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Report on the piloting courses results in both VET and Industry contexts

### **Work Package 4**

### **Piloting the Green Transition**

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## Executive Summary

The European Green Deal aims to transform Europe's economy into a climate-neutral, resource-efficient, and competitive system by promoting regenerative growth, circular practices, and increased material-use efficiency. Achieving this requires equipping the workforce with essential green skills and transversal competencies, such as critical thinking, systems thinking, and problem framing. The GREEN project addresses this need by developing the Green Training Toolkit, which implements the results of sector-specific skill analyses, the GreenComp framework and the best practices shared from various European educational institutions (VET and HE), designed to help educators integrate sustainability into curricula. The toolkit was pilot-tested across diverse contexts including vocational education and training (VET) institutions, higher education, and various industry sectors (Automotive, Batteries, Defense, Energy, Maritime). The target groups addressed involved educators, trainees, and industry professionals. Feedback gathered through these pilot activities has

provided valuable insights to enhance the toolkit's effectiveness, emphasizing successes, addressing challenges, and outlining pathways toward fostering a skilled, resilient workforce capable of driving Europe's green transition and building a sustainable future.

A key component in the design of the toolkit was the Train-the-Trainers workshop held in Cyprus, facilitating exchange of best practices among trainers. The Train-the-Trainers workshop, held on May 21-22 at the University of Cyprus in Nicosia, brought together 21 trainers from project partners and external institutions to exchange best practices and methodologies for integrating green skills and sustainability principles into education. Activities included interactive exercises connecting Sustainable Development Goals (SDGs) to education, highlighting the essential role of educators in achieving a sustainable society. Partners showcased innovative teaching approaches such as gamification, project-based learning, virtual reality simulations, hands-on sustainability demonstrations, and collaborative community-focused projects. Key insights emphasized the importance of continuous support, practical engagement, multidisciplinary collaboration, and holistic thinking in education. The workshop successfully highlighted practical tools and strategies that equip educators to effectively teach sustainability, foster innovative problem-solving, and encourage active community involvement, ultimately supporting the development of a resilient and environmentally conscious workforce capable of driving Europe's green transition.

Pilot workshops to test the Green Training Toolkit were conducted across five countries—Czech Republic, Cyprus, Denmark, Portugal, and Spain in both vocational education (VET) and industrial settings, involving several institutions, namely EWF, VSB–Technical University of Ostrava, University of Cyprus, Mercantec, and CETMAR. Collaboration with industrial institutions, including CT Engineering, OLIFE, SWANTEC, and MEGGITT, significantly enhanced the relevance and participation levels of the pilot workshops conducted in industrial settings. Participants from automotive, battery, defense, energy, and maritime sectors attended workshops featuring interactive activities on sustainability, circular economy, carbon footprint assessment, and practical applications of green skills. Feedback collected through structured questionnaires indicated increased awareness and effective integration of critical and systems thinking. A common recommendation across several workshops was to place greater emphasis on practical exercises. In total, eighteen workshops were conducted (fourteen for VET and four for industrial) and 254 participants engaged in the piloting phase.

Overall, the pilots confirmed the toolkit's ability to effectively support the development of green skills, enhances participants' readiness to implement sustainable practices, and highlights the importance of tailoring training methods to specific educational and industry requirements. Notable successes included the use of practical tools such as carbon footprint calculators, PV simulations, and gamified SDG activities, along with productive multinational and cross-sectoral collaboration. Challenges identified highlighted the need for greater emphasis on hands-on activities, clearer instructional guidance, and tailored approaches addressing sector-specific requirements and diverse participant knowledge levels. The pilots' outcomes suggest substantial potential for long-term systemic impact, as they fostered networks of trained educators and industry professionals committed to embedding sustainability into curricula and operations. These interventions, supporting continuous experiential learning and promoting targeted workforce upskilling, position the Green Training Toolkit as a valuable resource for realizing the European Green Deal's objectives and cultivating a sustainable, resilient, and innovative workforce.

## 1 Introduction

The European Green Deal aims to establish a climate-neutral, resource-efficient, and competitive economy by transitioning to a regenerative growth model. This involves reducing resource consumption, adopting circular principles, and doubling material use efficiency within the next decade. To enable this green transition, workers must acquire green skills (knowledge, abilities, values, and attitudes) crucial for building a sustainable future. These skills, alongside transversal competencies like critical and systems thinking, are vital for fostering a sustainable and resource-efficient society. The GREEN project aims to equip trainers with the necessary knowledge and material resources to support the upskilling and reskilling of the workforce for a sustainable future. Through previous work, it has identified sector-specific green skills and skill gaps by analyzing the ESCO database and consulting industry experts in key sectors (Additive Manufacturing, Automotive, Battery, Defense, Energy and Maritime). Guided by the GreenComp framework, the project emphasizes in equipping learners with systemic thinking, critical evaluation, and problem-framing skills to address sustainability challenges. These principles are integrated into a Green Training Toolkit, offering materials, exercises, and activities to help educators incorporate sustainability into their curricula. By implementing innovative learning approaches and embedding sustainability principles, the toolkit supports the development of a skilled, resilient workforce capable of driving the green transition and fostering a sustainable society.

Piloting the Green Training Toolkit is essential for gathering feedback and improving its quality and effectiveness. Therefore, to improve the Green Training Toolkit, its materials were pilot tested in various contexts: (i) VET and HE institutions and (ii) industry/companies, and with different target groups: (a) trainers and educators, (b) trainees in educational settings, and (c) workers (e.g., HR staff, Labor Risk and Hazards staff, CEOs, and managers). A total of eighteen pilot workshops were conducted, of which fourteen targeted Vocational Education and Training (VET) institutions, while the remaining four were designed to address industrial workers across the following sectors: Automotive, Batteries, Defense, Energy, and Maritime. Moreover, a Train-the-Trainers workshop was held in Cyprus, where trainers from partner institutions collaborated with trainers from external organizations that joined the GREEN VET Network. In this workshop, teaching methodologies and sustainability-focused initiatives implemented by each institution were displayed, and discussions were held on the effective integration of green skills into curricula. The outcomes of the workshop were incorporated into the development of the toolkit, and the best practices shared by partners were utilized as methods for integrating green skills into curricula.

The Report is structured as follows: In the second section of this document the results and methodologies contributed by the partners are presented, along with the conclusions drawn from the Train-the-Trainers workshop. The subsequent sections (3-7) provide a brief description of the content that was pilot tested across the five different countries (Czech Republic, Cyprus, Denmark Portugal, and Spain), accompanied by feedback collected from participants. The final section summarizes the findings from both the pilot tests and the Train-the-Trainers workshop, offering key insights, while also including the successes and challenges faced during the pilot process, and the expected long-term impact of the Green Training Toolkit.

## 2 Train-the-Trainers workshop

The Train-the-Trainers workshop was held on May 21-22 in Nicosia, Cyprus, hosted at the University of Cyprus and joined together 21 trainers from internal and external organizations. Alongside the



educational institutions already participating in the project (CETMAR, MERCANTEC, VSB-TUO, UCY) and EWF which is the project coordinator, six external organizations joined the network and took part in the meeting. These organizations were Instituto de Soldadura e Qualidade (ISQ), Universidad de la Coruña, Academia de Formação (ATEC), AMbitius by Tollcraft, CIFP Ferrolterra and Public School of Advanced Vocational Training SAEK Egaleo. Train-the-Trainers workshop started with a breaking ice and interactive activity designed to build a positive learning environment among participants (Figure 1).



*Figure 1. Ice-breaking and interactive activity – “positive ball”*

In the next activity, EWF introduced a game where trainers worked with the Sustainable Development Goals (SDGs) to explore their relationship with education. Each participant was assigned an SDG and asked to place it on a radius surrounding SDG 4, which focuses on education. The position of each SDG was determined by its perceived impact on education, and participants explained the reasoning behind their placements (see Figure 2). This exercise sparked a discussion among the participants, during which they evaluated the relative importance of each SDG in connection with education. While opinions differed regarding the significance of certain SDGs, there was unanimous recognition of the interconnectedness of all SDGs and the positive impact of education in each SDG. This highlights the important role of educators in achieving and more sustainable and GREENER world. Participants agreed that these goals are essential for achieving a greener, more inclusive, and equitable society. An idea that emerged from the discussion was to display the SDGs on a classroom wall. This visual representation could serve as a constant reminder for students to think about sustainability and brainstorm solutions related to each goal. Furthermore, participants highlighted that addressing issues such as poverty, hunger, and gender equality is crucial for ensuring access to education for all, enabling global progress toward achieving the SDGs.

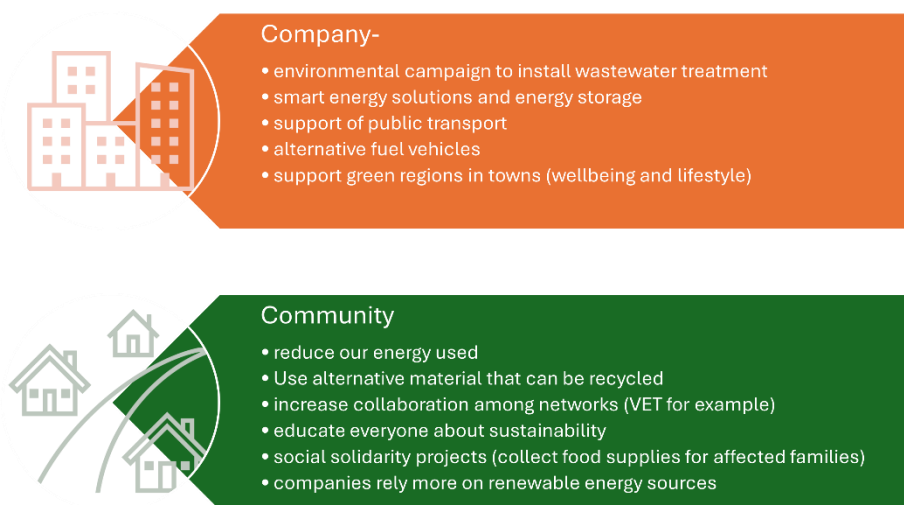


*Figure 2. SDG Activity – Education impact on SDGs*

In a peer learning approach, all trainers from partner organizations and external organizations presented their approach promoting sustainability through their education approach. MERCANTEC, as an expert in the training of trainers for sustainability, presented their approach to equipping trainers with the required knowledge so that they can teach effectively sustainability. The

importance of providing continuous support while ensuring job security was emphasized as crucial for enabling employees to grow and take on new challenges. MERCANTEC's approach to integrating green skills into curricula was explained by incorporating critical thinking, system thinking and problem was presented, as outlined in Deliverable D3.3 "Guidance document for the uptake of green skills and best practices by VET Systems". Additionally, a table was presented to facilitate reflections on the materials developed, encouraging trainers to provide feedback and insights.

Next, ISQ presented a team exercise that can be used to find different green measures that can be implemented at both community and company level. The activity focused on enhancing participants' knowledge of the SDGs and framing their importance in fostering attitudes and behaviors that contribute to a sustainable society. This activity can be used for multiple purposes such as raising awareness, inspiring action, and aligning curricula with green principles. This hands-on approach emphasized the interconnectedness of sustainability goals and their practical application in education and organizational contexts. The partners' suggestions for both the company and community level are displayed in Figure 3 below.



**Figure 3.** Suggestions by partners for actions that need to be taken at the company and community levels to enhance sustainability

The VSB-TUO promotes sustainability through its focus on green transition in the automotive sector, addressing electric vehicle development, battery technology, and hydrogen fuel cell innovation. Key roles such as the E-Powertrain Engineer and Life Cycle Assessment (LCA) Manager highlight the importance of skills like designing eco-friendly systems, assessing environmental impacts, and optimizing resource use. By employing best practices such as holistic analysis, waste reduction, energy efficiency improvements, and promoting consumer awareness, VSB-TUO ensures a strong alignment with sustainable development goals. Furthermore, CIFP Ferrolterra engages in a variety of innovative sustainability activities aimed at fostering environmental awareness and promoting green practices. The methodology involves students and teachers in both innovative projects and solving detected environmental problems, such as creating an intelligent bike station powered by solar panels to encourage sustainable mobility and daily exercise. Additionally, the institution has developed a simulator for water distribution networks in collaboration with local companies, enabling efficient leak detection and water quality management. These activities are supported by real-time data monitoring software and focus on green infrastructure, recycling, renewable energy use, and collaborative efforts across departments and the community.

CETMAR implemented an engaging activity aimed at changing attitudes towards sustainability by incorporating connected learning and the MATES methodology, focusing on green mobility and the circular economy in the maritime industry. The activity featured a group-forming exercise where



participants presented practical ways to reduce carbon footprints, both in theory and real-life applications. A hands-on demonstration showed how fog forms, simplifying complex concepts for better understanding. Another activity involved identifying plastic-use items hidden in the sand with blindfolds, highlighting how common they are, their environmental impact, and how long they remain on beaches (Figure 4). Universidad de la Coruña promotes sustainability through the Green Campus Program, which is a multidisciplinary initiative involving multiple schools. The program includes activities such as creating urban gardens, promoting sustainable mobility, reducing waste generation, addressing atmospheric, acoustic, and light pollution, and fostering social awareness and healthy eating habits. It also encourages non-paper administration and provides students with opportunities to work on real-life data, proposing solutions for challenges such as optimizing heating parameters to reduce energy consumption. Other initiatives include conducting water audits and categorizing waste into a school recycling system, equipping students with practical skills and fostering a culture of environmental responsibility.



**Figure 4.** CETMAR sharing exercise

ATEC implements a project-based learning approach focused on entrepreneurship, guiding students through the process of developing innovative ideas into tangible projects. The activity begins with group formation and registration on a work platform, followed by brainstorming sessions and structured project development. Students created prototypes of their ideas, utilizing tools like MIRO, an online whiteboard, for collaboration and visualization. The project finished with a community event where students shared their projects, encouraged participation, and presented their solutions to more people. This approach encouraged creativity, teamwork, and practical problem-solving skills. EWF promoted competition-based innovation to broaden learning experiences and challenge participants' skill sets. A notable example involved a sustainability-themed competition, encouraging participants to apply innovative solutions to real-world challenges. Moreover, AM-bitius, highlighted the importance of practical approaches in training, particularly through virtual reality (VR) to help operators learn the additive manufacturing (AM) process. The platform provided information to the participants when required and was designed as a multilingual, easy-to-use manual for AM machines. Programmed in UNITY, it featured realistic process demonstrations, enabling users to gain hands-on knowledge in an accessible and engaging way.

