Development of greening scenarios for VET Institutions

everGREEN

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List of abbreviations

EAP	Environment Action Programme
ESD	Education for sustainable development
EU	European Union
GHG	Green House Gases
ISO	International Organization for Standardization.
ISO14001	ISO Environmental Management System
SD	Sustainable Development
SDGs	United Nations Sustainable Development Goals (2015-30)
UNESCO	The United Nations Educational, Scientific and Cultural Organisation, a specialised agency of the UN aimed at promoting world peace and security through international cooperation in education, the sciences, and culture.
VET	Vocational Education and Training

FOREWORD

This document has been developed in the framework of the "everGREEN – Empowering Vocational and Training – VET Institutions towards Greener" Project, 2021-2-DE02-KA220-VET-000049358, which is funded by the Erasmus+ Programme, under Key Action 2, Cooperation partnerships in vocational education and training.

The outlined nine scenarios report is based on a matrix providing guidance and a concrete framework for the VET green transition in all European countries participating in everGREEN Project. Details about the development of the nine different scenarios include all possible combinations among two main criteria: (1) organisation readiness on the horizontal axis (low-medium-high) and greening objectives on the vertical axis (light-medium-intense).

The report focuses on recommending viable and measurable indicators to facilitate the monitoring of the green transition process. It contains examples and actions that could be followed or that could serve as inspiration for new measures to achieve the desired higher level of greening of the VET system.

CHAPTER ONE

Introduction

1. Introduction

The 2030 Agenda for Sustainable Development was adopted by all United Nations' member states in 2015, and the core of this agenda are the 17 Sustainable Development Goals (SDGs).
The SDGs nowadays are an urgent call to action and in this context, the European Union has adopted EU environmental policies towards 2030 and aligns it with the objectives of the European Green Deal[1].
Accordingly, the Commission's proposal from October 2020, the priority objectives of the 8th Environmental Action Programme (EAP) are:

1. Climate change mitigation to reach the 2030 greenhouse gas (GHG) emission reduction target
2. Climate change adaptation
3. Accelerating the transition to a non-toxic circular economy
4. Pursuing zero-pollution (including in relation to harmful chemicals)
5. Protecting, preserving and restoring biodiversity
6. Reducing environmental and climate pressures related to the EU's production and consumption[2].

Government strategy, and companies' actions in response, will henceforth be the primary driver of this climate transition. However other sectors may play a supporting and relevant role contributing to an orderly transition to net zero GHG emissions.

The European Union is also encouraging the education and training sector to take action to contribute to the green transition and to strengthen the sustainability competences of all learners. In 2020, the Council recommendation on Vocational education and training (VET) for sustainable competitiveness, social justice, and resilience, highlighted that VET is a driver for innovation and growth and prepares for the digital and green transitions and occupations in high demand[3].

Likewise, the updated European Skills Agenda and the Osnabrück Declaration emphases on four areas for the years 2021 to 2025, with the third one specifically focusing on sustainability - a green link in VET, describing VET Institutions as enablers of innovation and an essential foundation for green, digital, and sustainable growth[4].

In this area, the everGREEN project envisions the adoption of action plans preparing VET communities - including managers, staff, and learners - to initiate the greening process of the sector, to change behaviour and adopt a greener mindset at both organisational and individual levels.

As part of the framework of this project, the first work package (WP 1) proposes the development of nine scenarios comprising a set of tools, methods and activities to support VET institutions in achieving their green goals.

[1] Communication from the Commission to the European Parliament, the Council, the European, Economic and Social Committee and the Committee of the Regions, The European Green Deal, COM/2019/640 final.
[2] Environmental Action Programme, 2022.
[3] Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness, and resilience 2020/C 417/01.
[4] Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies.

CHAPTER TWO

Conceptual Framework

2. Conceptual Framework

A literature review collected models from many educational organisations, schools, secondary schools and universities that have published practical experiences in preparing and implementing sustainable actions, good practices, and action plans[5] [6] . Universities are global leaders in demonstrating and promoting all forms of environmental, social and economic sustainability that impact locally, regionally, nationally and internationally.

