



CEDEFOP

# GREENING APPRENTICESHIPS

From grassroots initiatives to comprehensive approaches

**POLICY BRIEF**



## **POLICY BACKGROUND**

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**Greening jobs, skills and  
VET to make the transition  
happen**

**Apprenticeships and the  
green transition**



# Greening jobs, skills and VET to make the transition happen

A greener and fairer Europe lies at the core of the [European Green Deal](#) (EGD), EU's growth strategy since 2019. It sets targets for greenhouse gas emissions and offers a framework to approach greening and sustainability comprehensively, while leaving no one behind.

A people-centred transition needs people's skills, knowledge and attitudes. The importance of skills development drives the EU policy agenda: examples are the [Green deal industrial plan for the net-zero age](#) and the 2023 [European Year of Skills](#), placing emphasis on a socially fair and just green transition.

Jobs and skills across sectors and occupations are already affected by the green transition. By 2030, implementing the EGD can be a job growth engine in the EU, but not for all sectors. Water supply and waste management, construction and electricity will garner more employment benefits. The positive impact is expected to be spilled over through transformations in production and supply chains to supportive sectors (e.g. ICT, logistics). In contrast, losses are foreseen for certain sectors (e.g. coal), which can translate to economic and social bottlenecks, particularly in some EU regions ([Cedefop, 2021](#)).

As the transformation required is broad and deep, affecting not only the way we produce, but also the way we consume, live and relate to nature, greening either already affects or will affect all sectors and occupations, to varying degrees. This wider perception of what 'greening' means, moving away from past narrower definitions that included only CO<sub>2</sub> reduction emissions, broadens the scope of 'green' occupations; this makes their identification less straightforward. Using online job advertisements, Cedefop assesses the 'greenness' of occupations relying on green elements in tasks ([Cedefop, 2023a](#)).

But which occupations are more central to the green transition? The interlinkages between technological advancement, innovation and the green transition bring into focus also the occupations that may be small in terms of employment share, yet indispensable to reach a new green paradigm. The 'thyroid' occupations, as Cedefop has coined the term ([Cedefop, 2023a](#)), include engineering and scientific (e.g. in R&D), but also more technical profiles necessary for the implementing green technological advancements.

A more detailed understanding of sectoral developments highlights an array of occupations and skills

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crucial for the green transformation. Cedefop's sectoral skills foresight exercises on [smart green cities](#) (Cedefop, 2022a), [waste management](#) (Cedefop, 2022b), [agri-food](#) (Cedefop, 2023b) and the [circular economy](#) (Cedefop, 2023c) identified 'frontline' green jobs (e.g. energy professionals, construction, repair, engineering, transportation), greentech specialists (e.g. hydrogen specialists, energy experts, circular economy designers), management staff (e.g. in waste management, renewable energy management, green/smart cities), digital specialists (e.g. data analysts, GPS experts, ICT professionals) and those referred to as 'green hearts and minds' (sustainability trainers, waste management trainers, HR staff) (Cedefop, 2023a).

VET can be the main pathway for up- and reskilling workers in these sectors and equipping younger learners. The broader approach to what greening means is also reflected in the skills that VET can help develop and strengthen. [Skills for the green transition](#) are a wider set of skills and competences, including knowledge, abilities, values and attitudes needed to live, work and act in resource-efficient and sustainable economies and societies (Cedefop, 2022c). They can be technical (either occupation-specific or cross-sectoral), linked with production processes; or soft and more transversal, linked to sustainable thinking and acting, relevant to work and life.

Sectoral and regional/local specificities determine the exact skillsets per occupation. Nonetheless, common skill types have been identified in Cedefop's sectoral skill foresights:

- *strategic skills*: management and entrepreneurial skills establishing a sustainability vision or mindset;
- *enabling skills* that include digital and data analysis skills that can range from collection to processing of information, and product and process design skills;
- *production skills*: e.g. for workers installing sensors, food production line workers, soil and water management professionals, and waste processing and recycling workers;
- *marketing / communication skills*: to raise consumer and, generally, citizen awareness of the merits of a more circular approach to living, consuming and producing, as in reducing waste and upscale recycling.

