT specialists, legal assistants, engineering technicians). The qualifications of the graduates correspond to professional qualification Level 4 that allows them to perform complex tasks under changing conditions, to take responsibility for the allocation of resources, to organize and manage the work of other specialists and/or workers. It also allows graduates to compete in the labour market or to continue their education in a

<sup>&</sup>lt;sup>25</sup> Ministry of Education and Science of the Republic of Latvia https://www.izm.gov.lv/en/education-system-latvia





related programme for obtaining a higher professional qualification. These programmes are considered to be "non-university" higher education programmes.

The qualifications obtained in the second cycle professional higher education programmes correspond to professional qualification level 5. (Level 5 – the highest qualification of a specialist in a given occupation). Level 5 provides the capacity for independent analysis, to take decisions, to design and/or plan, to organize, manage and control and/or to carry out scientific research activities in a given branch. Usually, a professional bachelor's degree in a certain sector of the national economy is obtained simultaneously with the qualification. These programmes are considered to be "university-type" higher education programmes.

Upon completion of a programme of professional higher education, students are awarded a professional qualification and a professional bachelor's degree that can be followed by further 1-2 years of professional master's studies. The master's degree (*maģistrs*) of higher professional education is awarded if the total duration of studies is at least five years.

#### 3.3 Professional programmes: possibilities for implementation

There is growing interest in programmes that aim to combine vocational and academic learning in so-called 'dual study programmes', taking a complementary perspective of VET and HE.

Vocational education programmes in Latvia<sup>26</sup>

Vocational education programmes in Latvia are provided at three levels:27

- basic education (integrated primary and lower secondary);
- secondary education (upper secondary);
- higher education.

Vocational education combines education and practical training (50-65% of curricula depending on the type of programme) at school and enterprises. Vocational education at secondary level can be implemented also as an apprenticeship type scheme (nationally called "work-based learning") with flexible curricula taking place alternately at school and in enterprise.

Vocational education institutions, depending on founder, can be public (State, local government) and private. Institutions that provide vocational secondary education programmes and additionally act as regional methodological and continuing education centres and carry out validation of non-formal and informal learning may obtain a status

<sup>&</sup>lt;sup>26</sup> Vocational Education Law. The Parliament of the Republic of Latvia(*Saeima*) on 10 June 1999; Latvijas Vēstniesis, 213/215, *30.06.1999. amended on 06.01.2017.* https://likumi.lv/ta/en/en/id/20244

ILO. Latvia. https://www.ilo.org/dyn/natlex/natlex4.detail?p\_lang=&p\_isn=56400

<sup>&</sup>lt;sup>27</sup> Ministry of Education and Science in Latvia https://www.izm.gov.lv/en/education-system-latvia





of vocational education competence centre according to criteria established by the Cabinet of Ministers.

There are basically two streams of higher education. There are degree programmes that prepare the student for a particular profession and there are academic degree programmes which are more general in nature.

A notion of professional higher education concept exists in the country, which is provided below.

#### Professional higher education

Higher education programmes can be academic (lead to a degree) or professional (lead to a degree and/or professional qualification).

There are Bachelor's, Master's and Doctor's degrees in both academic and professional higher education. More than two thirds of all higher education students' study in professional study programmes. Professional higher education programmes allow continuous progression from EQF levels 5 to 8.<sup>28</sup>.

Professional education programs are developed by educational institutes in coordination with its founder. To provide development of curriculum in professional basic education, professional secondary education, professional training and professional development education in accordance with national standards, National Centre for Education is organizing development of samples for professional education programs and advising development of programs.

#### Professional standards

According to regulations of the Cabinet of Ministers, The Ministry of Education and Science and the National Centre for Education in co-operation with the Tripartite Co-operation sub-council of Vocational Education and Employment perform the following tasks:

- organise the development and expert-examination of draft professional standards and vocational standards, inviting representatives of sectoral ministries and professional organisations; and
- provide organisational and methodological support for the development of the draft professional standards and vocational standards.<sup>29</sup>

In parallel to Bologna cycle structure, there is a division of professional higher education programmes in two levels:

<sup>&</sup>lt;sup>28</sup> National Centre for Education. The Republic of Latvia https://www.visc.gov.lv/en/professional-standards-and-programs

<sup>&</sup>lt;sup>29</sup> Ibid.







First level professional higher education programmes (college or short cycle studies, 2-3 years) leading to a Diploma of first level professional higher education and professional qualification (EQF level 5). Applicants with secondary education are admitted. These programmes are mainly focused on acquiring professional skills for labour market, but graduates can continue their studies in second level professional higher education programmes.

Scheme 3



Second level professional higher education programmes include:

 professional Bachelor's study programmes which lead to Professional Bachelor's diploma) and a professional qualification (EQF level 6) and last at least four years;







- professional Master's study programmes which lead to Professional Master's diploma and a professional qualification (EQF level 7) and last at least one year (in total with Bachelor's degree at least five years).
- professional higher education study programmes which lead to Diploma of professional higher education and a professional qualification (EQF level 6 or 7). These programmes last four to six years.
- short professional higher education study programmes which lead to Diploma of professional higher education and a professional qualification (EQF level 6). Learners can enrol in these programmes after completing Bachelor's or second level professional higher education programmes. These programmes last one to two years.

# 4. Bachelor's program "Entrepreneurship and Innovation in the Green Economy"

#### 4.1 Importance

The programme development at the RSU is important due to changes in the economic environment in the country, tendencies in the demographic situation and labour market. Furthermore, requirements for development of new knowledge and skills demand new and modern programmes.

The EIGE is relevant to new tendences in businesses and economy as well as the latest trends in higher education, and labour market education programmes development. This is explained by the EIGE content, knowledge transfer and knowledge creation methods, which, in turn, will ensure high quality of study process and study results. The content of the EIGE programme and innovative implementation methods will develop knowledge, skills and promote such basic and specialised competencies that will allow graduates to be actively involved in the planning and management of modern international business and green entrepreneurship and innovation. For the development of students' knowledge and skills, the EIGE study process will focus on the development of general critical competencies - communication and digital skills, teamwork, entrepreneurship and leadership development, enriched by process management and business model specifics in healthcare.