The Vocational and Training sector usually is positioned between secondary schools and universities and prepares students for employment or further studies. This sector predominantly consists of public institutes that are multipart, with diverse focus areas, organisational cultures, and curricula[7].

To better approach the response of VET to the global challenge of sustainable development, we will use the catchphrase "Greening VET" which refers to the sustainability transition of these institutions. The analysis started focusing on the SDGs (see Figure 1).

Fig 1. Sustainable Development Goals, United Nations 2015

Furthermore, the three pillars of sustainability – the environmental, the social and the economic – and their interrelationships, as well as the crucial role of a fourth pillar, governance, which cuts across the three aforementioned pillars of sustainable development (SD), are recognised.

[5] Guideline UI Green Metric world University Rankins, 2022.
[6] Chitranshi., Dr. Jaya et al. "Role of Sustainability in Educational Institutions." (2016).
[7] https://education.ec.europa.eu/education-levels/vocational-education-and-training

- Environmental sustainability refers to practices and responsibilities that preserve and conserve our natural world. It focuses on the impact we have on ecological systems.
- Social sustainability pertains to the impact that organisations have on people – both in terms of individuals and broader communities. Education, health, and prosperity are key tenets here.
- Economic sustainability has always been a pillar of business. The cost of the operations and the resulting revenue. This means a reasonable balance is required that focuses on long-term environmental and social stability while remaining economically viable[8].

However, the path to sustainable development requires a profound change in the way we think and act. In order to create a more sustainable world and address sustainability-related issues as described in the SDGs, individuals must become sustainability change agents, and therefore education is crucial to achieving these goals.

2.1. Approaches to Sustainability in VET Institutions

UN Environment's challenge in the 2030 Agenda is to develop and enhance integrated approaches to sustainable development - approaches that will demonstrate how improving the health of the environment will bring social and economic benefits[9].

Based on the report "Greening Technical and Vocational Education and Training" published by UNESCO to help technical and vocational education and training (TVET) leaders and practitioners improve their understanding and implementation of education for sustainable development (ESD), we have selected the following four areas that are most appropriate for European TVET Institutions[10].

2.1.1. Greening the Campus

The aim is to promote integrated management of the campus to strengthen operational sustainability mechanisms. It aims to ensure that sustainability principles are applied, resources are deployed and financial returns and benefits to the institution are identified.

[8] United Nations, "Transforming our World: The 2030 Agenda for Sustainable Development," 2015.
[9] United Nations (2020). The Climate Crisis - A Race We Can Win. https://www.un.org/en/un75/climate- crisis-race-we can-win
[10] Greening Technical and Vocational Education and Training. A practical guide for institutions, 2017.

2.1.2. Greening the Curriculum

The aim is to integrate sustainability into the existing curriculum and training. It aims to embed environment-related content and green skills into the curriculum and training. In doing so, teachers and trainers are gradually equipped with the competences they need to teach relevant content across subjects or in a specific competence area.

2.1.3. Greening the Institutional Culture

The aim is to integrate sustainability into all aspects of the institution. An ecological culture exists when sustainable development is an integral part of all an institution's strategies and plans, the benefits are demonstrated by stakeholders and are reflected in a range of institutional outcomes.

2.1.4. Greening the Community

The aim is to work with businesses and communities to develop and implement the institution's sustainability plans and programmes, which can be used to pursue common goals and make sustainable practices in the workplace and sustainable lifestyles the norm.

2.2. Sustainable Categories

Quality education, and in particular SDG target 4.7 on sustainable development and global citizenship, is instructive: it highlights the power of transformative education to ensure by 2030 that all learners acquire the knowledge and skills needed to promote sustainable development, including through education for sustainable development and sustainable lifestyles[11].

The conception of Education for Sustainable Development (ESD) has evolved to respond to the need for intervention to stop the deterioration of the natural environment and, consequently, to stop the impact caused by anthropical activities in our contemporary decades[12].

To identify the environmental aspects of related activities, ISO 14001:2015[13] proposes some useful categories to consider. It is important to outline the following definitions.

- **Environmental objective**: An overall goal, arising from the environmental policy, which an organisation sets itself to achieve, and which is quantified where practicable.
- **Environmental target**: A detailed performance requirement for the organisation, quantified where possible. It must be set and met in order to achieve the objectives.