The University of Cyprus serves as a cutting-edge research and training facility, employing diverse teaching methods such as lectures, demonstrations, simulations, hands-on experiences, and case studies. It features experimental testbeds, including small-scale PV systems, battery storage systems, and real-time simulation setups, enabling practical learning and experimentation. Training activities include system design, installation, and commissioning, as well as fault diagnosis in PV and battery systems, guided by expert instructors. An e-learning platform (Moodle) supports the lab's activities by providing course materials, communication tools, and an integrated examination

system. Finally, SAEK promotes sustainability by implementing green initiatives such as recycling paper, transitioning to a paperless educational system using Moodle, and obtaining class energy certificates for buildings. Activities such as guest lectures, company visits, and the “Let’s involve/evolve” approach that features dialogue, demonstrations, simulations, and real-world case studies, aimed to connect learning with realistic problems. Students explored energy efficiency solutions, comparing different options for savings and designing photovoltaic systems collaboratively using Maker tools.

A key takeaway from this workshop is that fostering green thinking requires a systematic and holistic approach, equipping trainers with clear methodologies and effective, impactful practices. The integration of virtual reality and project-based learning, including gamification and competition-based activities, enhances engagement and drives innovation. Involving managers, directors, students, and the broader community is essential for the successful implementation of sustainable practices, ensuring a collaborative and inclusive approach. By raising awareness about sustainability and building networks of trainers, institutions can create a ripple effect that promotes lasting change and equips future generations with the skills and mindset needed to address environmental challenges effectively.

### 3 Czech Republic – Automotive and Batteries sector

#### VET PILOTS

##### 3.1 Pilot 1 – Life Cycle Approach for Green Automotive

Pilot 1 was held at VSB-Technical University of Ostrava, Czech Republic on 25<sup>th</sup> of November 2024 from 9:00-11:00. In total 15 participants took part. The pilot was split into two sections:

##### 1. Theoretical Overview

- Introduction to the GREEN VET project: Objectives and goals were outlined to contextualize the initiative.
- Study Insights: Main findings from the Boston Consulting Group (BCG) study on the expected impact of skilled employee shortages on the Czech labor market and income were presented to highlight the urgency of addressing this issue. In relation to it, the emerging job roles and skills were brainstormed.
- Life Cycle Approach: Essential facts about environmental impact assessment and methods to calculate the carbon footprint were shared.

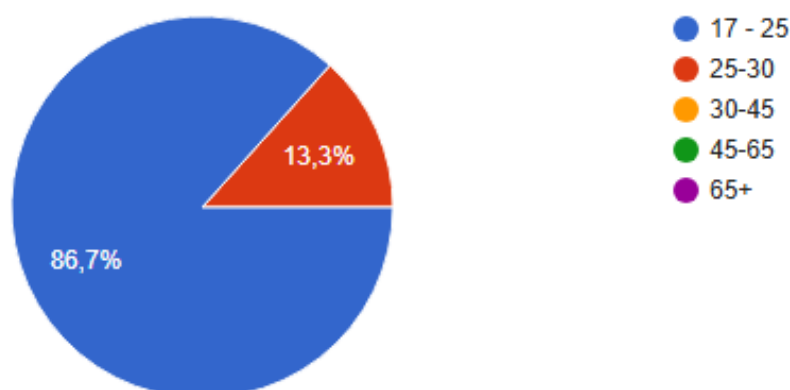
##### 2. Interactive discussion and activities

- Piloting of interactive applications available on the internet free of charge to calculate carbon footprint such as LCA tool of Green NCAP, AFDC, Carbon Calculator
- Hands-on Activity: The participants calculated their personal carbon footprints using one of the presented applications.

##### Demographics of participants

Age: Most of them were up to 25 years old (86.7%), with a small percentage being in the 25-30 age group.

Gender: The participants were composed of 12 men and 3 females representing Czech University/Higher Education and VET Centers.



**Figure 5.** Age representation of the participants of the 1st pilot in the Czech Republic

Role: All the participants were students.

### **Feedback from participants**

The respondents provided feedback via several specified questions below.

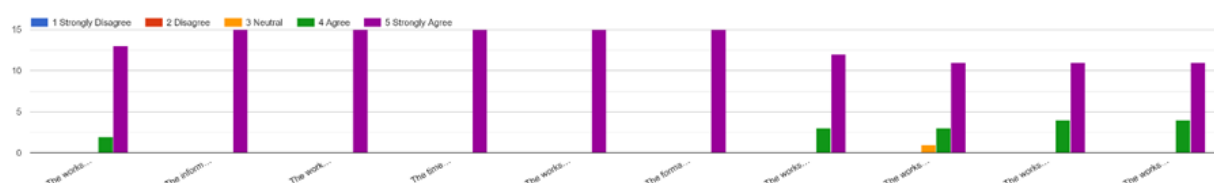
- The workshop met my expectations
- The information received prior to the event was adequate (e.g. register, agenda, objective, dates, location).
- The work program was coherent and allowed me to understand the objectives of the workshop.
- The time management was adjusted to the agenda schedule.
- The workshop had high quality presentations.
- The format allowed the participation and interaction of the attendees.
- The workshop helped increase my awareness and understanding of green thinking.
- The workshop encouraged me to think critically about sustainability challenges.
- The workshop improved my ability to identify and apply green skills in my daily life.
- The workshop helped me recognize the importance of integrating green skills in various fields.

They evaluated their relevance in a scale from 1 to 5 (1- strongly disagree, 5 – strongly agree).

1 Strongly Disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree

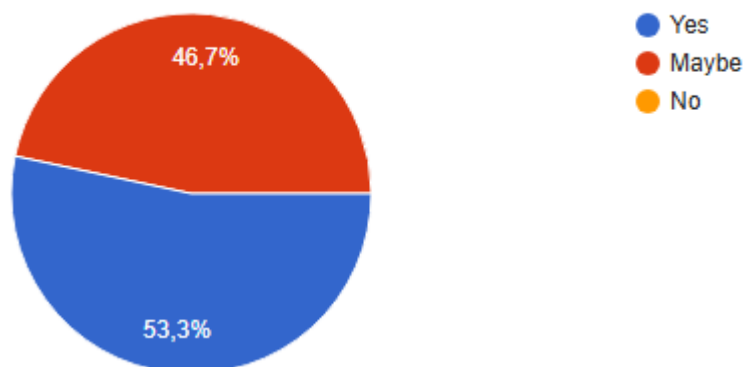
The participants strongly agreed that the workshop helped increase their awareness and understanding of green thinking, encouraged them to think critically about sustainability challenges. Figure 6 shows that the participants positively confirmed that the pilot also improved their ability to identify and apply green skills in their daily life. Several positive comments on the interactive form of the workshop were recorded. They appreciated that the format allowed the participation and interaction of the attendees.

Please make a cross according to your preferences

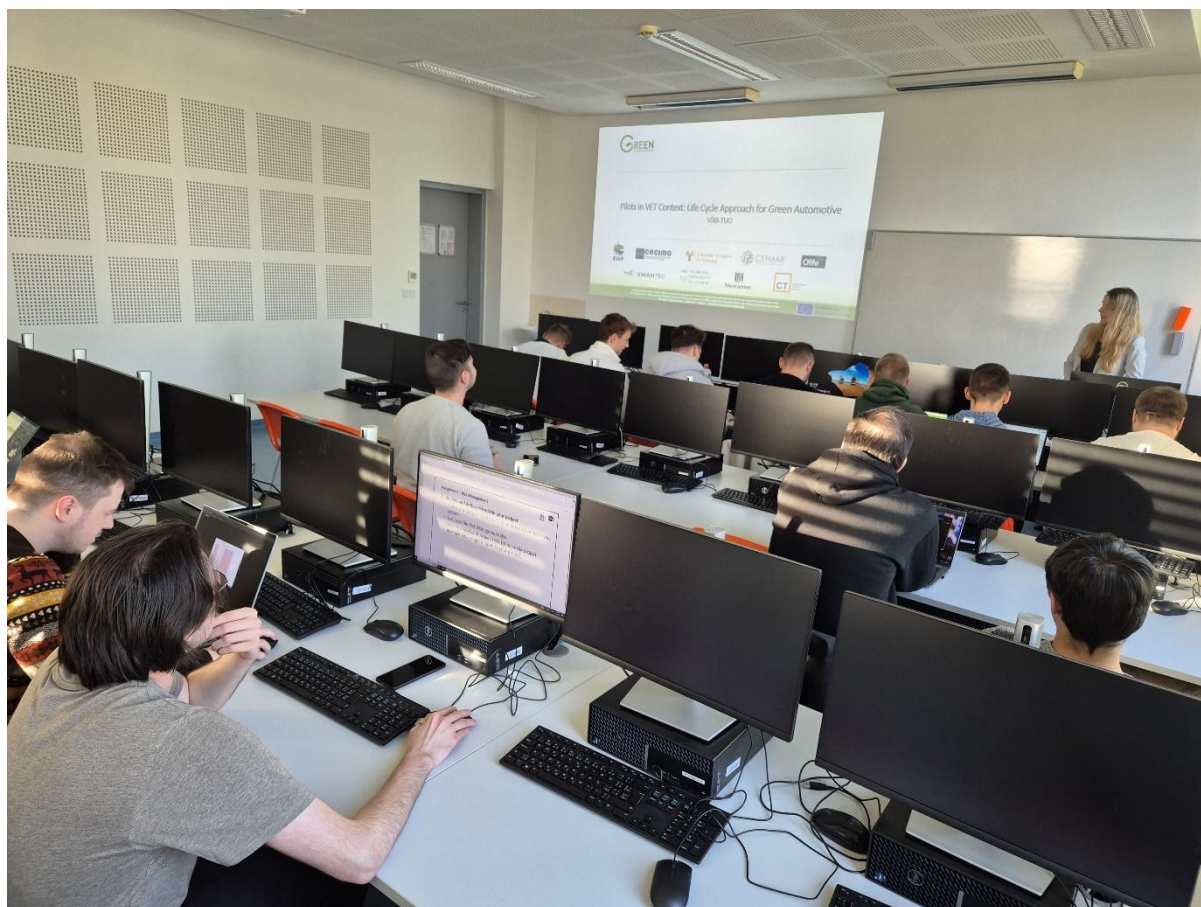


**Figure 6.** Feedback for the 1st pilot conducted in the Czech Republic

Based on the results, the pilots successfully fostered awareness and provided practical knowledge on sustainable practices in the automotive sector.



**Figure 7.** 1st Pilot Participants' feedback on their readiness to implement the learning or methodology presented in the workshop



**Figure 8.** A snapshot from the 1st pilot in VET content in Czech Republic



### 3.2 Pilot 2 – Life Cycle Approach for Green Automotive

Pilot 2 was held at VSB-Technical University of Ostrava, Czech Republic on the 25<sup>th</sup> of November 2024 from 16-18. In total, 24 participants took part. It marked a significant step forward in addressing the need for skilled professionals in the automotive sector. The pilot was structured as an interactive workshop.

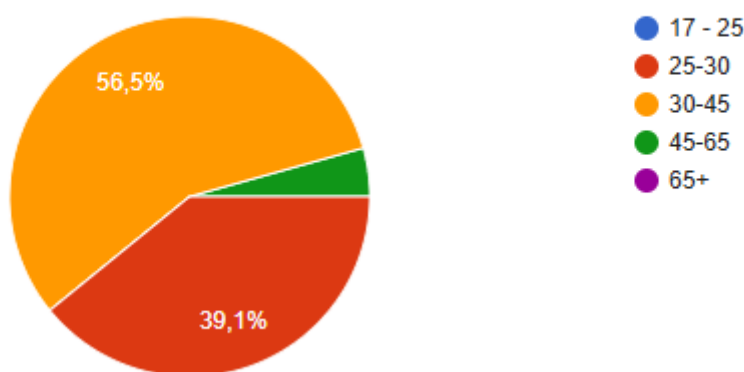
In the first part the theory on sustainability and sustainable development goals was shared. The main findings on the expected impact of skilled employee shortages on the labor market and income were presented to highlight the urgency of addressing this issue. The emerging green skills and job roles for the future automotive were discussed. The second part was dedicated to the best green practices in training and teaching in automotive. Essential facts about environmental impact assessment were shared with the participants. The interactive applications for carbon footprint calculation were piloted. The participants learnt about three applications available free of charge:

1. LCA tool of GREEN NCAP <https://www.greenncap.com/lca-tool/>
2. AFDC tool of U.S. Department of Energy <https://afdc.energy.gov/vehicles/electric-emissions>
3. Carbon Calculator <https://www.carbonfootprint.com/calculator.aspx>

The pilot concluded with a hands-on activity, allowing participants to actively engage with the applications introduced. It was followed by a brainstorming session on implementing these methods in green training and education. Participants agreed that the piloted approach effectively fosters critical thinking, systems thinking, and problem framing in green education and is well-suited for training in the green automotive sector.

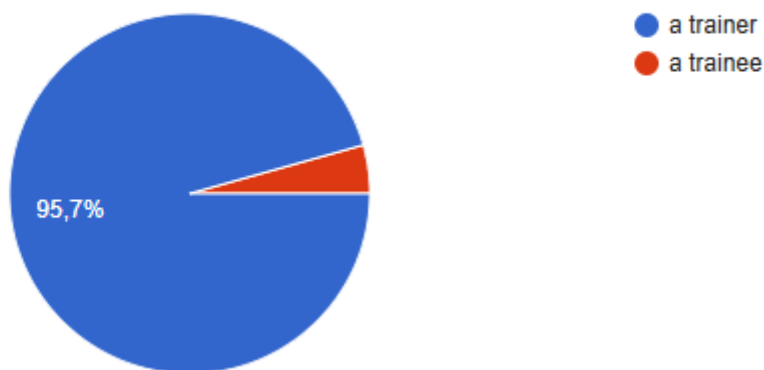
#### Demographics of participants

Age: Most of them were of the age 30-45 followed by the group of 25-30 years old.



*Figure 9. Age representation of the participants of the 2nd pilot in the Czech Republic*

Role: Participants represented University/Higher Education and VET Centers. The pie chart presents participants' roles. At this pilot more than 90% identified themselves as trainers.



**Figure 10.** Role representation of participants of the 2nd pilot in the Czech Republic

Gender: The participants were composed of 21 men and 3 females.

