

AGDUPT

ADdressing skills mismatching in the green sector through Digital Upskilling of veT

D3.2

Guidelines for the Creation of Action Plans for VET Institutes

CESIE



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Glossary

Key Term/concept	Description
Sustainable Digital Integration	The practice of incorporating digital technologies into educational frameworks in an environmentally responsible manner.
Digital Resource Integration	Incorporating digital tools and resources into the curriculum enhances learning experiences and outcomes.
E-Learning Platforms:	Online platforms provide educational content and experiences, often with interactive tools and resources.
Augmented Reality (AR) and Virtual Reality (VR)	Technologies that either overlay digital information on the real world (AR) or create entirely immersive digital environments (VR)
Sustainable Digital Practices	Practices that minimize the environmental impact of digital technologies in educational settings.
Greening the Campus	Initiatives aimed at making campus operations more sustainable, including energy efficiency, waste reduction, and the promotion of biodiversity.
Greening the Curriculum:	The integration of sustainability principles and practices across all learning areas to prepare students for contributing to a sustainable future.
Green Skills	The knowledge, abilities, values, and attitudes needed to live in, develop, and support a sustainable and resource-efficient society.
Green Transition	The shift towards a more sustainable and environmentally friendly economy and society. It involves reducing carbon emissions, increasing renewable energy sources, and promoting sustainable practices in all areas of life.
Sustainable Research and Innovation	Research and innovation activities focused on addressing sustainability challenges and advancing sustainable solutions.

Whole-Institution Approach	A comprehensive strategy that involves integrating sustainability into all facets of an educational institution, from governance and operations to curriculum and community engagement.
Digital Literacy	The ability to effectively find, use, evaluate, create, and communicate information using digital technologies.
Circular Economy	An economic system aimed at minimizing waste and maximizing resources through reuse, repair, refurbishment, and recycling.
Digital Inclusion	Efforts to ensure that all individuals and communities, including the most disadvantaged, have access to and skills to use digital technologies and the internet
Environmental Stewardship	The responsible use and protection of the natural environment through conservation and sustainable practices
Carbon Footprint	A measure of the amount of greenhouse gases (such as carbon dioxide) emitted into the atmosphere due to human activities, such as driving a car or sending an email.
Gamification	The application of typical elements of game playing (e.g., point scoring, competition with others, rules of play) to other areas of activity, such as education, to encourage engagement with the content.

List of abbreviations

Acronym	Description
VET	Vocational Education and Training
WB	Western Balkans
EU	European Union
VLE	Virtual Learning Environment
AR/VR	Augmented Reality / Virtual Reality

Executive summary

In the face of escalating environmental concerns and the imperative for sustainable development, the "D 3.2 Guidelines for the Creation of Action Plans for VET Institutes" emerges as a pivotal document, charting a course for Vocational Education and Training (VET) institutions to align more closely with the green sector's evolving demands. This Guideline underscores the critical role of VET in preparing a workforce proficient in their trades and adept in sustainable practices and digital technologies, thereby contributing to the green economy.

The document delineates a multifaceted approach to curriculum development, advocating for a blend of theoretical knowledge and practical, hands-on experience. This dual training model ensures learners acquire the skills necessary for green entrepreneurship, ranging from renewable energy solutions to sustainable agricultural practices and waste management. The guidelines emphasize the need for VET programs to dynamically adapt to the rapid pace of technological advancement and changing environmental regulations, ensuring that graduates are well-equipped to meet the challenges and opportunities of the green business sector.

Central to the guidelines is integrating digital microlearning resources, crucial tools for enhancing accessibility and engagement in VET education. These resources facilitate bite-sized, focused learning tailored to individual learner needs, making education more flexible and relevant to the industry's demands. The document provides actionable strategies for developing these digital resources, ensuring they are aligned with green sector skills and competencies.

Moreover, the guidelines highlight the importance of continuous skill development and adaptation, urging VET institutions to remain vigilant in monitoring the supply and demand of skills in the green sector. This includes incorporating new green skills into curricula and enhancing existing programs with digital competencies, reflecting the growing significance of digitalization across all sectors, including the green economy.

