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GreenHive

GreenComp in Vocational Education and Training: **State of Art and Best Practices in Italy**

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List of Abbreviations

Abbreviation	Definition
AFAM	Higher education for the fine arts, music and dance (*Alta formazione artistica, musicale e coreutica*)
ANPAL	Agenzia nazionale politiche attive lavoro
CPIA	Adult education centres (*Centri Provinciali per l'Istruzione degli Adulti*)
ECEC	Early childhood education and care
IeFP	Vocational education and training (*Istruzione e formazione professionale*)
IFTS	Higher technical education and training courses (*Istruzione e Formazione Tecnnico Superiore)*
ITS	Higher technological institutes (*Istituti tecnologici superiori)*
MIM	Ministry of education and merit (*Ministero dell'istruzione e del merito*)
MUR	Ministry of university and research (*Ministero dell'università e della ricerca*)
OECD	Organisation for Economic Co-operation and Development
PCTO	Pathways for Transversal Skills and Orientation (*Percorsi per le Competenze Trasversali e per l'Orientamento*)
PTOF	Three-year educational offer plan (*Piano triennale dell'offerta formativa*)
USR	Regional school office (*Ufficio scolastico regionale*)
VET	Vocational education and training

Introduction

Central to the success of transformative endeavours is the recognition that change is ultimately driven by individuals. The realization of sustainable transformations rests fundamentally upon people's preparedness to adapt, innovate and embrace new attitudes, behaviours, practices and tools. The transition towards the climate-neutral economy the European Union aspires to build is not exempt from this foundational requirement. Citizens must be ready to recognize and re-evaluate the existing beliefs, values and norms that fuel their actions and the behaviours of the systems they are a part of.

The twin digital and green transition is more about **people** and talent than policies and technologies.

Green and technological advancements are powered by talents and propelled forward by the attitudes, knowledge and skills of those who can adapt and thrive in a greener and more digital society. In this context, Vocational Education and Training (VET) has expanded its responsibilities in new cross-cutting areas. It is called to support learners in developing a green-skilled workforce and proactive contributors to the just transition that the European Green Deal[1] calls for.

[1] European Commission (2019). *Communication from the Commission to the European Parliament, The European Council, the Council, the European Economic and Social Committee and the Committee Of the Regions: The European Green Deal.*

A greening labour market. The emergence of new regulatory constraints, increasing awareness of corporate environmental and social responsibility[2], and growing stakeholders' demands for answers to sustainability challenges are leading companies to be increasingly involved in reviewing their strategic processes and implementing sustainable development initiatives[3]. Hence, the demand for green jobs and skills in companies is increasing. In Italy, according to the latest research[4] by the Italian Union of the Chambers of Commerce (*Unioncamere*) and the Italian National Agency for Active Labour Policies (*ANPAL*), **green job entries planned by Italian companies reached a total of 1,816,120 in 2022, accounting for 35.1% of total entries planned for that year**. This figure represents a step forward compared to the previous year, when the incidence of green jobs was 34.5%, with an absolute increase of 13.5%. Nevertheless, **47.4% of the required positions (+6,8% from the previous survey) could not be filled**.

The competences needed. The Joint Research Centre of the European Commission contributed to bridging the gap between experts and other stakeholders for a shared definition of green competences through a non-prescriptive reference framework for learning for environmental sustainability that can be applied in any learning context: the ***European Sustainability Competence Framework***, or ***GreenComp***[5].

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[2] Abbasi, S.G., Tahir, M.S., Abbas, M. & Shabbir, M.S (2022). *Examining the relationship between recruitment & selection practices and business growth: An exploratory study*. Journal of Public Affairs. Volume 22, Issue 2, e2438.

[3] Afsar, B. Cheema, S. & Javed, F. (2018). *Activating employee's pro-environmental behaviors: The role of CSR, organizational identification, and environmentally specific servant leadership*. Corporate Social Responsibility and Environmental Management. Volume 25, Issue 5, p. 904-911.

[4] Unioncamere & ANPAL (2022). *Le competenze green. Analisi della domanda di competenze legate alla Green Economy nelle imprese, indagine 2022*. Available at: https://excelsior.unioncamere.net/sites/default/files/pubblicazioni/2022/CompetenzeGreen_2022.pdf

[5] Bianchi, G., Pisiotis, U. & Cabrera Giraldez, M. (2022). *GreenComp The European sustainability competence framework*. Punie, Y. and Bacigalupo, M. editor(s), EUR 30955 EN, Publications Office of the European Union, Luxembourg, ISBN 978-92-76-53201-9, doi:10.2760/821058, JRC128040.

The framework identifies a set of sustainability competences, divided across four interrelated competence areas, as shown in the below figure.

Figure 1. GreenComp Areas and Competences

The European Commission has encouraged Members States to use the framework as a reference when introducing educational initiatives on sustainability. This publication aims to delve into its implementation in the Italian VET system while analysing policy developments and current practices in the field of sustainability education in the sector.

The purpose and structure of this publication. The publication collects the findings and conclusions of research on the state of the art and best practices in the field of sustainability education in VET in Italy, with a particular focus on the implementation of the European Sustainability Competence Framework. The research was conducted in the scope of the "Green Hive" project - a cooperation partnership co-funded by the European Union under the Erasmus+ Programme – and included the collection and analysis of primary and secondary data sources.

Chapter 1, "The Green Hive Project", presents the project's rationale, objectives and expected results, providing an insight into the context of this research.

Chapter 2, "Sustainability Education in VET: The Italian Context", presents an overview of the sustainability education landscape within the context of VET in Italy. The chapter lays the groundwork by exploring the demand for a green-skilled workforce and how the national education and training system responds to it.

Chapter 3, "GreenComp: State of the Art in Italy", analyses the recent policy development in the Italian education system in field of sustainability competencies and provides insights from interviews with VET experts.

Chapter 4, “Developing Sustainability Competences: Best Practices in Italy”, presents ten best practices implemented by institutions and organisations across the country, successfully integrating the competencies set out in GreenComp into their curricula or educational initiatives.

A concluding chapter synthesises the insights gathered in the publication.

1. The Green Hive Project

Green Hive is a Cooperation partnership in the Vocational Education and Training (VET) field co-funded by the Erasmus+ Programme of the European Union. Implemented by a consortium of five entities, such as the *Technological University of the Shannon: Midlands Midwest* (Ireland), the companies *Lascò* (Italy) and *Femxa* (Spain), and the non-profit and non-governmental organisations *KEAN* (Greece) and *Team 4 Excellence* (Romania), the project aims to increase the capacity of VET providers to prepare learners for the green transition by developing a **European platform-based ecosystem for sustainability education** called the "Green Hive".

The Green Hive will consist of localised hubs for sustainability education, namely the "Green Combs," established within VET providers. While the Hive will be an open and cross-sectoral long-term cooperation network dedicated to innovation, continuous improvement and co-creation in sustainability education, the Combs will make VET providers the managing centre of networks of local stakeholders (i.e., companies, representatives of universities, civil society organisations and professional associations) for learning, networking and cooperating on sustainability challenges.

Hence, the project promotes the establishment of permanent VET co-creation structures where students will be enabled to think in systems, understand the interconnectedness of the economy, society and environment, and ultimately develop their systemic and critical thinking competencies by collaborating with other students and external stakeholders.

Four **main results** will be co-developed with over 500 VET experts in the scope of the project:

- a "**Methodological Framework**" for developing a VET sustainability education ecosystem and localised hubs to facilitate the transfer of local experience, knowledge and innovation

in the field of the implementation of the European Sustainability Competence Framework "GreenComp", and encourage collective actions of VET providers, learners and external stakeholders to co-create solutions for sustainability;

- a "**Toolkit for the setup and management of Green Combs**", including a how-to guide and canvases to support VET providers in setting up, managing and growing internal hubs for sustainability education;
- "**Educational resources for Green Combs**", including guidelines to implement open spaces for discussion around learner-generated topics among members of localised hubs, micro-learning videos, workshop scenarios and project-based learning experiences in the four competence areas of the GreenComp;
- the **"Green Hive" platform**, connecting the hubs through the Internet and providing capacity-building opportunities and digital tools for VET institutions, knowledge-transfer spaces, and co-creation activities for its members. By the end of 2025, the Green Hive is expected to host and connect at least 15 localised hubs and 200 VET learners in 5 countries.

Project website: **www.greenhiveproject.eu**

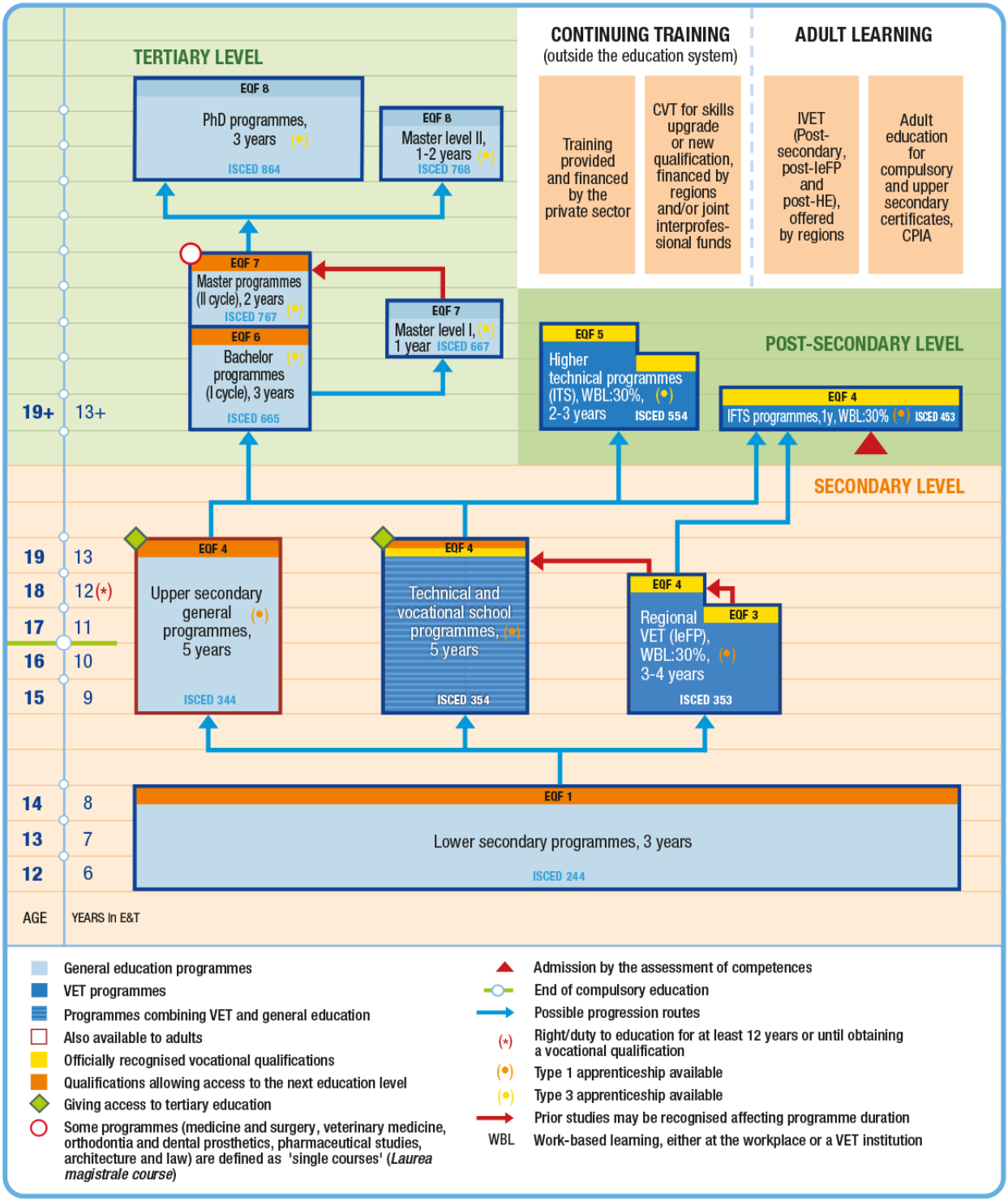
2. Sustainability Education in VET: The Italian Context

2.1 The Italian VET system

Gaining a grasp of the structure and governance framework of the national Vocational Education and Training system is crucial for contextualizing the integration of sustainability education. Recognizing the roles, responsibilities and decision-making mechanisms that shape the system is essential to effectively comprehend the factors that can influence endeavours towards advancements in sustainability education.

Hence, an outline of the type programmes offered at upper-secondary, post-secondary and continuing VET level and the governance structure of the national system is presented in the next pages.