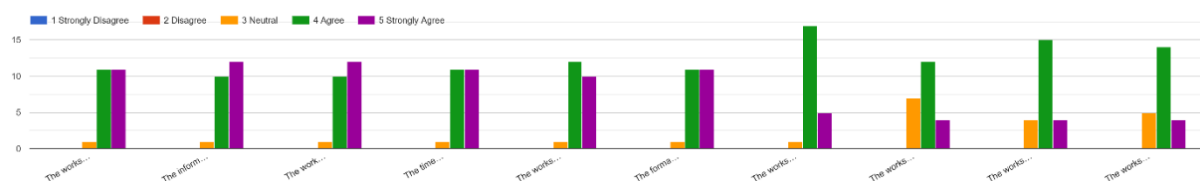
#### **Feedback from participants**

The respondents provided feedback via several specified questions below

- The workshop met my expectations
- The information received prior to the event was adequate (e.g. register, agenda, objective, dates, location).
- The work program was coherent and allowed me to understand the objectives of the workshop.
- The time management was adjusted to the agenda schedule.
- The workshop had high quality presentations.
- The format allowed the participation and interaction of the attendees.
- The workshop helped increase my awareness and understanding of green thinking.
- The workshop encouraged me to think critically about sustainability challenges.
- The workshop improved my ability to identify and apply green skills in my daily life.
- The workshop helped me recognize the importance of integrating green skills in various fields.

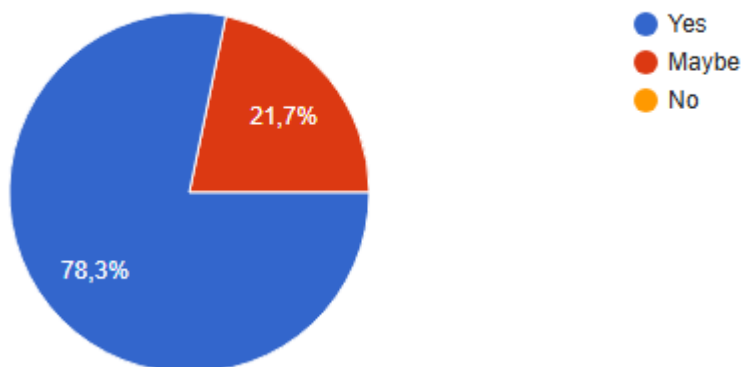
The participants' feedback was very positive. The participants considered the pilot to meet their expectations. They also appreciated the format and technical side of the pilot preparation. As Figure 11 confirms, the participants agreed that the workshop helped increase their awareness and understanding of green thinking, encouraged them to think critically about sustainability challenges. The positive fact is that the pilot also improved their ability to identify and apply green skills in their daily life. It was confirmed by the discussion on results of personal carbon footprint which the participants calculated and shared.

Please make a cross according to your preferences



**Figure 11.** Feedback for the 2nd pilot conducted in the Czech Republic





**Figure 12.** 2nd pilot participants feedback on their readiness to implement the learning or methodology



**Figure 13.** A snapshot from the 2nd pilot in VET content in Czech Republic

### 3.3 Pilot 3 – Life Cycle Approach for Green Automotive

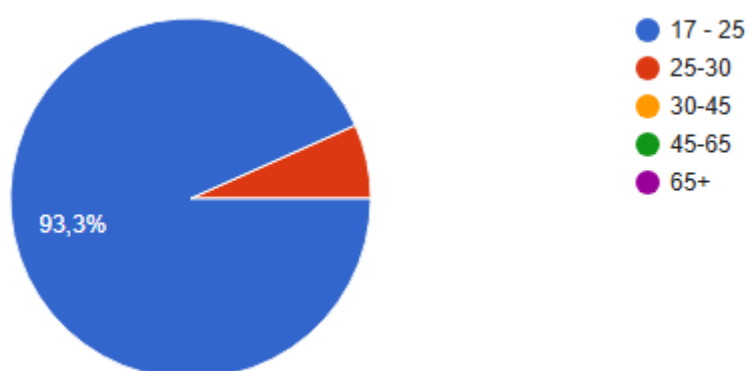
Pilot 3 was organized at VSB-Technical University of Ostrava on the 26th of November. The pilot featured a combination of theoretical and practical activities. To introduce the topic of green skills and emerging occupational profiles for the main findings from the study on the expected impact of skilled employee shortages on the labor market and income were presented to highlight the urgency of addressing this issue. Essential facts about environmental impact assessment and methods to calculate the carbon footprint were shared. The pilots concluded with a hands-on activity where participants calculated their personal carbon footprints with usage of applications. They discussed

actionable strategies for reducing the carbon footprint. The participants learnt about innovative approaches to green education in the field of automotive and batteries. They learnt several tips on how to include critical thinking, problem framing and systematical thinking into their learning. They also understood the importance of green skills and practical tools to contribute to reducing environmental impacts.

### **Demographics of participants**

Age: The most of participants were at the age of 17-25. About 7% were in the age category 25-30 years old.

Gender: The attendees' structure composed of 21 men and 1 female.



*Figure 14. Age representation of the participants of the 3rd pilot in the Czech Republic*

Role: All participants identified themselves as trainees.

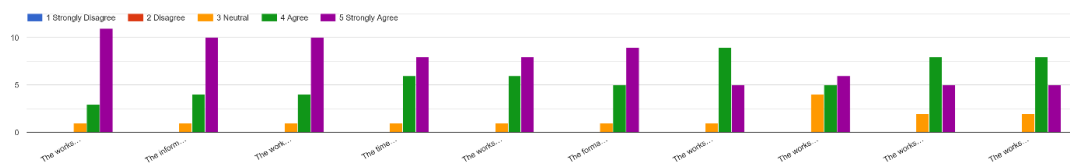
### **Feedback from participants**

The respondents provided feedback via several specified questions below.

- The workshop met my expectations
  - The information received prior to the event was adequate (e.g. register, agenda, objective, dates, location).
- The work program was coherent and allowed me to understand the objectives of the workshop.
- The time management was adjusted to the agenda schedule.
- The workshop had high quality presentations.
- The format allowed the participation and interaction of the attendees.
- The workshop helped increase my awareness and understanding of green thinking.
- The workshop encouraged me to think critically about sustainability challenges.
- The workshop improved my ability to identify and apply green skills in my daily life.

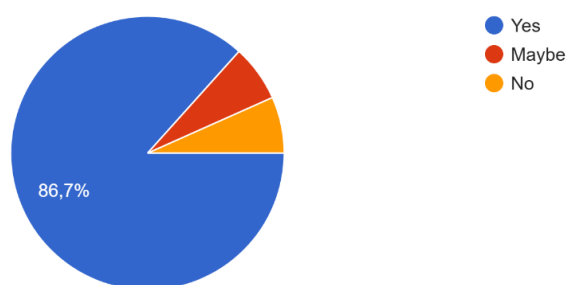
The workshop helped participants recognize the importance of integrating green skills across various fields. Feedback was collected from 15 participants, who highly appreciated the pilot for both its thorough preparation and its significance in advancing green learning. Nearly 90% of participants expressed their intention to apply the methodologies and insights presented in their own work.

Please make a cross according to your preferences



**Figure 15.** Feedback for the 3rd pilot conducted in the Czech Republic

After attending the course are you considering to apply any of the learnings or methodologies?  
15 odpovědi



**Figure 16.** 3rd pilot participants' feedback on their readiness to implement the learning or methodology



**Figure 17.** A snapshot from the 3rd pilot in VET content in Czech Republic

## INDUSTRY PILOT

### 3.4 Pilot Industry – Sustainable Future in Automotive

The Pilot was held on the 19<sup>th</sup> of February 2025 in Business Centre of VSB-Technical University, Ostrava, Czech Republic. The event was open to automotive professionals, innovators, manufacturing companies, and all industry stakeholders interested in sustainability in the industry. The pilot was attended by several companies operating in the automotive or battery sector. The following companies were represented by:

- Esgrovia - focused on sustainability in the automotive, chemical and food industry
- Resources Matters - active in sustainability and ESG reporting
- BM Group - supplier of automotive components
- Enmass - dealing with energy accumulation, energy audits and energy efficiency
- Autoklastr - dealing with automotive research and development
- Scoveco - aimed at IT consulting for automotive,
- Educos - focused on sustainability consulting
- Hilti - provides industrial project solutions

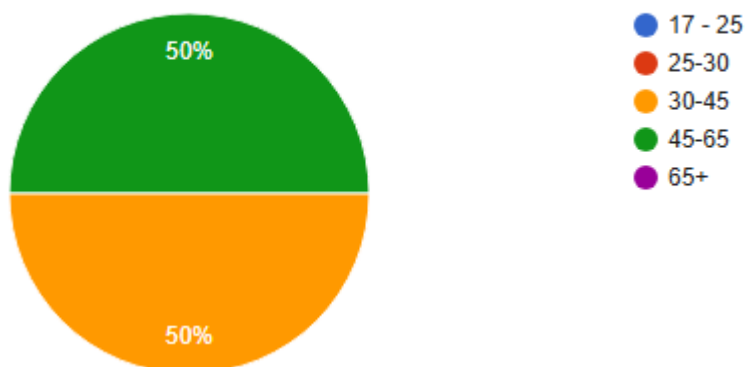
The topic of the workshop was Sustainable Future in Automotive, to which all lectures were adapted. The workshop was split into 3 lectures:

1. **Education and Green Transition in Automotive:** The lecture focused on the impact of green transition in education. It introduced the participants to the project and the Green VET network. The vision of the cooperation network and the conditions for its involvement were presented. The lecture opened a discussion on urgent skills for emerging professions. There were discussed the most emerging green job profiles such as LCA Manager, Sustainable Manager, E-Power Engineer. The participants agreed on their extreme importance in the green transformation of automotive and battery sectors. They also mentioned not neglecting the positions of buyers whose activities also influence the green transformation of a company by providing sustainable inputs for production.
2. **Digital Pass of batteries:** The second lecture focused on the digital pass within the battery sector as a means to ensure a circular economy. The digital battery passport is a key tool for tracking the life cycle of batteries, ensuring transparency in the supply chain and promoting the circular economy in the automotive industry. The impact on automotive clusters, and their benefits for safety, economy, and environment were discussed. Also, challenges and implementation strategies were drafted.
3. **Calculating a product's carbon footprint vs. its financial calculation:** This lecture summarized the requirements for ESG reporting and presented the issues of calculating the carbon footprint for the automotive industry. A case study was presented along with supplementary materials and data sheets. The contribution of the carbon footprint calculation to a company's future cash flow and how the chosen scope of the calculation affects the overall carbon footprint value was discussed.

#### **Demographics of participants**

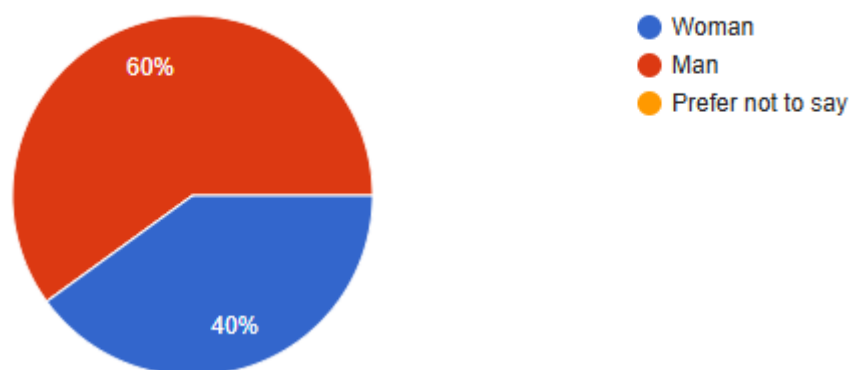
The workshop was attended by participants representing 10 external companies.

Age: 50% of participants were at the age of 30-45 and the other 50% were at the age of 45-65.



**Figure 18.** Age representation of the participants of the Industrial pilot in the Czech Republic

Gender: 60% of the participants were men, while 40% were women.



**Figure 19.** Gender representation of the participants of the Industrial pilot in the Czech Republic

Role: Participants represented the following positions:

- CEO with a focus on ESG reporting
- Project Manager
- Owner of
- ESG and Sustainability Specialist
- Project Manager
- Managing Director and ESG Specialist
- Project Manager
- Consultant
- Project manager in the automotive industry
- Expert in the automotive industry

### **Feedback from participants**

The respondents provided feedback via several specified questions below.

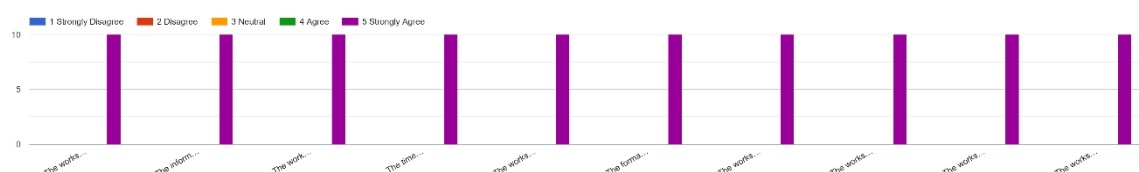
- The workshop met my expectations
- The information received prior to the event was adequate (e.g. register, agenda, objective, dates, location).
- The work program was coherent and allowed me to understand the objectives of the



workshop.

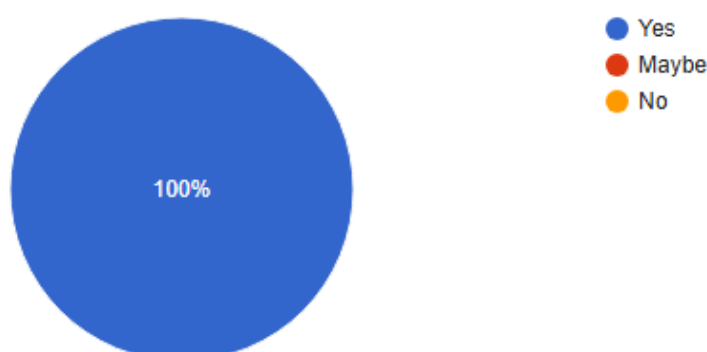
- The time management was adjusted to the agenda schedule.
- The workshop had high quality presentations.
- The format allowed the participation and interaction of the attendees.
- The workshop helped increase my awareness and understanding of green thinking.
- The workshop encouraged me to think critically about sustainability challenges.
- The workshop improved my ability to identify and apply green skills in my daily life.

Please make a cross according to your preferences



**Figure 20.** Feedback for the industrial pilot conducted in the Czech Republic

Feedback was received from 10 participants, all of whom provided positive responses. The pilot was highly appreciated for both its thorough preparation and its significance in advancing green learning. Every participant expressed their intention to apply the presented methodologies and insights, awarding the pilot the highest possible rating.



**Figure 21.** Industrial pilot participants' feedback on their readiness to implement the learning or methodology

During the presentation, we gathered several valuable interactions. At the beginning of the second lecture, we acknowledged that green skills training for the industry should be delivered differently than traditional education in schools. In an industrial setting, training should be linked to practical applications, addressing specific business needs rather than broad theoretical concepts. With this in mind, we introduced the green skills from a practical business perspective, emphasizing their direct relevance to companies. Key aspects included:

- Saving materials, energy, and resources, leading to cost reduction.
- Compliance.
- Enterprise Risk Management.
- Research and Development.
- Marketing, among other areas.