The EIGE programme will be part of the general direction of the several programmes implemented by the International Business and Economics department titled "Management, Administration and Real Estate Management".

The EIGE programme will focus on educating highly qualified specialists in the field of business management for Latvia, the EU and the entire world community and its management processes. Achieving this goal is ensured by providing students with the opportunity to receive theoretical and practical knowledge, skills and competencies relevant to business and interdisciplinary interaction, using the results of fundamental and practical research in several disciplines, qualified lecturers from academia and business, modern study content and format.







# The relevance of the programme to the studies' direction at the department of International Business and Economics

The EIGE 's compliance with the study direction "Management, Administration and Real Estate Management", which in turn meets the needs and trends of society and economic development, is clearly justified by a number of labour market research on occupations and skills needed in the planning of the new green and innovative business development. The objectives of the EIGE correspond to the needs of economic development and the integrating components of the Latvian Smart Specialization Strategy (RIS3)-including building human capital and public innovation capacity, promoting gradual modernization of the research and education sector, and developing an innovation system to drive public resources for innovation.

RSU strategic development directions are defined in RSU Development Strategy 2017–2021 (available on the RSU website in Latvian and English https://www.rsu.lv/en/about-us/strategy).

EIGE will be focused on the first main (vertical) development goal of the RSU strategy - innovative studies in a modern environment, as well as the main horizontal development goals, especially in the sections on sustainable university, twinning for labour market integration and international cooperation. EIGE will strengthen the identified in the RSU Development Strategy such positions as 3.1. 4, 8, 9, 10 and will addresses the weaknesses, in particular 3.2. Section 4.3, 5, 10, 14. Similarly, the establishment and implementation of EIGE will impact the use of several opportunities to minimise threats reduction described in the RSU strategy.

#### Innovative studies in a new modern environment

In the development of EIGE, special attention will be paid to the provision of innovative approaches to the implementation of studies in an up-to-date learning environment, which includes:

- regular discussion of EIGE design and study course descriptions with lecturers and external experts from both academic and industrial environment in Latvia and abroad.
- identification and updating of teaching material and technical support required for study courses, including literature and other modern-day materials (computer programs and applications, business games, video materials, interactive online tools).
- identification and inclusion of knowledge transfer and co-creation methods in the implementation of EIGE study courses.
- identification of interdisciplinary issues, creation of thematically relevant content, successive integration into study courses.
- organization of lecturers' experience exchange, active and wide use of e-learning and interactive online environment tools, attraction of guest lecturers, study visits to companies.





practice-oriented cooperation with employers in the basic study process (in addition to guest lectures, solving business problems in the study process will also be organized, for example, in the development of final theses), which allows bringing studies closer to practical business.



#### 4.2 Evaluation of the modernised program and module

#### Evaluation of the new module- EIGE at the RSU

Bachelor programme is Level 6 according to the European Qualification Framework<sup>30</sup>. The programme will be developed according to the RSU regulations.

The programme compliance with the set goals of the RSU will be evaluated by five RSU structural units and collegial institutions, which are presented below, in the scheme 4.

#### Scheme 4

<sup>&</sup>lt;sup>30</sup>Level 6- Bachelor's degree Graduate Certificate Graduate Diploma Professional Graduate Certificate in Education

*Knowledge*- Advanced knowledge of the fields of work or study, involving a critical understanding of theories and principles

*Skills* – A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems

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









Supervision over the implementation of the EIGE and its quality is ensured by the head of the EIGE, evaluating the study process, study results, analysing the results of student surveys, changes in labour market trends and current events in the industry and the world.

Following the described internal procedure, the EIGE licensing documentation prepared at the final stage have to be approved by four collegial institutions, which are presented on the scheem5.



The EIGE financial resources will be assessed and suggested by the RSU Finance Department and will be subsequently discussed and approved by the Rectorate.

The EIGE will be submitted for evaluation to independent experts, who will carry out an in-depth study of the documents, made assessments and recommendations for improvements, and as a result recommended that the EIGE will be submitted for licensing with independent experts' opinion.

#### 4.2 Aims and objectives of the EIGE module

The programme will focus on educating new specialist with knowledge about green economy and innovation and silks relevant to management of business entities with focus on new tendences in the green economy and innovation context.

The aim of the programme: to prepare highly qualified and creative specialists in international business and EIGE as well as in management.

Tasks of the study programme and a module



# 3LOE

Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy

1. To provide students with knowledge and ensure the development of practical skills and competencies in the understanding, analysis and management of economic and business processes, implementing a student-centred approach in an interesting and practical study process.

2. To balance the knowledge of theory and modern development tendencies during studies with an analysis and solution of situations based on practical resolution of business problems and those in the work environment.

3.Purposefully ensure a high-quality, high-value and innovative study process, using examples of best practices in higher education in an international context, including the study process infrastructure (e-environment, library, multimedia equipment, etc.) and process organization (team teaching, cooperation in the labour market, simulation, video collections, semester projects, etc.).

4. To implement consciously modern and non-traditional methods of knowledge transfer and co-creation, as well as skills development, promoting students' interest in the study program topics and motivation to use in the international business environment.
5. To maintain and develop extracurricular activities and cooperation of the study programme in the business, public administration and academic context in Latvia and in the international environment (conferences, summer schools, visits, etc.);

6. To ensure continuous quality monitoring and updating of the study program in cooperation with entrepreneurs and representatives of professional organizations in the business sector.

7. To show the best example to students in the aspect of professional ethics and professional development (participation in the development of the field, formation of opinion leadership, etc.), promoting a culture of active personal and professional development and participation of students.