# Apprenticeships and the green transition

Vocational education and training (VET) has a **crucial role to play in supporting transitions** in the short-term (reactively, in the sprint race to address pressing skill needs), as well as in reaching a new sustainability paradigm in the longer run (pro-actively, in the marathon race to equip the future workforce) (Cedefop, 2022d). An upsurge in **VET activities related to the green transition** has been under way across Europe, demonstrating how VET can be a leader of change (European Commission, 2023).

Cedefop has led the research on the potential role of **apprenticeships for greener economies and societies**; apprenticeships are in an advantageous position when it comes to supporting the green transition. First, as the dual role of apprentices and the frequent collaboration among them, their teachers and in-company trainers allow for cross-fertilisation in supporting the green transition (Cedefop & OECD, 2022). The combination of two learning venues also helps apprentices develop a wider set of skills, as required by the green transition.

Being closely tied to the labour market, apprenticeship can swiftly adapt, alleviating short-term bottlenecks and ensuring long-term worker employability in the context of the green transition.

**Adaptation of apprenticeships** can extend from modular approaches typically suitable in the short term, to the introduction of green elements across subjects and occupations, or to the development of comprehensive approaches for lasting, profound changes (Cedefop & OECD, 2022).

The more that apprenticeships are integrated in sectoral and company strategies to tackle the challenges of the green transition, the better the solutions they can provide at company and at system/society level (Cedefop & OECD, 2022).

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## EVIDENCE

### In this section

**Bottom-up approaches  
for greening  
apprenticeships**

**Top-down transversal  
initiatives**

**Sector-specific  
initiatives**

**Challenges in greening  
apprenticeships**



In 2022, members of the Cedefop Community of apprenticeship experts provided [examples of how apprenticeships are being adapted to the green transition](#). In this exercise, ‘greening apprenticeships’ was understood as the introduction of new programmes as a result of the green transition, the update of existing ones or the introduction of horizontal initiatives to support the adjustment of apprenticeship provision to sustainability objectives. As a result, the evidence collected from 16 EU Member States and UK-Scotland varies from bottom-up grassroot initiatives led by teachers, companies and apprentices, to curricula/qualifications adjustments and stronger linking of apprenticeships with higher-level (sectoral) strategies related to the green transition. This policy brief is based on these contributions.

The evidence presented does not cover the full spectrum of activities in the countries represented in relation to how apprenticeships adjust to the challenges and opportunities of the green transition. In many of the studies countries, more greening initiatives complete the picture of apprenticeship transformations. For, instance the German example refers to a specific sector and is only part of the wide range of strategies and initiatives introduced to adjust German apprenticeships to sustainability and the green transition.

The approaches to ‘greening apprenticeships’ range from systematic and coordinated, which do not exclude bottom-up initiatives, to sporadic and uncoordinated. In the latter cases, Community experts could not easily identify an example and had to scan the local and sub-regional level to come up with one.

The examples collected by Community experts illustrate these variations.

## Explained: Data collection from the Cedefop community of apprenticeship experts

The Cedefop community of apprenticeship experts was set up in 2018 to strengthen and expand knowledge on apprenticeships in Europe. Cedefop’s long-term collaboration with volunteer apprenticeship experts from the EU, EFTA and the UK results in valuable insights into national developments regarding apprenticeships, identifies existing gaps in information retrieval from the countries in specific areas of concern, and provides knowledge base for comparative analysis.

This policy brief is based on input from the following Community experts: Kurt Schmid (Austria), Petya Evtimova (Bulgaria), Mirela Franović (Croatia), Stelios Orphanos (Cyprus), Jan Bisgaard (Denmark), Riikka Vacker (Finland), Romain Pigeaud (France), Isabelle Le Mouillour (Germany), Olga Kafetzopoulou (Greece), Ilze Buligina (Latvia), Rasa Luzyte (Lithuania), Rob van Wezel (the Netherlands), Margareth Haukås (Norway), Andrzej Stępnikowski (Poland), Darko Mali (Slovenia), Guillem Salvans (Spain), Pär Lundström (Sweden), and Stewart McKinley (UK – Scotland).



# Bottom-up approaches for greening apprenticeships

Many of the examples provided by the Community are about the changes that happen at the local, regional or sub-sectoral level. In such cases, initiatives follow a project-based logic, at small scale and are often unlinked or loosely related to overall national or sectoral strategies. They are set up and led by specific schools, teachers, groups of local companies or even learners themselves.

All the examples, except one, come from countries where apprenticeships function as an alternative pathway to school-based VET, with which they share the same governance structures and curricula.