[11] Education for Sustainable Development Goals: learning objectives (2017).
[12] Framework for the Implementation of Education for Sustainable Development (ESD) beyond 2019.
[13] ISO 14001:2015: Environmental management systems – Requirements with guidance for use, 2015.

- **Environmental aspect**: An element of an organization's activities, products or services that can interact with the environment and may impact on the environment.
- **Environmental impact**: Any change to the environment, weather adverse or beneficial, resulting from an environmental aspect.

Sustainability categories listed below will be considered as the starting point to structure the level of targeting scenarios in the everGREEN project and assure the link to the SDGs guideline.

- Education
- Transportation or Mobility
- Resources (Energy & water)
- Wastes & Circularity

Not all environmental or sustainability aspects & impacts are equally important or produce the same level of results, therefore determination of their significance in this context is necessary to enable prioritisation of responses, for example through sustainability action plans.

There might be institutional light, medium or high-quality initiatives aimed at addressing the route towards sustainable or greening institutions, but these are restricted or limited to the funding approval and the long-term paybacks of green investments.

CHAPTER THREE

Development of greening scenarios

3. Development of greening scenarios

3.1. Objective of the nine greening scenarios

Green transition in the education sector is measured by the sustainability goals and the corresponding policies, measures and programmes of the institutions. In this context, vocational education and training (VET) institutions must have their own goals, prioritised strategies, indicators and a comprehensive plan to become a greener institution.

Fig 2. Workshop definition of categories and bases to the nine scenarios everGREEN matrix

The structure developed in this project integrates the description of nine scenarios matrix, where the Y-axis depicts the greening level, or VET greening ambition level, categorized as light, medium and intense target. The X-axis represents the level of vocational training maturity to assess how far the measures have progressed. It may be measured at low, medium, or high level.

The designed scenario matrix provides a guideline and a very concrete framework for the green transition in VET in all countries participating in the everGREEN project. It analyses nine different scenarios corresponding to each possible combination of low-medium-high readiness and light-medium-intense greening targets.

The scenarios include examples, viable and measurable actions to facilitate the monitoring of the process. The actions could be equivalent or can be the light to think in similar measures to reach the intended level of greening.

3.2. Definition Process of the nine greening scenarios

To outline the following nine greening scenarios matrix, ARDITEC followed two main activities:

1. Literature review of educational organizations and their greening transition.
2. Workshop with everGREEN Consortium Partners

The consortium partners participated in a workshop assisted by ARDITEC, where they actively discussed, and conveyed the base of the nine scenarios.

3.3 Construction of the nine greening scenarios Matrix

The workshop's main outcomes and agreed variables to include in the axes of the matrix, inspire further analysis and conclusively the following nine greening scenarios matrix approach.

The architecture combines different levels of objectives in terms of individual and collective action on institutional investment to increase ambition with different levels of readiness in terms of metrics, monitoring and optimisation.

3.3.1. Targeting or Ambition

Defined by three levels as shown in figure 3 and detailed below:

- Level 1 (Light): There is awareness for the topic and staff and/or students occasionally take individual, uncoordinated actions.
- Level 2 (Medium): Staff and/or students have the feeling they need to act. They systematically take decisions/make actions using their own skills and resources.
- Level 3 (Intense): There is institutional support for strategic, holistic implementation of actions and measures throughout the VET organisation.

3.3.2. Readiness

Defined by three levels as shown in figure 3 and detailed below:

- Low Level: The organization starts to measure, define, and record indicators for the action. Raising awareness is the key starting point in this level.

- Medium Level: The organization follows up, monitors, and reports collected and updated KPIs. Organization, groups, and Individuals are committed to promote sustainability.

- High Level: The organization keeps track of actions. Updates the strategic and have implementation plan to optimize results and engages in a self-improvement loop. Organization and individuals are engaged and promote sustainability to others.