After some time, we posed a targeted question to the audience:

**“How would your company react if someone came to your company and offered green skills training?”**

The question initially caused hesitation and some head-scratching. Eventually, the response was:

*“This is a bad question. You should have presented it the way you did at the beginning.”*

Some industry representatives expressed concern about the exclusion of older employees from the workforce. Individuals over 40 or 50 years old often face difficulties in securing new job opportunities, reinforcing the need for structured knowledge-transfer programs. Green skills are not just about environmental sustainability, they also encompass social responsibility, making the inclusion of older employees highly relevant. A truly sustainable workforce considers diversity, inclusion, and long-term workforce resilience, aligning with the principles of social sustainability within green skills frameworks. As part of green education in companies, we proposed opening a broader discussion on how businesses can strategically integrate older employees into their workforce. There can be a significant age disproportion within the companies, with younger employees entering the workforce while experienced professionals are being phased out. Companies should develop a long-term strategy to ensure that older employees remain valuable contributors, whether through mentorship programs, reskilling initiatives, or structured knowledge-sharing frameworks. Addressing this issue as part of a company’s sustainability and corporate responsibility strategy would not only enhance workforce diversity but also improve long-term business resilience by leveraging the experience and expertise of senior employees.

During the second lecture, we presented a case study on the implementation of a Digital Product Passport (DPP) by Porsche, focusing on their method of collecting data from multiple suppliers. This process was facilitated by a third-party company, Circularise. A participant from the plastic industry raised a question about tracking CO<sub>2</sub>, emphasizing the challenges of obtaining this data emissions from number of foreign suppliers and overall concern for increasing bureaucracy and associated costs. This question fit perfectly within our discussion, as we had already highlighted the potential for tracking data from multiple foreign suppliers in a DPP process. We directed the participant to the Circularise website, where a case study specifically related to the plastic industry was available. This connection reinforced the practical application of the training, demonstrating how the DPP can support ESG solutions and help address real-life industry challenges. The challenge of job obsolescence due to the Twin Transition was discussed. The audience highlighted that not all training for older job roles is irrelevant, sometimes there can be 60-70% overlap. Many employees could be strategically retrained for closely related emerging positions instead of being phased out entirely. To address this, companies should analyze and map job roles that are expected to become obsolete and identify transition pathways to new, sustainability-driven roles. Ensuring that retraining efforts align with both employee competencies and company needs is essential for maximizing workforce adaptability and business continuity.



*Figure 22. Snapshots from the industrial pilot in Czech Republic*

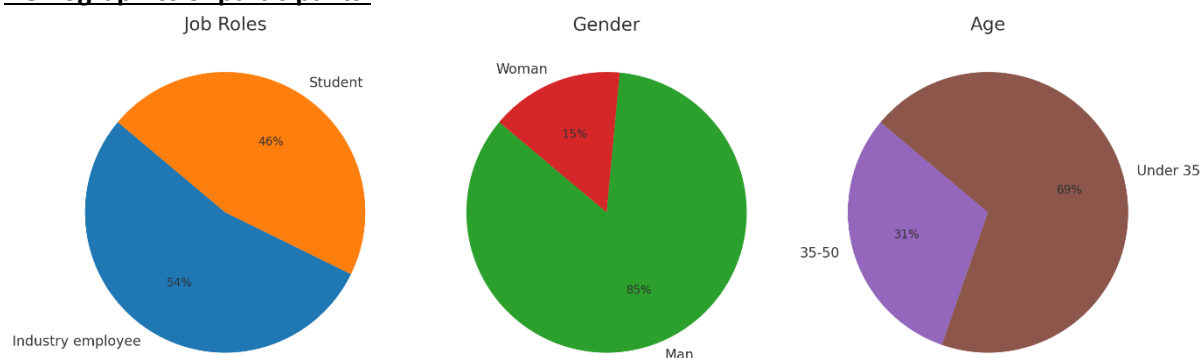
## 4 Cyprus – Energy sector

### VET PILOTS

#### 4.1 Pilot 1 – Techno-economic analysis of sustainable low-carbon heating and cooling solutions in buildings

The 1<sup>st</sup> pilot was conducted in the premises of the University of Cyprus library. It was repeated twice due to low participation in the 1<sup>st</sup> one. In total, 13 people participated in this pilot. The workshop began with a brief introduction to the energy transition challenge, emphasizing the importance of addressing heat demand for space and water heating alongside electricity generation. While various renewable energy sources are in use, heat pumps remain underutilized. The introduction also covered the basic principles of heat pump operation and how they contribute to sustainable heat production. Participants then engaged in a practical exercise using Excel to size the heating requirements of a single-family home in Cyprus, based on meteorological data. After a short break, attendees conducted a techno-economic analysis of heat pumps, comparing different models from various manufacturers. They evaluated payback periods using current heating fuel and electricity prices. This led to a discussion on potential government policies to encourage heat pump adoption, such as financial incentives or increasing taxes on petrol to reduce its consumption.

### Demographics of participants:



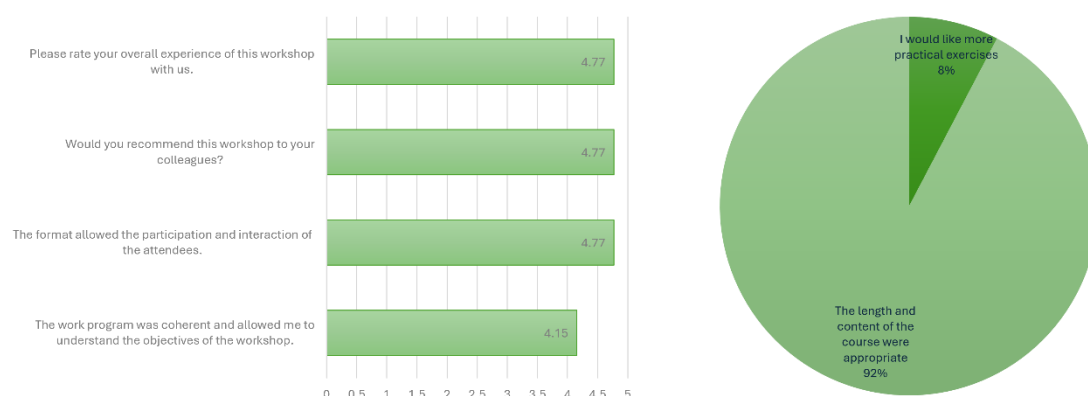
**Figure 23.** Demographic Overview of the 1<sup>st</sup> pilot in Cyprus showing the job roles, gender and age representation of the participants.

**Job Role:** Most participants were industry employees (54%), followed closely by students (46%).

**Gender:** The majority of participants were men (85%), while women made up 15% of the total.

**Age Distribution:** Participants were mostly under 35 years old (69%), with the remaining 31% in the 35–50 age group.

### Feedback from participants

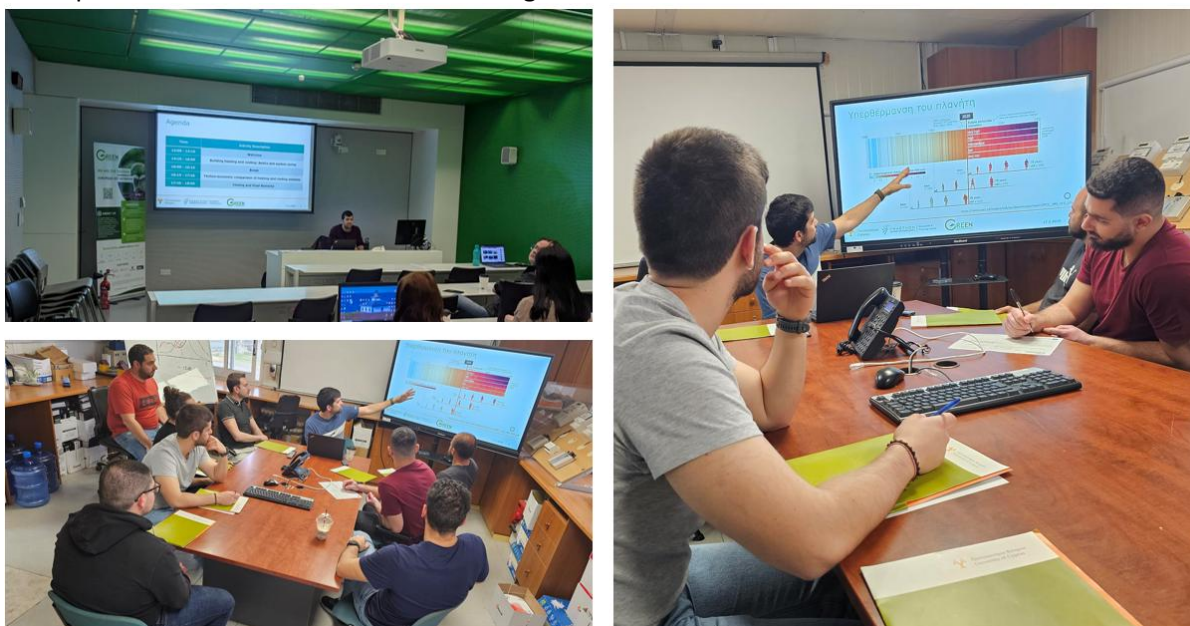


**Figure 24.** Feedback from the 1<sup>st</sup> pilot conducted in Cyprus. The left figure shows feedback on the workshop's quality, while the right figure focuses on participants' preferences for its content.

Participants responded to statements about the workshop using a 1 to 5 scale, where 1 = Strongly Disagree and 5 = Strongly Agree. The results indicate high satisfaction and strong agreement with the workshop's effectiveness:

- **Overall experience:** Participants rated their overall experience very highly, with an average score of 4.77, indicating strong satisfaction.
- **Recommendation:** The same high rating of 4.77 was given when asked if they would recommend the workshop to colleagues, showing strong endorsement.
- **Participation and interaction:** Again, the format was rated 4.77, suggesting participants felt very engaged and included.
- **Clarity of objectives:** This item received a slightly lower rating of 4.15, still positive but indicates room for improvement in communicating the workshop's goals.
- **Course structure feedback:** 92% of participants felt that "the length and content of the course were appropriate", showing strong agreement with the structure and pacing. 8% of participants expressed that they "would like more practical exercises", suggesting a small group is seeking a more hands-on component.

The feedback was positive, with most participants strongly agreeing that the workshop was engaging, worthwhile, and well-structured. A minor suggestion for improvement is to incorporate more practical exercises to enhance learning.

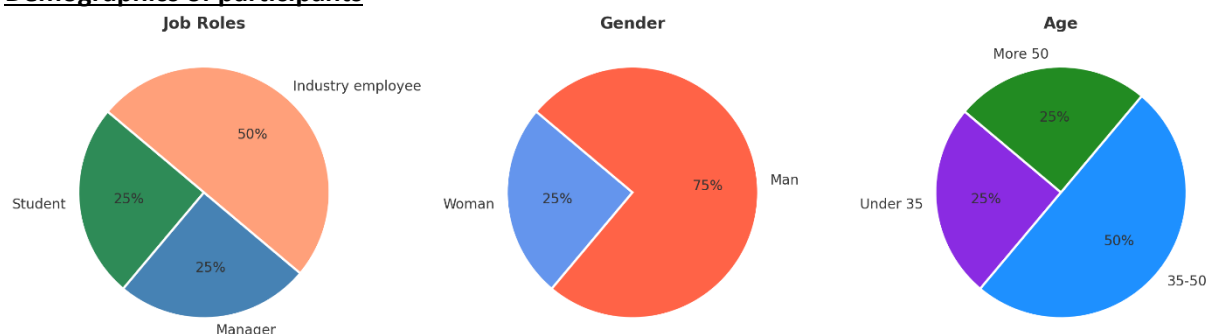


**Figure 25.** Snapshots from the 1st VET Pilot in Cyprus

## 4.2 Pilot 2 – From GREEN skills and SDG goals to everyday goals

This workshop focused on sustainability and circular economy principles, emphasizing their role in reducing waste, minimizing carbon emissions, and promoting resource efficiency. It explored the shift from a linear to a circular economy, highlighting the 7Rs (Rethink, Refuse, Reduce, Reuse, Repair, Recycle, Recover) and real-world case studies from the fashion and technology industries. Additionally, the workshop examined the impact of education on sustainability and the Sustainable SDGs, encouraging participants to reflect on how learning can drive environmental and social change. Through interactive discussions, group exercises, and hands-on activities, participants analyzed recycling barriers, workplace circularity, and individual contributions to a greener future. The workshop fostered critical thinking, systems thinking, and problem-solving skills, equipping attendees with practical strategies for integrating sustainability into daily life and professional settings.

### Demographics of participants



**Figure 26.** Demographic Overview of the 2nd pilot in Cyprus showing the job roles, gender and age representation of the participants.

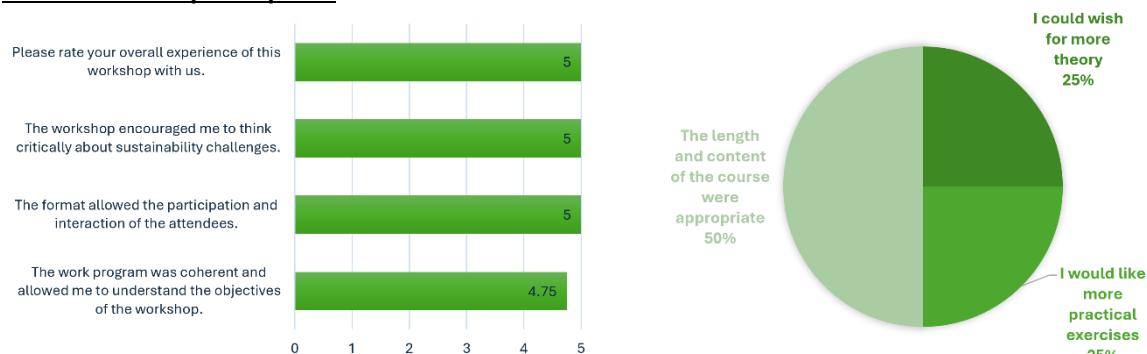


**Job Role:** Half of the participants (50%) were industry employees, while students (25%) and managers (25%) made up the rest.

**Gender:** Most of the attendees were men (75%), with women making up 25% of the participants.

**Age Distribution:** The largest age group was 35-50 years old (50%), while both under 35 (25%) and over 50 (25%) were equally represented.

### Feedback from participants



**Figure 27.** Feedback for the 2nd pilot conducted in Cyprus. The left figure shows feedback on the workshop's quality, while the right figure focuses on participants' preferences for its content.