The "D 3.2 Guidelines" also advocate for VET alignment with policy guidelines for a just transition towards environmentally sustainable economies and societies, ensuring that VET contributes to broader societal goals of sustainability and social justice. It presents a vision of the green sector as a catalyst for sustainable

development, highlighting its potential for job creation, investment, and minimizing environmental impact.

The "D 3.2 Guidelines for the Creation of Action Plans for VET Institutes" is a comprehensive roadmap for VET institutions aiming to navigate the transition towards a more sustainable and digitally integrated education model. It emphasizes the critical role of VET in equipping the workforce for the green economy, advocating for curriculum innovation, the integration of digital learning resources, and a steadfast commitment to sustainability and equity. This document is instrumental for educators, policymakers, and stakeholders in the VET sector seeking to adapt to the changing landscape of the green business sector and contribute to building a more sustainable and equitable future.

Context

The EU's enlargement agenda for the Western Balkans (WB) region identifies various areas that require attention, with the labour market situation being a significant concern. While the region's economic recovery shows promising progress, a critical challenge persists in a significant mismatch between the skills and competencies offered and the demands of businesses. To address this issue, the ADDUPT project was initiated with a specific focus on strengthening the link between Vocational Education and Training (VET) provision in the Western Balkans and the emerging green sector in their labour markets.

The ADDUPT project has set several objectives to strengthen the region's VET system and foster a fruitful relationship with the dynamic green sector. Firstly, it seeks to develop a mechanism for diagnosing business needs in the green sector, ensuring a timely and comprehensive alignment between VET provision and the evolving demands of environmentally conscious industries. The project also aims to provide an in-depth analysis of the green sector in the participating countries, namely Albania, Bosnia and Herzegovina, and Montenegro.

The project also emphasizes support for VET trainers and staff in the Western Balkans, aiming to establish flexible and interactive links between VET and the labour market. By building the capacity of WB-VET institutions to incorporate green labour market needs into their training provisions, the project seeks to enhance the employability potential of WB-VET learners and equip them with the skills required to thrive in the evolving green sector.

To achieve these goals, the ADDUPT project prioritizes the continuous professional development of VET teachers and trainers in the Western Balkans. This emphasis on training and upskilling aims to bolster the quality of the VET sector, ensuring it remains adaptive and responsive to the ever-changing demands of the labour market. While addressing the needs of the emerging green sector, the project also aims to foster a symbiotic relationship between VET institutions and businesses, aligning VET provision to the specific needs of the green sector.

Overall, the ADDUPT project represents a concerted effort to improve the quality of VET education and training in the Western Balkans while addressing the specific needs of the emerging green sector. By bridging the skills gap and facilitating productive

cooperation between VET and the labour market, this project strives to contribute to the sustainable growth and development of the Western Balkan region.

Introduction

The Importance of Green Skills in the VET Sector

In the face of the escalating challenges posed by climate change and environmental degradation, the urgency for a paradigm shift towards sustainability in all sectors of the economy cannot be overstated. This shift is particularly pertinent in education, where the Vocational Education and Training (VET) sector emerges as a pivotal player. The European Green Deal, as put forth by the European Commission in 2019, envisions this transformative journey towards a future characterized by sustainability, resource efficiency, and a competitive edge, thereby setting a new course for VET institutes across Europe.¹

At the core of this transformation is the recognition of the VET sector's instrumental role in moulding a workforce that is adept at meeting today's demands and is also visionary in its approach to the challenges of tomorrow. The European Centre for the Development of Vocational Training (CEDEFOP) has been at the forefront of this discourse, emphasizing the sector's capacity to drive the transition through a strategic focus on skills, knowledge, and competencies that align with resource-efficient processes and cutting-edge technologies.²