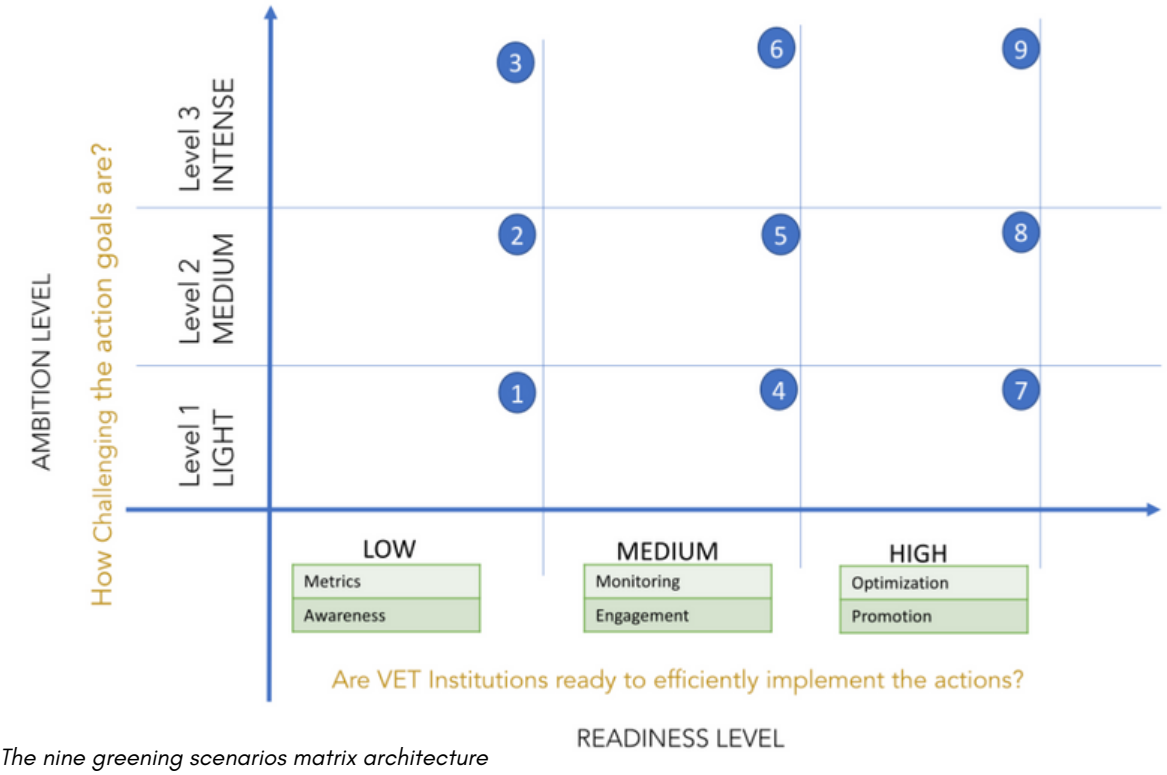

Fig 3. The nine greening scenarios matrix architecture

The matrix should be applicable regardless of VET stage or status, and actions are generally aligned with the filtered categories and SDGs. Education is highly interconnected and transversal to all SDGs, and measures in other categories have the potential to contribute to specific SDGs, as shown in Figure 4.