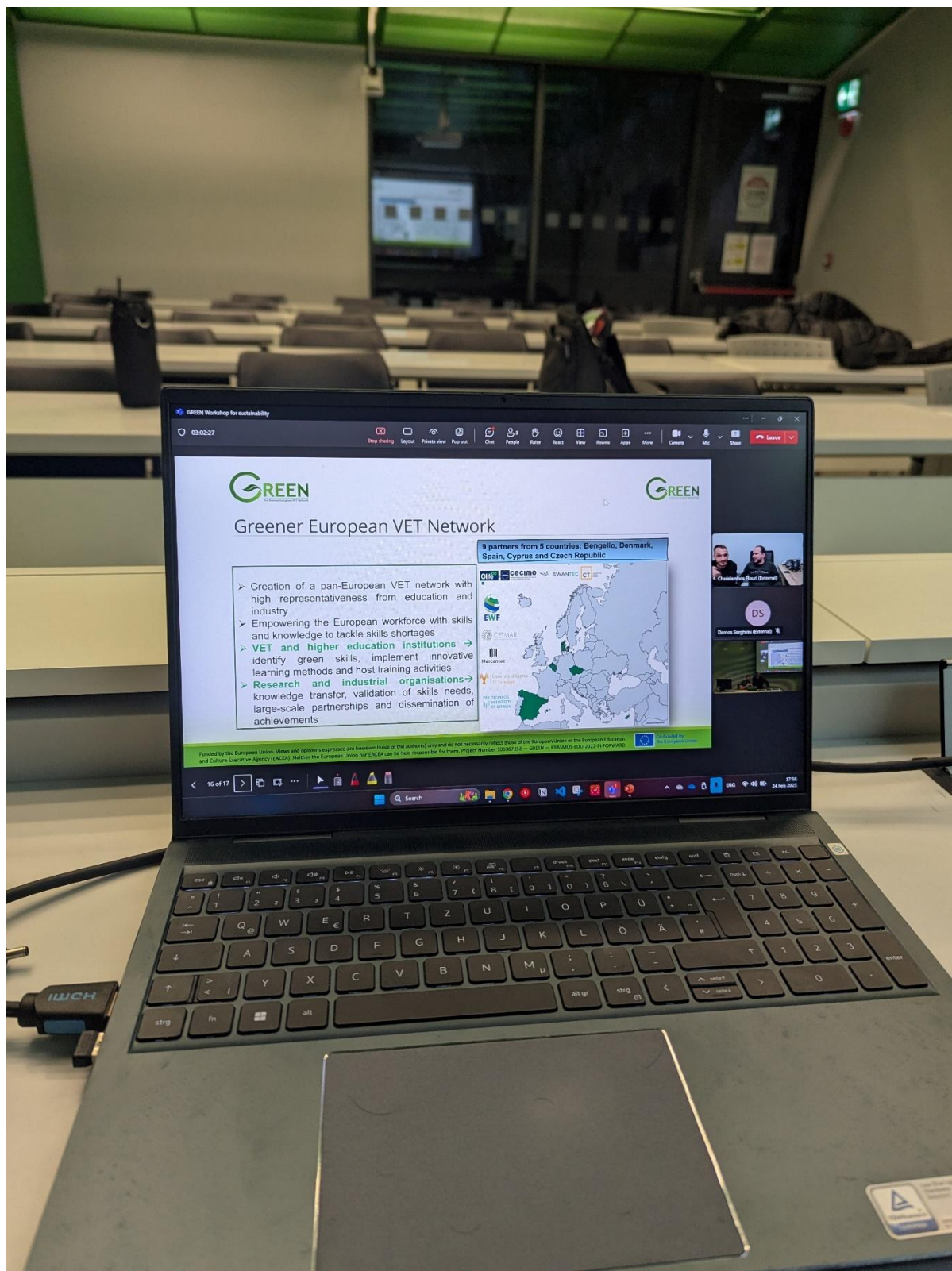
Participants responded to statements about the workshop using a 1 to 5 scale, where 1 = Strongly Disagree and 5 = Strongly Agree. The results indicate high satisfaction and strong agreement with the workshop's effectiveness:

- **Please rate your overall experience of this workshop.** – 5/5 (Strongly Agree)
- **The workshop encouraged me to think critically about sustainability challenges.** – 5/5 (Strongly Agree)
- **The format allowed the participation and interaction of the attendees.** – 5/5 (Strongly Agree)
- **The work program was coherent and allowed me to understand the objectives of the workshop.** – 4.75/5 (Near Strongly Agree)

Participants shared feedback on the balance of content and structure of the workshop:

- 50% felt the course length and content were appropriate.
- 25% wished for more theoretical content.
- 25% wanted more practical exercises.

The feedback shows that participants really liked the workshop. They strongly agreed that it was engaging, interactive, and well-organized. Most people thought the amount of content was just right, but some would have preferred more theory, while others wanted more hands-on activities. This suggests that future workshops could include both more explanations and more practical exercises to meet different learning styles. The limited number of participants (only 4) may have influenced the feedback, as a larger group could have facilitated a more diverse and in-depth discussion on sustainability and circular economy principles. Expanding participant numbers in future workshops could enhance engagement and provide a broader range of perspectives.



**Figure 28.** A snapshot from the 2nd pilot in the VET Content in Cyprus



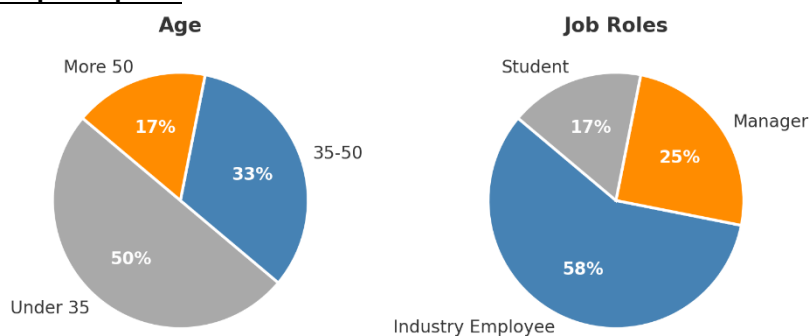
### 4.3 Pilot 3 – Demonstrations and simulations of battery and PV

This pilot guided users through the step-by-step process of using PVsyst Version 7, a software designed for photovoltaic (PV) system simulation and analysis. The tutorial was structured into three main sections:

1. **Basic Project Setup** – It explained how to create a grid-connected PV project, including site selection, system configuration (PV modules, inverters), and executing the first simulation. It also covered the analysis of simulation results, such as performance ratio and energy production.
2. **3D Near Shadings Construction** – It introduced the process of building 3D shading scenes to account for obstacles that could reduce solar panel efficiency. The tutorial demonstrated how to define shading objects, run shading simulations, and analyze their impact on PV performance.
3. **Meteorological Data Management** – It focused on weather data essential for accurate PV simulations. The tutorial explained how to use built-in databases, generate synthetic hourly weather data, and import data from external sources.

The tutorial provided practical examples, detailed explanations of PV system losses, and guidance on optimizing system design to improve energy yield.

#### Demographics of participants



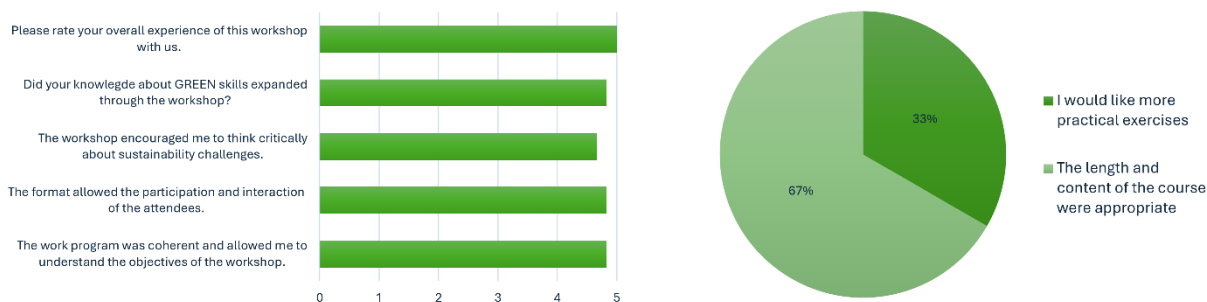
**Figure 29.** Demographic Overview of the 3rd pilot in Cyprus showing the age, job roles and representation of the participants.

**Age:** 50% of participants were under 35 years old, making up the largest age group. 33% were between 35 and 50 years old. 17% were over 50 years old, indicating a smaller representation from older participants.

**Job Roles:** 58% of participants were industry employees, showing strong engagement from professionals in the field. 25% were managers, representing a quarter of the attendees. 17% were students, highlighting some involvement from those in academic or training settings.

**Gender:** In total 13 participants were present, but only 12 answered the questionnaire. There was 1 woman and 12 men in the workshop.

## Feedback from participants:



**Figure 30.** Feedback for the 3rd pilot conducted in Cyprus. The left figure shows feedback on the workshop's quality, while the right figure focuses on participants' preferences for its content.

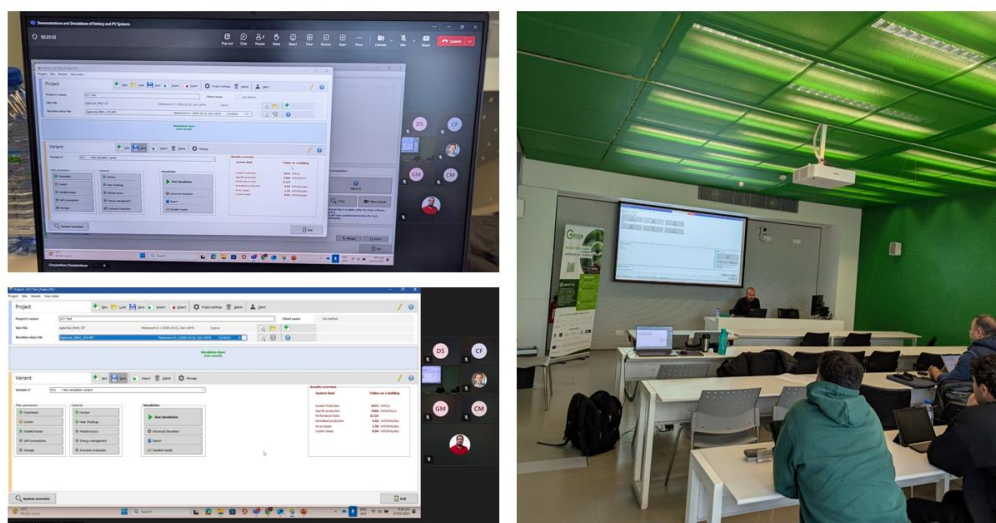
Participants rated their experience and engagement in the workshop using a **1 to 5 scale** (1 = Strongly Disagree, 5 = Strongly Agree). The responses indicate high levels of satisfaction across all aspects:

- **Overall experience of the workshop** – Rated **5/5**, showing strong approval.
- **Knowledge expansion on GREEN skills** – Rated **5/5**, indicating the workshop was effective in increasing awareness.
- **Encouragement to think critically about sustainability challenges** – Rated **4.75/5**, suggesting it successfully stimulated reflection.
- **Participation and interaction in the workshop format** – Rated **5/5**, confirming the engagement was effective.
- **Clarity and coherence of the work program** – Rated **5/5**, demonstrating that objectives were well communicated.

The feedback on the course structure and content distribution has shown:

- 67% of participants felt the course length and content were appropriate.
- 33% expressed a desire for more practical exercises.

The workshop received excellent ratings, with participants strongly agreeing that it was engaging, informative, and well-structured. While most attendees were satisfied with the balance of content, one-third suggested including more practical exercises to enhance the learning experience. Future sessions may benefit from integrating more hands-on activities while maintaining the current level of theoretical content.



**Figure 31.** Snapshots from the 3rd VET Pilot in Cyprus

## INDUSTRIAL PILOT

### 4.4 Pilot Industry – Sustainability and tools for supporting the energy transition

This shorter workshop, designed for employees in the energy sector, introduced sustainability principles and their practical applications in industrial and energy-related applications. It combined concepts from green skills, circular economy, and PV system simulation to equip participants with key knowledge and tools for sustainable energy practices. The workshop covered:

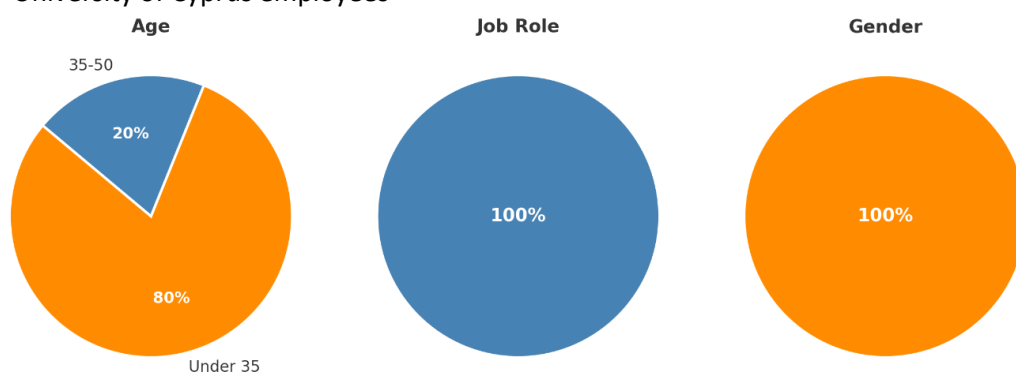
- **Sustainability and Circular Economy Principles:** Participants explored how sustainable practices can be integrated into daily operations, focusing on resource efficiency, waste reduction, and renewable energy. Discussions emphasized the importance of green skills in the workforce and how circular economy models can support long-term sustainability goals.
- **PVsyst Tutorial for Energy Simulations:** Attendees learned to simulate PV system performance using PVsyst, gaining hands-on experience in system design, shading analysis, and meteorological data management to optimize solar energy projects.
- **Sustainable Heating and Cooling – Heat pumps:** The workshop also addressed low-carbon heating and cooling solutions, emphasizing energy efficiency strategies, renewable integration, and the reduction of fossil fuel dependence in industrial settings.

Through interactive discussions, practical demonstrations, and case studies, participants developed insights into sustainable energy solutions and learned how to apply these concepts in their professional roles.

#### Demographics

The workshop was organized in cooperation with MEGGIT which invited several employees from their group of companies. In total, there were 10 participants from different companies including:

- Abio power LTD
- Green Energy Group
- Aurora
- Cyprus Institute
- University of Cyprus employees



**Figure 32.** Demographic Overview of the industrial pilot in Cyprus showing the age, job role and gender representation of the participants. All participants were men and industrial employees.