In [Denmark](#), the project Apprentices for sustainability was initiated by apprentices in carpentry in Copenhagen, who asked critical questions about conventional construction methods and materials and demanded new knowledge and skills about sustainable construction. Their interest was followed up by a group of teachers, who developed the project to embed sustainability into the school-based component of the carpentry apprenticeship programme. Alongside the basics of sustainable building methods and how to use more sustainable materials (technical, craft knowledge), apprentices

were introduced to a holistic approach of building processes and organisational development across professions.

In [Spain](#), the regional government of Catalonia and the VET school of Manresa, with the support of local agro-ecological farms, set up an initiative to update approximately 1/5 of an existing curriculum with new content blocks, linked to greenification. The content includes biodiversity, efficiency in the use of water, energy saving, use of renewables in farms, reduction of emissions, and overall sustainable tourism and conservation of rural heritage. A new occupational profile was developed (higher technician in landscaping and rural environment), and the programme leads to an IVET degree at tertiary level.

Even if not originally conceived with a view to scaling up at national level, some of these examples draw the attention of whole sectors, regions, or national stakeholders. The Danish case has been featured in national media and paves the way for similar adaptations in other sectors. The Spanish example is studied by Catalan authorities so that it

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is applied to agro-ecological farms and agriculture schools in the region of Central Catalonia.

Some of these local examples were intended from the beginning to act as pilots, with a clear view of extending their application in all schools that offer the programmes in question across the country. Both the cases presented below are funded by the EU.

In [Bulgaria](#), the Vocational School for Mechanical and Electrical Engineering of Pleven is being supported to develop a draft update of apprenticeship curricula for electricians at upper secondary level, integrating skills for the green transition. Once approved, the updated curricula could be applicable to all apprenticeship programmes for electrical technicians. The initiative is part of an EU-funded project (ENTIRE), which has also developed methodological guidelines for the integration of skills for the green transition in VET curricula, applicable to all professions, together with advice on how business can be actively involved in adapting apprenticeship curricula.

In [Croatia](#), the Vice Vlatkovic VET school in Zadar led the process of qualification and curricula development for auto-mechatronics, to be applied in the corresponding apprenticeship programme across the country, based on a new occupational standard developed by HOK (Croatian Chamber of Trades and Crafts). The development is part of an ESF project (Be ready, be competent) that set up a regional centre of competence (RCC) in mechanical engineering.

Local level action does not mean that more comprehensive approaches are missing, nor that these examples are entirely disconnected from other initiatives in the country. But being introduced at this level, such examples tend to be relatively small in scale, with a limited range of interventions envisaged: for example, a new qualification or a curriculum update is not always followed by a corresponding update in teaching tools or some training activity for teachers and trainers.

Therefore, [it has been argued](#), that while bottom-up initiatives raise awareness, respond to pressing needs and offer valuable inspiration and activation, they need to be complemented by more strategic, comprehensive approaches. Such approaches will allow apprenticeships to maximise their contribution in addressing needs emerging from the green transition.

# Top-down transversal initiatives

Centralised, top-down initiatives may refer to changes in curricula, standards, and qualifications that help meet the objectives related to greening apprenticeships more effectively and efficiently. A first distinction can be made between transversal approaches and those targeted at specific occupations or sectors.

Transversal approaches presented in this section may be applicable to all apprenticeship programmes, to all VET, or even all education programmes.

In [Austria](#), greening has emerged as a megatrend with implications related to technological change, climate change and sustainability, as well as potential for transformation, economic opportunities and job opportunities. Adaptation of apprenticeships in relation to the green transition takes place both transversally and in selected programmes. Horizontally, elements related to sustainability are introduced in all apprenticeship programmes at national level following well-established procedures for updating apprenticeship programmes.

In Cyprus, all apprenticeship curricula are un-

dergoing an update in 2023 in relation to the development of skills for the green transition. The aim is to develop a redesigned curriculum for each apprenticeship specialty, followed by content outline and bibliography.

In [Greece](#), the update of apprenticeship training guides will result in green modules for all curricula of the post-secondary apprenticeship scheme. The new modules will typically include one part on environmental values and the culture of sustainability, and one on specialty-specific skills linked to a sustainable economy.