#### 4.3 Results and Degree (Professional Graduate Certificate in Education)

The main outcomes are in the education of young specialists and entrepreneurs with expert knowledge in new trends in the green and innovation in business development (SMEs).

#### Expected study results

Table 2

Knowledge	Explanation			
EIGE				
K-1	Able to demonstrate specialized knowledge in international business and en-			
	trepreneurship and innovation in the green economy and management.			
K-2	Able demonstrate a critical and current understanding of concepts and regular-			
	ities in the economy and management of entrepreneurship and innovation in			
	the green economy.			
K-3	Able to demonstrate in-depth theoretical and practical knowledge of the theory,			
	methods of analysis and tools in the economic analysis of international			





	business, entrepreneurship and innovation in the green economy and manage-
	ment.
K-4	Recognizes the development of necessary knowledge and skills, including so-
	cial digital skills, and the need for self-growth in the global environment of in-
	ternational business, entrepreneurship and innovation in the green economy
	and management.

#### Table 3

Skills	Explanation
EIGE	
S-5	Able to identify trends and find creative solutions using a scientific approach to the changing issues of international business, entrepreneurship and innovation in the green economy and management.
S-6	Able to gather information independently and analytically from various sources, critically evaluate it and present it correctly.
S-7	Able to formulate information in a structured analytical and concise manner in writing, to express himself precisely and to discuss arguments in general and specialized aspects of international business, entrepreneurship and innovation in the green economy and management.
S-8	Able to use appropriate practical and theoretical knowledge and skills in profes- sional business management and research (scientific) work, being aware of the impact of their activities on the environment and society.

#### Table 4

Compe- tences EIGE	Explanation
C-9	Able to plan business processes and resources, including time, work, person- nel, talent, finance, infrastructure.
C-10	Able to participate in the development of international business and start-ups in a global environment, offering innovative solutions to industry problems.
C-11	Able to demonstrate an understanding of and application of professional ethics and culture, including intercultural understanding and respect.

During the development of the study results, they will be mapped against the corresponding Latvian Qualifications Framework (LQF) (which corresponds to the European Qualifications Framework level descriptions).

#### 4.4 Infrastructure

Infrastructure will be ensured by the RSU. Library resources will be available to students. Compulsory literature will be provided by the library.

The EIGE financial resources will be assessed and suggested by the RSU Finance Department and will be subsequently discussed and approved by the Rectorate.

#### Duration





7 semesters or 3,5 academic years for a full-time programme, including part-time work will be developed during 2021/2022 acad. year.

#### 5. Cooperation with business as part of the curricula

#### 5.1 Working time at a company as part of the curricula

Working time at the company is of high value and a requirement of the programme. It is aimed at learning at the Workplace and producing Semester Projects – total 5 projects (one project in each Semester).

In addition, a report on practice will be developed and defended, however, this position needs further discussion.

Moreover, a Bachelor thesis will be worked-out in a time frame of a semester with a public defence at the end of studies.

#### 5.2. Training for managers and other interested parties

The training will be organised in accordance with the guidelines and good practices developed by the 3 LoE Project.

#### 6. Concept of communication and promotion of the program

Promotion will be organised in accordance with the Promotion Plan in 2021-2024 developed by the RSU and accepted by the lead partner (PP1) of the 3 LoE project.

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RSU Development Strategy 2017–2021 (available on the RSU website in Latvian and English). https://www.rsu.lv/en/about-us/strategy

Preparation and management of SMEs for work in the Green Economy. Curriculum. Satakunta University of Applied Sciences (SAMK), project partner number 11 Compiled by Dr Kari Lilja, Dr Sirpa Sandelin and Sanna Lindgren, p.4.







*F-Energy Generation from Wastewater and Waste. Curriculum* WWW&CE and WIFI Steiermark.-425p.

## **Evaluation Concept**<sup>31</sup>

Introduction

The objective of the evaluation is to determine whether the goals of the study programme and/or a module "Green Entrepreneurship and Innovation" will be achieved during the process of implementation, and whether the programme has an impact on student's career opportunities.

The type of evaluation follows standard course evaluation methods, i.e. formal, process and outcomes. The formal evaluation will provide feedback to the curriculum designers, developers and implementers to ensure that designed and implemented courses in the programme and/or a module meet the needs of the intended audience, i.e. assure or improve the quality of programme. The planned duration of the programme and/or a module varies and depends on the educational level and purposes of studies. Each lesson lasts 45 minutes, which is considered as an academic hour.

Methods used in will be lectures, discussions, teaching talks, working in small groups, case studies and examples from real practices. Information applied during teaching includes thematic data, literature (basics & backgrounds, thematic introductions etc.), presentations, questionnaires, question guides, checklists, analysis results, good practice examples and so on. A programme and/or a module should contain at least the following matters: basics/overview of essential tasks and contents of business-oriented and productivity-enhancing measures in green entrepreneurship and innovation as well as workplace innovation (in each of the courses in the curricula).<sup>32</sup>

#### Main terms of the evaluation

Evaluation will answer to the following questions:

- a. Were the goals and objectives suitable for the audience?
- b. Were the training methods and course materials appropriate for the audience?
- c. Should the programme and/or a module or some parts of it be developed further and how?
- d. What additional information would be beneficial for the development of the programme and/or a module, facilities, and timing.

<sup>&</sup>lt;sup>31</sup> Prepared by Rigas Stradina Universitate, Latvia

<sup>&</sup>lt;sup>32</sup> Dr. Kari Lilja and Dr Sirpa Sandelin. *Further vocational training*. Satakunta University of Applied Sciences.