The imperative for a curriculum that is responsive to the dual transitions towards digitalization and greening was further highlighted in the 2020 Council Recommendation on Vocational Education and Training. This document laid out a clear directive for VET programs to evolve, ensuring that learners are not only equipped with the skills necessary for thriving in green and digital economies but are also champions of sustainable practices.³ The OSNABRÜCK Declaration following this

¹ European Commission (2019). The European Green Deal.

https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF

² European Center for the Development of Vocational Training (CEDEFOP) and Organisation for Economic Co-Operation and Development (OECD) (2015). Green Skills and innovation for inclusive growth.

https://www.cedefop.europa.eu/files/3069_en.pdf

³ Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience

https://www.cedefop.europa.eu/files/celex_32020h120201_en_txt.pdf

recommendation, reasserted the essential role of VET in facilitating a just and resilient transition, spotlighting the sector as a cornerstone for recovery and sustainable growth.⁴

These initiatives dovetail with the broader objectives of the European Skills Agenda and are supported by the strategic priorities delineated in the Council Resolution on a Strategic Framework for European Cooperation in Education and Training. The proposal for a Council Recommendation on Learning for Environmental Sustainability, introduced in January 2022, further amplifies the commitment to embedding the ethos of green transition and sustainability within the educational and training ecosystems.⁵

The discernible increase in the workforce's sustainability-trained talent, marked by growth from 9.6% in 2015 to 13.3% in 2021, is a testament to the shifting paradigms in the labour market. This trend underscores the imperative for VET institutes to develop action plans that are not only cognizant of the current landscape but are also forward-thinking in their approach to cultivating green skills.⁶

The D3.2 Guidelines for creating Action Plans for VET Institutes are conceived as a beacon for VET institutes navigating this transformative era. These guidelines equip institutes with the insights, tools, and frameworks to design and implement comprehensive action plans. Such plans will not only align with the strategic objectives of the European Green Deal but will also empower VET learners to become the vanguards of a sustainable future. This introduction lays the groundwork for the ensuing chapters, which will delve into the specifics of action plan development.

⁴ European Commission (2020). Osnabrück Declaration on vocational education and training as an enabler of recovery and just transitions to digital and green economies
<https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8441&furtherPubs=yes>

⁵ European Commission (2022). Council Recommendation on the learning for environmental sustainability.
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0011>

⁶ The Council of the European Union (2021). Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030)
<https://eur-lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=uriserv:OJ.C .2021.066.01.0001.01.ENG>



Figure 1: Potential contribution of VET to the Sustainable Development Goals (SDGs)

Chapter 1: The Role of Digital Innovation in Modern VET Programs

Digital innovation has undeniably transformed the landscape of Vocational Education and Training (VET) programs, carving out new pathways for learning, skill development, and international exposure. This transformation, catalyzed by the unforeseen challenges of the COVID-19 pandemic, has compelled VET professionals to reimagine traditional teaching methodologies, leading to the rapid digitalization of practices to sustain and enhance educational delivery. In the wake of these challenges, VET organizations swiftly adapted, developing hybrid and virtual modalities of international mobility opportunities. Such innovative solutions have ensured that VET learners can continue to benefit from international experiences, a cornerstone of comprehensive vocational education, irrespective of global constraints. This digital pivot not only preserved but also expanded the accessibility and inclusivity of VET programs, aligning with the European Commission's emphasis on "Digital inclusion".⁷ The Commission advocates for a digital transformation that

⁷ European Commission, "Digital Inclusion Strategy"
<https://digital-strategy.ec.europa.eu/en/policies/digital-inclusion>

invites participation from all societal segments, ensuring that the digital world's benefits are universally accessible.

However, the digital leap in the VET sector is not without its environmental considerations. The European Commission, through its "Green digital sector" statement⁸, has highlighted the environmental footprint of digital technologies, stressing the importance of a balance where digital solutions do not outweigh their energy consumption. This sentiment was further echoed in the "A Green and Digital Transformation of the EU" declaration on Digital Day 2021,⁹ backed by the European Green Digital Coalition Members. The declaration underlines the commitment to fostering green digital solutions that are environmentally sustainable and encourages the development of standardized methodologies to evaluate the environmental impact of these digital innovations.