In Finland, sustainable development and its interconnections has been captured in learning contents within national qualification requirements for VET since 2018. A learning unit on 'promoting sustainable development' is part of a set of common units included in all VET qualifications. A new, optional unit of learning outcomes called Working with climate responsibility is also available as from the 2022/23 school year.

In Slovenia, systematic integration of climate objectives and content into secondary VET programmes (which can be offered as apprenticeships) are being developed as part of

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...the introduction of green elements in curricula and qualifications often goes **hand-in-hand** with that of **digital skills...**



the overall PCVIZ project (Climate goals and content in education) which runs through all education levels. The project adaptation for all VET will include adjustment of curricula, development of teaching materials and didactic tools, capacity of education institutions, and training of teachers and other school staff in relation to climate change and sustainability.

In **Norway**, sustainable development is one of the three priority interdisciplinary topics introduced in curricula at all education levels, including VET and apprenticeship. The central role given to this green shift allows students to develop relevant skills within and across subjects. It combines technical knowledge (e.g. learn how to assess materials and chemicals) with attitudes (how to make ethical and environmentally good choices) and practices (use and reuse resources in production). The new curricula focus on being more future-oriented and relevant for students, apprentices and the needs of working life.

Either because of ‘simultaneous’ political interest or because of actual interconnection of the two, the introduction of green elements in curricula and qualifications often goes hand-in-hand with that of digital skills.

In **Latvia**, development of skills for the green transition in apprenticeship is linked with the overall attention of VET stakeholders; first to develop STEM-related skills, then to test new collaboration practices and to engage employ-

ers in skills development (project Supporting employers to promote skills development in Latvia).

In **Lithuania**, a new support scheme intends to update VET programmes (that can be offered also as apprenticeships) in a rapid way, in relation to both digital skills and skills for the green transition. Following consultations with social partners, the objective set is for 95 new or updated VET programmes to be registered by 2026. The update will be related to competences needed for the development of green technologies and innovations (energy efficiency, circular economy as well as digitalisation).

Examination standards can also inform what is expected to be taught in apprenticeships, mirroring curricula and qualification standards updates. Community experts identified an example in that direction.

In **Poland**, circa 160 examination tasks were developed in topics related to environmental protection as part of the overall update of the examination process for craft apprenticeships (project New quality of vocational exams in crafts, from the Polish Craft Association). The tasks and questions are connected to legal and normative changes, waste management and implementation of the New Green Deal and new, sustainable business models. Members of examination boards were trained accordingly, to be able to use such tasks in the examination procedures.

# Sector-specific initiatives



Alongside the transversal approaches, there are cases of top-down interventions that affect programmes offered in specific sectors or occupations of high interest and relevance for the green transition.

Some of the examples collected by the Community experts intend to address **direct, pressing needs of skills related to the green transition**. They showcase how can apprenticeship help in the sprint race of Europe towards meeting green transition needs and sustainability goals.

In [Austria](#), alongside the transversal apprenticeship programme, new specialised training modules are being introduced in specific apprenticeship programmes, that have more explicit links, and therefore content, with the green transition (e.g. electrical engineering, installations and building technology, sun protection technology). The procedure relies on the involvement of social partners and sector representatives together with external research institutes such as in Austria.

In [Sweden](#), the rapidly growing needs of the solar energy sector led to the development of a new programme for Solar energy managers

at tertiary level (under higher VET, *Yrkeshögskolan* scheme). Although not formally an apprenticeship, the programme offers a fast way to reach tertiary (NQF/EQF level 5) qualifications in this area, while working. Its learning outcomes should be based or clearly linked to the standards set in the Swedish Qualification Framework.

In UK-Scotland, increased demand from employers for apprenticeship to support processes related to the net zero and green low carbon economy led to the development of a Digital manufacturing apprenticeship programme. The programme is targeted at young people and older learners, who might already be employed. It promotes meeting sustainability-related goals via digital technologies (e.g. AI, 3D modelling and data science).

Some of the examples offer an insight into how updating of apprenticeship was not just a reaction to existing needs but followed a **proactive and forward-looking logic**, linked to the overall long-term greening strategy of a sector. Such cases are based on structured, multi-stakeholder processes to capture sectoral or occupational skill needs for



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the present as well as the future. In this way, apprenticeships are a tool for the marathon race towards securing a qualified workforce able to adapt to future skill needs and, through that, the competitiveness of sectors and longer-term employability of apprenticeship graduates.