The process of the evaluation will provide information about the training and lectures:

- Evaluation will be focused on procedures and actions to be used to produce results.
- Evaluation as a process is supposed to take place during the delivery of training and at the end of the training.
- The co-organiser (Responsible for the course) will: monitor the training. describe the training process as a whole. record the findings into the written report.
- The outcome of the evaluation will concentrate on finding out how the knowledge, attitudes, and behaviours of the audience have developed
- As a recognized fact, it should be noted that to find out the outcomes of education and training takes a long time. At this this particular stage of the entire evaluation process only main topics relevant to the importance and value of the programme and/or a module will be assessed.<sup>33</sup>

#### The evaluation process will be as follows:

- Questionnaires will be suggested by the RSU and discussed with organisers of the training before the training starts.
- The questionnaires in a digital format will be applied.
- The co-organizer (responsible for the course) will suggest to the participants to fill the available questionnaires before the end of the course and as well as the questionnaires will be available on-line.
- The purposes of the questionnaire and how the data will be used should be explained clearly to participants. This will help to improve the response rate and encourage participants to make comments that can be useful to improve future programmes and/or a module.
- The evaluation approach will be based on a combination of qualitative and quantitative methods.
- The Microsoft Excel package will be used to transcribe the feedback and interviews.
- Open questions will be categorised, and qualitative analysis of the groups will be done.

#### The evaluation procedure

Semi-structured questionnaires will be suggested to the participants (ANNEX A). Different topics [topic no. 1, topic no.2 etc.] should be proposed by the organisers of the training according to the programme and/or a module for the training or parts of the course.

<sup>&</sup>lt;sup>33</sup> Dr. Kari Lilja and Dr Sirpa Sandelin. *Further vocational training*. Satakunta University of Applied Sciences.





#### It is recommended:

- 1) Co-organizer (Responsible for the course) fills in all required information:
  - the Name of the school / institution.
  - the Title of the evaluated course and the number of the workshop/session (1<sup>st</sup> / 2<sup>nd</sup>) in the beginning of the questionnaire's text to make sure that the identification data that is required for the evaluation is correct.

#### Semi-structured questionnaires will be created for the leaders of the training/course -trainers / lecturers / teachers) (ANNEX B). It is recommended:

- Co-organizer (Responsible for the course) fills in all required information:
   the Name of the school / institution.
  - the Title of the evaluated course and the number of the workshop (1<sup>st</sup> / 2<sup>nd</sup>) in the beginning of the questionnaire before printing it to make sure that the identification data needed in the evaluation is correct.
- 2) Time for the survey (approx. 10 minutes) will be allocated in the end of each workshop.
- 3) In the beginning of the course the co-organizer (Responsible for the course) will inform participants about the evaluation and its importance for further development actions.
- 4) The co-organizer (Responsible for the course) will make the link to the questionnaires available to the participants to be filled in before leaving the workshop. The purposes of the questionnaire and how the data will be used should be explained clearly to the participants. This will help to improve the response rate and encourage them to make comments that can be useful to improve future programs.

# Note: Survey for participants will be conducted twice, in the end of both workshops!

- 5) The participants complete the questionnaires and return them to the co-organizer.
- 6) The co-organizer distributes the lecturer's questionnaire to each lecturer to be compiled immediately after his / her part of the course has been finished. Note: If the lecturer teaches in both workshops, he / she completes the questionnaire twice!
- 7) In the end of the learning on the job -phase, representant of each enterprise involved in the training will be interviewed by the co-organizer. Guidelines for the interview will be found in appendix C. Interviews can be conducted face to face or via Skype, Microsoft Teams or e-mail, some examples to be given.





- 8) The co-organiser collects the questionnaires and answers of interviews and delivers them to the evaluator. If there are free speech answers in some other language than English, it is recommendable that the co-organiser translates them to English.
- 9) The evaluator compiles all feedback and summarises written analysis on the evaluations.

The evaluation approach will be based on a combination of qualitative and quantitative methods. The Microsoft Excel package will be used to transcribe the feedback and interviews. Open questions will be categorised, and qualitative analysis of the groups will be done.

#### Content of the final evaluation report

The final evaluation report will discuss answers to the following questions:

Did the curriculum reach the targets? How well was realised knowledge creation and its sharing? Did participants assimilate knowledge and tools? Was the venue and equipment be appropriate for the training course? What kind of further development of the training will be needed, if any?

## Annex A

Questionnaire for participants of the

.....course

Please mark with a cross where applicable

Gender	Female	Male	
Age	<50	>50	
Workplace	Education	Business	

Please mark the scale that applies to your opinion on the following aspects of the training that you participated.

- 1. Please indicate in which training course you participated
  - o
    o
    o
    o
    o
    o
- 2. What is your background?
  - I am a company owner/manager





- o I am a company employee
- I am a student/trainee
- Other (please indicate)
- 3. Please rate the general conditions of the training course
- $\circ~$  The facilities (location, room, online tool etc.) for the training course were suitable

Scale:

1= Strongly disagree
2=Disagree,
3=Neither disagree nor agree,
4=Agree,
5=Strongly agree

#### • The time frame and schedule for the training course were suitable

Scale:

1= Strongly disagree,
 2=Disagree,
 3=Neither disagree nor agree,
 4=Agree, 5=Strongly agree

• Comments

#### 4. Please rate the overall content of the training course

Scale:

Strongly disagree,
 Disagree,
 Neither disagree nor agree,
 Agree,
 Strongly agree

In common					
The topics and issues covered were relevant and re- sponded to the goals of training	1	2	3	4	5
The lecturers explained topics of the lessons, additional questions, experiences, and topical issues arisen during the course well	1	2	3	4	5
There was enough time scheduled for each topic	1	2	3	4	5
I gained valuable knowledge from lessons and examples presented by lecturers	1	2	3	4	5







I believe that can apply knowledge gained from lessons and use it in my future career	1	2	3	4	5
I can use new skills trained and knowledge gained in my future career, e.g. when consulting my clients	1	2	3	4	5

Comments concerning the common issues

- 5. What was most interesting for you during the training course?
- 6. What could have been done better? (E.g. was some topic missing or unnecessary)
- 7. Would you recommend the course to someone you know? If not, why not?
- 8. Was anything missing that you might need in your (future ) profession life ?
- 9. Was the proportion of topics and time frame of the training course content suitable or should some parts be increased/decreased?
- 10. Is there any other feedback on the training course you would like to share

Thank you for your answers! Please press "done" to submit the survey!