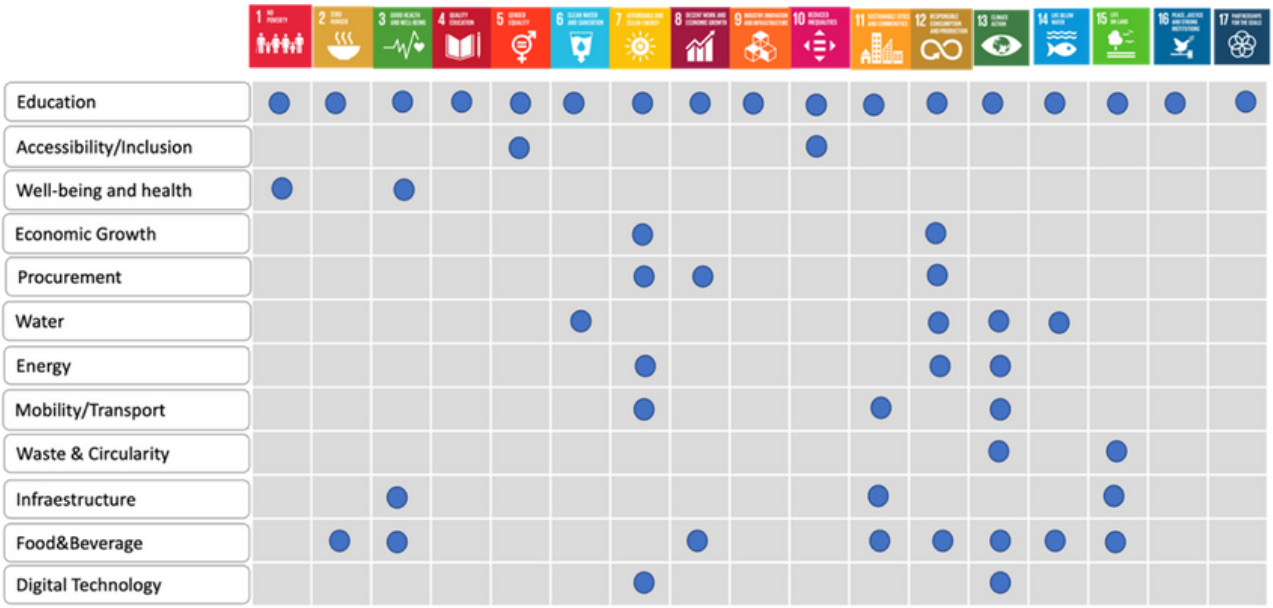

Fig 4. General Categories to build everGREEN scenarios linked to SDGs

CHAPTER FOUR

Implementation

4. Implementation

4.1. Actions towards greening VET Institutions

The matrix format can be a useful template for assessing the diversity of interventions relevant to VET, which can include all sustainable actions from curriculum to community. Tables 1-3 explain the scope for selecting the target level, taking into account the measures implemented in the above categories

SOCIAL

DIMENSION	AREA	Link to SDGs	OBJECTIVE	LEVEL 1 (Light)	LEVEL 2 (Medium)	LEVEL 3 (Intense)
SOCIAL	EDUCATION	SDG 3 SDG 4 SDG 8 SDG 17	GREENING THE CURRICULUM	VET teachers occationally include subjects relating to sustainability within the curriculum planning.	VET teachers, students are systematically considering sustainability study cases in the projects, thesis, and activities at a classroom level.	VET organisation is implementing an insitutional programme offering help to academic staff and teachers to develope new courses, and to incoporate sustainability in the existing curriculum.
SOCIAL	COMMUNITY	SDG 3 SDG 17	GREENING THE COMMUNITY	VET teachers, students and HR staff occationally organise activities to enhance health and happiness.	VET teachers, students and staff systematically participate in workshops, events, ludics to enhance the health and happiness and contribute to the well - being in the community.	VET organisation has a programme to promote and enhance self confidence, motivation, satisfaction, as well as communication skills, supportive and networking skills as a social factors.
SOCIAL	COMMUNITY	SDG 5 SDG 17	GREENING THE COMMUNITY	VET awareness in the educational community about human rights, respect, social status and gender identity, sexual orientation, etc.	VET teachers are systematically creating initiatives and special education programmes.	VET organisation is training HR staff, teachers and internal community at all levels and has inclusion and human rights educational plans.
SOCIAL	COMMUNITY (EXTERNAL)	SDG 4 SDG 8 SDG 17	GREENING THE COMMUNITY	VET Teachers/ Students are participating/helping occationally in some activities or employee voluntaring programmes which have impact in sustainability (social, economic and environmental)	VET teachers and students are systematically promoting small scale projects or iniciatives to interact with the communitity, local government or industries, which have some impact in the community.	VET organisation has partnerships with local government and nongovernment agencies/industry These are set out in the organization's sustainability strategy (if one exists). VET organisation is starting to influence the broader community to shift towards more sustainable practices.