Before delving into the distinctive features of the Italian VET system, Fig. 2, developed by the *European Centre for the development of vocational training* (CEDEFOP) and the European network *ReferNet*, provides a comprehensive visual representation of the overall national education system, offering a panoramic view of the interconnected components that form the Italian education landscape.



NB: ISCED-P 2011.
Source: Cedefop and ReferNet Italy, 2019.

Figure 2. Italian Education and Training System. © Cedefop & ReferNet

2.1.1 Upper-secondary VET

Vocational learning opportunities in the national education system are offered starting from the final two years of full-time compulsory education (until the age of 16), for which learners can choose an upper-secondary school or the Regional VET (*Istruzione e Formazione Professionale* – IeFP).

Regional VET includes two main Initial VET programme types:

- Three-year programmes where learners can achieve a professional operator certificate (EQF level 3) upon successful completion of a final exam;
- Four-year programme where learners can obtain a professional technician diploma (EQF level 4) upon successful completion of a final exam;

Initial VET is also provided by upper-secondary schools through five-year technical and vocational programmes:

- In technical school (*Istituti tecnici*) programmes, learners can develop knowledge, skills and competences to carry out technical and administrative tasks;
- In vocational school (*Istituti professionali*) programmes, learners can develop specific theoretical and practical preparation, enabling them to carry out qualified tasks in production fields of national interest.

These programmes - combining general education and VET - start at the age of 14 and usually finish at 19, awarding an upper secondary education diploma upon successful completion of a final examination (EQF 4), which gives graduates access to higher education.

For adults, programmes leading to upper secondary VET qualifications are provided by Provincial Adult Education Centres (*Centri Provinciali per l'Istruzione degli Adulti* - CPIA) under

the remit of the ministry of education and aim to ensure progression opportunities for low-skilled individuals.

2.1.2 Post-secondary VET

At the post-secondary level, the following VET programmes are offered:

- Higher technical education and training courses (*Istruzione e Formazione Tecnnico Superiore* - IFTS), lasting one year and managed by consortia composed of at least four training partners (i.e., a vocational training centre, a school, a university, an enterprise or another public or private centre). These courses lead to a Higher technical specialisation certificate (*Certificato di specializzazione tecnica superiore* – EQF level 4) upon completing a leaving examination.

- Higher technical institute programmes (*Istruzione Tecnica Superiore* – ITS), such as non-academic and short-cycle bachelor programmes, lasting from two to three years and leading to a high-level technical diploma (EQF level 5) upon passing a final examination. Students can access these programmes with an upper secondary leaving certificate or after completing a four-year regional VET course plus an additional one-year course in IFTS.

2.1.3 Continuing VET

Continuing VET, targeting mainly employed people, comprises programmes to maintain or upgrade competencies and skills, support companies' competitiveness and innovation and comply with compulsory training related to work-specific requirements. They can award participants a formal qualification.

2.1.4 Subsidiarity and autonomy of institutions

The organisation of the Italian education system is built on the principles of subsidiarity and autonomy of institutions. As summarised by Eurydice[6], the system's **governance** presents the following key features:

> The State has exclusive legislative competence on the general organisation of the education system (e.g., minimum standards of education, school staff, quality assurance, State financial resources). The Ministry of education and merit (*Ministero dell'istruzione e del merito* – MIM) and the Ministry of university and research (*Ministero dell'università e della ricerca* – MUR) are responsible for the general administration of education at national level for the relevant fields. The MIM has decentralised offices (*Uffici scolastici regionali* - USRs) that guarantee the application of general provisions and the respect of the minimum performance requirements and of standards in each Region.
>
> Regions have joint responsibility with the State in some sectors of the education system (e.g., the organisation of ECEC (0-3), the school calendar, the distribution of schools in their territory, the right to study at higher level). **Regions have exclusive legislative competence in the organisation of the regional vocational education and training system (Istruzione e formazione professionale - IFP)**.
>
> Local authorities organise the offer at local level (e.g., maintenance of premises, merging or establishment of schools, transport of pupils) from ECEC to upper secondary education.
>
> **Schools have a high degree of autonomy**: they define curricula, widen the educational offer, organise teaching (school time and groups of pupils). Every three years, schools draw up their own Three-year educational offer plan (*Piano triennale dell'offerta formativa* - PTOF).

[6] Eurydice. (2023). *National Educational Systems Overview: Italy*. Retrieved from https://eurydice.eacea.ec.europa.eu/national-education-systems/italy/overview [Accessed 1 June 2023]

At tertiary level, universities, the institutions of the Higher education for the fine arts, music and dance (*Alta formazione artistica, musicale e coreutica* - Afam) and the Higher technological institutes (*Istituti tecnologici superiori* - ITS Academies) have statutory, regulatory, teaching and organisational autonomy.

In summary, the governance within the Italian VET system is characterized by the presence of multiple institutional players at both national and regional levels, in addition to a notable involvement of social partners who support the definition and creation of active employment policies, including lifelong training. In accordance with Title V (Article 117) of the Italian Constitution, which delineates ownership and jurisdiction over education and training matters, the education and employment ministries establish overarching rules and fundamental principles. At the same time, the regions and autonomous provinces wield the authority to develop and implement VET programs and apprenticeship-type schemes and own legislative power over vocational education. Education institutions retain autonomy to define curricula, widen the educational offer, and organise teaching. As the system adapts to changing demands, the collaborative efforts of these stakeholders continue to shape the trajectory of VET in Italy.

2.2 The demand for green skills

Research[7] conducted in 2022 by the Italian Union of the Chambers of Commerce (*Unioncamere*) and the Italian National Agency for Active Labour Policies (*ANPAL*), summarised in the introductory chapter of this publication, picture an increase of green job entries planned by Italian companies, reaching over 1.8 million entries, accounting for 35.1% of total planned entries in 2022. The rates vary significantly across industries: the prevalence of green jobs

[7] Unioncamere & ANPAL (2022). *Le competenze green. Analisi della domanda di competenze legate alla Green Economy nelle imprese, indagine 2022*. Available at: https://excelsior.unioncamere.net/sites/default/files/pubblicazioni/2022/CompetenzeGreen_2022.pdf

within the overall projected workforce is notably substantial for categories such as artisans and specialized labourers (77.2%), who also hold the foremost position in terms of absolute numbers (585,440, equivalent to 32.2% of the total green jobs count), as well as executives (74.5%) and operators of plant and mobile machinery (60.5%). Conversely, in more traditional and routine jobs, green jobs are less frequent. For instance, within executive office roles, their share in the overall employment landscape amounts only to 6.9%. Similarly, within sectors associated with trade and services, which contributed the most to the total income in 2022, the weight of green jobs remains insignificant.

Parallelly, **green skills were requested for around 4.2 million positions** in 2022, accounting for 81.1% of the planned entries from Italian companies, over 700,000 more positions than 2021, when green skills were in demand for 76.3% of planned entries. This data reflects the significance of green skills within company requirements, evident by the substantial proportion (41.7%) of openings for which green skills were required at least to a medium or high proficiency level and the increased number of companies who invested in green skills, equal to 54.1% in 2022, confirming a steady and progressive trend over the five-year period 2018-2022, with the exception of the pandemic year, when there was a temporary decrease.

Further forecasts developed by Unioncamere and ANPAL[8] based on information gathered through the *Excelsior Informative System*[9] highlight that, between 2023 and 2027, companies and public administrations will require at least intermediate green skills from almost 2.4 million workers (65% of the requirement over the five years) and high importance from over

[8] Unioncamere & ANPAL (2023) *Previsioni dei fabbisogni occupazionali e professionali in Italia a medio termine (2023-2027). Scenari per l'orientamento e la programmazione della formazione*. Retrieved from: https://excelsior.unioncamere.net/sites/default/files/pubblicazioni/2023/report_previsivo_2023-27_0.pdf

[9] Established in 1997 by Unioncamere in collaboration with the Italian Ministry of Labour, the National Agency for Active Employment Policies (ANPAL) and the European Union, the Excelsior "Information System for Employment and Training" is one of Italy's major sources on topics relating to the labour market and training and is one of the official surveys included in the National Statistical Program (PSN). It aims to monitor the outlook for labour demand and the professional, training and skills needs expressed by companies.

1.5 million (over 41% of the total). The forecasts show that the demand for green competences will be transversal to the different professions and economic sectors. Green and digital transition processes will continue to play an important role in the labour market, increasing the demand for green competences in the next 5 years.

Almost half (47.4%) of the 4.2 million green job positions opened in 2022 remained vacant, marking an increase of 6.8% compared to the 2021 Excelsior Survey. Data from the 2022 survey pictures that the difficulty of finding professionals with green skills has increased from 33.8% in 2021 to 41.5% in 2022, registering a growth of almost 8 percentage points in just 12 months. Analysing data from 2018, it is observed that the difficulty of finding was initially at physiological values for a national labour market (27.5% in 2018). However**, the current values point to an inefficiency in the labour market concerning green skills.** Furthermore, the difficulty in finding green-skilled professionals appears to be more significant as the required green skills increase: it involves 36.5% of the entries for which green skills are not needed, while it affects 41.5% and 44% of the entries where green skills are respectively needed or required with a high degree of importance.

The shortage of a green-skilled workforce can be evaluated in conjunction with the country's performance on the implementation of the 2030 Agenda for Sustainable Development[10], particularly its progress towards achieving the SDG 4, "Quality education", whose target 4.7 explicitly refer to education for sustainable development:

> "
>
> By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a

[10] UN General Assembly (2015). *Transforming our world : the 2030 Agenda for Sustainable Development*. A/RES/70/1. Available at: https://www.refworld.org/docid/57b6e3e44.html [Accessed 20 June 2023].

culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Target 4.7 - 2030 Agenda for Sustainable Development

Latest research by the Sustainable Development Solutions Network (SDSN)[11] indicate that significant challenges still remain in the country's performance in relation to SDG 4, and the trends show a stagnation.

The next Chapter analyses how the national VET system is responding to these challenges.

[11] Sachs D. J., Lafortune G., Fuller G. & Drumm E. (2023). *Implementing the SDG Stimulus. Sustainable Development Report 2023*. Dublin University Press, Dublin, Ireland. ISBN: 978-0-903200-13-4.

3. GreenComp: State of the Art in Italy

This Chapter presents the results of an analysis of the recent policy developments in the Italian education system in the field of sustainability competencies and provides insights from interviews with VET experts.

3.1 Research Methodology

3.1.1 Research Strategy

The research strategy employed in this study a mixed-methods qualitative approach, combining desk research with interviews with Vocational Education and Training (VET) experts to investigate the integration of sustainability competencies in the Italian VET system.

3.1.2 Data Collection Method and Tools

For the purpose of this research, document analysis and semi-structured interviews were used. Particularly, the **document analysis** involved the revision of national educational guidelines, policy documents, curricula, syllabi, and research studies, to address the following research questions:

a. What are the current practices and policies for developing GreenComp sustainability competencies in VET in the country?
b. How do national educational guidelines address integrating sustainability competencies in VET curricula and courses?
c. What government policies and initiatives are in place to promote the development of sustainability competencies in VET?

d. To what extent are sustainability competencies integrated into the country's VET curricula and syllabi?

In addition, **semi-structured interviews** were conducted with VET experts to gather their perspectives on sustainability education in the national VET system. A semi-structured questionnaire was used an interview guide for the researcher. Certain predetermined questions were prepared to guide the interviews and ensure that the research objectives were addressed. However, additional questions arose during the interviews as unexpected insights and information emerged. Some sample questions that were included in the semi-structured questionnaire were the following:

a. How do you perceive the current practices for developing sustainability competencies in VET in your country?
b. Based on your experience, which activities do you think have been most effective in Italy in raising awareness and attention towards the development of these competences in VET?
c. What are the weaknesses and limitations of the current practices for sustainability competencies development in VET?
d. What resources, support, and infrastructure are necessary to enhance the development of sustainability competencies in VET?
e. How do VET experts assess the effectiveness and impact of the current practices for sustainability competencies development in VET?
f. What resources, support, and infrastructure are necessary to enhance the development of sustainability competencies in VET?
g. How do VET experts perceive the level of awareness and commitment among VET stakeholders towards sustainability competencies?
h. What innovative approaches or strategies do VET experts suggest for further advancing the development of sustainability competencies in VET?

i. What collaboration and partnership opportunities exist or should be fostered to enhance the development of sustainability competencies in VET?
j. How do VET experts envision the future of sustainability competencies in VET, considering the evolving needs and trends in sustainable development?