#### Annex B

Questionnaire for lecturers of

the ..... course

#### Dear Lecturer,

Thank you for taking your time to evaluate a training course, that was developed and tested as part of the Erasmus+ project "3LOE". This survey is anonymous and will take 5-10 minutes.

- 1. Please indicate which training course you were lecturing
- title of the course
- $\circ$  title of the course





- o title of the course
- o title of the course
- Other, please indicate

#### 2. Please indicate how many years of experience in teaching you have

- Less than 2 years
- Between 2 and 5 years
- More than 5 years

#### 3. Please rate the general conditions of the teaching during the training course

Scale: 1= Poor, 2=Satisfactory, 3= Good 4=Very good, 5=Excellent

- The facilities (location, room, online tool etc.) for the training course were...
- o The time frame and schedule for the training course were...
- The curriculum provided was...
- The background knowledge of the training participants was...
- The motivation of the training participants was...

#### Comments

#### 4. Please rate the overall content of the training course

Scale: 1= Poor, 2=Satisfactory, 3= Good 4=Very good, 5=Excellent

- The overall content of the training course was...
- The way the content responded to the needs and goals of the training participants was...
- The relevance of the training course content for the overall qualification was.

Comments:

- 3. What could be done better? (e.g. was some topic missing or unnecessary)
- 4. Is there any other feedback on the training course you would like to share?

Thank you for your answers! Please press "done" to submit the survey.





#### Annex C

Questionnaire	for	interviews	of	enterprises
Questionnane	101	IIIICI VICWS	UI.	enter prises

..... course

Date \_\_\_/\_\_/2022\_\_\_\_

Course\_\_\_\_\_ Enterprise

#### The interviewer will ask the following questions from each enterprise's representative.

- 1. Schedule: Was the schedule of theory and practice in line with the company's needs? Are you satisfied with the schedule and order of topics?
- 2. Content: Did the training contain topics and issues needed in your business? Was something missing? If is, please write what in your opinion was missing?
- 3. Implemented project: Did the project, implemented during the learning at the job -phase, achieve the goals set to it? If not, what remained incomplete?
- 4. What could have been done differently? And what should not be changed?

#### Thank you for your answers!







# III Study Program "Electrical and Automatic Equipment"<sup>34</sup>

### 1. Concept and Curriculum

Panevėžio kolegija/State Higher Education Institution would like to implement bachelor's degree program Electrical and Automatic Equipment's within the 3LOE project. The curriculum has been developed to include modules (subjects) required to train electrical engineers capable of designing, developing and implementing sustainable energy systems, energy efficient solutions and smart grid technologies.

- Sustainable energy systems: as the world moves towards a more sustainable future, there is a growing demand for renewable energy sources such as solar, wind, and hydro power. Electrical engineers play a critical role in the design, development, and maintenance of these systems.
- Energy-efficient solutions for buildings and industries. Electrical engineers can design and implement systems that reduce energy consumption, such as smart lighting and HVAC systems. They can also integrate renewable energy sources into buildings and industrial processes, reducing greenhouse gas emissions and promoting sustainable practices.
- Smart grid technologies Electrical engineers can contribute to the development of smart grid systems that optimize energy distribution and reduce waste. They can design and implement sensors and automation systems that monitor and control energy consumption in real-time, helping to improve efficiency and reduce costs.

A curriculum and complete module handbook are available in Latvian and has been published separately at <u>www.3-Loe.eu</u>.

## 2. Description of how dual (work-based) study programs work

At Panevėžio kolegija/State Higher Education Institution (hereinafter referred to as "College") dual (work-based) study programs offer an innovative and hands-on approach to education, seamlessly integrating academic learning with practical work experience. The primary goal is to prepare students for the professional world by immersing them in real work environments while they pursue their degrees. Internships in companies constitute at least one-third of the program's scope. Not less than 50 percent of the teachers possess practical experience in the subject they teach.

Structure of study programs: Study mode and duration time: full-time (3 years), parttime (4 years). Volume of the study programs in credits: 180 ECTS credit. The curriculum is divided between academic coursework and practical training at college and practical training at partner companies. The flexibility of dual study programs allows students to customize their learning experience. They can choose specializations, electives to tailor their education to their career goals.

<sup>&</sup>lt;sup>34</sup> Prepared by Panevėžio kolegija/University of Applied Sciences

# 3LOE

Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy





Academic Component: The academic component of the program covers core subjects related to the field of study. Teachers deliver a curriculum that aligns with the latest industry trends and standards. Students attend lectures, engage in group projects, and participate in practical training in our Research & Innovation Centre to build a strong theoretical foundation.

Work-Based Learning: The hallmark of dual study programs is the integration of work-based learning. During the practical phases, students join partner companies, where they work on real projects under the mentorship of experienced professionals. This hands-on experience is invaluable for bridging the gap between theory and practice, allowing students to develop practical skills, build industry connections, and gain insights into their chosen field.

Mentorship: Each student is typically assigned a mentor both at the College and the company. Mentors provide guidance, support, and constructive feedback, ensuring that students are well-supported throughout their academic and professional journey.

Dual study programs offer numerous benefits. Students gain practical experience, enhance their employability, and often secure job offers from the companies where they completed their practical training. Employers, in turn, benefit from a pipeline of skilled and knowledgeable graduates who are familiar with their specific industry needs.

#### 3. Study Program Implementation guide

The study program "Electrical and Automatic Equipment" is implemented guided by these principles:

- The content of study program was renewed according to the international standards, globalization processes and modern trends.
- Global competencies are developed in the study program, emphasizing the importance of intercultural competencies in the content.
- The study of modules (subjects) is based on international literature exploiting the potential for interdisciplinary approach.
- The internationalization of study program has been strengthened by inviting professional teachers of foreign higher education institutions and promoting the international mobility of students.
- The students who come for partial studies are integrated into common groups of students through the module (subject) in English, allowing students to improve their knowledge of English and prepare for studies in foreign higher education institutions.
- The dissemination of good practices of the academic staff of the College, participating in international mobility activities and of visiting teachers and researchers of foreign higher education institutions, is carried out, which leads to the introduction of advanced educational and research methods in studies.