In [Germany](#), in the context of the national hydrogen strategy, BIBB has launched the H2PRO research project to address the issue in relation to occupation and qualification needs, in qualifications primarily achieved through apprenticeships. The project will analyse tasks in numerous sectors, to identify emerging additional qualification needs, assess existing qualifications in relation to these needs, and conclude with recommendations for regulatory work and IVET/CVET practice to address the identified gaps.

In [the Netherlands](#), following the SBB 2022 report on Climate-related jobs in a built-up environment, SBB's sectoral committee for Technology and built environment (TGO) examined trends and innovations related to the green transition and circularity, analysed existing qualifications and training offers, and offered recommendations to all stakeholders. Following the report, new apprenticeship courses are offered (solar panel installations, charging station installation). The report calls for both further inclusion of generic, cross-sectoral skills in all TGO qualification files, and the identification of more targeted

electives (optional subjects) to be added in specific qualification files.

Such forward-looking approaches allow the search for skill needs not only within the occupation/sector but also in adjacent occupations or across the value chain. For example, in the Netherlands, the TGO sectoral report explicitly calls for stakeholders to consider interconnections between sectors and addresses recommendations to other sectoral councils as a result of changes in the sector. The German initiative also looks for work tasks along different value chains to identify requirements for VET/apprenticeships.

Another case where apprenticeship update was initiated by sectoral authorities comes from France: there, at sub-sectoral level, apprenticeships were adjusted to the needs of the green transition in line with the **corporate social responsibility strategy** of the sector.

In [France](#), the French Tennis Federation that offers apprenticeships through its own training centres (CFAs) introduced an initiative to improve the environmental impact of the sport/activity and raise awareness of the entire tennis ecosystem. This is in line with their long-term vision for the sector and their long-standing CSR policy. An online module, part of the ISCED 5 DEJEPS qualification offered in the form of apprenticeships, introduces apprentices to environmental practices and offers resources to apply such practices daily.

# Challenges in greening apprenticeships

Members of Cedefop's Community of apprenticeship experts participated in a workshop to discuss and reflect on the findings coming from individual cases. The collected evidence and further analysis reveal some overarching challenges in relation to the approach and the extent to which apprenticeships can be adjusted to assume a central role in facilitating the green transition.

## Challenges in introducing targeted initiatives

The evidence revealed that, in many countries, introduction of green elements in curricula is carried out horizontally, across all education, all VET or all apprenticeship specialties/programmes. While this is one positive way to adapt apprenticeships, it is not always easy to complement this approach with additional improvements targeted to specific occupations, learner groups or geographic regions.

Community experts consider that apprenticeship stakeholders do not always have the skills intelligence required to design targeted interventions in relation to the green transition; this is either because skills intelligence mechanisms are not well-functioning or because their outcomes do not reach apprenticeship stakeholders in a meaningful way.

This is accentuated by the fact that the transformation triggered by the green transition in many sectors is often complex and far reaching, requiring a comprehensive understanding of environmental, economic, and technological factors. Sectors themselves may struggle to understand and express the skill needs and skill gaps.

## Challenges in scaling-up

The collected cases offer evidence of bottom-up approaches across Europe, initiated by apprentices, teachers, school leaders, companies or NGOs at local level. Such examples are a good start, for all stakeholders to explore, test, familiarise with concepts and practices. But it is argued that only when such practices are channelled into larger-scale, framework level initiatives and standards that the value of apprenticeships in facilitating the green transition can be maximised.

Many of the bottom-up approaches may have scale-up potential, but the actors who have taken initiatives at the local level usually do not have the capacity or the mandate to scale up their work to higher levels across the sector involved, or beyond the school, city or region. Channelling such initiatives into broader sectoral, regional or national

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strategies requires the activation of the corresponding stakeholder types.

### **Challenges in enabling the contribution of key actors**

Even when initiatives follow a sectoral approach and are based on the involvement of social partners and sector representatives, Community experts see a particular challenge in the engagement of individual companies in relation to greening apprenticeship provision. SMEs may broadly recognise the value and the need to adapt but

there are difficulties in understanding the green transition and the implications for their businesses: in terms of technological changes to come, the ways to update their operations and subsequently the exact skills they need to be competitive now and in the longer run.