The digitalization of VET programs represents a crucial stride towards ensuring the sector's relevance and adaptability in a rapidly evolving digital landscape. The integration of digital tools and platforms has not only facilitated innovative teaching and learning methods but also broadened the scope of VET programs to include virtual international experiences, thereby enhancing the global competency of learners. The shift towards digital modalities has the potential to democratize access to knowledge and training, breaking down geographical and socio-economic barriers and fostering a more inclusive educational environment.

However, the journey towards a fully digitalized VET sector is ongoing, with a significant focus on the environmental sustainability of such digital advancements. While some VET professionals and organizations have proactively adopted practices to minimize their digital footprint, a comprehensive assessment of the environmental impact across the sector is imperative. This assessment will help understand the extent of awareness and the integration of eco-friendly digital practices within the VET community.

⁸ European Commission, "Green Digital sector statement"

<https://digital-strategy.ec.europa.eu/en/policies/green-digital>

⁹ European Commission, "A Green digital transformation of the EU"

<https://digital-strategy.ec.europa.eu/en/news/eu-countries-commit-leading-green-digital-transformation>

As we delve deeper into the digital transformation of VET programs, it is crucial to balance innovation with environmental stewardship. The development and deployment of green digital solutions should be at the forefront of this transformation, ensuring that VET programs equip learners with the skills for tomorrow and instil a deep-seated commitment to sustainability. The role of digital innovation in modern VET programs extends beyond educational reform to encompass a broader responsibility towards fostering an environmentally conscious and digitally inclusive society.

1.1 Digital Resource Integration

In an era where digital technology reshapes every facet of our lives, its integration into Vocational Education and Training (VET) programs presents a transformative opportunity. This integration is pivotal in aligning VET curricula with the dynamic requirements of the green sector, a key objective of the ADDUPT project. This chapter explores innovative strategies for incorporating digital tools and methodologies into VET education, enhancing the curriculum with e-learning solutions, and harnessing the power of digital integration to foster a more adaptable and engaging learning environment.

1.1.1 Innovative Strategies for Digital Tool Incorporation

The seamless integration of digital tools into Vocational Education and Training (VET) programs is a nuanced process that demands a well-orchestrated strategy. This strategy must weave these digital tools into the fabric of the curriculum and ensure their alignment with the practical realities and challenges prevalent in the green sector. Achieving this requires thoroughly exploring and identifying digital tools and software at the vanguard of technological progress, particularly those with direct applicability and relevance to the industries students are preparing to enter.

An invaluable approach to this integration is the establishment of partnerships with leading technology firms and innovators to organize workshops and seminars tailored explicitly for VET contexts. These collaborative sessions serve as a bridge, connecting the world of education with the realm of industry by bringing technology providers

into direct contact with students. Through live demonstrations and interactive sessions, students gain hands-on experience with cutting-edge tools, enriching their learning journey with practical insights and skills directly transferable to their future workplaces.

Furthermore, adopting project-based learning models is crucial in embedding digital competencies within the VET curriculum. By designing projects that mirror the complex problem-solving tasks students will encounter in their careers, educators can create authentic learning experiences that transcend traditional theoretical instruction. These projects, which necessitate using specific digital tools and solutions, challenge students to apply their knowledge in practical, real-world contexts. This methodological approach facilitates deepening digital skills and fosters a critical mindset and problem-solving capabilities, effectively narrowing the gap between academic preparation and professional practice.

In addition to these strategies, continuous dialogue with industry stakeholders can inform the progressive development of the curriculum, ensuring that it remains responsive to the evolving technological landscape and the emerging needs of the green sector. By aligning educational objectives with industry standards and expectations, VET programs can cultivate a workforce that is not only digitally literate but also highly adaptable and equipped with the skills necessary to navigate the complexities of modern professional environments.

