



Vocational Education and Training and the Green Transition

A Compendium of inspiring practices

2024 edition

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Contact: Tim Van Rie

E-mail: EMPL-2025-WG-VET@ec.europa.eu

European Commission

B-1049 Brussels

Vocational Education and Training and the Green Transition

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FOREWORD

With the European Green Deal, we are harnessing the power of renewable energy and phasing out harmful fossil fuels. We are creating new quality jobs, more sustainable goods and services, whilst polluting less, through better use of resources.

The fact is that this is a marathon, not a sprint. Recent extreme weather events are a strong reminder that the environment can be fragile and we must nurture it. An ambitious and successful green transition is a prerequisite for our future prosperity and social cohesion. European leadership in climate action means stronger industries with quality jobs. In particular, overcoming barriers to women's participation in the clean technology sector brings benefits to workers, employers and the environment. A strong EU net-zero industry will secure affordable energy, for both companies and households.

We can only meet these ambitious goals if workers have the skills sets to make this happen. The European Year of Skills has put this topic front and centre with a whole-of-government approach. It also brought together employers and companies, who are looking for talented people to join their ranks; workers, young people and job seekers who are looking for new opportunities, to make a difference; and education and training providers who develop talents and help learners to thrive in the labour market and their lives.

As a key deliverable of the European Year of Skills, the Commission put forward an Action Plan on tackling labour and skills shortages in March 2024. It builds on the many policy and funding measures already in place at EU level, the 2030 employment and skills targets endorsed at the Porto Social Summit, and the €65 billion across EU funds available to invest in skills. It is addressing the issue in a holistic manner that includes re- and upskilling, but also improving working conditions and fair intra-EU mobility of workers and learners.

High-quality vocational education and training (VET) is key to this agenda. It helps address shortages in technical occupations that are needed for the green transition. VET provides learners with the skills needed on today's and tomorrow's labour market, and gives good opportunities to gain new skills throughout their careers. Excellent VET contributes to making the EU more sustainable, more innovative, more competitive, socially fair and resilient.

This new edition of the Compendium of the Working Group VET and the Green Transition shows how VET actors across Europe are rising to the call of the green transition, through innovative solutions, at EU, national or local level. It highlights the willingness among stakeholders to share experiences and learn from each other.

I would like to thank everyone who has contributed to this publication. And I would encourage readers to make the most of these ideas and continue their exchanges. In doing so, you can make decisive contribution to the green transition, whilst promoting excellence in VET.





1. INTRODUCTION

‘There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all.’¹

In June 2023, the Working Group on VET and the Green Transition published its first Compendium of inspiring practices². Since then, it has become even clearer that there must be no let-up in our attempts to combat climate change, to achieve more economic growth with fewer emissions, and to ensure a green transition that is fair for all.

The period from February 2023 to January 2024 was the **hottest 12-months ever recorded**. For the first time, the global mean temperature exceeded 1.5°C above the pre-industrial reference period³. Europe is the fastest-warming continent, heating at twice the global rate⁴. The Summer of 2023 saw extreme weather events, including the largest wildfire and the highest number of days with extreme heat stress on record in the EU⁵.

The largest economies in the world continue to invest heavily in green innovation, as part of a **global clean technology race**. To compete and thrive, the EU’s net zero technology industry needs a supportive environment, including a skilled workforce⁶. Under the European Green Deal, the EU has taken measures and provided funding (⁷) to modernise our economies, reduce greenhouse gas emissions and make more efficient use of resources across sectors and industrial ecosystems⁸.

The green transition creates new opportunities on the labour market, but also puts new demands on the EU’s working age population. Addressing labour and skills shortages is key⁹, not just to promote a more sustainable economy, but also to foster **a transition that is fair for all**¹⁰. The European Year of Skills has promoted a mindset of reskilling and upskilling, helping people to get the right skills for quality jobs¹¹.

As the first edition of this Compendium demonstrated, **Vocational Education and Training (VET)**

1 [Intergovernmental Panel on Climate Change, 2023: Summary for Policymakers.](#)

2 [Vocational education and training and the green transition. A compendium of inspiring practices. June 2023.](#)

3 *All United Nations Framework Convention on Climate Change parties to the Paris Agreement of 2015 agreed to limit the global temperature increase from the industrial revolution to 2100 to 2°C while pursuing efforts to limit the increase even further to 1.5°C.*

4 [European Environment Agency \(2024\), European Climate Risk Assessment.](#)

5 [Copernicus Climate Change Service \(2024\) European State of the Climate, Summary 2023.](#)

6 *Proposal for a Net Zero Industry Act [link to be updated once adopted].*

7 *Several of the inspiring practices mentioned in this Compendium have received EU funding, under the European Social Fund, Erasmus+, the Recovery and Resilience Fund and other instruments. This is mentioned in the text, with additional information available in the relevant fiches.*

8 [Achievements of the von der Leyen Commission on the European Green Deal, April 2024.](#)

9 [Action Plan to Address Labour and Skills Shortages, in the context of the European Year of Skills.](#)

10 [Securing our future Europe’s 2040 climate target and path to climate neutrality by 2050 building a sustainable, just and prosperous society’. COM/2024/63 final](#)

11 [Decision of the European Parliament and of the Council of 10 May 2023 on a European Year of Skills.](#)

has a vital part to play in the green transition. Standing at the interface of education and work, it is uniquely positioned to equip people with the skills they need to help mitigate and adapt to climate change. Like the 2023 edition, this new Compendium builds on exchanges in the Working Group on VET and the Green Transition (see box).

The Working Group on Vocational Education and Training and the Green Transition

Under the coordination of the European Commission, the Working Group on Vocational Education and Training and the Green Transition was established in December 2021 with a mandate until December 2025.

The Working Group aims to enable technical exchanges and contributions to help countries implement the principles and objectives of the Council Recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience¹²; and the Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies¹³, with particular reference to the green transition. It brings together delegates from EU Member States, candidate countries, EFTA countries, EU agencies, and European social partners, VET provider associations and civil society organisations.

As part of a range of mutually beneficial exchanges, the Group shares good practices on how to adapt VET to the needs of the green transition, and this Compendium is one of its major outputs, intended to inspire others to action.

This second edition of the Compendium builds on the first by providing a new set of inspiring practices and new insights into developments taking place in VET across Europe. As well as elaborating further on some of the themes in the previous edition, it also identifies new themes, reflecting the additional inspiring practices brought forward by the Working Group members. It thus complements the first edition and reflects the ever-evolving way in which VET is deepening its response to the crises in our environment. In doing so, it helps point the way forward to the crucial next steps for VET.

How the Compendium is structured

- The Compendium provides an **analysis** of the inspiring practices provided by members of the Working Group on VET and the Green Transition. It highlights some overall lessons to emerge from the practices and then focuses in more detail on a selection of topics to show the directions in which VET is developing. The practices are categorised according to their main orientation under headings that mainly reflect the commonly recognised building blocks of VET.

¹² [Council Recommendation C417/01 of 24 November 2020.](#)

¹³ [Osnabrück Declaration of 30 November 2020.](#)

- Several **lighthouse practices** were selected by the Working Group from the very extensive and rich set of inspiring practices. This subset of projects aims to provide readers with a snapshot of the kind of initiatives that are covered in the compendium, across different themes and countries.
- Every practice depends for its success on a particular set of contextual factors and should therefore be considered in light of national, regional, and sectoral circumstances. For readers who wish to have additional information on individual practices, the document contains links to more **detailed fiches**.
- As an alternative entry point to the collection of inspiring practices, an **index** provides an overview by **countries** covered by the practices.