- Innovation: regularly updating course content to incorporate emerging technologies, fostering a culture of research and development, and providing spaces for collaborative projects and innovation.
- Regional Development: partnering with local businesses for internships, engaging in community projects, and tailoring study program to meet the specific needs of the local job market.
- European Added Value: actively participating in European Union-funded projects, promoting international collaboration, and aligning study program with European standards and initiatives.
- Internationalization: facilitating student and staff exchanges with international institutions, offering globally relevant courses, and actively participating in international conferences and research collaborations.
- Development of Green and Digital Skills: offering courses on environmental responsibility and incorporating digital literacy across various disciplines.
- Social Dimension: promoting diversity and inclusion through policies and initiatives.





# Implementation and Evaluation

#### 1. The Study Program Implementation Statistics

#### 1. Number of students register in the study program:

Autumn semester (17 students) Spring semester (17 students)

#### 2. Number of students according to gender:

Autumn semester (17 Men)

Spring semester (17 Men)

#### 3. Number of students according to age:

Age	Number	Percentage
group		
Under 20	0	0
20-29	9	52,9
30-39	2	41,2
40-49	2	5,9
50-59	0	0
60+	0	0

# **4. Number of students remaining at the completion of the study program:** 13 students

#### 5. Number of students withdrawn:

5 students

#### 6. Grade Distribution:

Achievements levels	Number	Percentage
Excellent (9-10)	3	23,1
Typical (6-8)	7	53,8
Threshold (5)	5	15,4
Lower than threshold (<5)	2	7,7







#### 2. The Study Program Evaluation by Students

Study programme evaluation by students was performed using online survey. Electronic version of the survey is available at <a href="https://forms.gle/hZQW2XX4mCgatXKc6">https://forms.gle/hZQW2XX4mCgatXKc6</a> Online survey was carried out in the last week of the Spring semester. 16 students took part in the survey, i. e. 94,1 percent of students who remained at the completion of the study programme.

7. Evaluation of study program	me content and teaching	g quality
7.1. Results and objectives of s	Number	Percentage
Strongly agree	8	50.0
	6	37.5
Neither agree per disagree	2	12.5
	0	0.0
Strongly disagree	0	0,0
3 The content was organized	$\frac{0}{2}$	0,0
	Number	Borcontago
Strongly agree		
	16	100
Agree	10	100
	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
(.3. The content of the subjects	of the study programm	e was not repetitive
	Number	Percentage
Strongly agree	6	37,5
Agree	6	37,5
Neither agree nor disagree	4	25,0
Disagree	0	0,0
Strongly disagree	0	0,0
7.4. The materials distributed w	ere helpful to achieve st	udy programme results
	Number	Percentage
Strongly agree	8	50,0
Agree	6	37,5
Neither agree nor disagree	2	12,5
Disagree	0	0,0
Strongly disagree	0	0,0
7.5. The training process was fl	exible:	
	Number	Percentage
Strongly agree	6	37,5
Agree	6	37,5
Neither agree nor disagree	4	25,0
Disagree	0	0,0
Strongly disagree	0	0,0
7.6. While studying I gained end	ough theoretical knowle	dge
	Number	Percentage
Strongly agree	8	50.0



Co-funded by the Erasmus+ Programme of the European Union



Agree	8	50,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
7.7. There are enough praction	cal / laboratory classes:	
	Number	Percentage
Strongly agree	9	56,3
Agree	6	37,5
Neither agree nor disagree	0	0,0
Disagree	1	6,3
Strongly disagree	0	0,0
7.8. The study programme co	ontent is in line with the late	st technological develop-
ment trends	Number	Percentage
Strongly agree	8	50,0
Agree	6	37,5
Neither agree nor disagree	2	12,5
Disagree	0	0,0
Strongly disagree	0	0.0
7.9. The environment require	d for studies (auditoriums.	computerized auditoriums.
aboratories) is comfortable	and properly equipped	,
,	Number	Percentage
Strongly agree	8	50.0
Agree	6	37.5
Neither agree nor disagree	2	12.5
Disagree	0	0.0
Strongly disagree	0	0.0
7.10. Necessary academic lit	erature and access to inform	nation sources is provided
,	Number	Percentage
Strongly agree	8	50.0
Aaree	8	50.0
Neither agree nor disagree	0	0.0
Disagree	0	0.0
Strongly disagree	0	0.0
7.11. There are enough space	es in the educational institut	tion where it is possible to
study individually after lectu	res	
- •	Number	Percentage
Strongly agree	8	50,0
Agree	6	37,5
Neither agree nor disagree	2	12,5
Disagree	0	0,0
Strongly disagree	0	0,0
7.12. I have a possibility to s	ubmit suggestions for impro	oving this study programme
	Number	Percentage
Strongly agree	6	37.5
Agree	6	37.5
Neither agree nor disagree	4	25.0
	•	,_





Disagree	0	0,0
Strongly disagree	0	0,0
7.13. The study programme	prepares me for the future in	the working life
	Number	Percentage
Strongly agree	10	62,5
Agree	6	37,5
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
7.14 The experience I gained	will be useful in my work	
	Number	Percentage
Strongly agree	10	62,5
Agree	6	37,5
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
7.15 I will recommend this s	tudy programme to others	
	Number	Percentage
Strongly agree	6	37,5
Agree	6	37,5
Neither agree nor disagree	4	25,0
Disagree	0	0,0
Strongly disagree	0	0,0

7.16. Do you have any comments about any of your answers to the questions in this section?

No

7.17. Please also provide an overall assessment of your studies on a five-point scale (5-highest, 1- lowest rating). Content of the study program (theoretical and practical classes of subjects, internship)