3.1.3 Sample Selection

The research utilized purposive sampling, a type of non-probability sampling technique, to establish the sample for the study. In accordance with this approach, individuals were selected based on their knowledge, relationships, and expertise related to the research topic (Freedman et al., 2007). For this particular study, sample members were chosen due to their direct involvement and experience in the phenomenon being investigated, as well as their significant work background in vocational education and training and active participation in sustainability education.

3.1.4 Data Analysis

The data collected from the desk research and interviews were subjected to qualitative data analysis techniques. Thematic analysis was employed to identify recurring themes, patterns, and insights related to the integration of sustainability competencies in VET. The findings were organized, interpreted, and presented in this research publication, contributing to the understanding of current practices, challenges, and opportunities in sustainability education within the VET system.

3.1.5 Ethical Considerations

Informed consent was obtained from all participants, clearly outlining their voluntary participation in the research and their freedom to withdraw from the study at any point and for any reason. The objectives of the study were thoroughly explained to participants, and they were assured that their responses would be treated confidentially and solely used for academic purposes specific to this research. Moreover, the study ensured that participants were not

subjected to any physical or psychological harm. On the contrary, researchers strived to create and maintain a comfortable environment throughout the research process.

3.1.6 Limitations

This research had the following limitations:

a. The size of the sample for the interviews was relatively small – 15 participants. A bigger sample would probably enhance the reliability of the research;
b. The findings represent the perspectives and practices within the specific country, and generalization to other contexts should be done cautiously;
c. The research relies on self-reported information from VET experts, which may be influenced by individual biases or limited awareness of practices outside their immediate scope;
d. Sustainability education in the country may be influenced by factors which were not mentioned in this research.

3.2 Sustainability competencies in the Italian formal education system: recent evolutions of the country's educational policies

In the past eight years, the Italian formal education system has been interested by several interventions to support the integration of sustainability competencies across curricula. Some of the key recent developments are listed in the following pages.

- In November 2016, the second working table of the National Conference for Environmental Education and Sustainable Development of the General States of the Environment, dedicated to "*The 2030 Agenda for Education for Sustainable Development, innovative business and consumption models*"[12], developed a **Charter on Environmental Education and Sustainable Development**[13]. The Charter is a programme of medium and long-term commitments on education and training, from biodiversity to sustainable mobility, from digital and communication to climate change. Particularly, it outlines some of the strategic objectives that education must pursue in learning for sustainable development as well as guidelines for schools based on a global educational approach to sustainable development[14], taking into account and declining some fundamental characteristics emerged from the Global Action Program on Education on sustainable development of the UNESCO Education Strategy 2014-2021[15]: *Interdisciplinarity, Acquisition of values, Critical Thinking Development and Problem-Solving Research, Multiplicity of methodologies, Shared and participatory decisions*, *The importance of the local context.* The document states the significance of implementing comprehensive training programs for educators and trainers, stressing the imperative to equip teachers with the ability to seamlessly incorporate environmental and sustainable development considerations within their teachings. This necessitates both initial and continuing training, aiming to cultivate the capacity for self-assessment regarding current educational approaches. The document envisions a training process for educators which involves a network of stakeholders, including those from the third

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[12] Conferenza Nazionale Educazione Ambientale e allo Sviluppo Sostenibile (2016*). Tavolo 2 - Agenda 2030: educazione allo sviluppo sostenibile, modelli innovativi di impresa e di consumo. Documento finale*. Retrieved from: https://www.mase.gov.it/sites/default/files/archivio/allegati/educazione_ambientale/documento_tavolo2_sviluppososteni bile_rev7.pdf

[13] Mase.gov.it. *Da Stati Generali una "Carta" per l'Educazione green*. Available at: https://www.mase.gov.it/comunicati/da-stati-generali-una-carta-leducazione-green

14 https://www.unesco.org/en/education-sustainable-development

15 Unesco. (2014). *Unesco Education Strategy 2014-2021*. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000231288

sector who possess extensive expertise in sustainable education. The working group recommended collaboration with scientific research institutions, production and management entities, to contribute to developing tailored courses and internships that facilitate the integration of cutting-edge knowledge within schools.

- In October 2017, the Council of Ministers approved the **National Strategy for Sustainable Development**[16] which aims, inter alia, to "*ensure in every educational sphere (from pre-school to university education and vocational training and in informal and non-formal education) interdisciplinary and participatory pathways geared towards disseminating knowledge, skills, attitudes and lifestyles oriented towards sustainable development, including by investing in teacher training, curriculum integration education programmes, and respect for the principles of sustainability and social inclusion by the educational and training venues*".

- In December 2018, the Ministry of Education reformulated the previously called "Alternanza Scuola-Lavoro" (literally, "*School-work Alternance*") into "**Pathways for Transversal Skills and Orientation**" (*Percorsi per le Competenze Trasversali e per l'Orientamento* - PCTO), offering students – during the last three years of upper-secondary education – opportunities to experience orientation activities, based on active, experiential and project-based learning approaches, in institutions or private companies, in order to develop their transversal skills and get a better consciousness about their own vocations and talents. Citizenships competences are set as one of the key competence targets of the pathways, encompassing the skills, knowledge and attidues to "act as responsible citizens and participate fully in civic and social life, based on an understanding of social, economic, legal and political structures and

[16] Ministero dell'Ambiente e della Tutela del Territorio e del Mare (2017). *Strategia Nazionale per lo Sviluppo Sostenibile. Retrieved from:* https://www.mase.gov.it/sites/default/files/archivio_immagini/Galletti/Comunicati/snsvs_ottobre2017.pdf

concepts as well as global developments and sustainability"[17]. The minimum compulsory hours of PCTO are 210 hours in vocational schools and 150 hours in technical schools, while only 90 hours are mandatory in general education. PCTOs can represent a valuable tool to support students in experiencing and experimenting with sustainable practices and develop their sustainability competences through active learning experiences. Numerous PCTOs have been designed in the fields of sustainability and green economy. A keyword-research on Google's search engine in July 2023, showed over 70.000 results combining the terms "PCTO" and "Green", including web pages of relevant projects implemented by educational institutions, government reports, research papers, news articles and online discussions.

- In August 2019, with Law n. 92, Italy re-introduced **civic education** as a subject in its own right in the first and second cycles of education, including school-based upper-secondary VET. Since the school year 2020/2021, schools must provide at least 33 hours of transversal civic education teaching on three main conceptual cores: (a) Constitution, law (national and international), legality and solidarity; (b) **sustainable development, environmental education, knowledge and protection of heritage and territory**; (c) digital citizenship. The Law also defined co-ownership and shared responsibility among all teachers across all subject areas. Thus, it opens to multiple forms of civic education that can be declined according to different learning goals and objectives, providing schools with wide flexibility for the design of educational offer.

  In June 2020, with the Ministerial Decree n. 35/2020, the Ministry of Education introduce specific competence target for the second cycle of education in relation to civic education, thus laying the foundations for the definition of a curriculum which

[17] Ministero dell'Istruzione, dell'Università e della Ricerca (2019). P*ercorsi per le competenze trasversali e per l'orientamento. Linee Guida*. Retrieved from: https://www.miur.gov.it/documents/20182/1306025/Linee+guida+PCTO+con+allegati.pdf

explicitly includes many topics related to the indicators of the Target 4.7 for the SDG 4. Particularly, among the themes included in the curriculum, there are the following:

Topic	Competence Target for the 2nd Education Cycle
Climate change	• The 2030 Agenda for Sustainable Development
Environmental sustainability	• Respect, care, conservation, improvement • of the environment • Protecting the safety of the environment under ordinary or extraordinary hazardous conditions • The 2030 Agenda for Sustainable Development • Eco-sustainable development
Sustainable consumption and production	• The 2030 Agenda for Sustainable Development
Human survival and well-being	• The complexity of existential, moral, political, social, economic and scientific problems • Physical, psychological, moral and social well-being • First intervention and civil protection foundations • Cultural heritage and common public goods

While civic education maintains its distinct status as a subject, its integration into curricula can manifest through diverse organizational arrangements. It may be incorporated through specific subjects already addressing such matters, take a cross-curricular approach as originally intended, or even be integrated systemically within the school through dedicated project-based initiatives. Presently, there is not a national oversight that would offer insights into the methodologies and outcomes of this approach.

- In November 2021, the Ministry of Education launched an implementation plan for the objectives of the 2030 Agenda, namely ***Piano RiGenerazione Scuola***[18] (literally, *Re-Generation School Plan*), that has become a part of the schools' educational offer, including upper-secondary vocational institutions. With the Art. 10 of the Legislative Decree n. 196/2021, the Plan became a part of the offering of educational institutions: drawing up the Educational Offer Plan for the three-year period 2022-2025, since September 2022, schools have been invited to include in the school curriculum, activities relating to the themes of ecological and cultural transition. The plan aims to enhance, systematize and implement school projects and activities and offer, through a free portal, a vast repertoire of tools and resources that schools can use to develop projects on issues related to sustainable development. In the same legislative decree, the Ministry establishes that the Plan becomes part of the Three-year educational offer plans (*Piano triennale dell'offerta formativa*, PTOF). In the elaboration phase of the PTOF 2022-2025, the schools will be able to include in the institute curriculum the activities related to the themes of the ecological and cultural transition.

- In December 2021, Italy launched the ***National Plan for New Competences*** (*Piano Nazionale Nuove Competenze*)[19], as part of National Recovery and Resilience Plan. The Plan aims to "reorganise the training of workers transition and unemployed workers, through the strengthening of the vocational training system and the definition of essential quality levels for upskilling and reskilling activities". "For employed workers it is also foresees, from the resources of REACT-EU, the New Skills Fund in order to allow companies to reschedule their working hours. companies to reschedule working hours and promote training activities on the basis of specific collective agreements with trade unions". Hence, it represents a strategic coordination framework for

[18] https://www.istruzione.it/ri-generazione-scuola/index.html.
[19] Ministry of Labour and Social Policy (2021). *Decree 14 December 2021. Adozione del Piano nazionale nuove competenze*. Published on https://www.gazzettaufficiale.it/eli/id/2021/12/28/21A07649/sg

upskilling and re-skilling interventions aimed at addressing the needs for new skills resulting from digital and green transitions and the effects of the COVID 19 pandemic. As defined in the Council Implementing Decision approving the Italian National Resilience Plan of 13 July 2021[20], the Plan should meet the following requirements: (i) define common standards and essential levels of vocational training throughout the national territory; (ii) be addressed to both employed and unemployed persons, with the aim of improving their e-skills and encouraging lifelong learning; (iii) identify relevant skills and standards on the basis of collaboration between the public and private systems; (iv) take into account the different needs of the target groups concerned, which should at a minimum include the most vulnerable groups; (v) include all relevant sectoral strategies so as to have a comprehensive approach, including with regard to the national strategic plan for adult competences; (vi) incorporate provisions for the development of a forecasting system for new skills needed in the labour market in the short and medium term.

The Plan includes three guiding programmes:

(i) The **Gol Programme** – Gol (*Garanzia di occupabilità dei lavoratori*) aims to redesign employment services to improve people's employability by offering customised pathways into or back to work. It targets workers with social safety nets or other income support, fragile workers (young people, women with special disadvantages, people with disabilities, over 55s), the working poor, unemployed people without income support. The programme, coordinated by ANPAL and implemented by the regional employment services, includes an integrated service offer, based on cooperation between public and private services. It envisages paths of accompaniment to work, professional upskilling or re-skilling, and paths in network with other territorial services (social, socio-medical, reconciliation,

[20] https://temi.camera.it/leg18/temi/piano-nazionale-di-ripresa-e-resilienza.html.

educational) in the case of complex needs, such as those of persons with disabilities or fragility. The Plan explicitly states that training paths addressed to workers must "take into account the ongoing ecological and digital transitions"[21], but it defines targets for digital skills but not for green skills. The beneficiaries involved in the programme until 31 May 2023 are approximately 1,240,000 throughout the national territory.