2. OVERALL LESSONS FROM THE 2024 EDITION OF THE COMPENDIUM

VET can make a unique contribution to the green transition.

Vocational Education and Training is well positioned to make a distinctive contribution to the green transition. Compared to other parts of education and training, VET's inherent connections to employment means that it can support the development of all types of skills required for the green transition. These include **transversal skills** like problem-solving and adopting ways to reduce pollution that are applicable across occupations.

VET also has a key role in developing the new **technical skills** that have a vital role to play in sectors at the forefront of greening like renewable energy (e.g., solar panel installation) and construction (e.g., retrofitting buildings to improve energy efficiency). Many of these occupations and industrial ecosystems are facing labour and skills shortages¹⁴. For young people who are concerned about climate change, a VET programme in these fields can be an attractive option.

VET has a role in fostering skills for the green transition at **different stages of (working) life**: from young people in initial education and training, to adults benefitting from up- and re-skilling for new green job opportunities, through continued or higher VET. VET can also create green **change agents** amongst employees in the workplace and reach into companies to upskill managers and owners so that they can make their businesses more sustainable.

From planning to action and deepening its response.

The first edition of the Compendium provided many examples of strategies, funding, and skills anticipation. In this second edition of the Compendium **implementation is more prevalent**, with countries and stakeholders now putting forward more examples on 'how to' achieve the goals they have set for greening their societies and economies. There are also more practices that bring the **just transition** aspect of greening to the fore, by addressing gender disparities or creating new opportunities for low-qualified and unemployed persons. The new edition also features practices that focus not just on upskilling teachers and trainers but on professionalising new roles for them, e.g., as sustainability coordinators. The strong connections that are being forged between the **green and digital** transitions feature prominently.

14 European Commission – *Employment and Social Developments in Europe Annual Review 2023*.

The green transition can be a pathway to VET excellence.

It is notable that many of the inspiring practices describe activities that are in line with the principles of **vocational excellence**. This means taking a learner-centred approach to VET, working in partnership with a wide group of stakeholders, becoming part of skills ecosystems and regional strategies and integrating research, innovation, and business activities. All these types of activities are evident in the inspiring practices, which show how VET can reach out into new areas related to greening where it can add value, as well as making improvements in teaching and learning. In such ways, the green transition in VET can be a **win-win**, promoting key skills for climate action, whilst increasing the attractiveness of VET.

3. KEY THEMES

This section examines the inspiring practices according to several themes:

- **Learning, teaching and training** considers core VET topics like how curricula, programmes and learning methods need to adjust to and anticipate the green transition, and the ways in which new relationships are emerging between teachers, trainers and learners.
- **Greening VET for the world of work** shows how skill needs in business are changing, the nature of the response in different sectors, how VET can be key to the development of green(er) enterprises and the important role of careers advice to smooth the transition from VET into greener employment opportunities.
- **Promoting synergies** shows how VET is ideally placed to forge important links to other agendas, notably the ways in which it can contribute to helping to ensure the green transition is a fair transition, building on and extending its existing practices in delivering learning to disadvantaged communities and tackling workplace issues around gender; and in connecting the green and digital transitions by ensuring digitalisation in the workplace and VET schools can support green goals.
- **Joining forces for VET excellence** highlights the important role that is being played by social partners in the green transition in VET from national level social dialogue mechanisms down to local level developments. It also shows how wider stakeholders in business and other domains can be brought into interventions such as specialised competence centres to become centres of excellence for the green transition.

3.1. LEARNING, TEACHING AND TRAINING

Learning, teaching and training are the core of VET and there are important ways in which it can be developed to support the green transition. This means not only tuning programmes and curricula to green skills needs but developing new ways of teaching and learning especially to support the development of transversal skills such as critical-thinking and problem-solving. This in turn requires shifts in teacher's and trainers' professional development to enable them to become facilitators of learning, reflecting the new relationships with learners required by greening, and indeed to become green change agents. Greening also means bringing in a wider circle of stakeholders to contribute their expertise to the learning process.



3.1.1. DEVELOPING GREENER VET CURRICULA AND PROGRAMMES

As highlighted in the 2023 edition of the Compendium, the process of greening in VET encompasses all types of programme: from IVET and apprenticeships at the point of labour market entry for young people to provision for adults in the form of CVET and upskilling and reskilling programmes, as well as implementing new curricula to support people outside mainstream provision. In line with these findings, the inspiring practices collated for this Compendium show that several countries are stepping up their efforts to **introduce and mainstream skills for the green transition** into their VET offer, as well as making targeted interventions for people at a disadvantaged in the labour market or the VET system (see the section on developing skills for a fair green transition.)

- In Lithuania, the project [Competencies for Green and Digital Transformation](#) focuses on updating vocational training programs to meet the rapidly changing needs of the labour market, particularly in the context of attracting new investors to the country. The project (with funding from the Recovery and Resilience Facility) aims to develop or update vocational training programs, incorporating competencies related to green technologies and innovations such as energy efficiency, circular economy, and digitalisation.
- As part of the strategy to modernise vocational and technical secondary education, Slovenia will develop [a national reference framework of key competences](#). The project (with funding under Next Generation EU) includes green competences, and a concept for integrating key competences into VET curricula. On this basis, vocational and professional education curricula will be renewed, with a focus on embedding competences for the digital and green transitions.
- During the 2023-24 academic year in Türkiye, efforts are underway to integrate the concept of [green transition into textbooks](#) across all grades from 1st to 12th. These textbooks serve as a systematic platform for disseminating information and raising awareness about green transition topics among students. Over the past two years, advances in digitalisation have further contributed to the green transformation of educational materials.



Lighthouse practice: The Global Climate Change and Environmental Problems Awareness Survey Report conducted in Türkiye serves as a tool in assessing high school students' awareness of critical environmental issues. Findings of the report revealed encouraging levels of awareness among students regarding topics such as energy resource efficiency and environmental protection. Additionally, the report also highlighted areas for improvement, particularly in students' willingness to actively engage in climate change solutions. To address the identified gaps, the report proposes several recommendations. These include fostering greater cooperation and involvement of both teachers and students in climate change-related activities, integrating sustainability and environmental science into school curricula, and organizing workshops and events to showcase successful projects and practices. Additionally, the report emphasizes the importance of collaboration with universities, local governments, and relevant sectors to further promote awareness and action on climate change.

- The module [Green Skills](#) developed in Latvia since 2012 (with funding from the Leonardo da Vinci programme), serves as a methodological framework for integrating sustainability principles into various levels of VET curricula. Initially focused on initial VET, it now extends to continued VET and addresses the emerging need for green skills in a rapidly evolving, environmentally conscious labour market.
- The German Project Agency for Vocational Education and Training for Sustainable Development (PA-BBNE) has developed [materials for implementing the national green competence standard in training occupations](#) (see Compendium 2023 edition for details of the national competence standard). These materials were produced for many occupations and considered all dimensions of sustainability relevant to vocational training. The project targeted teachers at vocational schools, vocational students, trainers, and trainees in companies, as well as, environmental educators, researchers in vocational education, pedagogues, and institutions of vocational education.

Several inspiring practices are targeting the skills of **apprentices**, or the development of work-based learning.

- The initiative in Lithuania to [promote vocational training in the form of apprenticeship](#) aims to facilitate practical skill acquisition in the labour market. The project (co-funded by the Recovery and Resilience Facility) simplifies procedures and provides financial support for overcoming common obstacles faced by companies in hosting apprentices, which also incentivises employer participation.