SMEs, especially micro-companies, also face difficulties in engaging resources to make shifts in the way and the content of their apprenticeship training. For example, in several cases, in-company trainers are not the traditional source of expertise and need to learn, from external experts, VET teachers or even apprentices. Any additional investment in the context of the green transition may seem like an additional cost, with its potential benefits sometimes hard to be seen.

Some of the collected cases also point towards similar challenges for VET schools. Sometimes it is challenging to fit new green elements in existing curricula, simply because this is an additional requirement in terms of time. VET teachers also need to be trained in new technologies, be acquainted with new curricula and new teaching methods and materials.





## CONCLUSIONS

### In this section

**Greening approaches influenced by the differences in apprenticeship models**

**Apprenticeship adaptation maximised if underpinned by high-quality skills intelligence**

**Multi-stakeholder governance structures support adaptation to the green transition**

**Collaboration at all levels helps apprenticeship actors cope with change**



# Greening approaches influenced by the differences in apprenticeship models



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...it is worth reflecting whether the **variation in the approaches to greening apprenticeships illustrates the variation in how they are structured** in a country...



...most **cases of sector-specific responses** come from countries where **apprenticeships are a system of their own** and not a simple alternative mode of delivery of school-based VET...

As there is no one apprenticeship model in the EU countries, there is no single form of responses to adapting apprenticeship provision to society and labour market needs triggered by the green transition.

Although the examples do not extend to the full spectrum of activities to make apprenticeships greener, it is worth reflecting whether the variation in the approaches to greening apprenticeships illustrates the variation in how they are structured in a country: do they operate as a system of its own (with its own governance, qualifications, curricula etc.), or as an alternative pathway to school-based VET (sharing governance, qualifications and curricula with school-based VET).

What may be observed is that most cases of sector-specific responses come from countries where apprenticeships are a system of their own and not a simple alternative mode of delivery of school-based VET. In such cases, collaboration platforms and shared governance structures are in place to allow sector representatives and social partners to express their current or future skill needs and help shape apprenticeship content.

In contrast, in countries where apprenticeship is only an alternative mode of delivery, the examples detailed often point to two extremes. Some are of horizontal nature, which cover all VET or all education and are therefore not specific to apprenticeship occupations. Other initiatives linked to local labour market needs remain at smaller scale, e.g. at the school or subregional level.

# Apprenticeship adaptation maximised if underpinned by high-quality skills intelligence



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...stakeholders can **benefit from high-quality skills intelligence** from sectors, regions and workers themselves...



...**interdisciplinary and cross-sectoral** logics capture **better** how jobs will be evolving and **what skills** apprenticeships need to develop...

The green transition is rapidly and continuously changing jobs and skill needs. Horizontal adaptation of apprenticeship training content is one way to address such needs, but the contribution of apprenticeships can be maximised if it also offers sector or occupation-specific responses.

Apprenticeship stakeholders can benefit from high-quality skills intelligence from sectors, regions and workers themselves. First, skills intelligence mechanisms should allow for granularity of data in terms of occupations or geographically. Then, such information should become available to apprenticeship stakeholders in a meaningful way, offering clearly articulated needs and [actionable insights \(Cedefop, 2024\)](#), and therefore helping them to devise for apprenticeship responses accordingly.

Given that many green tech developments often originate outside the sectors affected, and sustainability requirements may come from across the supply chain, interdisciplinary and cross-sectoral logics are essential in the case of the green transition, to capture better how jobs will be evolving and what skills apprenticeships need to develop. This calls for providing apprenticeship stakeholders with input from actors typically less involved in apprenticeships, such as higher education, research institutes, NGOs or representatives of sectors that are traditionally outside the apprenticeship realm, but influence sectors that typically rely on apprenticeships.

# Multi-stakeholder governance structures support adaptation to the green transition

Multi-stakeholder governance approaches can boost the capacity of apprenticeships to respond to the challenges and opportunities linked to the green transition. They allow structured dialogue among all key stakeholders, offering those representing the labour market a platform to indicate changing skill needs, and expressing their views on how apprenticeship programmes, qualifications and curricula need to be updated or complemented with new ones.

Having such governance structures in place and functioning well not only helps address pressing skill needs in a quick and efficient way. It also helps apprenticeship stakeholders act proactively, anticipating future technological changes and subsequent skill needs. According to some Community experts, structured dialogue turned the need to adjust to the green transition into an opportunity, by identifying new areas for apprenticeship programmes, or by increasing the relevance and attractiveness of existing ones to companies and learners.