(ii) The **Dual System** investment programme – The programme promotes the acquisition of new skills by young people (18-35 years old), by facilitating the matching between the education and education and training system and the labour market through the enhancement of alternance measures and in particular the dual apprenticeship contract. Through this programme, the Plan aims to progress from the experimentation phase of the Italian way to the dual system towards a phase of gradual dual transition of both the vocational training systems and the enterprises, through the following instruments: the gradual standardisation of measures; the expansion of the dual apprenticeship offer throughout the country, also by means of greater application methods; the strengthening of the dual training offer in a supply chain key; the strengthening of the propensity of enterprises to use dual apprenticeship and of the training capacity of the enterprises themselves. Through the dual learning modality, learners alternate classroom-based training moments (at a training institution) and practical training moments in work contexts (at a company/organisation), The three tools to implement this learning model are: (a) *reinforced alternance*, i.e. a teaching method - provided for in the second cycle of education, made compulsory in every training institution and type of pathway - with periods of

[21] ANPAL (2021). *Il Programma Garanzia di Occupabilità dei Lavoratori (GOL).* Gazzetta Ufficiale della Repubblica Italiana. Available at: https://www.anpal.gov.it/documents/552016/1365559/Programma+Gol+testo.pdf/055577fd-9385-73a7-9ee0-a666e0dccfff?t=1670406730860

practical application of no less than 400 hours per year; (b) *simulated training enterprise*, i.e. a way of implementing alternance, implemented through the creation of a virtual company, animated by the students of a class, which carries out a market activity and refers to a real company (so-called tutor or godmother company) which constitutes the reference model to be simulated in each phase or business life cycle. This training method also envisages periods of practical application of no less than 400 hours per year; (c) *first-level apprenticeship*, which is the preferred form of integration of young people into the labour market as it allows them to gain both a qualification and direct professional experience.

(iii) The **New Competences Fund** - Refinanced in November 2022 with EUR 1 billion, the Fund is geared to supporting digital and ecological transitions and aims to offer workers the opportunity to develop new or improved competences and to equip themselves with the tools useful for adapting to new labour market conditions, supporting companies in the process of adapting to new organisational and production models. One of the novelties of the New Fund concerns a greater characterisation of training with respect to the first edition towards training in digital and green skills creation in order to selectively direct public resources to the achievement of the expected results of the National Resilience Plan. Interventions for the year 2023 mainly concern support for enterprises facing changes related to the dual digital and green transition. The reference framework for digital skills will be the DGCOMP, **while for green transition skills the European Skills, Competences, Qualifications and Occupations (ESCO) classification will be used**[22]. The ESCO classification was defined by the European Commission in January 2022 and includes 571 skills and knowledge concepts, of which 381 are skills, 185 knowledge and 5 transversal skills.

[22] https://esco.ec.europa.eu/en/classification.

3.3 Experiences from the field: interviews with VET experts

Lascò conducted interviews with 15 vocational education and training experts to gather their insights and experience with sustainability competencies.

3.3.1 Composition of the Group

The group was composed of no. 10 teachers, 3 trainers and 2 other VET experts (i.e., mentors and coaches) working in Upper-secondary (13%), Continuing (33%) and Post-Secondary (53%) VET. Most of the respondents (67%) had a basic knowledge of the GreenComp Framework, while 20% of the participants did not have knowledge of the Framework prior to the interview. Only 13% indicated an advanced knowledge of the Framework, as they already integrate it into their work.

3.3.2 Summary of the findings

This section presents an overview of the findings from the interviews, capturing the essence of the discussions around the key questions (*Qn*) posed during the interviews. The identities of the participants have been meticulously safeguarded through codification to ensure confidentiality and anonymity. Each participant is represented by a unique code, designed to protect their privacy while allowing for a comprehensive synthesis of their invaluable insights.

Q1	**How do you perceive the current practices for developing sustainability competencies in VET in Italy?**

Participants provided varying insights to the questions, using a scale from 1 (very ineffective) to 5 (very effective). Among the respondents, 60% found the current practices to be ineffective, by indicating a rating of 2 out of 5, while 20% perceive the current practices as neither ineffective nor effective (3/5 rate). On the other hand, a minority, comprising 13%, held a favourable view and assigned a rating of 4, suggesting a level of effectiveness. Lastly, only 7%

of participants showed strong confidence in the existing practices, awarding the highest rating of 5 out of 5.

Among the reasons behind the low rating, there is the resounding sentiment of a perceived imbalance between concrete actions and rhetoric, as expressed by LAS1_SR ("Low substance and too much form") and LAS10_TL ("There is too much talk about it but too little is done"), echoed by LAS14_AN, believing that "We have been talking about green skills for a few years, but they are still not concretely integrated into programmes". Amidst this discourse, a call for raising awareness-actions about sustainability education emerged, stressing the imperative of devoting "time and attention to raising awareness" on sustainability education (LAS12_RC), and to wider dissemination of sustainable practices (LAS3_GR). This sentiment is further compounded by the observation that "existing techniques are not applied" (LAS2_AN).

One of the participants (LAS4_AN) also highlighted that sustainability education primarily orbits the higher education world, excluding school and vocational education, where, as stated by LAS7_AN, "[Sustainability] is dealt with in a discretionary manner by the teachers of the various disciplines when it should be included as a school subject in its own right". This exclusion reflects a larger challenge – as one participant (LAS5_FO) put it, "these [sustainability] practices have not yet entered the mindset and consequently the educational methods of Italian schools, which remain anchored to archaic methods and do not look to the future, as it is necessary in the field of environmental sustainability", pointing to an overarching resistance to adapt curricula and practices to changing needs. This sentiment is further compounded by the observation that Italian vocational teachers and trainers find "Difficulties in integrating innovative models for the development of transversal competences on obsolete training models based on top-down knowledge transmission" (LAS15_RA).

Yet, as the interviewers navigated the discussions, a recurring motif called for "a commitment by everyone" (LAS11_AN), stressing the collective responsibility of educational stakeholders to advance sustainability education.

Q2	**Based on your experience, which activities do you think have been most effective in Italy in raising awareness and attention towards the development of these competences in VET?**

Based on the insights provided by teachers and trainers, the most effective strategies within Italy's vocational education and training landscape for strengthening awareness and focus on sustainability skill development can be grouped into seven clusters:

1. **Awareness-raising Initiatives**: A resounding 80% underscored the effectiveness of awareness-raising initiatives. These endeavours, often as campaigns and educational events, contribute significantly to fostering a culture of sustainability by sensitizing students to its critical importance.

2. **Collaboration with Market and Non-profit Actors**: Most respondents (67%) emphasized the potency of synergies with market and non-profit stakeholders. Collaborative endeavours that provide learning opportunities and internships tied to sustainability bridge the gap between education and practical application and establish a vital link between education and the evolving demands of the professional landscape.

3. **Institutional Guidelines and Policies**: 53% of respondents identified the significance of institutional guidelines, encompassing ministerial policies and guidelines that champion the integration of sustainability competencies into the curriculum. These regulatory frameworks are pivotal in shaping the educational landscape and prioritizing sustainability education.

4. **Integration Across Subjects and Domains**: 33% of the interviewees acknowledged the efficacy of the current practices aimed at embedding sustainability skills across diverse subjects and areas of study. This approach ensures that sustainability education

permeates various disciplines, fostering a holistic understanding and application of these competencies.

5. **Adoption of Sustainable Practices Within Institutes**: 53% recognized the adoption of sustainable practices within institutes as a potent strategy. Initiatives such as energy efficiency, recycling programs, and eco-friendly materials serve as practical demonstrations and impart valuable lessons in sustainable living.

6. **Institutional Policies and Action Plans**: 53% of the respondents highlighted the role of policies and action plans within institutes. These internal frameworks ensure systematic integration of green competencies, aligning the institution's ethos with sustainability values.

7. **Experimental Initiatives**: A limited 7%, represented by a single participant, pointed out the significance of experimental initiatives within the institute.

These insights collectively portray a multifaceted approach to fostering sustainability skill development within Italy's VET landscape. The emphasis on regulatory support, collaborative engagement, cross-disciplinary integration, awareness campaigns, sustainable practices, internal policies, and experimental initiatives underscores the multi-dimensional strategy required to nurture vital competencies for people to live, work, and act sustainably.

Q3	What are the weaknesses and limitations of the current practices for sustainability competencies development in VET?

The insights provided by respondents highlight six distinct clusters of concerns, offering a wide representation of the challenges educators face when striving to support students in developing sustainability competencies.

1. **Training and Support for Educators**: 67% of respondents identified limited opportunities for specific training for teachers and trainers, echoing a pressing concern regarding the need for comprehensive professional development that equips educators with the pedagogical tools necessary to support sustainability competencies' development effectively.

2. **Lack of Synergy and Collaboration:** Regarding collaboration, 60% underscored the 'lack of synergies between schools, training institutions, and actors in the job market and non-profit sector.' This challenge highlights the importance of fostering meaningful connections between educational institutions and stakeholders beyond academia to enrich the learning experience.

3. **Clear Guidelines and Resources**: Over a half of the respondents (53%) flagged the 'lack of clear guidelines or specific directives to understand how to integrate these competencies into the curriculum.' This deficiency underscores the necessity for structured frameworks that guide educators in seamlessly integrating sustainability themes within their teaching plans.

4. **Financial and Educational Resource Constraints**: Addressing the resource landscape, 53% identified the ''lack of adequate financial resources,' and 47% noted the 'lack of educational resources, teaching materials, and tools.' These concerns highlight educators' practical challenges in securing the necessary tools and materials to convey sustainability concepts effectively.

5. **Defining and Evaluating Competencies:** Another 47% highlighted the difficulties in defining and evaluating sustainability competencies. This underscores the intricacies of measuring abstract yet crucial skills such as sustainability awareness, posing a need for refined evaluation methods.

6. **Recognition and Appreciation of Educators** An isolated response (7%) touched upon the “lack of respect and gratification [for teachers], even in the face of concrete initiatives”. This sentiment underscores the importance of recognizing educators' efforts in advancing sustainability competencies.

Q4	What resources, support, and infrastructure are necessary to enhance the development of sustainability competencies in VET?

The perspectives shared by the interviewees illustrate the requisites necessary to strengthen the development of sustainability competencies within Vocational Education and Training. The analysis of their responses reveals five distinct clusters of requirements that collectively underscore the multifaceted support network needed to foster effective sustainability education.

1. **Teacher and Trainer Training Programs:** 80% of respondents emphasized the necessity for training programs for teachers and trainers. This response underscores the importance of equipping educators with the tools and knowledge required to effectively deliver sustainability education, aligning their pedagogical practices with evolving sustainability challenges.

2. **Collaboration with External Partners:** Regarding collaboration, a significant 73% highlighted the need for collaboration with external partners such as companies, non-profit organizations, and other stakeholders. This response resonates with the importance of connecting VET institutions with real-world entities to provide learners with practical insights and experiences rooted in sustainability principles.

3. **Competence Assessment Tools and Frameworks:** An emerging facet is the demand for tools for assessing sustainability competencies. Complementing this is an additional 7% who advocated for a Ministry framework to develop micro-credential-

based training programs. These perspectives underscore the call for structured assessment mechanisms that evaluate learners' grasp of sustainability concepts.

4. **Increased Funding for Development:** Approximately 60% underscored the need for increased funding for program development and teaching resources. Adequate financial support is vital to facilitate the creation of comprehensive and engaging sustainability-focused curricula that resonate with learners.

5. **Recognition and Incentives:** A distinct 7% voiced the importance of economic recognition for teachers engaged in sustainability education. This perspective highlights the significance of acknowledging educators' efforts and providing incentives for their dedication to fostering sustainability competencies.

Q5	In your opinion, what is the level of awareness and commitment of VET actors in Italy towards the development of sustainability competences?

The interviewees were asked to rate the perceived level of awareness and commitment of VET actors in Italy towards the development of sustainability competences on a five-point Likert Scale, from 0 (Very Low) to 5 (Very High). The distribution of ratings reveals a balanced outlook, with no respondents indicating the highest level (5/5) of awareness and commitment. A significant portion (40%) perceives the current level as '3,' indicating a moderate level of awareness and commitment. Meanwhile, the combined percentage of participants indicating levels '3' and '4' (40% and 20% respectively) highlights a noteworthy sentiment leaning towards at least moderate, if not high, recognition of the awareness and commitment within the VET stakeholder community. However, the responses also suggest room for improvement, with a notable percentage (27%) rating the level as '2,' prompting a call for increased efforts to enhance awareness and dedication among VET actors.

Q6	Which approaches or strategies do you think could support the development of sustainability competences in VET?

The responses provided by the interviewees reveal a diverse range of insightful approaches and strategies that hold the potential to bolster the development of sustainability competencies within Vocational Education and Training (VET). These perspectives collectively underscore the multifaceted nature of the effort and the need for a comprehensive approach to equip learners with the essential skills for a sustainable future.