Lighthouse practice: In 2024, Greece is introducing a nation-wide apprenticeship class on green skills in the post-secondary year of initial VET, with the goal of making green transition part of apprenticeship curricula. The initiative (supported by the European Social Fund Plus) follows a comprehensive legal reform of VET and lifelong learning. This reform introduced a model according to which all “Training Guides” should be designed. Each speciality of the apprenticeship programmes should include a module covering both general knowledge and understanding of environmental values, as well as specific green skills that qualified workers of each speciality will need. Additionally, teachers and in-company trainers will be trained to help apprentices acquire environment-friendly skills.

3.1.2. PROMOTING NEW WAYS OF LEARNING

The green transition in VET involves not just a focus on technical skills for new business tasks in production (e.g. organic agriculture) and service delivery (e.g. eco-tourism) but also a set of transversal skills like critical thinking and problem solving which everyone will need if they are to adopt greener ways of working. Developing transversal skills in particular requires the adoption of teaching, training, and learning methods that might be new to many VET providers and teachers such as more experiential, learner-centred and inter-disciplinary methods such as project-based and peer learning methods. VET is well placed to develop such methods being already practically and experientially based around ‘learning by doing’. VET is also pre-disposed to embrace new settings for learning since it already involves both classroom and workplace components, such as outdoor learning that has a role in greening learning.

Several of the inspiring practices use **experiential learning approaches that draw on the natural resources available in our environment:**



Lighthouse practice: During the school year 2022 to 2023, Cyprus introduced outdoor, nature-based education and experiential learning in Secondary Technical and Vocational Education. This initiative involved teachers and students from various specialties such as ‘Fashion Design and Production’, ‘Agriculture’, ‘Architecture and Civil Engineering’, ‘Building and Construction Works Technician’ and ‘Furniture and Wooden Constructions Design’. Actions included building wooden houses for stray dogs, or performing fashion shows focused on sustainability and ecology, inspired by the birds of Cyprus. The main objective of the introduction of outdoor activities was to promote outdoor and nature-based education together with the traditional syllabus.

- The initiative [Buzzing for Biodiversity: Educating Malta’s Young Minds on the Importance of Bees and Insects](#) focuses on highlighting the importance and benefits of bees and other insects. By engaging students with hands-on experiences, such as interacting with live bees and sensory activities related to beekeeping tools, the project aims to establish a holistic understanding of nature and promote respect for all life forms, contributing to the promotion and greening of future generations of VET students.
- In Türkiye, the Ministry of National Education is developing initiatives to educate students about climate change and foster environmentally responsible behaviours. Central to this effort is the establishment of [Climate Workshops](#) aimed at raising awareness about climate change’s adverse effects on human life, encouraging problem-solving, and environmental consciousness through experiential learning. These workshops also serve as platforms for conducting research, engaging in project activities, and developing green skills among students across all types and levels of schools.

Several inspiring practices show how **competitions can empower and motivate learners through their use of project-based and problem-solving peer learning methods.**

- In Austria, the [Green Energy Solution Competition](#) brings together students and teachers from secondary and tertiary level VET for a week of peer learning. This competition (supported by Erasmus+) focuses on fostering the project-based learning skills by using a specific challenge and encouraging pupils to present their solutions.
- In Serbia, a two-day online event [Challenge Special](#) enables students to work in teams to devise solutions to green challenges, under the guidance of teachers and mentors. Combining training and competition, the event includes team-building activities, motivational lectures, mentorship sessions, and presentations to a jury.

3.1.3. ENABLING TEACHERS AND TRAINERS

Implementing the types of teaching and learning methods highlighted above requires teachers and trainers¹⁵ to be equipped with the knowledge, skills, and values to do so. In particular, the role of teachers and trainers seems to be evolving from being the provider of specialist subject knowledge to the facilitator of a student’s learning – a new type of more learner-centred relationship. The 2023 edition of the Compendium shone a light on how initial and continuing professional development for teachers and trainers is increasingly being enhanced with green elements and this aspect also features amongst the practices in this edition, showing how teacher training can be built into green initiatives. The current examples also go further, showing how teachers can become agents of change in their VET institutions and how the green transition benefits from tapping into expertise outside the institution to broaden the learning experiences that can be offered to students.

¹⁵ This Compendium defines ‘teachers and trainers’ in a broad way to include all those people involved in the different types of teaching, training and instruction that take place within VET, including tutors, mentors, instructors, trainers in schools, colleges, or workplaces.

The inspiring practices in the 2024 edition show how **teacher training can be built into green transition projects and initiatives** in VET in the form of materials, workshops, and other learning opportunities.

- The [Climate Change Teachers' Academy \(CLIMADEMY\)](#) develops a European platform and community of practice for teachers to learn about and exchange on the green transition. The collaborative project (with Erasmus+ funding) involves partners from Finland, Germany, Greece, and Italy. It aims to create a European network to offer a comprehensive program where teachers will learn by using an efficient methodology how to educate the next generation of European citizens on climate change issues.
- In Germany, the guide [Designing Learning Processes in Vocational Training with Sustainability in Mind](#), offers didactic material for in-company trainers and vocational teachers for professions in the food trade and industry. With this practical guide, trainers of food-producing professions get tasks along guiding principle of sustainable development, professional practice, training regulations, competence goals, learning processes, and companies as a sustainable place of learning to develop their own starting point and approach for learning and training units.



Additionally, The Belgium–Flanders [VR in the pipeline project](#) includes a course to teach teachers and trainers how to use AR and VR in the classroom; and The [Climate Justice initiative](#) in the Republic of Ireland developed teaching and learning resources for teaching staff, including the Climate Justice Education in Practice Tutor Handbook. (see below)

Several inspiring practices **bring a wider circle of stakeholders into the learning process**. The green transition can be a technical subject and teachers may feel they lack some of the expertise they need to best support their learners. This can be addressed by bringing in expertise from outside VET. Bringing in experts also helps to demonstrate that learning should not be confined to the classroom or school but can be a lifelong process, in line with the goals of the green agenda. It can also build bridges to other stakeholders that can support other dimensions of the green transition in VET.

- In the Cantabria region of Spain, the sustainability activities of [Santa Clara High School](#) include organising training for students and teachers in: responsible consumption delivered by Fondo Cantabria Cooperera (a public institution); mental health, delivered by a psychiatrist of the Cantabrian Health Service (public institution); and a round table on Social and Sustainable Entrepreneurship with the support of CEP (public education institution).

- In Luxembourg, a [Sustainability Management Series](#) aims to show managers how to take concrete steps to apply sustainability principles in their companies. Each module of the series is introduced by a lead speaker who will present the theme and its challenges and is then joined by a second presenter who animates a case study. The plurality of the speakers allows participants to acquire theoretical knowledge but also to benefit from real-life experiences.

Finally, **teachers have the potential to be change agents for the green transition.** Within VET institutions, the green agenda is often taken forward initially by (perhaps self-taught) enthusiastic individual teachers. Over time, institutions often find it helpful to formalise roles and responsibilities around sustainability by creating the post of sustainability coordinator. At tertiary level, VET institutions might create Director of Sustainability positions to ensure the green transition is given the importance required at board of management level. The inspiring practices show how programmes and qualifications are being developed to support teachers to progress into such roles and hence to support the **professionalisation of sustainability management within VET.**

- In the Brandenburg Land of Germany, the Hochschule für nachhaltige Entwicklung in Eberswalde has developed a [Master's 'Change Agent'](#) qualification which enables participants to build their expertise in sustainability. The initiatives aim to equip participants with specialist knowledge and skills to promote sustainability within educational contexts and beyond, addressing ecological, social, and economic dimensions of sustainability while fostering transformative action.