1.1.2 Strategic Use of E-Learning Platforms to Enrich VET Curricula

The transformative impact of e-learning on Vocational Education and Training (VET) is profound and multifaceted. E-learning platforms are vibrant hubs of continuously evolving content, meticulously curated to mirror the latest advancements and methodologies within the green sector. This ensures that VET curricula are up-to-date and agile in adapting to new industry standards and technologies, maintaining relevance in an ever-changing professional landscape.

These platforms stand at the forefront of educational innovation, offering a rich and interactive learning ecosystem extending far beyond the confines of traditional classrooms. By embracing e-learning, VET programs can offer a more personalized

and accessible educational experience, catering to students' diverse needs and learning styles. When improving e-learning for VET programs, focusing on making education fit each student's way of learning is essential. By including various online tools, such as virtual reality experiences and interactive activities, we can help everyone learn better in their style. This approach ensures that learning is more engaging and accessible to all students.

The arsenal of e-learning tools includes various digital modules, from immersive augmented and virtual reality (AR/VR) experiences to interactive simulations, which can vividly recreate industry-specific scenarios. These tools offer students unique opportunities to practice and refine their skills within a safe and controlled environment, significantly enhancing their understanding and engagement with the material.

A strategic approach to e-learning entails assembling an extensive collection of digital resources, such as dynamic tutorials, real-time simulations, and interactive sessions with industry professionals. This wealth of resources is readily accessible on-demand, empowering students with the autonomy to explore and interact with the learning material at their convenience and pace.

Integrating AR and VR technologies into e-learning platforms is particularly transformative in the context of VET. By leveraging these technologies, students can immerse themselves in realistic and complex environments, such as renewable energy setups or sustainable construction sites. This enriches their learning experience and significantly boosts their retention of crucial concepts and skills, preparing them for the practical challenges of their future careers.

1.1.3 Leveraging Digital Integration for Adaptability and Engagement

The deliberate and thoughtful integration of digital technologies within Vocational Education and Training (VET) programs marks a significant evolution from traditional pedagogical approaches, introducing unprecedented flexibility and adaptability. In this digital era, platforms and tools are engineered to support modular learning frameworks, effectively democratizing education by allowing students to customize

their learning trajectories. This level of customization ensures that learners can align their educational experiences with their unique aspirations and career goals, thereby fostering an environment where each student's potential is fully realized. In this model, the curriculum is no longer static but a dynamic and responsive construct that evolves following the learners' pace, preferences, and emerging industry trends.

Moreover, the infusion of digital resources into VET programs catalyzes the creation of a rich, collaborative learning ecosystem. Digital platforms facilitate many interactive opportunities, from peer discussions and group projects to expansive community forums that simulate contemporary workplaces' collaborative dynamics. This digital scaffolding nurtures a sense of community among learners and cultivates essential soft skills such as communication, teamwork, and problem-solving, which are invaluable in the professional realm.

Integrating digital tools extends beyond facilitating interaction and introduces learners to the digital tools and collaborative platforms they will encounter in their professional lives, smoothing the transition from education to employment. Students gain confidence and proficiency in the digital competencies required in the green sector and beyond by navigating these digital environments during their studies.

In the broader context of the ADDUPT project, the strategic incorporation of digital resources within VET curricula is recognized as a cornerstone for equipping tomorrow's workforce. This approach ensures that education remains relevant and in step with the rapid technological advancements and positions VET institutions as pioneers of innovative, inclusive, and highly effective educational models. By championing e-learning solutions and leveraging the myriad benefits of digital technologies, these institutions are setting new standards for education that are not only attuned to the needs of the green sector but also emblematic of a forward-thinking commitment to preparing students for the multifaceted challenges of the future workplace.