ENVIRONMENTAL

DIMENSION	AREA	Link to SDGs	OBJECTIVE	LEVEL 1 (Light)	LEVEL 2 (Medium)	LEVEL 3 (Intense)
ENVIRONMENTAL	OPERATION IN CAMPUS	SDG 12 SDG 13 SDG 14 SDG 17	GREENING THE CAMPUS - WATER	VET Teachers or studet groups are occationally promoting awareness and initiatives regarding water conservation.	VET teachers staff and students are systematically encouraging environmental actions at campus level in regards to water conservation.	VET organisation has developed a comprehensive plan/programme for water conservation and its implementation.
ENVIRONMENTAL	OPERATION IN CAMPUS	SDG 7 SDG 12 SDG 13 SDG 17	GREENING THE CAMPUS - ENERGY	VET Teachers or studet groups are occationally promoting awareness and initiatives regarding energy reductions on campus.	VET teachers staff and students are systematically encouraging environmental actions at campus level in regards to water conservation.	VET organisation has developed a comprehensive plan/programme for energy efficiency, management and its implementation. Establised set procedures for energy efficiency on campus.
ENVIRONMENTAL	OPERATION IN CAMPUS	SDG 13 SDG 15 SDG 17	GREENING THE CAMPUS - WASTE &	VET Teachers or studet groups are occationally promoting awareness and initiatives regarding energy reductions on campus.	VET teachers staff and students are systematically encouraging environmental actions at campus level in regards to waste management.	VET organisation has developed a comprehensive plan/programme for waste management and its implementation.
ENVIRONMENTAL	OPERATION IN CAMPUS	SDG 7 SDG 12 SDG 13 SDG 17	GREENING THE CAMPUS - MOBILITY	VET Teachers or studet groups are occationally promoting awareness and initiatives regarding sustainable mobility/carpooling/walkability activities on campus.	VET teachers staff and students are systematically encouraging environmental actions at campus level in regards to sustainable mobility.	VET has developed a comprehensive plan/programme for sustainable mobility and its implementation.

ECONOMIC

DIMENSION	AREA	Link to SDGs	OBJECTIVE	LEVEL 1 (Light)	LEVEL 2 (Medium)	LEVEL 3 (Intense)
ECONOMIC	GOVERNANCE	SDG 4, SDG 8 SDG 12, SDG 13 SDG 14, SDG 15 SDG 17	GREENING THE INSTITUTIONAL CULTURE	VET teachers or students are supporting small scale projects which are creating awareness for sustainable development.	VET teachers and students are systematically introducing projects/activities that are impacting the sustainable development of the organisation.	VET organisation is actively developing its sustainability strategy maybe even by applying for/receiving government and community funding for its implementation.
ECONOMIC	OPERATION IN CAMPUS	SDG 7 SDG 12 SDG 17	GREENING THE CAMPUS	VET organisation has not yet targets set for energy, water and waste savings and is not aware of any financial savings through occational teachers/students actions (see dimension "environmental")	VET organisation realizes profits and savings, that small scale projects or initiatives by teachers and students are binging in regards to energy, water and waste savings.	The VET organisation has established a plan to achieve financial savings by reducing energy/water consumption, reducing the amount of waste in the landfill, or circular economy practices.

As shown in the tables above, the ability to increase targets may also depend on the investment and resources available. Some examples of specific measures and their benefits for greening campus buildings can be found in the table below. However, the benefits and initial investment depend, among other things, on location, availability of resources and technologies.

Green Action	Pay-back period	Benefit
Energy star-labelled appliances	2 years	Save Electricity
Solar Hot Water System	5 – 8 years	Saving gas and electricity, reducing CO_2
Rainwater harvesting system	3 – 6 years	Reduction water consumption
Green Roofs	10 years	Reducing the amount of heat loss and gain
PV systems (5.3 MW solar panels)	8 - 10 years	45% Campus electricity/ Avoiding 2250 tCO_2

Examples benefits of greening campus (Source: Greening Universities Toolkit V.2.0, 2014)

4.2. Approach Route towards greening VET Institutions

Figure 5 shows an example of a possible pathway to greening VET institutions (campus, institutional culture, curriculum and community); however, it is assumed that this pathway may be individual for different organisations and is likely to be determined by the initiator of the transformation (students, teachers, administrative staff, external parties).