Lighthouse practice: In Austria, the university course [Sustainability Coordinator at Schools](#) is a scientifically based and practice-oriented continuing education program for teachers at upper secondary VET level. Green Tech Academy Austria (GRETA) and the University College of Teacher Education Styria have jointly developed this course, in the context of GREENOVET (supported by Erasmus+). As well as teaching participants the fundamentals of the green transition, the programme develops skills in planning and implementing concrete sustainability activities. As such, the programme is an opportunity for teachers who want to upgrade and formalise their skills, so that they can take on management responsibilities for sustainability in everyday school life.

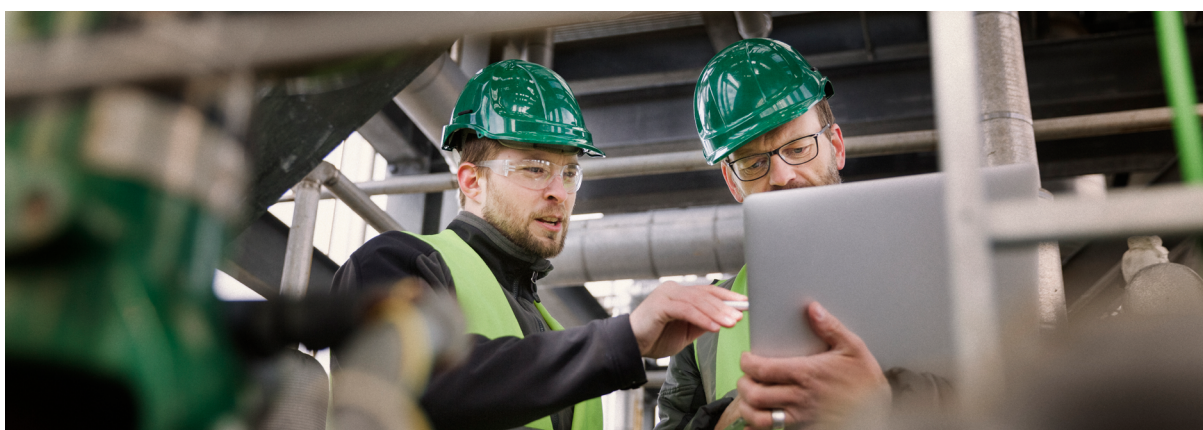
3.2. GREENING VET FOR THE WORLD OF WORK

The green transition is ushering in widespread changes in the workplace, most prominently amongst industries in the vanguard of greening such as renewable energy, but also in other businesses since principles such as 'reduce, reuse and recycle' stand to benefit all companies. This section considers examples of how skill needs are identified as a basis for programme or qualification development and the ways in which changes in VET are taking root in different sectors. The section also delves into the ways VET can support green entrepreneurship and directly help businesses to make their processes more sustainable. Finally, it looks at the vital link between VET and employment that is provided by careers services and how these are being developed to support the green transition.

3.2.1. IDENTIFYING SKILLS NEEDS

Understanding in depth the skill needs required by the green transition is a prerequisite for developing an effective response in VET. As indicated in the 2023 edition of the Compendium, the general mechanisms that are in place for identifying and anticipating skills needs at national and/or regional levels in Europe are frequently used for developing understandings of skills for the green transition too. At the same time, as the inspiring practices gathered in 2024 highlight, specific activities targeted at particular sectors or occupations/professions remain important.

- The Flemish Department for Education developed a project aimed at addressing the increasing demand for skilled workers in green technology. The initiative involves [research into training needs](#) of the sector, as well as development of training programmes and a didactic laboratory. The green technology sector needs innovative, practice-oriented training modules which can be offered flexibly as workplace learning, in face-to-face education or via distance modules and digital tutorials. With a target of adult learners across educational levels, this project fits in the ‘Edusprong’ initiative, a Flemish Government intervention within the ‘Flemish Resilient’ recovery plan that aims to boost adult education.
- The [Qualification screening in the Skilled Crafts for Climate Protection](#) (“Qualifikationsabgleich im Klima-Handwerk”) initiative in Germany aims to identify qualification gaps in skilled crafts professions related to green transition goals. The project analyses the capacity of VET qualifications to generate the necessary competences for addressing climate change. Recognising the crucial role of construction and installation professions in achieving net-zero targets, the initiative analysed 111 professional actions across 26 crafts professions, spanning five clusters including buildings, energy generation, and agriculture. The analysis revealed that existing VET curricula cover most identified actions, particularly in the buildings cluster, showcasing the adaptability of the German VET system to fast-paced market developments.



3.2.2. GREENING SECTORS AND VALUE CHAINS

The green transition plays out in different ways across sectors, with some being radically affected and others less so. But it is important that, from the skills and VET perspective, all sectors consider the green transition since awareness of, for example, the need to ‘reduce, reuse, recycle’ (the 3Rs) can impact every occupation, as can transversal skills like critical-thinking and problem-solving. The inspiring practices illustrate well the different ways in which sectors are responding to the green transition as well as highlighting the need to think not just about individual sectors but the interconnections between them.

Some sectors owe their raison d’être to the green transition and require the full range of VET infrastructure and provision to be created, from the design of new programmes and qualifications through to teaching and learning materials and teacher training. **Renewable energy** is a case in point.



Lighthouse practice: The introduction of the Photovoltaic Systems Electrician qualification in Romania's IVET system addresses the growing demand for skilled labour in the photovoltaic industry. This qualification equips electricians with specialised skills required for installing and maintaining photovoltaic systems, such as handling support structures and electrical connections. Stakeholders including the National Centre for the Development of Technical and Vocational Education (CNDIPT), TVET teachers, and economic operators have jointly defined learning outcomes and assessment standards. The initiative is supported by the Recovery and Resilience Facility (RRF) and REPowerEU, which prioritise investments in renewable energy and workforce upskilling.

- In Germany, the AusbildungPlus initiative integrates qualifications within the 3 to 3.5 years apprenticeship training on a federal and Länder level. In recent years, various programmes have emerged in the energy and renewable energy sectors, either comprehensively or as part of specific occupations. These initiatives span IVET and CVET, and provide targeted training for apprentices and trainees, or for staff in the logistics sector.
- In Flanders, Belgium, three new training profiles have been developed to address the changing needs of the green transition and industry demands. These include the 'Technician in Renewable Energy Technologies', 'Refrigeration Technician', and 'Processor of Waste Electrical and Electronic Equipment'. The reasoning behind the development of these new training profiles is the need to meet the growing demand of skilled workers in their corresponding sectors.
- The Alliance for Batteries Technology, Training and Skills (ALBATTs) project is designing a blueprint for future competences and training schemes in the battery and electromobility sector. As well as identifying skill needs around battery production, the project (supported by Erasmus+) maps education and training, develops new curricula, and learning materials and pilots training courses.
- The GreenSkills4H2 project is part of the European Hydrogen Skills Alliance. The project (supported by Erasmus+) brings together stakeholders from research, higher education, national and regional public bodies, and large companies to identify skill needs, develop a skills strategy and design and pilot training programmes for hydrogen, which is at the heart of Europe's decarbonisation strategy.