1.2 Sustainable Digital Integration in VET Institutes: Balancing Innovation with Environmental Responsibility

As the ADDUPT project forges ahead in its mission to bridge the gap between Vocational Education and Training (VET) institutes and the demands of the green sector in the Western Balkans, the emphasis on digital resource integration marks a pivotal aspect of modernizing educational frameworks. This strategic shift towards digitalization, aimed at enhancing curricula and fostering a more interactive and accessible learning environment, brings the imperative of environmental mindfulness. In developing action plans for VET institutes, it is essential to address the ecological footprint of digital technologies, ensuring that the drive towards innovation does not come at the expense of environmental sustainability.

Recognizing this, the approach to digital integration within the ADDUPT project is twofold, focusing on adopting sustainable digital practices alongside advancing educational technologies. Central to this approach is using energy-efficient digital tools and platforms, which are less resource-intensive and minimize the carbon footprint associated with digital operations. This includes selecting e-learning solutions hosted on green servers powered by renewable energy sources and optimizing digital content to reduce energy consumption during data transmission and storage.

Moreover, it is necessary to incorporate sustainability principles into the digital curriculum to cultivate a culture of environmental stewardship among VET educators and learners by embedding awareness of digital carbon footprints and eco-friendly practices into training modules. This educational initiative enriches the learning experience with critical insights into sustainable digitalization and empowers participants to make informed choices that align with ecological conservation goals.

In line with enhancing employability in the green sector and improving the quality of VET education, this Guideline advocates for the judicious use of advanced digital technologies, such as virtual and augmented reality. While these technologies offer immersive and impactful learning experiences, their application is carefully balanced with energy efficiency considerations and environmental impact. The deployment of a Virtual Learning Environment (VLE) further exemplifies a commitment to reducing

the ecological footprint by centralizing educational resources, thereby diminishing the need for physical materials and curtailing energy expenditure associated with traditional learning methods. This balanced approach to digitalization is integral to creating action plans for VET institutes, ensuring that the leap towards digital and green transitions is innovative and sustainable.

Activity	Estimated CO2 Emissions (g/usage or hour)	Estimated metres are driven by car
Sending/receiving (1 email)	4	33
Cloud storage (video of 1 hour)	5	41
Printing one double-sided A4 page	6.5	53
Web browsing research (1 hour)	55	449
Video streaming (1 hour)	55	449
Social media (1 hour)	70	572
Cybersecurity measures (firewalls, encryption, etc.) per year	5,500	44 935 m = 45 km
One device production (ex: smartphone, laptop, etc.)	72,000	587 399 m = 587 km

Figure 2: CO₂ Emission Table from Digital practices

1.2.1 Sustainable Digital Practices in VET Institutes

To integrate sustainable digital practices within Vocational Education and Training (VET) institutes, several case studies and real-world examples offer actionable insights. The emphasis on adopting energy-efficient digital tools and platforms is paramount, as highlighted by implementing sustainable cloud storage solutions. VET

institutes can significantly reduce their digital carbon footprint by choosing providers that prioritize environmental sustainability. This approach is complemented by adopting green servers powered by renewable energy sources, which not only minimize energy consumption but also align with the environmental goals of the green sector.

Moreover, the concept of digital minimalism plays a crucial role in reducing the ecological impact of digital technologies. VET institutes are encouraged to adopt practices such as regular clean-up of unnecessary data, optimizing digital content, and utilizing network-attached storage to decrease reliance on cloud services, thereby conserving energy. The integration of tutorials and checklists within the curriculum supports this initiative, offering practical steps for individuals and organizations to follow. These include guidelines for sustainable cloud storage, efficient data management, and energy-efficient apps and devices.

The real-world application of these strategies within VET institutes is a testament to their effectiveness. For instance, implementing a shared unique storage area, emphasizing the importance of archiving unused data, showcases a proactive approach to digital sustainability. Furthermore, developing a Data Charter that outlines transparent data management and storage processes ensures that all institute members adhere to sustainable practices.

VET institutes are encouraged to partner with environmental and technological research bodies to foster continuous learning and adaptation. This collaborative effort can facilitate sharing best practices and innovations in sustainable digital education, creating a dynamic learning environment that remains responsive to the evolving technological landscape and its environmental impacts.