Synergies and Collaboration: 33% of the interviewees stressed the importance of engaging stakeholders across academia, industry, and institutions to create a comprehensive learning ecosystem that nurtures sustainability competencies. Particularly, the need for "360-degree synergies" (LAS1_RS), "collaboration with universities and companies" (LAS3_GR) and "development of partnerships with companies and external organisations" (LAS5_FO and LAS6_AN) emerged, highlighting the significance of a collaborative approach to developing sustainability competences. This collaboration, for instance, could serve the need for "enhancing internships in both local and non-local green companies that would help students acquire the know-how that is indispensable for promoting problem-solving in a life-long learning perspective" (LAS13_AN) and contribute to "a real and concrete development of the dual learning model[23]" (LAS4_AN).

Active Learning and Student Engagement: 40% of the interviewees emphasised the need for active learning approaches, through a combination of project-based and problem-based learning, but also a wider engagement of students in co-shaping the learning activities:

"

[23] In the Italian education system, Dual learning is a learning modality based on alternating 'classroom' training moments (at a training institution) and practical training moments in 'working contexts' (at a company/organisation), aimed at favouring transition policies between the world of school and the world of work to allow young people, still in a pathway of the right to education and training, to orient themselves in the labour market by acquiring spendable skills and shortening the transition time between training and professional experience.

I believe that the starting point is to create project-based learning paths that have environmental sustainability as their main focus.

LAS5_FO

“

Field activities for students aimed at something concrete and tangible, with or without the partnership of external organisations or companies.

LAS7_AN

“

Students’ engagement and promotion of real problem-based learning.

LAS8_LL

“

More projects in which students are the real actors.

LAS10_TL

“

Greater involvement of students in the definition of learning paths and knowledge of sustainability issues.

LAS12_RC

Financial and Human Resources: Three respondents highlighted the need for financial resources and professional development, particularly stressing the need for “more funding”

(LAS9_AD) and for "continuous training" for teachers and trainers (LAS11_AN), towards "developing and increasing competences and responsibilities" (LAS2_AN) within VET entities.

Integration of Technologies: One of the respondents (LAS13_AN) also addressed the significance of "integrating digital technologies", leveraging digital tools to develop sustainability competences.

Regulations: One of the respondents (LAS15_RA) suggested the "obligation for schools and vocational institutes to adapt initial training programs in order to integrate the development of green skills".

In summary, these responses collectively emphasize the need for a holistic and collaborative approach to fostering sustainability competencies within VET. Integrating real-world experiences, project-based learning, student involvement, technological integration, and curriculum adaptation are crucial components in equipping learners with the skills required to navigate the challenges of a sustainable future.

Q7	**What collaboration and partnership opportunities exist or should be fostered to enhance the development of sustainability competencies in VET?**

The interviewees stressed the crucial role of collaboration and partnerships in enhancing the development of sustainability competencies in VET. Particularly, the respondents identified the need for (a) private sector engagement, (b) civil society involvement, (c) international partnerships for knowledge exchange, and (d) research and academic collaborations.

Private Sector Engagement: 73% of the respondents underscored the importance of partnering with companies and industries, valuing the direct involvement from the business sector to VET. Such partnerships, for instance, can offer real-world insights

and practical applications and align education with the evolving demands of a greening labour market.

Civil Society Involvement: Equally compelling was the parallel emphasis on collaboration with non-governmental and civil society organisations, also receiving a 73% response, underscoring an awareness of the broader societal context of sustainability. Engagement with NGOs and civil society entities are believed to introduce a holistic perspective, encouraging learners to view sustainability as an integral aspect of community well-being.

International Partnerships: Most of the respondents (87%) stressed the importance of international exchanges of good practices with other countries, recognising the potential to share experiences, strategies, and best practices internationally. Such exchanges can enrich VET curricula by infusing diverse viewpoints and global perspectives on sustainability.

Research and Academic Collaborations: Respondents (67%) recognised collaboration with research institutes and universities as a significant avenue. This signals the desire to bridge the gap between academia and practice. Collaboration with research institutions ensures that sustainability competencies are rooted in evidence-based insights, fostering a well-rounded understanding of complex issues.

Q8	How do you envision the future of sustainability competences in VET in Italy?

The interviewees' responses picture a future for sustainability competences in VET that embraces collaboration with the private sector, prioritizes educator readiness, emphasizes experiential learning, and navigates the integration of sustainability competences in curricula. Notably, 93% of respondents emphasized the crucial role of

partnerships between VET entities and the private sector, recognizing this collaboration as foundational for shaping the country's sustainability competences landscape. This partnership-driven approach is expected to align education with real-world insights and the needs of the labour market. Moreover, 80% of participants highlighted the imperative of enhancing teacher and trainer preparation, reflecting a shared understanding of educators' pivotal role in advancing sustainability education. A notable 73% foresee an increase in hands-on experiential learning, valuing practical engagement to provide students with insights into sustainability challenges and solutions that extend beyond theory. Additionally, 33% of participants emphasized the better integration of sustainability competences within vocational curricula, underscoring the need for cohesive development across disciplines. This challenge emphasizes the importance of a curriculum that consistently addresses sustainability competences, reflecting a holistic vision for the future of sustainability education in Italy.

Q9	What do you think is needed to make this future a reality in Italy?

The participants' responses articulated the necessary prerequisites to transform the envisioned future of sustainability competences in Italy's Vocational Education and Training landscape into a tangible reality. Their insights converge on several crucial elements that collectively form the foundation for effecting meaningful change.

Financial Investments: A call for more funding and investment was shared by three of the respondents (LAS1_RS, LAS2_AN and LAS11_AN), underscoring the importance of financial backing to propel sustainable education initiatives, resonating with the imperative of allocating resources for the enhancement of sustainability competences.

Recognition: Equally important – according to LAS3_GR - is the need for "Greater and better recognition of the knowledge and competences of the technical teachers", highlighting the role of recognizing and valuing the expertise of technical educators, thereby motivating their active engagement in fostering sustainability competences.

Transition from Words to Action: LAS4_AN plead for a "Revolution of the 'concrete' – from words to actions", reflecting a collective desire to see concrete initiatives in the field of sustainability education in VET. Moving beyond rhetoric and translating intentions into practical actions was identified as pivotal for realizing the future of sustainability competences.

Curricular Integration and Forward-Thinking Leadership: One of the participants (LAS5_FO) emphasized the need for "integrating school learning programmes with ad-hoc pathways aimed at promoting the development of sustainability skills", suggesting tailored curricular pathways that prioritize the development of sustainability competences. In order to achieve this integration, as stated by LAS7_AN, there is a need for "forward-looking school leaders" who can drive the integration of sustainability across educational institutions.

Enhanced Educator Preparation and Resources: LAS7_AN and LAS8_LL stressed the importance of educators' preparation, addressing the need for integrating sustainability into teachers and trainers' education, as well as for promoting a specific qualification for sustainability educators. Furthermore, adequate resources and training are seen as instrumental in equipping teachers to effectively contribute to developing learners' sustainability competences.

Awareness, Practical Initiatives, and Collaborative Networks: Participants emphasised the importance of "More information" (LAS9_AD) and "More practical involvement in the field of sustainability education" (LAS10_TL), calling for greater awareness and practical engagement. LAS12_RC echoed this sentiment, addressing the need for "awareness-raising activities on sustainability education, with more practical than theoretical initiatives", recalling the value of practical experiences in promoting sustainability. Collaborative initiatives are also advocated, with the proposal to "Create networks of schools for the exchange of good territorial practices implemented" (LAS13_AN), stressing the importance of sharing knowledge and successful experiences.

Institutional Support and Frameworks: LAS14_AN and LAS15_RA emphasised the need for coordinated efforts and clear guidelines for effective implementation. Particularly, LAS15_RA called for a “A framework and related development tools promoted by the Ministry and key partners” in order to promote a structured approach, including governmental support and partner collaboration, to facilitate innovative educational experiences.

4. Developing sustainability competences: Best practices in Italy

This chapter presents ten Italian best practices in developing the GreenComp sustainability competencies. The following criteria guided the selection of the best practices:

- *Effectiveness*: The extent to which the practice has demonstrated positive outcomes in developing sustainability competencies among VET learners, such as improved knowledge, skills, and attitudes towards sustainability.
- *Inclusiveness*: The practice's ability to cater to diverse learners, including individuals from different socio-economic backgrounds, genders, ethnicities, and abilities, ensuring equitable access and participation in sustainability competencies development.
- *Innovation*: The degree of creativity, novelty, and originality exhibited by the practice in its design, implementation, and delivery of sustainability competencies development in VET, incorporating new approaches, methods, or technologies.
- *Transferability*: The potential for the practice to be adapted, replicated, and scaled up in different VET contexts and settings, considering factors such as feasibility, adaptability, and compatibility with varying institutional and cultural contexts.
- *Impact*: The impact of the practice on learners' ability to apply sustainability competencies in real-world contexts, as well as its potential to contribute to broader societal and environmental goals.

- *Scalability and Replicability*: The potential for the practice to be scaled up and replicated in other VET systems, considering factors such as scalability, cost-effectiveness, and practicality.

4.1 B Corp School

B Corp School	
2018	**Author:** InVento Innovation Lab Impresa Sociale Srl
Goals	B Corp School is a sustainable entrepreneurship program addressed to secondary school students through which students are guided in the creation of a real green start-up inspired by the model of better-for-the-planet companies. Students are accompanied in the design and/or realisation of an innovative product or service that is sustainable both economically and environmentally and socially.
Target Groups - Beneficiaries	Upper-secondary school students (14-19 years old). To 15 July 2023, 13 schools, 20 classes, 382 students have signed up.
Needed resources	Video-lessons, slides and project work (provided free of charge on the initiative's website).
Methodology	The programme is divided into six key phases, associated with video-lessons and project work: 1. *B Corp Startup: Green and Social Entrepreneurship at school* - Students explore the world of environmental sustainability, examples of virtuous B Corp startups and the concepts of sharing economy and benefit corporation. 2. *From the analysis of the territory to the business idea* – Students explore how to implement a needs analysis and how to develop innovative solutions, delving into impact categories and indicators and the B Corp model. 3. *Market analysis and Idea validation* – Students explore different methods for market analysis and idea validation, including the Learn Method, techniques for presenting and voting on the business idea and implementing convergent and divergent interviews, and delve into the tools to develop a business organisation chart and teamwork. 4. *Business Model Canvas and Minimum Viable Product (MVP)* - Students learn how to develop the Business Model Canvas for their enterprise and the prototype of their solution. The

	lesson covers go-to-market strategies, sales and marketing, partner engagement, key business resources and activities, cost-revenue model, crowdfunding and MVP development. 5. *Business Plan and Environmental Evaluation* – Students explore the economic-financial planning and management dimensions of an enterprise (e.g., business plan design, finance, break-even point and provisional budget, foundations of economics) and tools to perform an environmental assessment (e.g., business tools and strategies for monitoring the impact and maximizing social and environmental benefits, including the Life Cycle Assessment); 6. *Pitch and Narrative Methodologies* – Students learns how to communicate their idea and value proposition, through graphics, marketing and storytelling, in order to outreach and engage their target group.
Success Factors	**Interdisciplinary approach** - The program integrates various disciplines, from environmental sustainability and economics to design and communication. This holistic approach can help students connect the dots and gain a comprehensive understanding of sustainability. **Project work** - Project-based learning, such as creating a green startup, offers students a chance to apply theoretical knowledge to real challenges, fostering a deeper understanding of concepts and their practical implications. **Engaging curriculum design** - The program's curriculum covers various aspects of sustainable entrepreneurship and takes students step-by-step through the design and/or realisation of an innovative, economically, environmentally and socially sustainable product or service.
Competences of the GreenComp addressed	Valuing sustainability, Supporting fairness, Promoting nature, Systems thinking, Problem framing, Exploratory thinking

	Collective action Individual initiative
Related Resources	Practice website: https://app.inventoschool.com/courses/b-corp-school-2019-2020-open

4.2 AmicoEco

AmicoEco	
2014-ongoing	**Author:** Leroy Merlin Italia SRL
Goals	AmicoEco is a multidisciplinary project addressed to primary and secondary school students and aims to address the need for a deeper understanding of environmental sustainability by encouraging sustainable and ethical behaviour. Schools have at their disposal free and customised teaching materials, calibrated to the specific needs of their age group. Particularly, Leroy Merlin provided two innovative multimedia tools (*The AmicoEco Kids* and *The AmicoEco Junior*), consisting of different didactic tools to educate students on sustainability and provide teachers with support to complement the traditional educational offer.
Target Groups - Beneficiaries	Primary and secondary school students. From 2014 to 2022, 239.000 students were trained.
Needed resources	Multimedia toolkits - provided by Leroy Merlin free of charge on the project website.
Methodology	The project includes training paths on the following themes: - *Climate and energy* for primary school pupils and secondary school students; - *Domestic sustainability and good practices*, realised in synergy with the Italian Ministry of the Environment in order to familiarise the younger generations with the REACH regulation, and intended for primary school pupils and secondary school students; - *Sustainable forest managemen*t, carried out in synergy with the Forest Stewardship Council (FSC)® Italy and addressed to primary school pupils and secondary school students; - *Responsible consumption and environmental sustainability*, realised in collaboration with *Next New Economy for All* and the OECD National Contact Point at the Ministry for Economic Development, intended for primary and secondary school students; - *Energy Poverty*, intended for upper-secondary school students. Each training path is articulated in four main sections, as distinct educational moments but, at the same time, connected and

integrated by the ample space given to discussion and playful-educational activity, with the aim of fully involving the student, affecting every component of the person: from the emotional to the cognitive, from the psychological dimension to the more practical skills:

1. ***Pre-Test*** - A fun 'survey' is employed to support the class to 'break the ice' and introduce reflection. 10 situational questions investigate learners' views and habits regarding sustainable consumption, social responsibilities, human rights and forest protection.
2. ***Double Interview*** - A double interview is presented to stimulate sensitivity and stimulate learners in expressing their point of view on the subject. By reproducing verisimilar situations, in which learners can identify themselves, the interview aims to present an insight into real life.
3. ***Analytical Recognition*** – Through a succession of screens, characterised by images and animated content, learners delve into the topics and gain a comprehensive overview of the beliefs and doubts associated with these topics, thus stimulating an analytical recognition of the topics. This section provides students with a correct and complete overview of the topic, also thanks to the use of examples and numerical data, supporting the content credibility. The graphics are of high impact, in line with young people's tastes, as their design was built on the visuals of popular television programmes and magazines. This section also includes sub-sections dedicated to subject-matter insights, providing 'simulating questions' – to enhance group discussions - and 'pop-up windows' - offering the possibility of knowing more about a topic, term or concept addressed in the relevant screen.
4. ***Activity Lab*** – It is a playful-educational moment - to be carried out in groups with the aid of multimedia - leading students from a theoretical level to a more practical and participative one, in the course of which students can reflect and discuss more on what they have addressed in the analytical phase, while having fun at the same time.

Success Factors	**Interactive and appealing instructional content** - The innovative multimedia tools (AmicoEco Kids and AmicoEco Junior) offer interactive and visually appealing content that aligns with the preferences of young learners, making the educational experience more engaging. **Collaborative partnerships** – The collaboration with organizations like the Italian Ministry of the Environment, the Forest Stewardship Council (FSC)®, Next New Economy for All, and the OECD National Contact Point in the development of the training paths enhances the comprehensiveness and credibility of the program. **Experiential learning**: The program's emphasis on experiential learning through discussion, interviews, analytical recognition, and activity labs enables students to apply theoretical knowledge in practical and participatory ways. **Engagement through gamification**: The inclusion of playful-educational activities fosters engagement and enthusiasm among students while encouraging them to actively participate in the learning process. **Discussion and Interaction**: The inclusion of group discussions, simulating questions, and pop-up windows promotes active interaction among students, enabling them to share their viewpoints and deepen their understanding through dialogue.
Competences of the GreenComp addressed	Valuing sustainability, Promoting nature, Systems thinking, Futures literacy, Exploratory thinking, Collective action, Individual initiative
Related Resources	Project website: https://www.educazionedigitale.it/leroymerlin/

4.3 Fuga dall'INmondo

Fuga dall'INmondo	
2021/ongoing	**Author:** Agenzia provinciale per la protezione dell'ambiente di Trento (*Provincial Agency for Environment Protection of Trento* - APPA-TN)
Goals	To inform students and raise their awareness about climate change and its evidence, increasingly frequent extreme phenomena and their impacts on the future.
Target Groups - Beneficiaries	The practice targets students of primary, lower secondary and upper-secondary schools and vocational training providers of the Trento province.
Needed resources	• A big park or a green area • Fundamentals knowledge of planning and managing and escape room game
Methodology	*Fuga dall'INmondo* is an outdoor escape game on climate change, implemented in the Hasburg Park in the city of Terme di Levico, in the province of Trento. Upon entering the Hapsburg Park in Levico Terme, the class finds itself projected into a parallel world called *INmondo*, whose inhabitants have consumed almost all natural resources. Wasting them without judgement, they have polluted the seas and rivers, made the air almost unbreathable due to exhaust fumes, released so many greenhouse gases into the atmosphere that they have even changed the very climate of the planet. In order to escape and be able to return to their 'straight world' the clean and healthy *OUTworld*, where man lives in harmony with Nature, learners will have to search the park for clues that will lead them to their escape route. These clues will require logical ability, a spirit of observation but above all team spirit: this is in fact a cooperative game where it is not the individual but the group that wins. Therefore, participants find themselves trapped in an adverse situation and must free themselves within a certain time limit by solving puzzles of various kinds, gradually unravelling the story and allowing them to learn the details of the chosen theme. The class is divided into groups and, to encourage the active participation of everyone, each group member is assigned a specific

	role. The environmental educator plays the role of *Master*: they introduce the setting/environment, distribute the materials and follow the development of the game, as well as conducting the final briefing. The experience lasts about two hours: • Presentation of the setting and instructions: 15 minutes • Game development: 70 minutes • De-briefing and conclusions: 30 minutes • Prize-giving and final greetings: 5 minutes
Success Factors	**Experiential Learning -** The use of an escape game format transforms learning into an immersive experience, allowing students to actively engage with the content and apply critical thinking skills. The activity encourages hands-on exploration and problem-solving, fostering a deeper understanding of climate change issues through **active participation**. **Real-World Context** - The parallel world concept of "INmondo" reflects real-world consequences of climate change, making the learning experience relatable and impactful. **Collaborative Learning** - The emphasis on teamwork promotes collaboration among students as they work together to solve puzzles and challenges. **Gamification** – The activity effectively integrates game dynamics, mechanics and components enhancing the learning experience, including narrative and storytelling, constraints (i.e., time-limited challenges), progression, indirect competition, puzzles and challenges, role cards, intrinsic and extrinsic motivation. **Setting and Environment** - Using an actual outdoor location enhances the authenticity of the experience and allows students to connect with nature.
Competences of the GreenComp addressed	Valuing sustainability, Supporting fairness, Promoting nature, Systems thinking, Critical thinking, Futures literacy, Exploratory thinking, Political agency, Individual initiative

Related Resources	*Escape Park* Website: https://educazioneambientale.provincia.tn.it/Catalogo-del-sistema-provinciale/Parco-asburgico-di-Levico-Fuga-dall-INmondo-Escape-Park-sui-cambiamenti-climatici *Natural Park* Website: http://www.naturambiente.provincia.tn.it/vt_parco_levico/vt_ita.html

4.4 Connect to Green Plug

Connect to Green Plug	
2019-2020	**Author(s):** Unione Province Italiana – Basilicata *In partnership with*: Provincia di Matera, Provincia di Potenza, Legambiente Basilicata, CEA i Calanchi, Associazione Labirinto visivo
Goals	Connect to Green Plug is a project co-funded under the *Azione Province Giovani* Programme promoted by the Department for Youth Policy and Universal Civil Service of the Italian Presidency of the Council of Ministers. The project aimed at: • Bringing young people closer to and empowering them with regard to land, the environment and sustainable development. • Favouring good practices of protection, valorisation, sustainable development and green jobs • Promoting good practices also through environmental education, reduction of consumption, knowledge and monitoring of pollutants • Educating active and European citizenship
Target Groups - Beneficiaries	The project targeted mainly young people aged 15-35 years old, including upper-secondary school students.
Needed resources	• Locations for organising information and training events (e.g., community centres, educational institutions, outdoor spaces); • Educational materials (e.g., resources for presentations and materials for workshops and interactive sessions – partially available on the project website); • "Connect to Green Plug" App (available free of charge for Windows, Mac and Android)
Methodology	The project consists of 4 activities aimed at connecting young people in the Basilicata region to the various "*Green Plugs*".

(i) Information and Training

The "Knowledge Days": information, training and territorial animation days dedicated to young people with the aim of deepening their knowledge on issues related to environmental sustainability, focusing on the natural and landscape aspects of the Park and Protected Areas of Basilicata

(ii) CONNECT TO GREEN PLUG Award

Section I- addressed to young people from 15 to 29 years of age - included two thematic subsections:

- Basilicata green, in search of hidden natural treasures;
- positive actions for a green connection between generations and for sustainable development (UN Agenda 2030 - Strategy for Sustainability)

Section II – addressed to young people from 25 to 35 years old - included two thematic subsections

- innovative green companies, examples of good practice
- innovative ideas for green start-ups.

(iii) CONNECT TO GREEN PLUG App Game

Creation of am app and online game to promote knowledge of environmental heritage combined with good practices on sustainability and respect for the environment.

(iv) Sentinels for the environment

In collaboration with schools and environmental associations, backpacks containing equipment capable of monitoring certain environmental values will be given to the children, with the aim of launching a path capable of training young "sentinels for the environment" capable of spreading good practices and encouraging the

	reduction of emissions and consumption harmful to the environment. The 'sentinels' are a naturalistic observation group made up of students, citizens, volunteers from organisations and other associations working in the area. They will have to conduct constant monitoring activities on the local fauna and flora, highlighting any criticalities and anomalies in order to understand the extent to which climate change is modifying biodiversity.
Success Factors	The main strength of this practice lies in its seamless integration of both theoretical knowledge and hands-on activities, exemplified through the "*Sentinels for the environment*" initiative. The theoretical aspect of the practice is covered in activities such as the "Knowledge days", where young people are presented with in-depth information about sustainability, climate change, and the significance of preserving natural resources. Through expert-led presentations, discussions, and workshops, participants can develop a foundational knowledge and understanding of environmental issues. Theory is translated into action through the establishment of the collaborative observation group for environment. Providing participants with monitoring equipment and empowering them to become environmental sentinels transforms theoretical concepts into tangible experiences. This hands-on involvement allows young people to witness the effects of environmental changes first-hand, bridging the gap between theoretical understanding and real-world application. Engaging in practical activities like monitoring environmental values not only deepens participants' understanding but also empowers them to actively contribute to the protection of their surroundings. As these young "sentinels" measure and analyse environmental parameters, they can cultivate a sense of responsibility for their ecosystem and its well-being, fostering a personal connection to the environment and nurturing a genuine passion for sustainability.
Competences of the GreenComp addressed	Valuing sustainability, Promoting nature, Critical thinking, Adaptability, Collective action, Individual initiative

Related Resources	Project webpage on the Coordinator's website: https://www.upibasilicata.it/connect-to-green-plug/ Project webpage on the Funding Operator's website: https://azioneprovincegiovani.net/2019/progetti/connect-to-green-plug/ Presentation of the project results and outputs: https://www.azioneprovincegiovani.net/2019/wp-content/uploads/2021/05/Attivita-Progettuali-CTGP.pdf *Connect* The Game: http://www.upibasilicata.it/connectgame/

4.5 Futurità

Futurità	
2020-2023	**Author(s):** Intesa Sanpaolo & WeSchool.
Goals	The practice aims to introduce upper-secondary school students to what the sustainable economy is and how it is changing the world of work. Particularly, it pursues the following main goals: • Facilitating the development of a culture of sustainability, bringing to the world of young people and schools the new economic models advocated by actors and businesses close to the interests and daily lives of the younger generations • Propose learning tools to make third and fourth grade students understand the mechanisms underlying sustainable economic development strategies.
Target Groups - Beneficiaries	The practice targets upper secondary school students. According to the available data, the second (2021-2022) and third editions (2022-2023) of the project engaged, respectively, • 2.344 students and 138 teachers, with 1.935 certified PCTOs and 197 project work delivered[24]; • Over 2.700 students[25].
Needed resources	Instructional material (video-lessons and interactive learning modules) and learning app, available free of charge for the schools enrolled in the project.
Methodology	*Futurità* is a civic and digital education project realised by the *Intesa Sanpaolo* group in collaboration with WeSchool, an Italian start-up specialising in EdTech. The project was designed to support students in developing knowledge around the Sustainable Development Goals and gaining coherent guidance in choosing the university studies or

[24] Source: https://www.weschool.com/it/case-studies/futurita/. Accessed on 15 July 2023.
[25] Source: https://group.intesasanpaolo.com/it/sezione-editoriale/eventi-progetti/tutti-i-progetti/educazione/2021/06/futurita-progetto-educativo-sulla-sostenibilita. Accessed on 15 July 2023.

profession. The proposed training pathway is focused on the development objective of Education for Sustainability, and therefore not only regarding the conservation of the environment and natural resources, but also the construction of environments, cities, and ways of living that are inclusive and respectful of people's fundamental rights. Within this framework, the project proposes **participatory experiences to schools in which students can become promoters of actions of renewal and interconnection between environment, economy and social relations**. Thus, the educational pathway offers teachers and students the opportunity to approach the idea of 'futurity', meaning it as the ability to foresee a context of imminent realisation, to project oneself in work and to orientate choices accordingly.