Other sectors and industrial ecosystems, like those related to **food and hospitality** are adapting to new green products and require the development and implementation of appropriate training. It is important to consider not just how VET for agricultural production might be greened but how sectors all the way down the value chain to the sale and consumption of foodstuffs in shops and restaurants should consider the environment: with each person in the EU generating on average 131kg of food waste per year¹⁶, reducing food waste is an important green issue and its reduction would have effects throughout the food chain.

- In Romania, the Education for Sustainable Cooking project integrates principles of sustainable cooking and gastronomy into VET curricula. It aims to reduce food waste and promote responsible cooking and consumption among future professionals in the gastronomy industry. The project develops zero waste and circular kitchens in schools, restaurants, catering, and events companies with a new element of the curriculum called Sustainable Cooking.

¹⁶ Eurostat (2023) *Food waste per capita in the EU remained stable in 2021*.

- Denmark is developing a [national green culinary education standard](#). The trade committee for culinary education, in collaboration with leading experts in natural sciences, restaurants, and vocational teachers, will develop new basic preparation methods and descriptions of culinary characteristics applicable to plant-based proteins/raw materials.
- The [FoodTuristic](#) project adds a green technology curriculum in European culinary and hospitality schools, involving five vocational and higher education institutions from across Europe (Ireland, France, Malta and Slovenia). Focusing on food waste reduction and the circular economy, this Erasmus+ project also seeks to localise food production.
- In the hospitality sector, the [EcoSME](#) project promotes sustainability skills for SMEs by providing flexible, open source, multi-lingual training tools. Operating in Slovenia, with support from Erasmus+, it involves partners from Ireland, France, Spain, and Portugal.
- The [ECO Tag](#) consortium (spanning Lithuania, Spain, Estonia, Italy, and Switzerland) develops a seal for educational centres with training in cooking and gastronomy. The project (with funding from Erasmus+) combines other initiatives such as sustainable certifications in the field of catering, or environmental seals in training centres.

Another sector that has a key role in the green transition, and traditionally a large role for VET in developing relevant skills, is **construction and the built environment**. The inspiring practices illustrate well the types of greening taking place in this sector.



Lighthouse practice: Since 2020, Ireland has developed its [National Network of Nearly Zero Energy Buildings \(NZEB\) and Retrofit Centres of Excellence](#). Six Centres of Excellence are now operational. They ensure a coordinated approach to support the national expansion of retrofit and Nearly Zero Energy Building courses for new and existing construction workers. These courses range from introductory modules to specialised skills training; starter programmes, conversion courses, upskilling and post-apprenticeship courses. This initiative goes in line with the Irish national policy in climate action and housing, meeting the growing demand for training in NZEB and retrofitting skills.

- In Greece, through the [Remote training and certification of knowledge and skills in energy saving in the construction sector](#) project (IME GSEVEE), new, short-duration CVET courses on energy saving have been designed for employees in trades like plumbing, aluminium construction, refrigeration and glass installation. The project received funding from the Competitiveness, Entrepreneurship & Innovation” (EPAnEK) Operational Programme of the EU National Strategic Reference Framework (NSRF) for the period 2014-2020.
- The apprenticeship program for [‘Climate Gardener’](#) in Austria, focuses on climate change adaptation measures, particularly in terms of successful implementation of green and blue infrastructures in urban areas. The program aims to update relevant job profiles to meet changing skills demands driven by new technologies and urban housing requirements.

As well as meeting the needs of sectors, the inspiring practices also highlight the benefits that **holistic approaches** can bring which reach out beyond traditional boundaries.

- In Germany, the programme to develop [climate- and resource-friendly action in construction](#) seeks to show participants the interface between their trade and ‘neighbouring’ trades so that they gain: an understanding of the effects of their own work on the work of other trades; an overarching understanding of the quality of energy-efficient refurbishment and new construction; and an understanding of the “house as a system”. The project received funding from the European Social Fund.

- The Austrian Public Employment Services' (PES) ['New Skills Workshops 2023'](#) examines developments surrounding the green transition in the construction and ancillary construction trades. On this basis, the workshop identifies the changes needed for skills based especially on insights of experts, which help address and solve the problems of skills shortage and mismatch on the labour market. Running from December 2022 to November 2023, this project involved representatives of companies that are early adapters of new technologies.

Such holistic approaches reflect an important principle of sustainability: to understand the world in terms of interconnected systems. This implies looking beyond traditional sectors to identify **value chains**, e.g. recognising the entire food sector rather than just agriculture; or seeing the entire chain related to electric vehicles from manufacturing to servicing and installation of charging points.

Finally, it should be mentioned that sectoral approaches can also be holistic in the sense that VET schools can work with local stakeholders to **demonstrate the benefits of the green transition within their communities**.

- In Austria, [the Green School Energy project](#) used a VET school to demonstrate how improvements within the building can reduce the heat island effect for wider community benefits. The 4 year-long project aimed to improve indoor climate and the quality of outdoor living through an innovative combination of greening and irrigation measures with various photovoltaic (PV) elements. The project combined basic research and practical implementation, was led by a collaboration between students, teachers, public institutions, and private companies, and targeted educational levels ranging from secondary to higher education.

3.2.3. SUPPORTING COMPANIES AND WORKERS TO GO GREEN

Aside from tuning training for future and existing employees, the inspiring practices reveal other ways in which VET can develop and implement interventions for companies in terms of supporting greater sustainability in production and service delivery. Indeed, they reveal a wide range of interventions from supporting the development of green enterprises to working with existing companies to introduce more sustainable business practices both broadly and through interventions targeted at, for example, reducing energy consumption.

Regarding **green enterprise development**, projects typically meld together training with a range of other activities to support green innovation and business start-up processes, such as developing and providing access to ethical funding streams, carbon footprint calculators and other eco-audit tools and business networking opportunities. The overarching goal is to provide participants with an integrated set of activities which they can draw on to meet their needs.

- The [Women's Entrepreneurship Laboratory](#) in the Spanish Canary Islands supports business projects that incorporate concepts such as the circular economy and eco-design to support women's entrepreneurship. The project (supported by Erasmus+) has added value to professional training through the creation of relevant training tools for teachers, and delivers a range of workshops for (new) entrepreneurs on topics such as e-commerce, eco-crowdfunding, and carbon footprint calculation. It has provided the educational community with a 'Business Up' platform for the development of sustainable business projects led by women.

VET can also help **existing companies** more broadly to improve the sustainability of their business operations.

- The [SIMPLE project](#) (in Italy, Slovenia, Spain, Greece, and Bulgaria, supported by Erasmus+) aims to identify sustainable paths, business models and impact measurement methodologies to help SMEs by developing training materials for companies around a social impact measurement plan.
- In Luxembourg company directors and managers can take part in a training programme to understand the issues and challenges of sustainability as part of [Corporate Environmental and Social Responsibility](#) strategies and actions, and to identify concrete areas for improvement to be integrated into their companies.
- Entrepreneurs, company directors and managers in Luxembourg can also access training on sustainability management in which they learn the [principles of sustainability](#) and how they can help to identify concrete development opportunities.
- In Austria, [Green Transformation Cards](#) have been developed to provide an overview of the topics related to climate neutrality and possible counter-measures that can be used in workshop settings in VET schools by teachers and also in companies. The cards help to develop a common understanding of the issues around climate change and a net zero carbon future within companies and, from there, to identify the actions on the pathway to climate neutrality. The tool was developed in the context of the GREENOVET Centre of Vocational Excellence (supported by Erasmus+).
- The Greek [Programmes for upskilling and retraining of 150,000 workers in all sectors of the economy with emphasis in digital and green skills](#) were launched in 2022 and had the purpose of upgrading the knowledge, competences, and skills of private sector workers. This is done according to the skills required from new workplace trends and the improvement of the productivity of the employees, as well as through the maintenance of job positions. The project is co-funded by the Recovery and Resilience Facility.