Integrating sustainable digital practices within VET institutes is a step towards environmental responsibility and a strategic move to enhance the relevance and quality of education in the green sector. By adopting these practices, VET programs can prepare students for a future where digital competency and environmental stewardship go hand in hand, ensuring a technologically adept and ecologically conscious workforce.

1.2.2 Real Life Case Studies

Building upon the foundation of sustainable digital practices in Vocational Education and Training (VET) institutes, the Enhance Digital Teaching Platform in the UK is a prime example of how digital transformation can align with sustainability in the educational sector. Funded by the UK Department for Education and implemented by the Education and Training Foundation (ETF), this initiative underscores the importance of integrating energy-efficient digital tools and platforms into teaching and training practices.

By offering free, bite-sized online training modules through a user-friendly, mobile-first platform, the Enhance initiative exemplifies the concept of digital minimalism. This approach reduces the digital carbon footprint by leveraging efficient online delivery methods and encourages the adoption of best practices in digital content management and utilization. The platform's design, which requires no sign-on and provides content accessible on low-bandwidth connections, mirrors the sustainable practices advocated for VET institutes, such as optimizing digital resources and minimizing unnecessary digital waste.

Furthermore, the Enhance Digital Teaching Platform's focus on professional development in educational technologies (EdTech) and digital skills within the Further Education and Training sector aligns with the broader goal of preparing a workforce adept in digital competency and environmental stewardship. By fostering a community of practice and rewarding engagement through a badge system, the platform enhances teaching and learning outcomes and promotes a culture of continuous improvement and sustainability in digital education.

Therefore, this initiative addresses the immediate training needs identified by the ETF's National Training Needs Analysis and contributes to the overarching objective of integrating sustainable digital practices within VET institutes. It exemplifies how strategic digitalization efforts can support both the enhancement of educational quality and the commitment to environmental responsibility, preparing students for a future where technology and sustainability intersect.

Another exciting initiative is Velocity Academy in Cambodia, which stands out for its unique application of gamification to digital learning. By incorporating game-like elements such as points, levels, and interactive challenges, the platform transforms the learning experience into a more engaging and interactive process, potentially increasing learner engagement and retention rates.

Similarly, in Indonesia, a collaborative effort involving the International Labour Organization, the Ministry of Manpower, and Skilvul, an online education platform, focuses on equipping vocational training centre instructors with the necessary skills for online and distance teaching. This initiative emphasizes enhancing women's participation in STEM fields, demonstrating the potential of digital education to foster inclusivity and equal opportunity.

Further afield, the Bibliothèques Sans Frontières' Ideas Cube project in the Democratic Republic of the Congo introduces an innovative solution to the challenge of limited internet connectivity in remote areas. By providing offline digital access to educational content through an offline server, the Ideas Cube project expands the reach of digital education, ensuring that learners in even the most isolated regions have access to valuable educational resources.¹⁰

Chapter 2: Whole-Institution Approach

The transition towards sustainable practices is imperative for vocational education and training (VET) institutions amid growing environmental challenges and the global push for sustainable development. This chapter introduces the "Whole-Institution Approach" as a comprehensive strategy for integrating sustainability into all facets of VET institutions. This approach encompasses curriculum and teaching and extends to institutional culture, operations, and community engagement, ensuring a cohesive and inclusive effort towards greening.

¹⁰ https://unevoc.unesco.org/pub/trends_mapping_study_digital_skills_development_in_tvete_teacher_training.pdf

2.1 Whole-Institution Approach: Key Components

1. **Leadership and Governance:** Leadership commitment is crucial in driving the sustainability agenda. This includes setting clear sustainability goals, policies, and strategies supported by the institution's governance structures.
2. **Curriculum and Learning:** Integrating sustainability principles into the curriculum and learning materials across all disciplines, ensuring that students gain the knowledge, skills, and attitudes necessary for sustainable development.
3. **Campus Operations:** Transforming campus operations to reflect best practices in sustainability, including energy efficiency, waste management, sustainable procurement, and water conservation.
4. **Community Engagement and Partnerships:** Engaging with local communities and forming partnerships with other institutions, businesses, and non-governmental organizations to share knowledge, resources, and best sustainability practices.
5. **Research and Innovation:** Fostering a culture of research and innovation focused on sustainability, encouraging the development of new solutions and technologies that contribute to sustainable development.
6. **Monitoring and Evaluation:** Establishing mechanisms for monitoring and evaluating the progress of sustainability initiatives, ensuring continuous improvement and accountability.