All participants in the workshop were men and industry employees, reflecting a strong engagement from professionals in the energy sector. Regarding age distribution, most attendees (80%) were under 35 years old, while a smaller portion (20%) belonged to the 35-50 age group.

### Feedback from participants:



**Figure 33.** Feedback for the industrial pilot conducted in Cyprus. The left figure shows feedback on the workshop's quality, while the right figure focuses on participants' preferences for its content.

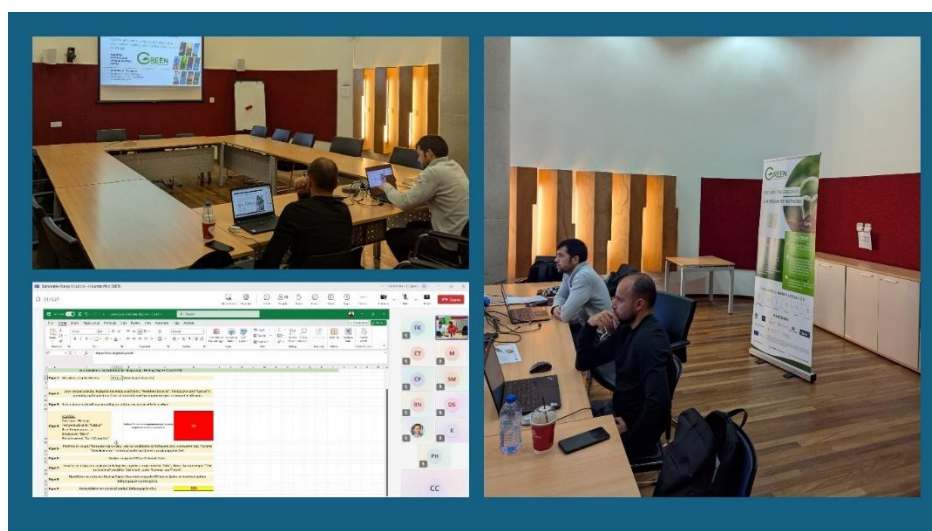
Participants rated various aspects of the workshop on a 1 to 5 scale (1 = Strongly Disagree, 5 = Strongly Agree). The results show high satisfaction, with all aspects scoring above 4.2/5:

- **Clarity of the work** program received the highest rating (4.8/5), indicating that participants found the workshop well-structured.
- **Overall experience and participation/interactivity** were both rated 4.6/5, showing strong engagement.
- **Knowledge expansion on GREEN skills** was rated 4.4/5, while critical thinking encouragement had the lowest rating at 4.2/5, suggesting room for improvement in stimulating deeper discussions.

The feedback on the course structure and content distribution has shown:

- 80% of participants felt that the course length and content were appropriate.
- 20% expressed a preference for more practical exercises, indicating a potential area for enhancement in future sessions.

The feedback confirms that the workshop was well-received, engaging, and structured effectively. However, some participants would have liked more hands-on activities, suggesting that future workshops could incorporate more practical components while maintaining the current level of theoretical content.



**Figure 34.** Snapshots from the industrial intervention in Cyprus

## 5 Denmark – Defense Sector

### VET PILOTS

#### 5.1 Pilot 1 – From GREEN skills and SDG goals to everyday goals

Pilot 1 was held at Ulfborg Kjærgaard, Denmark on 27<sup>th</sup> of June 2024 from 8:00-14:00. In total 19 participants took part. Mercantec's 1<sup>st</sup> pilot was a continuation of Mercantec's presentation at the Train-the-Trainers in Cyprus and for this pilot we had prepared a template that the participants themselves could use afterwards that can be found in the teaching material.

#### Demographics of participants

Teacher	15
Trainer	0
Student	0
Management	2
Other	0

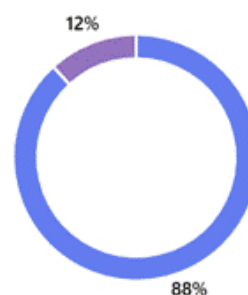


Figure 35. Occupation of participants in the 1st VET pilot in Denmark

Woman	9
Man	8
Prefer not to say	0

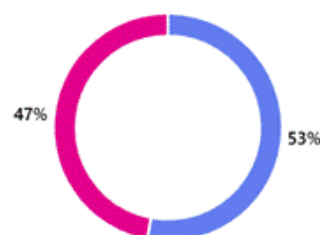


Figure 36. Gender of participants in the 1st VET pilot in Denmark

#### Feedback from participants:

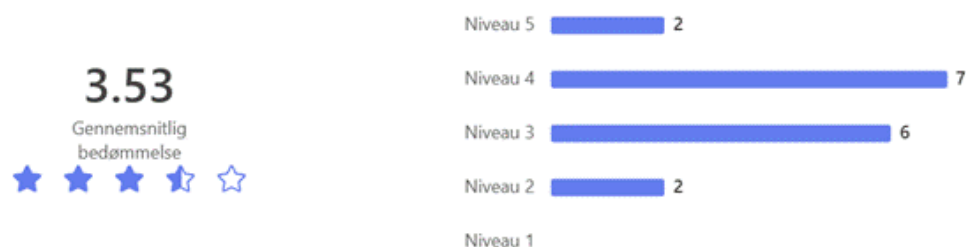
In general, there was positive feedback from the participants. For many, the workshop presented them with breakthrough moments of working with the SDGs in this way, and all the participants were offered a set of SDG cards that can be used in their own teaching afterwards. 12 decks of cards have been handed out.



Figure 37. Overall experience of participants in the 1st VET pilot in Denmark



Did your knowlegde about SDGs and GREEN skills expanded through the workshop



**Figure 38.** Participant feedback on enhanced knowledge of SDGs and green skills in 1st VET Pilot in Denmark

How well equipped do you feel after this workshop to implement GREEN skills og SDGs into your teaching/training



**Figure 39.** Participant readiness to integrate green skills and SDGs after the 1st VET Pilot in Denmark

Would you recommend this workshop to your colleagues



**Figure 40.** Feedback on whether participants would recommend this workshop after the 1<sup>st</sup> VET Pilot in Denmark



**Figure 41.** Snapshots from the 1st VET Pilot in Denmark



## 5.2 Pilot 2 – How to think greener and more sustainable with Critical Thinking,

Pilot 2 was held at Mercantec, Denmark on 05 of February 2025 from 8:00-14:00. In total 14 participants took part. In this 2nd pilot, which was for students, it focused more on critical thinking, systems thinking and problem formulation than in the 1st pilot which was designed for teachers. The SDGs were turned around digitally, and a single task was solved. After the theory of critical thinking, the students were put in groups with a specific task with several possible solutions depending on whether you look at economy, quality or sustainability. This led to insightful discussions and the groups presented their choices to the other groups afterwards. The same approach continued with the topics System Thinking and Problem Formulation and the day ended with a summary.

### Demographics of participants



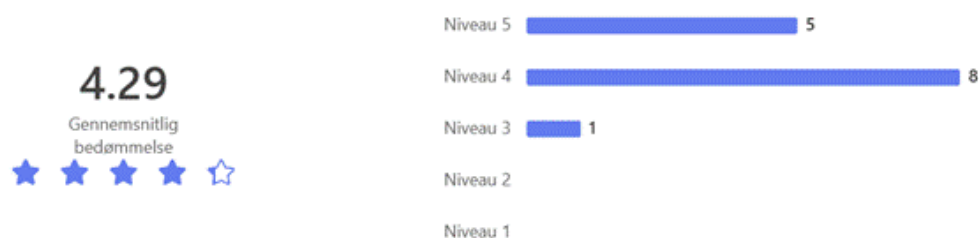
**Figure 42.** Occupation of participants in the 2nd VET pilot in Denmark



**Figure 43.** Gender of participants in the 2nd VET pilot in Denmark

### Feedback from participants:

In general, there was positive feedback about the content of the workshop. Curiosity was aroused about using critical thinking, system thinking and problem solving in a positive way seen through sustainable glasses.



**Figure 44.** Overall experience of participants in the 2nd VET pilot in Denmark

Did your knowledge about World Goals and GREEN skills expanded through the workshop

[F](#)



**Figure 45.** Participant feedback on enhanced knowledge of SDGs and green skill in the 2nd VET Pilot in Denmark

Will you use critical thinking, system thinking and problem solving more, after this event?

[F](#)



**Figure 46.** Participant readiness to integrate critical thinking, system thinking and problem solving after the 2nd VET Pilot in Denmark

Would you recommend this workshop to your colleagues



**Figure 47.** Feedback on whether participants would recommend this workshop after the 2nd VET Pilot in Denmark



**Figure 48.** Snapshots from the 2nd VET Pilot in Denmark

### 5.3 Pilot 3 – How to think greener and more sustainable with Critical Thinking,

Pilot 3 was held at Mercantec, Denmark on 05 of March 2025 from 8:00-12:00. In total 17 participants took part. In this event, we had optimized the length for a 4-hour event. This is so that the workshop can be more flexible and perhaps better fit into a teaching program. The focus on the event was critical thinking, systems thinking and problem solving with groupworks.

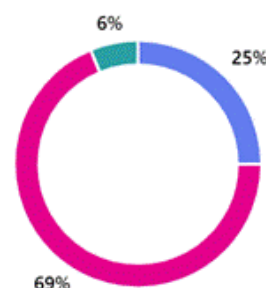
#### Demographics of participants

Teacher	0
Trainer	0
Student	16
Employee, Industry	0
Other	0



**Figure 49.** Occupation of participants in the 3rd VET pilot in Denmark

Woman	4
Man	11
Prefer not to say	1



**Figure 50.** Gender of participants in the 3rd VET pilot in Denmark

#### Feedback from participants:

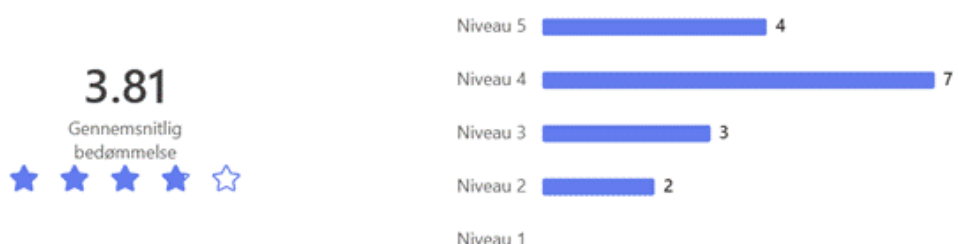
In general, there was positive feedback about the content of the workshop. In order to optimize even more at the workshop, it will be important to be more specific with the tasks to be solved in group work. In addition, it would be a good idea to go through the individual assignments in class before they are sent out in groups. This is to ensure that everyone is fully aware of what the task is

about.



**Figure 51.** Overall experience of participants in the 3rd VET pilot in Denmark

How well were you informed about Critical Thinking, System Thinking and Problemsolving before this event?



**Figure 52.** Participant's knowledge before the critical thinking, system thinking, problem solving before the 3rd VET Pilot in Denmark

Will you use critical thinking, system thinking and problem solving more, after this event?



**Figure 53.** Participant's knowledge before the critical thinking, system thinking, problem solving after the 3rd VET Pilot in Denmark

## INDUSTRIAL PILOT

### 5.4 Pilot Industry – How to think greener and more sustainable with Critical Thinking, Systems Thinking and Problem Framing

Pilot 4 was held at House of Industry, Denmark on 24 of March 2025 from 8:00-12:00. In total 15 participants took part. In this event, employees from different companies participated. The focus on the event was Critical Thinking, Systems Thinking and Problem framing with groupworks.

The outline of the pilot was as follows:

### Welcome and info about the project

- WHY – Intro

### Intro to critical thinking

- Group work – General case
- Upload to your own everyday life and select an example for presentation
- Presentation from one group (5 min.)
- Short break

### Intro to systems thinking

- Group work – General case – change group
- Upload to your own everyday life and select an example for presentation
- Presentation from one group (5 min.)
- Short break

### Intro to problem framing

- Group work – General case – change group
- Transfer to your own everyday life and select an example for presentation
- Presentation from one group (5 min.)

### Reflection break

- Summary + evaluation
- End

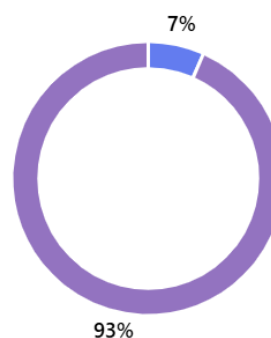
### Demographics of participants

Occupation: Most participants (93%) were from the industry sector, with 14 identifying as employees in industry. Only one participant (7%) was a teacher.

Gender: The gender distribution showed that 60% of participants were men (9 participants) and 40% were women (6 participants).

What is your occupation

Teacher	1
Trainer	0
Student	0
Employee, Industry	14
Other	0



**Figure 54.** Occupation of participants in the industrial pilot in Denmark



What is your gender

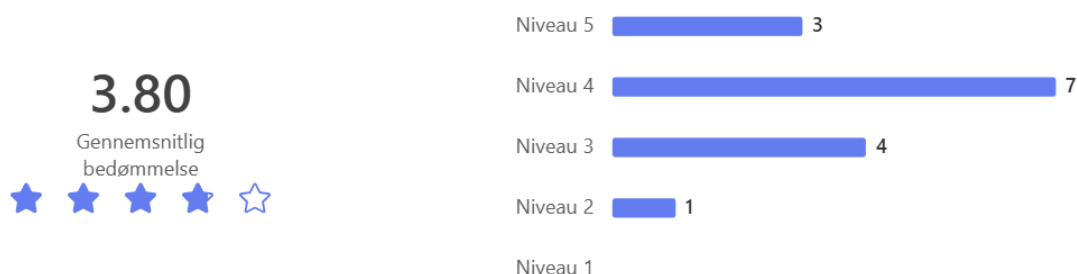


**Figure 55.** Gender of participants in the industrial pilot in Denmark

### Results and feedback from participants

The feedback from participants regarding the workshop was generally positive. Participants rated their overall experience with an average score of 3.80 out of 5, indicating a good level of satisfaction. When asked how well they were informed about critical thinking, system thinking, and problem solving prior to the event, the average rating was 3.67, suggesting a moderate level of pre-existing knowledge. After the workshop, participants rated their understanding of these topics at an improved average score of 3.93, reflecting a positive impact on their learning. Additionally, 53% of participants indicated they would recommend the workshop to colleagues, while 47% responded with "maybe", demonstrating a generally favorable perception of the workshop's value.

Please rate your overall experience of this workshop with us.