Certain measures focus specifically on SMEs, because frequently, whilst willing to engage with the green agenda, they lack the know-how, time, and resources to do so. One specific way in which VET can support businesses is to help them to understand the benefits of energy management (for themselves in terms of long-term cost savings and in terms of addressing climate change) and then implementing change programmes to embrace non-carbon energy sources.

- In Luxembourg [energy management training](#) is offered to people working in small companies and public administrations to equip them with knowledge on how to make their company more energy efficient so they can take concrete, measurable and immediately achievable steps.

3.2.4. PROMOTING AWARENESS OF GREEN CAREER OPTIONS

Linking people in VET to future employment related to the green transition is a vital aspect of VET greening and this comes through strongly in the inspiring practices collected for this Compendium. Inspiring practices illustrate a mix of activities including online portals and more traditional promotion activities. They target learners right across the age spectrum from young people in initial VET and apprenticeships to adults seeking upskilling and reskilling so that they can access new green jobs.

Many inspiring practices show how an employment awareness raising/promotion element can be **integrated into larger VET interventions.**

- In the Netherlands and Belgium-Flanders, the [Energy Education project](#) Energie(k) Onderwijs includes a recruitment and awareness campaign aimed at learners in primary and secondary education and adults. By adapting existing courses, developing new pathways, in-service training, and fostering cross-border cooperation, the project (supported by InterReg) aims to ensure a steady supply of skilled workers equipped to drive the energy transition forward.
- In Cyprus, the panel discussion [Blue Growth: A Challenge for the Environment](#) aimed to address the environmental challenges of coastal cities. The panel worked as a catalyst for motivating the awareness of young professionals regarding environmental issues and opportunities related to blue growth.

Other inspiring highlight how **green careers promotion can be the subject of dedicated interventions.**

- The trans-national [AppInternN](#) project has set up a network of career hubs across Greece, Italy, Spain, and Belgium (with the support of Erasmus+ funding). The hubs enable students and graduates to search for apprenticeships or jobs through relevant databases, and offer guidance and promote special events (seminars, webinars, information events, study visits, presentations, job fairs, etc.), to support their collaboration with employers and other labour market stakeholders, helping them to become familiar with sectoral issues.
- The German project [Make it green - The future is in your hands](#), aimed to integrate green sustainable aspects into different professions and enhance vocational orientation for youth. This project (with support from the European Social Fund) provided young people with experimental spaces to explore the greening of professions.
- In Austria, the [Fighters4Climate](#) initiative aims to raise awareness of green jobs and to inspire young people by revealing the professional fields that lie behind this term. Through its website, the initiative presents 13 of the most important green occupations, providing illustrative role model videos and links to further information on VET programmes. The initiative has also included media activities, poster campaigns, and a learning document on green jobs in conjunction with the research arm of the Austrian Economic Chamber and the Federation of Industry.
- The [Technology Leap](#) initiative in Sweden aims to broaden the interest in technology and for higher education in engineering by providing four-month remunerated internships for recent upper secondary graduates. The project is a response to the large need for technical skills and lack of young adults interested in engineering. In addition, a [Finance Scheme](#) aims at giving better opportunities for transition and skills development throughout working life for all workers. This initiative, coupled with the rapid expansion of the Higher Vocational Education scheme (see 2023 edition of the Compendium) and the introduction of HVE short courses, provides concurrent mechanisms to address the green and digital transitions in Sweden.

3.3. PROMOTING SYNERGIES

An important principle of the green transition is the forging of links to other agendas, reflecting the inter-connectedness of environmental and human systems. Two key aspects of this are explored in this section. First, consideration is given to how VET can support a green transition that is fair. It is important that the benefits of the European Green Deal are widely distributed across society and VET's traditional position in education systems makes it ideally placed to support this goal since its learner base often includes people with lower levels of educational attainment, it is often a tool in

second chance education and it has a key role in upskilling and reskilling for unemployed people. Secondly, the section turns to examine how links can be forged with the digital transition: as the inspiring practices show, digitalisation of VET has great potential to support the green transition.

3.3.1. DEVELOPING SKILLS FOR A FAIR GREEN TRANSITION

It is vital that the green transition does not leave anyone behind¹⁷. Through the European Green Deal, jobs will be created around new and evolving industries, with **job opportunities for different profiles**: from research and development to the implementation of more sustainable processes, and installation and maintenance of green technologies¹⁸. However, access to education and training remains uneven¹⁹: adults with lower levels of educational attainment are less likely to take part in education and training, as are those outside the labour force, older adults and those living in rural areas. In addition, it is important that people are empowered to take an active role in tackling environmental issues in their communities by developing the broader sustainability competences needed.

In many ways VET is uniquely positioned to support skills development for a just transition because its **learner base is very broad**. Along with up- and reskilling of workers, it includes tackling basic skills needs and providing interventions to address early school leaving. VET can also support the empowerment of women in key segments of the labour market and business creation.

Developing skills for a just transition requires multi-faceted responses which are well illustrated by the inspiring practices. For people with **low levels of educational attainment or achievement**, developing 'climate literacy', can help to develop critical knowledge and skills on the causes of climate change and the solutions proposed by a just transition.

- In Malta, a [VET course in agribusiness](#) is being developed to better meet the needs of secondary school students with low levels of educational achievement. The project aims to improve student engagement and attitudes towards schooling, reduce absenteeism, open pathways for further education or employment, and provide certification opportunities in agribusiness.
- Ireland's [Climate Justice Education](#) initiative targets adults with low levels of educational attainment and especially with literacy difficulties, in disadvantaged communities. These are often marginalised from national and local dialogues on the climate crisis. Targeting adult education, lifelong learning and initial VET, this project offers a certified programme dealing with the climate crisis.

The green transition also opens up opportunities to improve the inclusion of people with **special educational needs**.

- At [vocational special education schools](#) in Türkiye, a project has been implemented to improve students' awareness of the need to recycle waste products. It simultaneously enhances wider awareness of the contribution people with special needs can make to society.

Several initiatives specifically target **unemployed persons**, to help them gain new skills and seize new labour market opportunities.

¹⁷ [Council Recommendation on ensuring a fair transition towards climate neutrality of June 2022.](#)

¹⁸ [Cedefop \(2023\) Skills in Transition – The way to 2035.](#)

¹⁹ [European Commission \(2023\) Education and Training Monitor 2023 Volume Comparative report.](#)

- Greece launched the [Upskilling and retraining programmes for 120,000 unemployed in high demand sectors of the economy with emphasis in digital and green skills](#). These programmes (co-funded by the Recovery and Resilience Facility) were implemented in the national context of upgrading knowledge, abilities, and skills of the human resources (upskilling), as well as the reskilling of the individuals in digital and green skills.
- In a similar vein, Greece introduced an [Integrated Intervention of Training, Certification and Employment of 15,000 unemployed aged 25-45](#), with the purpose of upgrading the skills and/or retaining the unemployed in that specific age range. This national-level initiative (with funding from the Recovery and Resilience Facility) focuses on the acquisition of skills in areas of high demand, such as green and digital, and includes training and certification of the acquired of knowledge.
- In Portugal, the [Green Skills and Jobs Programme](#) aims at professional training and requalification of workers whose employers were directly or indirectly affected by the increase in energy costs, and of unemployed people. To prevent unemployment, the programme promotes the maintenance of jobs for some and the stimulus to the creation of new jobs, for others, whilst accelerating the transition and energy efficiency.