	Number	Percentage
5	8	50,0
4	8	50,0
3	0	0,0
2	0	0,0
1	0	0,0

7.18. Please also provide an overall assessment of your studies on a five-point scale (5-highest, 1- lowest rating). Management of study program (human and material resources, organization of the study process and assessment)

Number	Percentage
6	37,5
6	37,5
4	25,0
0	0,0
0	0,0
	Number           6           6           4           0           0

7.19. Do you have any comments about any of your answers to the questions in this section?





I am satisfied with all aspects of my studies. There's nothing I'd change about my studies; I'm satisfied with everything. 7.20. What you liked most in this study programme? The clarity of the material presented, along with the engaging nature of the lectures. The instructors, many of whom were supportive and approachable. The opportunity for remote learning. The course content within the study program. Interacting with the instructors; I gained a lot of new knowledge. Everything. 7.21. Which specific difficulties you encountered during the studies? I'm not sure. Mathematics. No challenges encountered. Honestly, the most challenging aspect of my studies was managing my time effectively. Not enough time Initially, I found distance learning somewhat challenging. 7.22. If the training was repeated, what should be left or changed? Since I've completed the first year, it's hard for me to suggest what should be kept or changed. I don't think anything needs to be changed. Everything seems fine, I have no complaints. I feel that some instructors should manage their time better. Maintain the option for distance learning. Keep it as it is. No changes needed. Nothing to add.

#### 3. The Study Program Evaluation by Teachers

Agree

Study programme evaluation by teacher was performed using online survey. Electronic version of the survey is available <u>https://forms.gle/Bgw96epvvryPfg8d7</u>. Online survey was caried out in the last week of the Spring semester. 10 teachers took part in the survey, i. e. 55,6 percent of teachers who worked in the study programme.

8. Evaluation of study program	me structure and descr	iption:
8.1. Do you agree that the study	programme objectives	meet the needs of the labour
	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.2. Do you agree that the study	programme objectives	meet the level of the certifi-
cate?		
	Number	Percentage
Strongly agree	5	50,0

50,0





Disagree         0         0,0           Strongly disagree         0         0,0           S.D oy ou agree that the scope of the study programme is sufficient to achieve the study programme objectives?         Percentage           Strongly agree         2         20,0           Agree         7         70,0           Neither agree nor disagree         1         10,0           Disagree         0         0,0           Strongly disagree         0         0,0           84. Do you agree that the target group is clear and well defined?         Revertage           Strongly agree         2         20,0           Agree         7         70,0           Neither agree nor disagree         1         10,0           Strongly disagree         0         0,0           Strongly agree         2         20,0           Agree         7         70,0           Strongly agree         0         0,0           Strongly disagree         0         0,0	Neither agree nor disagree	0	0,0
Strongly disagree     0     0.0       8.3. Do you agree that the scope of the study programme is sufficient to achieve the study programme objectives?       Number     Percentage       Strongly agree     2     20.0       Agree     7     70.0       Neither agree nor disagree     0     0.0       Strongly disagree     0     0.0       8.4. Do you agree that the target group is clear and well defined?       8.4. Do you agree that the target group is clear and well defined?       Strongly agree     2     20.0       Agree     7     70.0       Neither agree nor disagree     0     0.0       Strongly agree     2     20.0       Agree     7     70.0       Neither agree nor disagree     0     0.0       8.5. Do you agree that the scope of the modules is sufficient to achieve the learning outcomes of the study programme?       Strongly agree     2     20.0       Agree     7     70.0       Neither agree nor disagree     1     10.0       Disagree     0     0.0       Strongly disagree     0 </td <td>Disagree</td> <td>0</td> <td>0,0</td>	Disagree	0	0,0
8.3. Do you agree that the scope of the study programme is sufficient to achieve the study programme objectives?         Strongly agree       Number       Percentage         Strongly agree       2       20,0         Agree       7       70,0         Neither agree nor disagree       0       0,0         Strongly disagree       0       0,0         Strongly disagree       2       20,0         Agree       7       70,0         Strongly agree       2       20,0         Agree       7       70,0         Strongly agree       2       20,0         Agree       7       70,0         Number       Percentage         Strongly disagree       0       0,0         Strongly disagree       0       0,0         Strongly disagree       2       20,0         Agree       7       70,0         Number       Percentage         Strongly disagree       0       0,0         Strongly agree       2       20,0         Agree       7       70,0         Number       Percentage       Strongly disagree         Strongly agree       1       10,0         Disagree	Strongly disagree	0	0,0
Number         Percentage           Strongly agree         2         20,0           Agree         7         70,0           Neither agree nor disagree         0         0,0           Strongly disagree         0         0,0           8.4. Do you agree that the target group is clear and well defined?         Number         Percentage           Strongly agree         2         20,0         Agree           Agree         7         70,0         Neither agree nor disagree         1         10,0           Disagree         0         0,0         3         Strongly disagree         0         0,0           Strongly disagree         0         0,0         3         Strongly disagree         0         0,0           Strongly disagree         0         0,0         3         Strongly disagree         0         0,0           Strongly agree         2         20,0         Agree         7         70,0           Strongly agree         2         20,0         Agree         0         0,0           Strongly agree         2         20,0         Agree         0         0,0           Strongly agree         2         20,0         Agree         0         0,0 <td>8.3. Do you agree that the so</td> <td>ope of the study programn</td> <td>ne is sufficient to achieve the</td>	8.3. Do you agree that the so	ope of the study programn	ne is sufficient to achieve the
Number         Percentage           Strongly agree         2         20,0           Agree         7         70,0           Neither agree nor disagree         0         0,0           Strongly disagree         0         0,0           Strongly disagree         0         0,0           8.4. Do you agree that the target group is clear and well defined?           Strongly agree         2         20,0           Agree         7         70,0           Neither agree nor disagree         1         10,0           Disagree         0         0,0           Strongly agree         2         20,0           Agree         7         70,0           Number         Percentage         Strongly agree           Strongly agree         0         0,0           Strongly agree         0         0,0           Strongly agree         0         0,0           Strongly disagree         0         0,0 <t< td=""><td>study programme objectives</td><td>?</td><td></td></t<>	study programme objectives	?	
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8.7. Do you agree that all modules are relevant to study programme?NumberPercentageStrongly agree330,0Agree770,0Neither agree nor disagree00,0Disagree00,0Strongly disagree00,08.8. Do you agree that the balance between theory and practice within the study programme is appropriate??NumberPercentageStrongly agree330,0Agree550,0Neither agree nor disagree220,0	Strongly disagree	0	0,0
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8.8. Do you agree that the balance between theory and practice within the study programme is appropriate??Image: strongly agreeNumberPercentageStrongly agree330,0Agree550,0Neither agree nor disagree220,0	Strongly disagree	0	0,0
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Strongly agree330,0Agree550,0Neither agree nor disagree220,0		Number	Percentage
Agree550,0Neither agree nor disagree220,0	Strongly agree	3	30.0
Neither agree nor disagree   2   20.0	Agree	5	50,0
	Neither agree nor disagree	2	20,0