Structure of the training path

In addition to the UN's 2030 Agenda and environmental sustainability, Futurità offers girls and boys topical issues such as data privacy on social networks, smart mobility and new digital professions. The blended teaching method provides for activities to be carried out online and moments of discussion in the classroom. The course contents are always available via the project digital platform. The various topics - dealt with in a simple, interactive manner and with direct and immediate language - are made available through video testimonials, information pills, learning paths and online gamefication, and experiential activities in the classroom.

The learning path includes four modules:

1. The 1st module - dedicated to the themes of the 2030 Agenda and the data economy - proposes reflections on the impact of our economy, talking about sharing mobility, domotics, 5G, themes close to the world that the young people know and experience closely.
2. The 2nd module focuses on the importance of digital citizenship and addresses issues related to data security and the conscious use of social networks and search engines. Topics such as protecting

privacy, protecting one's digital identity on social networks and identifying fake news are covered.

3. The 3rd module, developed with a view to university and professional orientation, explores the professions of tomorrow in the field of sustainability through video interviews with professionals such as the Environmental Risk Manager or the Digital Transformation Manager, who explain how sustainability has concrete implications for the organisation of companies.
4. The 4th module is a challenge in which students try their hand at the role play "A CEO's Week". In the game, the students, divided into groups, take on the role of a CEO and face the development of a project to improve the sustainability quotient of their company, imagining strategies and actions to face the challenges of the future. A moment in which the students put themselves to the test by bridging the gap between theory and practice.

The project works realised by the students at the end of the course are evaluated by a scientific commission based on criteria of feasibility, creativity, originality and impact, which rewards the best ones with an educational opportunity.

The 3rd edition of the project also introduced a **digital gamified community** dedicated to teachers, who were able to acquire points by sharing what they had done in class and actively participating in the Futurità community.

In addition, as in previous editions, a final challenge was set up for students on the following areas:

1. Design a new data centre with low environmental impact
2. Design the office of your dreams
3. Create a campaign against fake news
4. Smart mobility: rethink transport in your city
5. Create your own corporate netiquette

	204 projects were produced, and the students who developed the 5 winning projects were able to participate in a two-day bootcamp dedicated to financial education organised by Intesa Sanpaolo.
Success Factors	*Futurità* offers students the opportunity to learn about the different dimensions of sustainability through **active learning experiences, project-based and challenge-based learning approaches**. They're empowered to reflect on the interconnectedness of people, environment and economy while experimenting with real-world challenges. Parallelly, they're stimulated to reflect on the meaning of study or career path, in terms of orientation, thanks to – inter alia - the inclusion of video interviews with professionals, providing students with insights into real-world career opportunities related to sustainability and digital transformation, enhancing their understanding of potential future paths. Furthermore, the combination of online content and classroom discussions provides a well-rounded learning experience, allowing students to interact with both digital resources and their peers, while the inclusion of experiential activities, role-playing, and challenges bridges the gap between theory and practice, enabling students to apply their knowledge to real-world scenarios.
Competences of the GreenComp addressed	Valuing sustainability, Supporting fairness, Promoting nature, Systems thinking, Critical thinking, Problem framing, Futures literacy, Exploratory thinking, Individual initiative
Related Resources	Project website: https://www.futurita.it/ Project-related webpage on Intesa Sanpaolo's website: https://group.intesasanpaolo.com/it/sezione-editoriale/eventi-progetti/tutti-i-progetti/educazione/2021/06/futurita-progetto-educativo-sulla-sostenibilita

4.6 Alfieri dell'Ambiente

Alfieri dell'Ambiente	
2022	**Authors:** Dusty Srl - SRR Catania Area Metropolitana
Goals	The aim of the project is to promote environmental education on urban decorum, to transfer to local communities the importance of each person's civil and social responsibility towards the care of collective spaces. In particular, the project aimed to: • improve the level of respect for civic rules and maintaining urban decorum; • reinforce the concept that the well-being and cleanliness of the area can only be achieved if everyone does their part; • raise awareness of the importance of cooperation, encouraging people to ask not only what the municipality can do for its citizens, but also and above all what the individual citizen can do for his or her municipality; • show a possible world where everyone can enjoy a clean territory; • promote inter-generational dialogue, reversing roles, driving the youngest to teach their parents and adults about respect for the environment, encouraging them to bequeath a better world and a more sustainable future.
Target Groups - Beneficiaries	The project is addressed to school students at all levels, their families and in general all citizens living in the municipalities in the province of Catania (Southern Italy) where the promoter, the company *Dusty*, delivers environmental hygiene services.
Needed resources	• Educational materials for the environmental education phase, including lesson plans, presentations, and resources on waste management, recycling, and sustainability. • Video production tools (e.g., cameras or smartphones for recording, video editing software) and training materials on video creation.

- Online platform or website to host the videos, share information about the project, and facilitate the online contest and voting.
- Partnerships, for instance, with local waste management companies, educational institutions, community organizations, and possibly local media outlets. These collaborations can provide additional expertise, resources, and potential avenues for broadcasting the students' videos to a wider audience.

Methodology

The project is articulated into three main phases:

1. Dusty Educational – The first phase is dedicated to environmental education in the classroom. Students are accompanied on a path of active citizenship, awareness towards a sustainable lifestyle, and acquiring good daily practices to transfer to their families. Students are then called upon to use creative tools to design messages to raise awareness of environmental respect in public spaces. The central theme is separate waste collection, an indispensable action to protect urban decorum. In particular, the central theme is declined by delving into the following topics:

• the knowledge of the urban hygiene service and the integrated waste management cycle (e.g., ecological islands and municipal collection centres);
• the reinforcement of sustainable practices based on the "Three Rs" formula: Waste Reduction, Recycling and Reuse;
• the proper disposal of cigarette butts, educating smokers to stop scattering them indiscriminately in city streets;
• condemning 'die-hard' bad habits such as dog faeces in the street;
• combating the formation of unauthorised micro-dumps due to the intolerable abandonment of rubbish, often bulky, and bags containing food consumed in the street;
• the cleaning of public areas, including the proper use of street litter bins and combating the soiling of walls, buildings and public transport;
• any other issue useful for the responsible and conscious growth of virtuous users and combating disregard for the city's decorum.

	2. Activities on the territory – In this phase, students organise awareness-raising events in the local area to convey to their fellow citizens the messages devised during the training course. Through "on the road" initiatives, the students can act as "*Bishops of the Environment*" who defend their city. Through in-presence actions, face-to-face dialogues, artistic installations, and any other creative initiative in line with the objectives set, the new generations will demonstrate how the correct behaviour of each one benefits the entire citizenry. **3. Storytelling and online contest** - The final phase is dedicated to transferring the experiences lived during the first and second phases. During the previous phases, students will document their activities with photos, videos, images and graphics. In this last stage, they will be asked to use their material to create a video of a maximum of 3 minutes to tell their adventure as "Bishops of the Environment". A video that expresses their emotions and state of mind during the operational phases and reiterates the message of raising awareness of urban decency, which is the project's core idea. All the videos - one for each participating class - are published and visible on a special web page on the promoter's website so that families, friends and all citizens can vote for the three most deserving stories. The winners are awarded an educational visit to local waste recycling plants so that students can learn in-depth about the virtuous chain that brings waste back to life and rescues it from the fate of becoming waste. Furthermore, some videos are also selected by *SRR* - a joint-stock consortium company in charge of the integrated waste management service in the Catania metropolitan area - to be broadcast as TV commercials on local broadcasters and social channels.
Success Factors	The practice effectively integrates classroom-based environmental education and practical learning experiences, encouraging learners to take on an active role and apply the theoretical knowledge developed through the lessons to implement raising-awareness actions and community-oriented initiatives. Through digital storytelling, learners are empowered to communicate their vision of a sustainable future

Competences of the GreenComp addressed	Valuing sustainability · Supporting fairness · Critical thinking · Collective action · Individual initiative
Related Resources	Project-related webpage on the promoter's website: https://www.dusty.it/alfieridellambiente/progetto/ Outcomes of the practice: https://www.dusty.it/alfieridellambiente/blog/category/video/

4.7 Agente0011

Agente0011	
2015-2021	**Authors:** ActionAid, La Fabbrica SRL & Mandragola Editrice
Goals	Agent0011 is a **digital and interactive space** built around the SDGs. It constitutes an operational tool to promote awareness-raising, critical understanding and territorial activation on Agenda 2030 issues among 6- to 19-year-olds, initiating a learning and mobilisation process to strengthen active citizenship and thus achieve the educational goals for global citizens. It aims to affirm the ethical and social values of the promoters by stimulating reflection at school on all the issues of sustainable development: rights and equality, goods and resources, well-being and health, environment and territory.
Target Groups - Beneficiaries	The practice directly targets students from lower to upper-secondary schools but also aims to involve informal education stakeholders (such as youth centres, sports clubs, and youth associations). Since 2015, the initiative has engaged over 280 student teams throughout Italy in over 100 educational challenges, leading to 5.465 contributions uploaded by young people on the platform.
Needed resources	This practice relies on a digital platform and a community of educators, students and informal education providers participating in community-generated missions. The platform is freely available in Italian for educators, who can register on the platform and enrol their team(s). Education and training providers from other countries can implement training initiatives inspired by the success factors of this practice, for instance, by designing challenge-based learning experiences, creating and managing local communities of changemakers and engaging individuals in teaming up to find solutions to sustainability challenges jointly.
Methodology	This initiative engages young individuals from all across Italy in an online community called "Agente0011", encouraging them to participate in

	monthly sustainability missions. Through the tools and methodologies provided by the online educational platform "Agent 0011," children and young people contribute to spreading crucial and timely themes such as fighting inequalities, protecting the planet and its inhabitants, and promoting inclusivity. The platform's development was part of the "Agente0011" project, co-financed by AICS - the Italian Agency for Development Cooperation, as part of the Global Citizenship Education call for proposals. Since 2015, the platform has been using an active learning methodology to raise awareness and foster critical understanding and mobilisation among young people regarding the themes of the 2030 Agenda and the Sustainable Development Goals. By participating in weekly or monthly missions developed by the *Agente0011* Community, children and young people earn points and badges to climb the final ranking and win special prizes from leading Italian NGOs. Missions consist of tests and activities that are based on specific tasks and content but imply and encourage the use of transversal teaching skills: writing and oral expression skills, technological skills, artistic sensitivity, the use of social networks, and the adoption of a group, shared and participatory way of working. Through the teams' participation in the missions, a virtual community of students is thus established who create and share content, generating a virtuous circle of reflection and ideas around important issues. The platform includes an 'Impact Thermometer': for each mission a team completes, a small notch will be added to the thermometer, and the challenge for the entire Agent0011 community is to reach the full score. The more missions completed by each team, the faster the common goal will be achieved: to ensure that the principles and goals of sustainable development are understood and disseminated as far as possible by future generations.
Success Factors	*Agente0011* actively engages and empowers young people by providing them a platform to participate in meaningful missions and team activities, thus fostering a sense of ownership, responsibility, and agency, enhancing their commitment to sustainability challenges. Promoting

	collaboration and teamwork among students, educators, and various educational institutions, it not only enhances participants' understanding of the topics but also encourages them to exchange ideas and perspectives with others, enriching the overall learning experience. Through a gamified learning experience powered by missions focused on sustainability, inclusivity, and global challenges, students can develop a deeper understanding of diverse perspectives and the interconnectedness dimension of sustainability issues. Furthermore, thanks to the 'Impact Thermometer', students can also visualise the effect of their participation and engagement in sustainability challenges.
Competences of the GreenComp addressed	Valuing sustainability · Systems thinking · Critical thinking · Futures literacy · Exploratory thinking · Collective action · Individual initiative
Related Resources	Project platform: https://agente0011.it/.