It is important that greening jobs and enterprises also addresses the large gender disparities that exist in many labour markets, notably to tackle the problem of male dominance in certain occupations and sectors which underpins wider economic (wage) and social inequalities. The creation of new occupations, e.g., in renewable energy, provides an opportunity to challenge occupational segregation, whilst new business creation and the green transition in industry can be used to provide new routes into entrepreneurship for women, countering male-dominated social norms which inhibit women's participation in enterprise development.



Lighthouse practice: In Spain's Canary Islands, a [Women's Entrepreneurship Laboratory](#) aims to promote and increase female self-employment, through the creation of innovative and sustainable business ideas, led by young women under 30 years of age and linked to the design, fashion and personal image sector. The Laboratory (with funding from Erasmus+) supports business projects linked to the environment, incorporating concepts such as the circular economy, eco-design, and technological innovation, whilst promoting the empowerment of women and creativity, promoting empathetic and assertive attitudes. As a result of this project, an African Women's Entrepreneurship Hub was created, which has given rise to new collaboration within the Sub-Saharan Africa Region.

3.3.2. LINKING UP WITH THE DIGITAL TRANSITION

With the green and digital transformations underway at the same time, there is both an imperative and an opportunity for VET to weave digitalisation into its response to the skill needs of the green transition. VET is in a distinctive position because of the increasing use of digital tools not just in schools but also in workplaces. Indeed, digitalisation of production and service delivery processes is currently a strong driver of digitalisation in VET.²⁰

The 2023 Compendium found digital and blended learning to be one of the most prominent areas of innovation (blended learning being embedded in many inspiring practices), with the potential to expand the range of learning opportunities and improve the effectiveness of learning about green topics. The current set of practices confirms this to be an on-going developmental strand with increasing

²⁰ [Innovation and digitalisation in vocational education and training. Eight insights for pioneering new approaches. A report of the ET 2020 Working Group on Vocational Education and Training \(VET\).](#)

prevalence of the latest technologies like Augmented Reality (AR), Virtual Reality (VR) and Artificial Intelligence (AI), and with digital tools being created to be used by learners and applied to environmental challenges. At the same time, the practices highlight the need to consider the potential negative effects of digitalisation since digital tools are not necessarily environmentally neutral.

The current set of inspiring practices continues to show how **digital tools can improve the effectiveness of learning** about the green transition for both young people and adults. For adults, they are an effective way of reaching people for upskilling and reskilling around the green agenda.

- In Greece, the project [Remote training and certification of knowledge and skills in energy saving in the construction sector](#), has created e-learning models, case studies/virtual work scenarios, and an e-training course for the trainers. The project (with EU funding, see above) delivers new, short-duration CVET courses on energy saving to employees in construction. It covers trades such as plumbing, aluminium constructions, refrigeration and glass installation; elements included in an e-learning platform.

Some inspiring practices are making full use of the latest **virtual and augmented reality technologies**.



Lighthouse practice: In the automotive sector in the Flanders region of Belgium, augmented reality is being applied to VET around electric vehicles (EV), hybrid vehicles and autonomous driving systems. The InnoVET project [Online learning and evaluation in automotive education](#) involved collaboration with VET schools, industry partners, and research centres to create innovative and accessible training solutions. The EV'nAR project and its EV'nAR 2.0 extension developed e-learning materials, augmented reality (AR) training materials and practical exercises to prepare students for the automotive industry of the future.

- Also in Flanders, virtual reality is being used to help students learn about the operation of house sewerage and the effect of water management on the climate. [VR in the Pipeline](#) uses virtual reality-based training to create immersive and interactive learning experiences that can help students learn and retain information more effectively.
- In Türkiye, the [MET-UP Vocational and Technical Education Application Platform](#) uses augmented reality (AR) applications tailored for vocational and technical education. There are plans to incorporate 150 AR items across five vocational fields into the MET-UP application, including an English language feature.
- The [FORESTWELL](#) project led by VSGT Maribor in Slovenia aims to develop an innovative teaching module in augmented reality for VET providers, learners, and entrepreneurs. This project (with funding from Erasmus+) focuses on the tourism and wellness sectors, including forest bathing, which is an immersive experience in natural environments promoting forest-based well-being.

As noted, another important aspect of bringing digital and green together in VET is in **creating digital tools and applying them to environmental issues**.



Lighthouse practice: The [eSmart Home Project](#) in Hungary integrated skills for the green transition with digital skills and working in a collaborative manner. Primarily targeting 14-year-old pupils in their orientation year preceding IVET, the project taught the basics of coding, 3D design and printing. Using these techniques, pupils were able to construct a greenhouse equipped with sensors to grow plants using soil-less hydroponics methods. They went on to evaluate the pros and cons of growing plants in such a way compared to conventional methods. Beyond the project's end, the installations serve as ongoing tools for further exploration and project-based learning, reinforcing the transferability of skills across various professions.

- In the multi-country [PARADIGM](#) project (supported by Erasmus+), students created digital tools to monitor environmental issues such as air quality and energy consumption using low-cost open-source hardware and software solutions. The feedback has been very positive as students can take real measurements and evaluate real environmental impacts of their everyday activities and that of their school or VET centre. At the same time, learners acquire skills in the Internet of Things and technical programming skills.

Although digitalisation brings benefits, one needs to be mindful that **digital solutions come with a carbon footprint**. Skills to manage and reduce these effects will become crucial to the twin transitions, with VET playing a key role.

- In Luxembourg, ([Web eco-design](#)) a short course teaches students about eco-design principles, best practices, and tools to assess and improve the environmental performance of websites. At the end of the course, participants will be able to have their websites assessed according to eco-design principles using a tool provided online.
- In a similar vein, the [Good DEEDs](#) Erasmus+ project has elaborated a method for skills development to improve the energy efficiency of digital technology use in VET. The project involves partners from Latvia, Italy, Greece, Romania, Türkiye, and Portugal. It integrates ICT, digital competencies, and environmental responsibility, promoting VET.

3.4. JOINING FORCES FOR VET EXCELLENCE

This section examines the ways in which the green transition can support the drive to greater stakeholder engagement and excellence in vocational education and training. VET depends for its success on strong and effective engagement with business so that provision can better meet the needs of the economy. As the first part of this section demonstrates, social partners have a pivotal role to play in this process in the green transition. As well as supporting the identification of skill needs and the design of programmes/qualifications, social partners can also play key roles in activities such as the development of careers provision and at VET school level. Wider stakeholders also have a key role to play in developing VET excellence as the final part shows: as the inspiring practices demonstrate, specialised competence centres are becoming an important feature of the green transition landscape in VET.

3.4.1. PROMOTING SOCIAL DIALOGUE FOR GREENER VET

Employers' organisations and trade unions can be drivers and active participants across the entire spectrum of VET greening, from strategy formulation and curricula co-design to working with individual schools. Social partners are key stakeholders in developments around VET and the green transition, with a deep understanding of the world of work, including skill needs. This includes both social partners in the education sector, as well as in industrial ecosystems, or economy wide. The involvement of social partners spans all types of VET, both initial and continuing VET, at different levels (from lower secondary up to higher VET), and including work-based learning and apprenticeships.

Employers' organisations and trade unions can each contribute individually to the types of developments illustrated in the inspiring practices. They often provide services to their members which include materials and tools on the practicalities around greening in the workplace.