Well-designed, functioning governance mechanisms need to be supported by research bodies close to apprenticeship/VET or sectoral councils and specialists, so that the requirements for ap-

prenticeship emerging from the green transition are clearly identified.

When multi-stakeholder governance is matched with flexibility in apprenticeship design processes, the capacity of apprenticeship systems to adapt to the green transition is reinforced. Examples of this direction can be found in agile processes for updating programmes (also at the initiative of social partners), the provision of electives in apprenticeship curricula, or the existence of zones for adaptation of curricula to local labour market needs. Community experts point out that while apprenticeship stakeholders look for agility to meet pressing skill needs, they should not overlook the quality of apprenticeship programmes and their objective to qualify future workers so they will remain employable in the longer run.

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...such **governance structures**... help address **pressing** skill needs.. but also help stakeholders **act proactively**, anticipating **future** skill needs...



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# Collaboration at all levels helps apprenticeship actors cope with change

When multi-stakeholder collaboration runs through all levels, from design to implementation of apprenticeships, apprenticeship actors are more likely to receive the support and guidance they need to cope with the requirements arising from the green transition.

Collaboration platforms at the implementation level between VET schools, professional associations, chambers, as well as NGOs and local/regional authorities or higher education and research facilities, are valuable in supporting individual companies, trainers, teachers and, ultimately, apprentices.

Such collaboration should offer SMEs tailored information on how to adjust their training to meet the needs of greener curricula. In-company trainers can be guided by schoolteachers or local branches on what they need to train and how. This is of particular interest in apprenticeships, as comparability of the learning experiences in different workplaces helps increase trust in apprenticeship qualifications and hence the value of programmes for learners and sectors.

In a similar vein, local-level collaboration can help VET schools and their teachers become better prepared to adjust training to the needs of new or

updated greener curricula. For example, VET teachers can get to know new greener technologies with the help of pioneering local companies or upgrade their knowledge in joint training programmes with in-company trainers.

By becoming active within local ecosystems, apprenticeship actors can access information, infrastructure and modern technologies that boost their capacity to adjust apprenticeship training to the needs and opportunities of the green transition. And they can, themselves, act as innovators and champions of change for the green transition, helping the cross-fertilisation among learning venues and within the local communities.

Collaboration among stakeholders can help set up smaller-scale initiatives that are a valuable starting point for the adaptation of apprenticeships to the green transition. Such initiatives can then be expanded or mainstreamed into higher-level policies and strategies, if such collaboration runs through the system.

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...collaboration **platforms** at the **implementation** level are valuable in **supporting** individual companies, trainers, teachers and apprentices...



...collaboration should offer SMEs **tailored information on how to adjust their training** to meet the needs of greener curricula...



...they can act as **innovators and champions of change** for the green transition, helping the **cross-fertilisation** among learning venues...

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# POLICY BRIEF

## GREENING APPRENTICESHIPS

From grassroots initiatives to comprehensive approaches

From grassroots initiatives to comprehensive approaches, structured collaboration helps unlock the potential of apprenticeships for the green transition. Apprenticeships are particularly well placed to develop the skills for the green transition, as they are at the intersection of the education system and the labour market. Building on evidence from Cedefop's Community of apprenticeship experts, this policy brief looks at the different approaches that European countries follow to adapt apprenticeship provision to needs arising from the green transition. High-quality skills intelligence, multi-stakeholder governance structures and collaboration at all levels can help apprenticeships maximise their impact in meeting the skill needs of the green transition.

### Project info

[Apprenticeships](#), [Cedefop Green Observatory](#), Cedefop's Community of apprenticeship experts: articles on [greening apprenticeships](#)

### Project contacts:

Apprenticeship: Cedefop experts [Ramona David](#), [Vlasis Korovilos](#)

Skills and jobs for the green transition: Cedefop expert [Stelina Chatzichristou](#)



**CEDEFOP**

European Centre for the Development  
of Vocational Training

Europe 123, Thessaloniki (Pylea), GREECE

Postal address: Cedefop service post, 57001 Thermi, GREECE

Tel. +30 2310490111, Fax +30 2310490020, Email: [info@cedefop.europa.eu](mailto:info@cedefop.europa.eu)

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