**Figure 56.** Overall experience of participants in the industrial pilot in Denmark

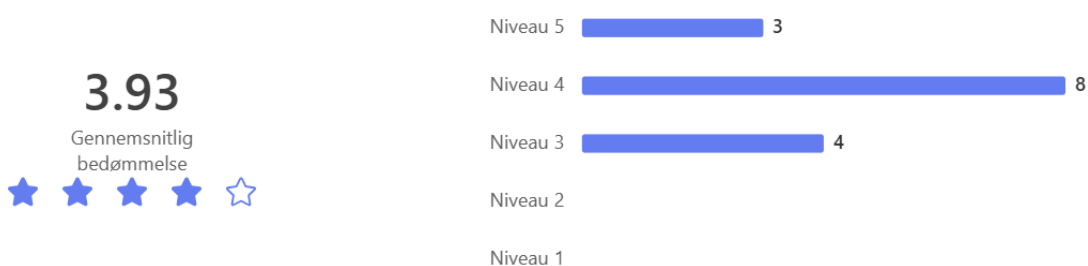
How well were you informed about Critical Thinking, System Thinking and Problemsolving before this event?



**Figure 57.** Participant's knowledge about critical thinking, system thinking, problem solving before the industrial pilot in Denmark

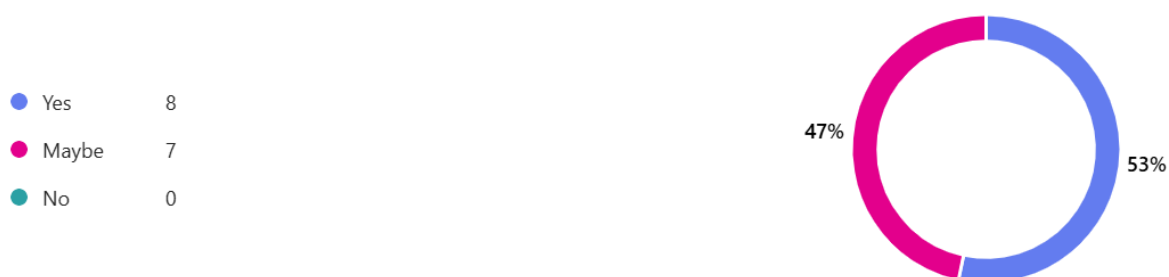
Will you use critical thinking, system thinking and problem solving more, after this event?

[FI](#)



**Figure 58.** Participants eagerness to use critical thinking, system thinking and problem solving after the industrial pilot in Denmark

Would you recommend this workshop to your colleagues



**Figure 59.** Feedback on the participants' eagerness to recommend this workshop



*Figure 60. Snapshots from the industrial intervention in Denmark*

## 6 Portugal - Cross Sectoral

Two pilot workshops were organised in Portugal targeting VET trainers. Both were delivered in a workshop format and resulted from requests that emerged following other project initiatives.

The first was developed in collaboration with ATEC, a member of the GREEN VET Network. EWF was invited to take part in their “Learning Innovation Summit – In the Era of Artificial Intelligence: The Role of Educators and Learners,” where we conducted a short workshop focused on raising awareness about sustainability among trainers.

The second pilot originated after the World Café event, where the director of a public VET training centre expressed interest in organising a dedicated workshop to build the capacity of their trainers in the areas of green transition and sustainability.

40

### 6.1 Pilot 2 - Greening Training: A Pedagogical Approach to Sustainability

Held in parallel with the event “Learning Innovation Summit – In the Era of Artificial Intelligence: The Role of Educators and Learners”, the workshop took place on 30 November 2024 under the theme “Greening Training – A Pedagogical Approach to Sustainability”.

The aim was twofold: to create a space for discussion on the topic and gather inputs from trainers, and to share the results of the GREEN project, particularly those related to the role of trainers in the green transition.

The session was attended by 10 trainers working at EQF levels 3 and 4, mainly in transversal subjects such as mathematics, citizenship, and environment, among others.



*Figure 61. Snapshots taken during the 1st pilot held in Portugal in VET context*

The workshop was structured around the UN Sustainable Development Goals (SDGs), with trainers

invited to reflect on the impact of education in achieving the other 16 SDGs. In particular, they were encouraged to consider the role of educators and how they could integrate these themes into their teaching, raising awareness and preparing their learners to adopt a green mindset.

Towards the end of the session, trainers were challenged to reflect on their own teaching practices and identify real-life examples where they could actively develop green competencies with their students.

## 6.2 Pilot 2 VET - For a Greener Tomorrow: Trainers Edition

The second awareness-raising workshop organised under the GREEN project – which aims to support a greener education and training system by identifying and integrating green competences into training programmes, as well as embedding them transversally in pedagogical resources and practices – was specifically designed for trainers and training managers.

Developed in a collaborative and peer-learning context, the workshop followed an interactive approach using active learning methods to enrich the training experience. Participants engaged in:

- Brainstorming activities, to generate innovative ideas and solutions related to green education;
- Collaborative activities, working in groups to design and implement green teaching strategies.

Key topics included:

- Sustainability in Education
- The Role of Trainers in the Green Transition
- Integrating Sustainability Principles and Green Thinking into Pedagogical Practices.

The workshop was based on the thematic unit "For a Greener Tomorrow – Trainers Edition", developed within the project, and was designed to last three hours. It took place on 12 March 2025 and brought together 17 trainers and 2 training managers (17 women and 2 men), mostly from public VET centres.

Several tools from the GREEN Toolkit were used during the workshop, including the SDG-based exercise. As in the previous workshop, this activity proved to be highly impactful, especially when trainers are encouraged to reflect on the role of education in building a more sustainable world and the importance of delivering quality education.

Participants also tested freely available online resources that could be used in their own classrooms, such as the Carbon Footprint Calculator.



**Figure 62.** Snapshots taken during the 2nd pilot held in Portugal in VET context

Trainers were then invited to share practical measures they believed could be implemented in their training contexts.

The following suggestions were collected:

- Organising training actions across schools in the group;
- Running a school-based workshop on sustainability;
- Integrating sustainability-related activities in economics classes;
- Encouraging students to reflect on real-life situations where education can make an impact;
- Reducing paper use, promoting recycling, and fostering green thinking;
- Promoting more class debates on sustainability;
- Introducing sustainability topics in lessons and organising a "circular market" with second-hand items;
- Delivering paper-free training sessions.

## 7 Spain – Maritime Sector

### VET PILOTS

#### 7.1 Pilot 1 – From GREEN skills and SDG goals to everyday goals

The maritime VET pilot 1 was organized in Marin-Spain, as a 4h event, in the training center A Aixola. It was held on 29 January 2025 from 10:00-14:00.

##### Demographics of participants

In total 8 participants took part. Trainers (Aixola) that teach to more than 60 VET students per year and training managers (CETMAR) participated in this workshop.

- Age: mostly 35-50 and some with more than 50 years
- Role: Trainers (Aixola) + training managers (CETMAR)

##### Results and feedback from participants

The metrics that are used for the assessment of this pilot were from 1-5, with 1 representing Strongly unsatisfactory and 5 Very satisfactory (6 people answered the satisfaction survey). The results are summarized in Table 1.



**Table 1.** Feedback received during the 1st pilot in the VET context in Spain

Quality criteria	Questions used to verify (how it was measured, insert the questions used)	Results (1-5)
Overall satisfaction	Please rate your overall experience of this workshop	4,50
Knowledge improvement	Did your knowledge about SDGs and GREEN skills expanded through the workshop?	4,67
Empower to implement or transfer the learning	How well equipped do you feel after this workshop to implement GREEN skills or SDGs into your working activity?	3,67

Most of the participants (4) would prefer an even more practical approach. Also 2 out of 6 respondents would like a continuation session of this course. All of them would recommend this workshop to their colleagues. Some comments from participants for promotional purposes can be seen in Table 2 below.

**Table 2.** Comments left by the participants in the 1st pilot in Spain

Comments left by the participants
I loved hearing the feedback and insights shared—thank you very much!
The workshop gave me ideas and activities I can use in my classes to address sustainability in a concrete or cross-cutting way.
A very practical and simple way to gain a deeper understanding of the SDGs. By identifying, through debate/brainstorming, the SDG targets that can or should be promoted in the participants' (or group's) work environment, it outlines a roadmap for change.
The SDGs are key to the 2030 Agenda, and this workshop helps participants become familiar with the more specific actions proposed within each category. It's a session that balances theory with more active learning through play



**Figure 63.** Snapshots from the 1st pilot held in the VET context in Spain by CETMAR.

## 7.2 Pilot 2 – The GREEN Approach: methodologies to integrate sustainability into teaching activities

The maritime education pilot 2 was organized in Marin-Spain, as a 4h event, in the training center A Aixola. It was held on 28 January 2025 from 10:00-14:00.

### Demographics of participants

In total 16 participants took part.

Age: Trainees of sustainability modules in professional certificates with ages ranging from 25 to more than 50.

Role: All of the participants were trainers. In addition, at least 2 of the participants teach students and workers as well (even more than 60 people per year).

### Results and feedback from participants

This session was adapted in response to the participants' request for more teaching resources. Due to time constraints, not all materials could be tested. However, participants expressed that they would have preferred more time for discussion and for experimenting with the practical tools and proposals shared by the facilitators. The metrics that are used for the assessment of this pilot were from 1-5, with 1 representing Strongly unsatisfactory and 5 Very satisfactory (12 people answered the satisfaction survey). The results are summarized in Table 3.

**Table 3.** Feedback received during the 2nd pilot in the VET context in Spain

Quality criteria	Questions used to verify (how it was measured, insert the questions used)	Results (1-5)
Overall satisfaction	Please rate your overall experience of this workshop	2,92
Knowledge improvement	Did your knowledge about SDGs and GREEN skills expanded through the workshop?	3,08
Empower to implement or transfer the learning	How well equipped do you feel after this workshop to implement GREEN skills or SDGs into your working activity?	2,75

2 participants agreed that the length and content of the course were appropriate but most of them (10) would prefer a more practical approach. Also 3 out of 12 people would recommend this workshop to their colleagues, 6 are not sure and 3 would not.



Figure 64. Snapshots from the 2nd pilot held in Spain for VET trainers

### 7.3 Pilot 3 – The GREEN Approach: methodologies to integrate sustainability into teaching activities

The maritime education pilot 3 was organized in 3 sessions (8h in total), one in presence in Ourense-Spain, and two online. In total 17 participants took part.

- 1<sup>st</sup> session, in presence, held on 03 March 2025 from 10:00-14:00 (4h).
- 2<sup>nd</sup> session online from 16:30-18:30 (2h)
- 3<sup>rd</sup> session online, held on 13 March 2025 from 16:30-18:30 (2h)

#### Demographics of participants

Age: 35-50 and over 50

Role: VET teachers. At least 4 of them train vet students and/or workers (1 teaching from 16-30 people, 2 teaching 31-60 and 1 teaching more than 60 people per year)

#### Results and feedback from participants

The metrics that are used for the assessment of this pilot were from 1-5, with 1 representing Strongly unsatisfactory and 5 Very satisfactory (7 people answered the satisfaction survey). Table 4 summarizes the results and feedback received from the participants.

Table 4. Feedback received during the 3rd pilot in the VET context in Spain.

Quality criteria	Questions used to verify (how it was measured, insert the questions used)	Results (1-5)
Overall satisfaction	Please rate your overall experience of this workshop	4,14
Knowledge improvement	Did your knowledge about SDGs and GREEN skills expanded through the workshop?	3,86
Empower to implement or transfer the learning	How well equipped do you feel after this workshop to implement GREEN skills or SDGs into your working activity?	4,00



5 out of 7 participants agree on the fact that the length and content of the course were appropriate and two would like more sessions. Some preferred an even more practical approach, debates and didactic strategies to directly apply with their pupils. Also 4 out of 7 people would recommend this workshop to their colleagues.

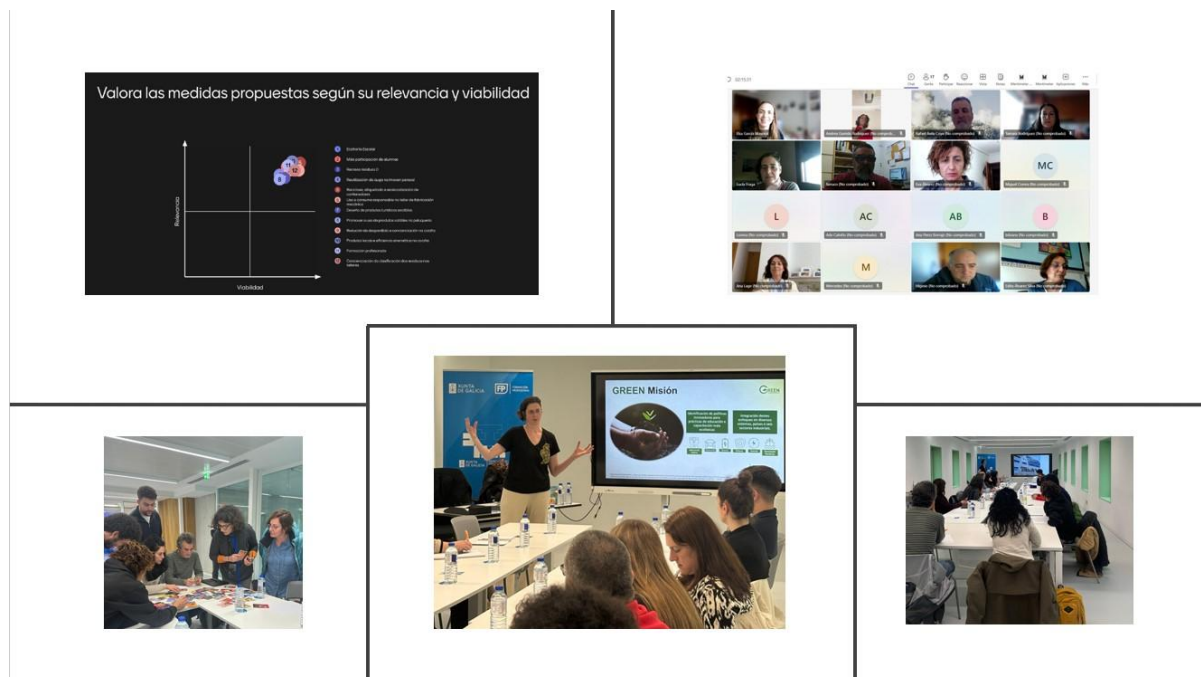


Figure 65. Snapshots taken during the 3rd pilot held in Spain in VET content

## INDUSTRY

### 7.4 Pilot Industry – From SDG goals to everyday goals

The maritime industry pilot was organized in 3 sessions, two in presence in Ferrol-Spain, and one online with a total of 6h for the whole course duration. In total 11 participants took part (plus 2 facilitators).