Depending on national systems and taking into account social partners' autonomy, employers' and workers' representatives can also work in a bipartite way, concluding agreements or engaging in joint projects. In addition, tripartite arrangements involve government actors, in different roles (for example providing funding or an institutional framework). The contribution of social partners may not always be immediately visible, as it may occur for example through institutionalised bodies (such as sectoral skills councils, or similar actors²¹).

Some of the ways in which social partners can be involved in greening VET - according to the diversity of national systems and social partners' autonomy²² - are as follows:

- Expressing **demand for new green skills**, especially technical skills, e.g., in Austria since 2009 the Federal Economic Chamber has taken part in in [New Skills Workshops](#) which involves companies that are early adopters of innovative technologies in identifying their skill needs in construction and related trades.
- Designing **occupational standards**, e.g. in Croatia, the Chamber of Trade and Commerce involves employers and employees in designing 50 [occupational standards and providing advice on overall organisation of apprenticeships \(with support from the European Social Fund\)](#)
- Designing **new programmes and qualifications**, e.g., in Greece the Small Enterprises Institute established by the Hellenic Confederation of Professionals, Craftsmen and Merchants, a social partner VET institute, has worked with professional bodies and federations to upgrade [qualifications focusing on energy saving](#), leading to five short CVET courses.
- Involvement in **career hubs** to bring employers and potential employees together, e.g., a multi-country Erasmus+ initiative in Belgium, Greece, Italy and Spain - the [Apprenticeship Inter-network](#) – (further details can be found in the section on the promotion of green career options).
- Being involved in provision at **local or school level**. In some countries, there is direct involvement by social partners in provision, e.g. in the context of sustainable forest management, environmental education has been integrated into the curriculum at [Ogre Technical School](#) in Latvia through joint work by students, teachers and a wide range of professional organizations – the Latvian Wood Industry Federation, Latvian Information and Communications Technology Association, Latvian Electrical Engineering and Electronics Industry Association and other industry associations.



Lighthouse practice: The Norwegian tripartite industry programmes for skills development ('Bransjeprogram') involve collaboration between the central government, responsible for the administration of funds to develop and implement programmes, and social partners, who are responsible for defining skills needs and assessing the content of learning programmes. This initiative encompasses various

21 For example, in France, the 11 *opérateurs de compétences*, 'OPCO' are managed in bipartite way by social partners. The OPCO for proximity services has developed several initiatives related to the green transition.

22 This overview, building on practices put forward in the context of the Working Group, is meant to be illustrative rather than exhaustive, both with the regard to different ways in which social partners are involved, and regarding the national examples provided under each of these categories.

levels of vocational education and training (IVET, CVET, and higher VET) and some of the developed programmes have targeted the green transition. For instance, this is the case of the Battery Industry programme ('Batterifagskolen'), focusing on sustainability within the sector; the Green Maritime Technology program, which explores alternative energy sources in the maritime sector; and the CCUS program addressing CO2 capture, use, and storage for the oil, gas, and supply industry.

- The '[Accounting for Future Competence](#)' assessments in Norway aim to utilise social dialogue to actively track trends and developments in VET, allowing a more flexible and robust education system that can adapt to the changes that require new skills or skillsets and knowledge. More specifically, this initiative is both a means to supplement the IVET knowledge base, and to prepare for potential changes to VET structures or curricula. Assessments are conducted by the vocational councils (one for each VET programme) appointed for the period 2021-2025.

It is also notable that greening can be an opportunity to **enhance social partner engagement in VET in general**.

- For example, in Poland the digital and green transitions have made it increasingly important for social partners to be more involved in VET. The [Sectoral Agreement for VET](#) is developing a cooperation network (supported by European Social Fund Plus) that includes sectoral employers' organisations, the Ministry of Education and Ministries for relevant sectors. Cyclical meetings have been set up to help determine skill demands and review core curricula.

3.4.2. INVOLVING ACTORS IN SPECIALISED COMPETENCE CENTRES

A development highlighted in the 2023 edition of the Compendium was the establishment of centres that specialise in a particular aspect of the green transition linked to the adoption of sectoral approaches. The 2024 inspiring practices indicate a reinforcement of this trend. Such centres **bring together expertise** that can focus exclusively on a sector or topic and make their findings available for a region or country. They can bring in a **wider range of stakeholders** and link in to wider local, regional, national, and transnational agendas. They can also leverage both public and private funds to achieve their aims. Some also integrate other activities like management support to SMEs, Research and Development, and innovation projects.



- Portugal is establishing [Specialised Technological Centres for Renewable Energy](#). The goal is to set up 30 centres nationwide aimed at providing specialised practical training to increase the skills and qualifications related to the green transition. Funds (supported by the Recovery and Resilience Facility) are available to state and private VET providers to modernize and upgrade their facilities to become centres.
- Portugal also benefits from [ECOTERMOLAB](#), a public-private partnership training centre focused mainly on adults, whose specialisations include hydrogen, green construction, and energy management. Activities also include trainer training, SME support packages and R&D projects. The main centre is based in Oporto but smaller, linked centres now operate in other regions of the country.
- In Ireland, six [NZEB/Retrofit Centres of Excellence](#) have been set up, forming a national network to deliver low carbon, green construction training (see above).
- Luxembourg is establishing a [Competence Centre on Energy Efficiency and Transition](#) together with an associated training curriculum. These target the crafts sector and will help both companies and their employees to acquire the necessary competences to install and maintain new technologies in the market.
- In Denmark, a new [Knowledge Centre for the Farming and Agricultural Sector](#) will be established in 2024, which will develop, prepare, and test new teaching courses and materials as well as assisting with the competence development of VET teachers in sustainability.
- Romania benefits from a national [Centre of Vocational Excellence in Urban Greening](#), a VET entity created through the collaboration of a VET school, a company, and an NGO, with the support of the National Centre for TVET Development and with Erasmus+ funding. Activities include curriculum and qualification development, training for students on urban biodiversity and a training course for VET teachers on urban greening.

ANNEX I: INDEX OF INSPIRING PRACTICES 2024

2024 edition, multi-country practices

ALBATTs - Alliance for Batteries Technology Training and Skills

- Austria, Belgium, Czechia, Finland, Ireland, Italy, Norway, Portugal, Romania, Slovenia, Sweden

AppInterN - Apprenticeship Inter network

- Belgium, Greece, Italy, Spain

CLIMADEMY - CLIMAtE change teachers' acaDEMY

- Finland, Germany, Greece, Italy

Good DEEDs - Digital Energy Efficiency Designers

- Greece, Italy, Latvia, Portugal, Romania, Türkiye

EcoSME - Business Sustainability Skills for SMEs in the Hospitality Sector

- France, Portugal, Slovenia, Spain

Energy Education project - Energie(k) onderwijs

- Belgium (Flanders), the Netherlands

ECO Tag - Achieving sustainable culinary centres

- Estonia, Italy, Lithuania, Spain, Switzerland

PARADIGM - Tools to Enhance Internet of Things and STEM in Environmental Education)

- Cyprus, Greece, Portugal, Spain

GreenSkills4H2 - The European Hydrogen Skills Alliance

- Austria, Belgium, Bulgaria, Denmark, Estonia, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Romania, Spain

SIMPLE - Social Impact Measurement Plan, Learning and Empowerment

- Bulgaria, Greece, Italy, Slovenia, Spain

2024 edition, country list

Practices proposed by stakeholders are marked with (*)

Austria

- [Sustainability Coordinator at Schools](#)
- [Green Energy Solution Competition](#)
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