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Disagree	0	0,0
Strongly disagree	0	0,0
8.9. Do you agree that the st	udy programme content is m	nodern?
	Number	Percentage
Strongly agree	5	50,0
Agree	5	50,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.10. Do you agree that the a	ssessment of study progran	nme mastering quality is ap-
propriate?		
	Number	Percentage
Strongly agree	3	30,0
Agree	7	70,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.11. Do you agree that the a	assessment of modules is ap	propriate?
	Number	Percentage
Strongly agree	4	40,0
Agree	6	60,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.12. Do you agree that the t	ools, equipment and/or supp	lies listed for practical
components of the curriculu	ım (if applicable) are satisfac	tory for study programme
delivery?		
	Number	Percentage
Strongly agree	2	20,0
Agree	6	60,0
Neither agree nor disagree	2	20,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.13. Do you agree that the study programme objectives meet the level of the certifi-		
cate?		
	Number	Percentage
Strongly agree	2	20,0
Agree	7	70,0
Neither agree nor disagree	1	10,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.14. Do you agree that the I	earning resources (e.g., prin	t media, audio-visual mate-
rials) provided for study programme delivery and to actively engage students are		
	<b>N</b> II	Densentex
Otras altera	Number	Percentage
Strongly agree	2	20,0
Agree	8	80,0





Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.15. Do you agree that the d	lual vocational training object	ctives were met?
	Number	Percentage
Strongly agree	2	20,0
Agree	6	60,0
Neither agree nor disagree	2	20,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.16. Do you agree that the d	lual vocational training prepa	ares student for the future
challenge in their working lif	e?	
	Number	Percentage
Strongly agree	5	50,0
Agree	5	50,0
Neither agree nor disagree	0	0,0
Disagree	0	0,0
Strongly disagree	0	0,0
8.17. How well do you evalua	ate collaboration between sc	hool and training partner?
	Number	Percentage
Extremely well	2	20,0
Very well	5	50,0
Somewhat well	3	30,0
Not so well	0	0,0
Not at all well	0	0,0
8.18. How do you evaluate st	tudents` theoretical training	at vocational school?
	Number	Percentage
Very satisfied	4	40,0
Somewhat satisfied	5	50,0
Neither satisfied nor dissat-		
isfied	1	10,0
Somewhat dissatisfied	0	0,0
Very dissatisfied	0	0,0
8.19. How do you evaluate st	udents` practical training ex	perience at training partner
in a company?		
	Number	Percentage
Very satisfied	6	60,0
Somewhat satisfied	1	10,0
Neither satisfied nor dissat-		
isfied	3	30,0
Somewhat dissatisfied	0	0,0
Very dissatisfied	0	0,0
8.20. Overall, are you satisfie	ed or dissatisfied with study	programme?
	Number	Percentage
Very satisfied	5	50,0
Somewhat satisfied	5	50,0





Neither satisfied nor dissat-		
isfied	0	0,0
Somewhat dissatisfied	0	0,0
Very dissatisfied	0	0,0

#### 8.21. Could you name the main advantages of this study program?

The skills students gain from a work-study program can significantly influence their future success.

Strong theoretical foundation combined with hands-on experience through internships with partner companies.

Effective integration of practical experience with theoretical learning.

A diverse selection of modules offering a well-rounded education, balancing theory and practice.

The study program is contemporary and relevant.

Students will engage in practical training with partner companies.

**8.22. Could you name the main disadvantages of this study program?** *There are no drawbacks.* 

**8.23. What changes would you recommend improving this study program?** *Incorporate a wider range of modern teaching methods.* 

#### 4. Conclusions

After implementation of the 1<sup>st</sup> year courses of study program Electrical and automatic equipment which was realized within the project "Three-level Centers of Professional Excellence: Qualification, Entrepreneurship and Innovation in the Green Economy" the following conclusions are defined.

The evaluation of the study program content and teaching quality reveals a generally positive perception among students. The objectives and results of the program are clearly defined, with the majority of students agreeing or strongly agreeing that the content is well-organized and easy to follow. Practical training and theoretical knowledge are balanced, and students feel prepared for their future careers, with all respondents believing they have gained sufficient theoretical knowledge. The study environment is considered comfortable and well-equipped, with adequate access to academic resources. The program is seen as modern and aligned with technological trends, and most students would recommend it to others. Overall, the study program received high marks, reflecting student satisfaction with both content and management. There were no major complaints, and students expressed contentment with the current structure of their studies.

Overall, the study program is well-regarded by the teaching staff, with high satisfaction levels concerning its structure, content, and outcomes. The feedback underscores the program's strengths in providing a balanced and modern educational experience while highlighting opportunities for refinement in practical resources and teaching methodologies.