4.8 Passeggiando nell'ambiente

Passeggiando nell'ambiente	
2022	**Author:** Istituto Superiore per la Protezione e la Ricerca Ambientale (*Institute for Environmental Protection and Research* - ISPRA)
Goals	The aim of the project (literally, *Walking in the environment*) is to encourage green thinking, driven by informed competence and 'feeling', from which the concepts of sustainable development and circular economy are born and nurtured, i.e., a model of the economy that regenerates itself by focusing on material recycling, for greater efficiency and less waste.
Target Groups - Beneficiaries	Students and teachers of lower and upper secondary schools.
Needed resources	Instructional material (e.g., video-lessons or interactives presentations), scientific publications, data and statistics about the topics covered in the program. Such resources are freely available in Italian on "*Educazione Digitale*" (www.educazionedigitale.it), free educational platform for teachers created and managed by the Benefit company *CivicaMente* (https://www.civicamente.it/).
Methodology	*Passeggiando nell'ambiente* is a multimedia educational program that stems from a homonym publication[26] by the Institute for Environmental Protection and Research (ISPRA), addressed to young people. The project intends to involve secondary school teachers and students in a digital didactic pathway integrating the content of the original publication with multimedia and interactivity. Particularly, ISPRA offers schools the following tools and resources: - a media education tool, namely "Open Mind", with content, scientific data and ideas for workshop activities; - a monographic didactic guide, for further in-depth study of the topics;

[26] ISPRA (2022). *Passeggiando nell'ambiente*. Available at https://www.isprambiente.gov.it/files2022/pubblicazioni/pubblicazioni-di-pregio/passeggiandonellambiente_light.pdf

- data, statistics, treatises and publications to promote the adoption of a scientific approach to environmental issues.

Through six learning units, the digital learning programme retraces paths and situations covered in the publication, such as the city, the countryside, the sea, the river, an ideal return home, and a special concluding educational section dedicated to sustainability. Each learning unit includes a video-lesson, insights and an activity lab, providing educators with practical guidelines and reusable resources, as summarised below.

1	Walking through the city	
	Topics	Air quality, transportation, waste and noise.
2	A trip to the countryside	
	Topics	Soil, biodiversity, agriculture and silviculture.
3	Towards the sea	
	Topics	Coast, beach, sea and fishing.
4	Going up the river	
	Topics	Water quality, water withdrawals, river course and mountains.
5	Returning home	
	Topics	Waste reduction, reuse, recycle and sharing.
6	An agenda for sustainability	
	Topics	Solidarity, inclusion, fairness and sustainability.

The project proposes an educational perspective of high scientific value, as it is based on the ISPRA Environmental Data Yearbook: for each path explored, the state of health of the environment is described in an easy-to-understand way, including through scientific data and fundamental information to photograph its conditions.

Success Factors

The practice allows a non-expert and young audience to benefit from the richness of scientific and statistical analyses, while also including emotional aspects and openness to the broader context of the circular economy and sustainability. It converges environmental education with

	civic education and highlights the importance of a scientific and precise approach to environmental issues.
Competences of the GreenComp addressed	Valuing sustainability · Systems thinking · Critical thinking · Problem framing · Futures literacy · Exploratory thinking · Individual initiative
Related Resources	Project webpage: https://www.educazionedigitale.it/passeggiandonellambiente/

4.9 GECO for School

GECO for School	
2021-2022	**Author:** GECO SRL Società Benefit
Goals	GECO For School is an educational project for high school students throughout Italy that aims to deepen, raise awareness and acquire skills in the field of sustainability.
Target Groups - Beneficiaries	Upper secondary students all over Italy.
Needed resources	Virtual reality platform.
Methodology	GECO For School is a free green education programme hosted in a virtual environment that allows direct interaction through avatars with which each student can glimpse and explore first-hand content related to the world of sustainability and concerning the topics of renewable energy, eco-food, green mobility, circular economy and sustainable tourism. The topics are explored through a mini-web series, including a knowledge check at the end of each episode. The five thematic classes were created with the contribution of sector experts and university professors to guarantee professionalism and accuracy in a way closer to the new generations. The web series sees the adventures of the boy Jack, who tackles, class by class, the themes of sustainability thanks to informative content, data analysis and a final interview with a green expert from each sector. At the end of each episode, a quiz is presented to test attention and learning of the video content. Only once all the classes and quizzes have been completed can the student download the certificate of participation. The virtual environment includes a roll-up of extra informative content with interviews with green experts and a dedicated area with interactive stands of GECO For School partner companies and universities where learners can get to know, learn from and come into contact with realities that look to the sustainable future.

	The transition from virtual to real is implemented through a national contest (i.e., "Your Sustainable School"). In this practical contest, schools and their students are invited to design a project to make their schools more sustainable. The GECO For School Scientific Committee evaluates the projects and awards prizes during a final event.
Success Factors	**Engaging virtual environment** - Using a virtual environment with avatars and interactive elements creates an engaging and immersive learning experience for students, which resonates with the preferences and tendencies of new generations. Furthermore, allowing them to interact directly with content through avatars lets them explore sustainability topics first-hand. **Collaboration with experts** – GECO involved sector experts and university professors in creating the thematic classes to ensure the accuracy and professionalism of the content. Their contributions lend credibility and depth to the educational material. **Storytelling approach** - Using a mini-web series with a central character, Jack, who explores sustainability themes through adventures, makes the learning experience more relatable and engaging for students. **Additional Informative Content:** Including extra informative content, such as interviews with green experts, provides students with a deeper understanding of the topics and exposes them to real-world insights. At the same time, interactive stands from partner companies and universities within the virtual environment expand students' learning opportunities. It offers a chance to connect with organizations actively contributing to sustainable practices. **Recognition and Incentives** - Awarding prizes for the best sustainability projects incentivizes participation and encourages learners and schools to engage with the program actively.
Competences of the GreenComp addressed	Valuing sustainability, Supporting fairness, Promoting nature, Systems thinking, Critical thinking, Problem framing, Futures literacy, Exploratory thinking, Collective action, Individual initiative
Related Resources	Practice website: https://www.gecoforschool.com/

4.10 Economie Circolari di COmunità (ECCO)

Economie Circolari di COmunità (ECCO)	
2019-2021	**Author:** Legambiente
Goals	The ECCO (*Circular Economies of COmmunity for Environmental, Social and Cultural Regeneration*) project - funded by the Italian Ministry of Labour and Social Policies – aimed at promoting and developing the circular economy through an integrated approach capable of generating environmental, economic and social benefits both on a national and local scale. Particularly, the project pursued the following objectives: • disseminate knowledge and information on waste prevention, reuse and recycling • raise awareness among consumers and local authorities on the possibility of reducing waste through its reuse or the purchase of remanufactured products; • encourage the emergence of new economic activities related to the circular economy through the development of a market system for "second life" goods; • increase the employability and competitiveness of young people in the circular economy sector, favouring the inclusion of socially weak people in the labour market • contribute to the improvement of environmental quality within cities by reducing the quantity of urban waste through the promotion of reuse and recycling; • experiment new forms of social inclusion and innovation based on the concept of community welfare that, through the creation of communities that promote the exchange and reuse of unused goods, foster integration and social cohesion.
Target Groups - Beneficiaries	The project was addressed to the following target groups[27]:

[27] Source: *ECCO* project application form published by Legambiente at https://www.legambiente.it/wp-content/uploads/Formulario-

	• 7.000 upper-secondary school students (17-20 years old); • 600 upper-secondary school teachers; • 26.000+ citizens, including 200 people with fewer opportunities for social, economic and relational barriers; • 520 companies, schools, universities and public institutions; • 50 local public administrations; • 250 non-profit organisations.
Needed resources	Practical guides to implement some project activities are available free of charge on the project website. Vocational education and training providers can draw inspiration from this practice, for instance, to establish green communities at their local level. They would require, as a way of example, establishing long-term partnerships with local businesses, communities and Third Sector organizations to enhance students' exposure to real-world applications and provide educational or career orientation opportunities; planning workshops and practical and experiential training sessions on green professions; collaborating with experts from circular economy sectors for the creation of comprehensive curriculum, or act as mentors or guest speakers to provide practical insights to students; offering teachers and trainers opportunities for professional development related to sustainability education; encouraging student-led initiatives and leadership roles within the initiative, allowing students to take ownership and contribute their ideas and creativity.
Methodology	The ECCO project worked on three main axes: the improvement of professional skills in the circular economy sectors; the empowerment of citizens and communities as facilitators of the transition to a circular economy, making them more aware of their role as agents of change; and the increase of citizens' awareness of the environmental, economic and social benefits of responsible lifestyles and consumption. The project led to the creation of 15 community hubs in Italy, called *Ri-hub*, which

ECCO.pdf?_gl=1*knrztj*_up*MQ..*_ga*MjExOTM3NDk2NC4xNjkzMzQwMDM3*_ga_LX7CNT6SDN*MTY5MzM0MDAzNS4xLjAuMTY5MzM0MDAzNS4wLjAuMA. [Accessed on 10 July 2023]

organise training courses for green jobs focusing on different sustainable supply chains: from ecotourism to eco-restaurants, from cycle tourism to beekeeping, from the regeneration of IT equipment to sustainable deliveries.

Project activities include:

- **Orientation activities for young people**: Orientation days were held at the Ri-Hub locations for students in their final year of secondary school, at business incubators and employment centres to present the employment opportunities offered by the circular economy to young people. During the meetings, a Practical Guide to Circular Economy Professions, which is freely available on the project website, was distributed and educational tours were organised, such as educational visits to companies operating in the circular economy and Ri-Hubs;
- **Training for teachers**: Design workshops were held to orient secondary school teachers to make them more aware of the circular economy.
- **Ri-Lab training courses**: Practical training workshops of 40 hours each were implemented within the Ri-Hubs to develop the identified economic sectors and facilitate the introduction of unemployed people into employment. Each Ri-Hub included two workshops on two different sectors and a seminar for the development of self-entrepreneurship;
- **Reuse and recycling workshops**, such as creative reuse workshops (e.g., workshops on ideas for recovering and upcycling materials and objects in fashion, art and design) and a repair workshop to educate people to repair and prevent waste;
- **Dissemination events, awareness-raising meetings and community forums** where citizens discussed the reasons and benefits of the circular economy;
- **Production of information material and useful tools** in a "How-to" series published online as open source, available free of charge on the project website.

Success Factors	One of the key success factors of this practice is adopting an **ecosystemic approach to sustainability education**: it effectively managed to create hubs for upskilling and reskilling young people and unemployed persons, equipping them with the skills needed to engage in a greening economy and society. Furthermore, the project has provided hands-on training workshops and experiential learning opportunities on green jobs, enabling students to develop the knowledge and skills related to several green professions and orientation activities to help its target group understand the diverse career opportunities in the circular economy.
Competences of the GreenComp addressed	Valuing sustainability, Supporting fairness, Promoting nature, Systems thinking, Critical thinking, Problem framing, Futures literacy, Exploratory thinking, Collective action, Individual initiative
Related Resources	Project website: https://economiecircolari.eu/

Conclusions

Despite the significant progress made over the past years, characterized by policy evolutions and inspirational and diverse educational initiatives, there is still work to be done to achieve an effective and consistent integration of GreenComp in the Italian vocational curricula and programs.

Data presented in this publication shows **an increased demand for a green-skilled workforce by Italian companies, but also an increased mismatch**. The consolidation of green jobs entries planned by companies in 2022 and the increased demand for green skills are positive signs of the growing awareness and interest in environmental sustainability and the green economy among employers, almost half of the 4.2 million green job positions opened in 2022 remained vacant, highlighting an increased mismatch between labour supply and demand and a growing need for green-skilled professionals.

Both the administration of the questionnaire and the review and analysis of the Italian best practices revealed needs, required actions, and suggestions on how to implement new opportunities to support learners in developing sustainability competences. These include the following:

- **Active Student Involvement**: All green skills learning experiences actively involved students, encouraging them to actively participate in the design and implementation of activities, stimulating their curiosity and creativity, and helping them develop a sense of responsibility toward the environment.

- **Interdisciplinarity**: Many of the practices integrated different disciplines and areas of study, combining science, humanities and art subjects. This interdisciplinary approach enabled students to better understand the complexities of concepts related to

sustainability and to develop a systemic view to problem solving and the creation of new solutions.

- **External Collaborations**: Green learning experiences often involved collaborations with experts in the field, environmental associations, artists and other stakeholders outside the education and training provider. These collaborations enriched students' experiences and provided an "augmented" perspective with respect to environmental challenges and possible solutions.

- **Use of Innovative Technologies**: the use of innovative technologies and digital tools such as virtual reality and interactive games proved to be of paramount importance in motivating students and making the 'learning experience more stimulating, exciting, and engaging.

- **Focus on Local Context**: Many learning experiences focused on specific environmental issues present in well-defined local contexts. Students were involved in finding solutions to apply within their own local area and community. This approach deepened the experience and increased the sense of belonging and commitment to the local area.