The categories described in the scenarios are particularly pointing out actions towards greening the curriculum in the first dimension called Education, and actions towards greening the campus which are composed by the measurable categories such as Infrastructure, transportation, resources, waste, food & beverage.

The greening of the institutional culture would be reflected in the fact that sustainable development could be an integral part of the institution's strategies and plans.
Community greening is probably the advanced stage at which it is possible to align the sustainability strategies of VET institutions with organisations, local industries and communities.

However, impulses (needs) can also come from the community to support and further develop aspects of sustainability (which can also extend into the VET sector). It does not have to be a linear process.

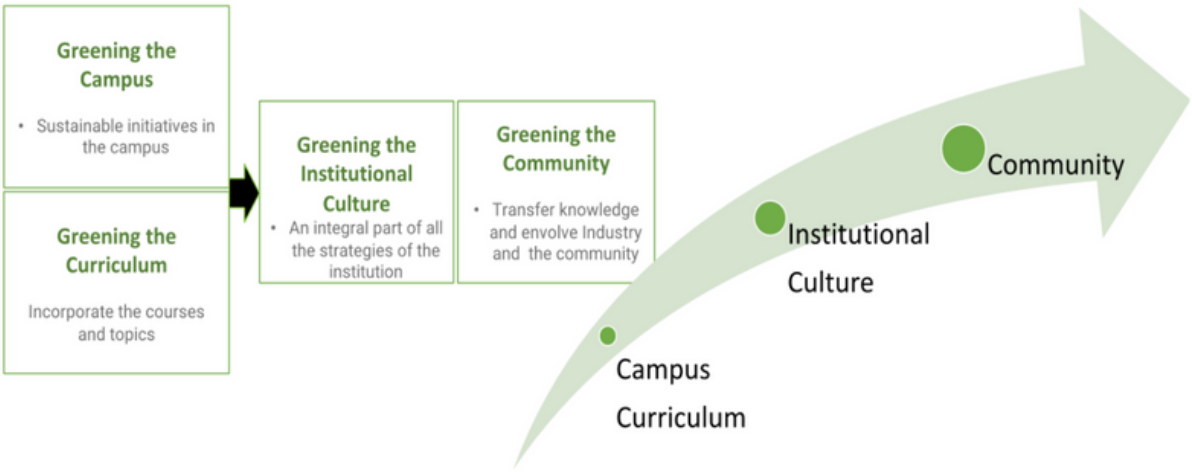

Fig.5. First approach to design the route to greening VET Institutions

CHAPTER FIVE

Future Work

5. Future Work

The nine scenarios matrix forms the basis for the creation of customised greening plans that include sustainability education and awareness-raising for improving the conservation of the natural environment on campus and in the communities and strengthening their joint action, as well as the route towards greening VET institutions.

The nine scenarios matrix is the starting point to invite the training teachers and staff to recognise their institutions and become role models who can clearly articulate the organisation's purpose in line with its sustainability goals. This drive then empowers individual and cultural transformations, bringing positive change that results in continued improvement and innovation.

An interactive questionnaire will be developed with the everGREEN consortium for VET participants to complete on the everGREEN online Support Tool to self-evaluate their organisation's progress and assess their appropriate scenario along with the most relevant greening plan.

Partners

Coordinator
BUPNET BILDUNG UND PROJEKT NETZWERK GMBH
Germany
www.bupnet.de

EUROTRAINING EDUCATIONAL ORGANIZATION
Greece
eurotraining.gr

CESIE
Italy
cesie.org

NOVEL GROUP SARL
Luxemburg
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ARDITEC - ASSOCIATION POUR LA RECHERCHE ET LE DEVELOPPEMENT D'INNOVATIONS ET DE TECHNOLOGIES POUR LA PROTECTION DE L'HERITAGE ENVIRONNEMENTAL, SOCIAL ET CULTUREL
France
arditec.net

CSS SLOVENSKI GRADBENI GROZD, GOSPODARSKO INTERESNO ZDRUZENJE
Slovenia
www.sgg.si

EVTA - EUROPEAN VOCATIONAL TRAINING ASSOCIATION
Belgium
www.evta.eu

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