- 1<sup>st</sup> session, in presence, held on 14 January 2025 from 10:00-14:00. In this event, we optimized the length for a 2-hour event.
- 2<sup>nd</sup> session online (2h)
- 3<sup>rd</sup> session in presence, held on 14 January 2025 from 10:00-12:00 (2h)

**Methodology:** theoretical and practical adapted from the Training toolkit to the context of a multinational company (CT Engineering group). The training methods used in the workshop included gamified learning activities and structured, insightful debates.

After a brief introduction to the GREEN project, some theoretical and practical exercises were put on the table:

- What do we understand for “sustainability”
- What SDGs are
- From theory to my job: proposing measures to integrate SDGs into our professional life
- Individual ecological footprint calculation & debate on results
- Waste management & circular economy (theory & debate)

#### Demographics of participants

The session included 11 participants from a maritime engineering company, along with 2 facilitators

from CETMAR.

Age: The group was diverse in age, ranging from 25 to 50 years old.

Role: It is primarily composed of experienced professionals holding various roles, including:

- Business Unit Manager – Naval
- Project Managers in Integrated Logistics Support and Industrial Plants
- Technical Leader and technical staff in Integrated Logistics Support
- Competence Development Experts in ILS & Safety, R&D, and HSE
- Lead Project Manager
- Project Manager in Basic & Detailed Engineering

Notably, one of the participants regularly delivers training sessions, typically instructing between 1 and 15 individuals per year.

### **Results and feedback from participants**



*Figure 66. Snapshots taken during the industrial intervention held in Spain*

The main activity was the Go Goals game, through which the participants went across all the SDGs, having to debate what measures they could propose to be carried out in their daily professional life. The game intended to raise the question: what can we do in our daily professional life to contribute to SDGs. These all lead to productive discussions on key topics related to sustainability, SDGs and their relevance.

The main results of this dynamic are the following:

- 2 teams of 5 people
- only 45 minutes of game
- 51 proposed measures to be integrated in the everyday functioning of the office

The pilots successfully raised awareness and provided practical guidance for both individual and collective efforts within an engineering office to contribute to the achievement of the SDGs. Participants, on their side, left with a deeper understanding of the importance of green skills and practical tools to contribute to reducing environmental impacts, and showed both knowledge and real interest in the topics and the contributions they can make. Plus, each one of them signed a commitment to themselves for the future, which degree of compliance will be assessed in the coming months.

The metrics that are used for the assessment of this pilot were from 1-5, with 1 representing Strongly unsatisfactory and 5 Very satisfactory (7 people answered the satisfaction survey). The feedback gathered during the workshop is outlined in Table 5 below.



**Table 5.** Feedback received during the industrial intervention in Spain

Quality criteria	Questions used to verify (how it was measured, insert the questions used)	Results (1-5)
Overall satisfaction	Please rate your overall experience of this workshop	4,43
Knowledge improvement	Did your knowledge about SDGs and GREEN skills expanded through the workshop?	4,29
Empower to implement or transfer the learning	How well equipped do you feel after this workshop to implement GREEN skills or SDGs into your working activity?	4,57

All participants agree on the fact that the length and content of the course were appropriate. Also 6 out of 7 people would recommend this workshop to their colleagues. Some comments from participants for promotional purposes can be seen in Table 6 below.

**Table 6.** Comments left by the participants in the industrial intervention.

Comments left by the participants
Outstanding. Every company member should have the opportunity to attend events like this one.
Companies need many more of this kind of workshops and training sessions. Awareness raising and clear explanations are crucial for the human future.

## 8 Summary and conclusions

The GREEN project supports the transition to a sustainable economy by equipping workers and trainers with essential green and transversal skills through innovative, practice-based training approaches. A key outcome of this initiative is the Green Training Toolkit, which provides trainers with educational materials and best practices developed by institutions across Europe to effectively integrate green skills into curricula. These materials were shared during a Train-the-Trainers workshop in Cyprus, where trainers from 11 vocational and academic institutions exchanged successful approaches to embedding sustainability into their teaching, fostering peer learning and collaboration within the newly established GREEN VET Network. The toolkit was pilot tested in both educational (VET and university) and industrial contexts to ensure its relevance and effectiveness. Participant feedback from these pilots was used to refine and enhance the Green Training Toolkit, maximizing its potential impact and usability.

### 8.1 Train-the-Trainers

The Train-the-Trainers workshop, held on May 21–22 in Nicosia, Cyprus, brought together 21 trainers from both project partners and external organizations to exchange best practices and explore innovative ways of integrating green skills into education and training. Through interactive activities, SDG-focused discussions, and peer-learning sessions, participants shared hands-on methods such as gamification, project-based learning, virtual reality training, and sustainability-themed competitions. Institutions showcased initiatives across various sectors, ranging from green mobility and circular economy to renewable energy, additive manufacturing, and smart water management. Key takeaways include the importance of adopting a systemic and holistic approach to green skills training, empowering educators with practical tools and methodologies, and promoting collaboration across stakeholders including educators and students to managers and communities. The workshop emphasized that fostering green thinking requires continuous support, creativity, and real-world engagement, and that sharing experiences can drive innovation and build momentum for

lasting sustainability impact.

## 8.2 Pilots in Czech Republic (VET)

Three pilot workshops were held at VSB–Technical University of Ostrava with a total of 54 participants. Each session combined theoretical input with interactive activities to develop green skills, focusing on sustainability, environmental impact, and the green transition in sectors such as automotive and energy. The theoretical part covered the GREEN VET project’s objectives, labor market challenges due to skilled worker shortages, and key concepts like life cycle assessment and carbon footprint calculation. Participants used online tools such as the Green NCAP’s LCA tool, the AFDC calculator, and the Carbon Footprint Calculator, to assess their own carbon footprints and discuss strategies for emission reduction and integrating these tools into green education. The workshops promoted critical thinking, systems thinking, and problem framing, encouraging participants to reflect on emerging green roles and practical approaches to green training. Participants felt the workshops met their expectations, were well-prepared, and effectively structured. The interactive format was appreciated for encouraging participation and engagement. Attendees reported increased awareness of green thinking, improved ability to apply green skills, and a deeper understanding of sustainability challenges. Nearly 90% expressed their intention to implement the presented tools and methods in their own work. The pilots confirmed that the approach successfully supports green skills development and practical application across both education and industry settings.

## 8.3 Pilots in Cyprus (VET)

The pilot workshops were conducted in the University of Cyprus as part of the GREEN project. The first pilot, held at the University of Cyprus library and repeated due to low initial attendance. Participants completed a practical exercise to size heating requirements using satellite data and Excel, followed by a techno-economic analysis comparing various heat pump models. The session concluded with discussions on policy incentives for broader adoption. The workshops also addressed circular economy principles, the 7Rs, real-life industry case studies, and the role of education in driving sustainability. Interactive activities encouraged participants to analyze barriers to recycling and reflect on individual and workplace contributions to circularity. Another component of the pilot introduced participants to PVsyst software, guiding them through PV system design, 3D shading simulation, and meteorological data management. The pilot workshops received highly positive feedback, with participants praising the overall experience, interaction, and critical thinking encouragement. While most found the content appropriate, many suggested a greater focus on hands-on activities, indicating a need for a balanced approach between theoretical and practical learning. The second pilot achieved perfect scores, while the third maintained high satisfaction with a slight preference for more practical exercises.

## 8.4 Pilots in Denmark (VET)

The pilot workshops were conducted by Mercantec in Denmark to promote green skills, SDGs, and transversal competencies like critical thinking, systems thinking, and problem framing. The first pilot introduced a reusable teaching template and SDG card sets to support classroom integration. Feedback was highly positive, with participants expressing increased engagement with sustainability topics. The second pilot focused on students and emphasized group work on real-world challenges involving sustainability, economics, and quality. Participants valued the discussions and format, though some suggested clearer task instructions. The third pilot was optimized into a 4-hour session for better integration into teaching schedules. Across all pilots, feedback confirmed improved understanding of green and transversal skills, strong engagement, and readiness to apply the

methods in educational settings.

## 8.5 Pilots in Portugal (VET)

These workshops were organised and facilitated by EWF in response to spontaneous requests from organisations that recognized the need to promote green principles and sustainability among their trainers. This highlights the growing awareness and commitment within the VET community to embed sustainability into educational practices.

## 8.6 Pilots in Spain (VET)

The VET pilot workshops were conducted by CETMAR and aimed to promote green skills and the integration of the SDGs into education and professional practice. The first two VET pilots were held in Marín at the A Aixola training center as 4-hour sessions. The first pilot received strong feedback with participants appreciating the balance between theory and practical activities and expressing a desire for more hands-on learning. The second pilot, despite receiving lower ratings as participants felt the content needed more practical relevance and structure, some of the participants expressed their interest in additional sessions. The third VET pilot was delivered as a blended learning experience across three sessions (one in-person in Ourense and two online). The Participants appreciated the interactive format and asked for additional time to engage with didactic tools and debates. The majority felt the content length was appropriate, though some again requested a more practical approach and more direct classroom applications.

## 8.7 Industrial pilots

Industrial pilot workshops were conducted in Spain, Denmark, Cyprus, and the Czech Republic to promote the integration of green skills, sustainability principles, and the SDGs within diverse professional and industrial settings. In Spain, the maritime industry pilot was delivered over three sessions (two in-person in Ferrol and one online), involving 11 participants. Using a mix of theory, gamification (Go Goals game), and group debates, the training addressed sustainability, circular economy, ecological footprint, and workplace applications of the SDGs. The activity generated 51 proposed actions for daily operations. In Denmark, a 4-hour workshop was held at the House of Industry with 15 participants from various companies. The session focused on critical thinking, systems thinking, and problem framing, using a groupwork-based approach.

In Cyprus, a workshop targeting energy sector professionals introduced sustainability, circular economy, PV system simulation (via PVsyst), and heat pump technologies. It emphasized practical application through demonstrations, discussions, and case studies. In the Czech Republic, the pilot took place at the Business Centre of VSB (Technical University in Ostrava). It engaged industry stakeholders from automotive and battery sectors, including companies like Hilti, Esgrovia, and BM Group. The session included three lectures: Green transition and emerging job roles, Digital Battery Passport (DPP), and Carbon footprint vs. financial calculation. The pilot emphasized the need for green skills training tailored to industry needs, and sparked in-depth discussions on workforce diversity, job obsolescence, retraining of older employees, and ESG compliance.

Across all countries, the industrial pilots effectively raised awareness, promoted systems thinking, and empowered professionals to apply green skills within their respective sectors. Participants appreciated the real-world relevance, interactive methods, and practical tools offered, while feedback highlighted the importance of balancing theory with hands-on components and tailoring approaches to business needs and workforce diversity.

## 8.8 Challenges and successes of pilots

These pilots offered valuable insights into the effectiveness, applicability, and areas for improvement of the Green Training Toolkit. The following section outlines the key successes achieved and challenges encountered during the implementation phase.

### 8.8.1 Successes

1. **High levels of engagement and participant satisfaction:** Feedback from participants across all pilots consistently indicated high satisfaction with the overall quality, content, and structure of the workshops. Average ratings ranged from 4.2 to 5 out of 5, particularly highlighting clarity, interactivity, and relevance of the materials. Participants appreciated the workshops' alignment with real-world sustainability challenges.
2. **Successful integration of green and transversal skills:** The pilots effectively introduced participants to essential green skills as well as transversal competencies such as critical thinking, systems thinking, and problem framing. These skills were widely acknowledged as valuable and applicable in both educational and workplace environments.
3. **Use of practical tools and innovative learning methods:** The workshops utilized a range of practice-based learning methods including carbon footprint calculators, PVsyst simulations, group exercises, debates, and gamified activities like the Go Goals game. These tools enhanced participants' understanding of sustainability and supported experiential learning.
4. **Multinational and cross-sector collaboration:** The Train-the-Trainers event and subsequent pilot activities facilitated knowledge exchange among educators, trainers, and professionals from various sectors ranging from green mobility, additive manufacturing, renewable energy, maritime, and automotive industries. This cross-sectoral approach supported the wider dissemination and contextual adaptation of green skills.
5. **Readiness to apply learning and promote further use:** A significant proportion of participants expressed their intention to implement the knowledge, tools, and methods in their own teaching or professional environments. This readiness indicates the potential for long-term, multiplier effects and systemic change.

### 8.8.2 Challenges

1. **Demand for more practical, hands-on activities:** A common theme across pilot feedback was the need for increased practical engagement. While the inclusion of simulations, tools, and games was well received, many participants recommended dedicating more time to experiential exercises and practical applications.
2. **Balancing theoretical and practical content:** In some cases, participants noted an imbalance between theoretical content and practical components. Additionally, clearer task instructions were requested, especially by students and less experienced participants during group exercises.
3. **Variation in pre-existing knowledge:** The level of familiarity with key concepts such as critical thinking, systems thinking, and sustainability varied among participants, particularly in industrial pilots. This required facilitators to adapt content on the spot, suggesting the need for differentiated learning paths or pre-session materials in future iterations.
4. **Challenges in participation and group dynamics:** Some pilots faced low initial attendance (e.g., Cyprus), requiring repetition of sessions. Smaller group sizes limited the diversity of perspectives and reduced opportunities for dynamic peer learning and discussion.
5. **Sector-specific needs and expectations:** The Czech Republic's industrial pilot revealed the importance of tailoring green skills training to sector-specific skills and knowledge. Participants emphasized that training should be closely aligned with company needs, sector-specific roles, and workforce demographics including structured approaches for retraining older employees and integrating ESG strategies.

## 8.9 Long-term impact of the pilots

The GREEN project pilots conducted for both VET and industry applications highlighted a strong interest in interactive methodologies and digital tools for acquiring green skills. These pilots effectively provided educators and industry professionals with practical tools, methods, and mindsets necessary to incorporate sustainability and green skill competencies into their respective fields. The pilots reinforced the importance of transversal competencies like critical thinking, systems thinking, and problem framing, which are essential for addressing complex sustainability challenges. Across all pilots, participants gained actionable knowledge and confidence to apply SDG principles in real-world scenarios, whether through curriculum development, workplace strategies, or cross-sector collaboration. The integration of tools such as carbon footprint calculators, PV simulation software, and SDG gamification methods support continuous learning and hands-on engagement, which is key for lasting behavior change and innovation.

These interventions also laid the groundwork for systemic change by fostering a network of trainers that will equip the current and future workforce with the necessary skills to tackle sustainability issues. The high levels of participant satisfaction and their readiness to implement what they learned suggest that these pilots can have a multiplier effect, with educators adapting the materials into future training and companies embedding sustainable practices into their operations. The pilots helped raise awareness of the evolving demands of the green transition and underscored the need for targeted upskilling, inclusion of older workers, and tailored approaches for different sectors. As these practices are further shared and scaled, the pilots are likely to contribute to a more resilient, environmentally conscious workforce equipped to support the goals of the European Green Deal.