2.2 Implementing the Whole-Institution Approach

This chapter will provide practical guidance and examples to help VET institutions adopt a whole-institution approach to greening.

- **Step-by-Step Implementation Plan:** Develop a clear, step-by-step plan that outlines the specific actions, timelines, and responsibilities for integrating sustainability across the institution.
- **Capacity Building and Training:** Invest in capacity building and training for staff, faculty, and students to ensure they have the knowledge and skills to contribute effectively to sustainability initiatives.
- **Stakeholder Engagement:** Actively involve all stakeholders, including students, faculty, staff, and external partners, in the planning and implementation process to ensure buy-in and participation.
- **Resource Allocation:** Ensure adequate resources are allocated for sustainability initiatives, including funding, personnel, and materials.
- **Communication and Awareness:** Implement a comprehensive communication strategy to raise awareness about sustainability initiatives, celebrate successes, and encourage community participation.

2.2.1 Implementing the Whole-Institution Approach: Detailed Strategies

1. Initial Assessment and Baseline Setting

Conduct a comprehensive sustainability audit to assess current practices, identify areas for improvement, and establish a baseline for measuring progress. This audit

should cover all aspects of the institution, including energy usage, waste management, curriculum content, and community engagement practices.

2. Goal Setting and Planning

Based on the initial assessment, set clear, achievable sustainability goals that align with the institution's overall mission and values. Develop a detailed action plan that outlines the steps needed to achieve these goals, including timelines, responsible parties, and required resources.

3. Stakeholder Engagement and Inclusivity

Engage various stakeholders in the planning and implementation, including students, faculty, staff, local community members, and industry partners. This ensures a diversity of perspectives and fosters a sense of ownership and commitment to sustainability initiatives.

4. Capacity Building and Professional Development

Provide targeted training and professional development opportunities to build the capacity of all stakeholders to contribute to sustainability efforts. This could include workshops, seminars, courses on sustainable practices, and hands-on learning and experimentation opportunities.

5. Curriculum Integration

Integrate sustainability principles and practices into the curriculum across all disciplines. This involves adding specific courses on sustainability and embedding sustainability concepts into existing courses and practical training opportunities.

6. Operational Changes

Implement changes to campus operations to reduce environmental impact. This could include energy efficiency upgrades, waste reduction programs, sustainable procurement policies, and improvements to water management practices.

7. Community Engagement and Collaboration

Actively engage with the local community and other institutions to share knowledge, resources, and best sustainability practices. Collaborative projects and partnerships can enhance the impact of sustainability initiatives and provide valuable learning opportunities for students.

8. Monitoring, Evaluation, and Feedback

Establish a robust system for monitoring and evaluating the progress of sustainability initiatives. Regularly review performance against goals, gather stakeholder feedback, and adjust as needed. Celebrate successes to maintain momentum and motivation.

9. Continuous Improvement and Innovation

Foster a culture of continuous improvement and encourage innovation in sustainability practices. Be open to new ideas and approaches and support pilot projects and experimentation.

10. Communication and Awareness Raising

Develop a comprehensive communication strategy to raise awareness of sustainability initiatives and their impact. Use various platforms and formats to reach audiences, including social media, newsletters, campus events, and public exhibitions. By following these detailed strategies, VET institutions can effectively implement a whole-institution approach to greening, ensuring that sustainability is embedded in every aspect of their operations and culture. This contributes to

environmental sustainability and prepares students to be responsible, forward-thinking citizens and professionals in a rapidly changing world.

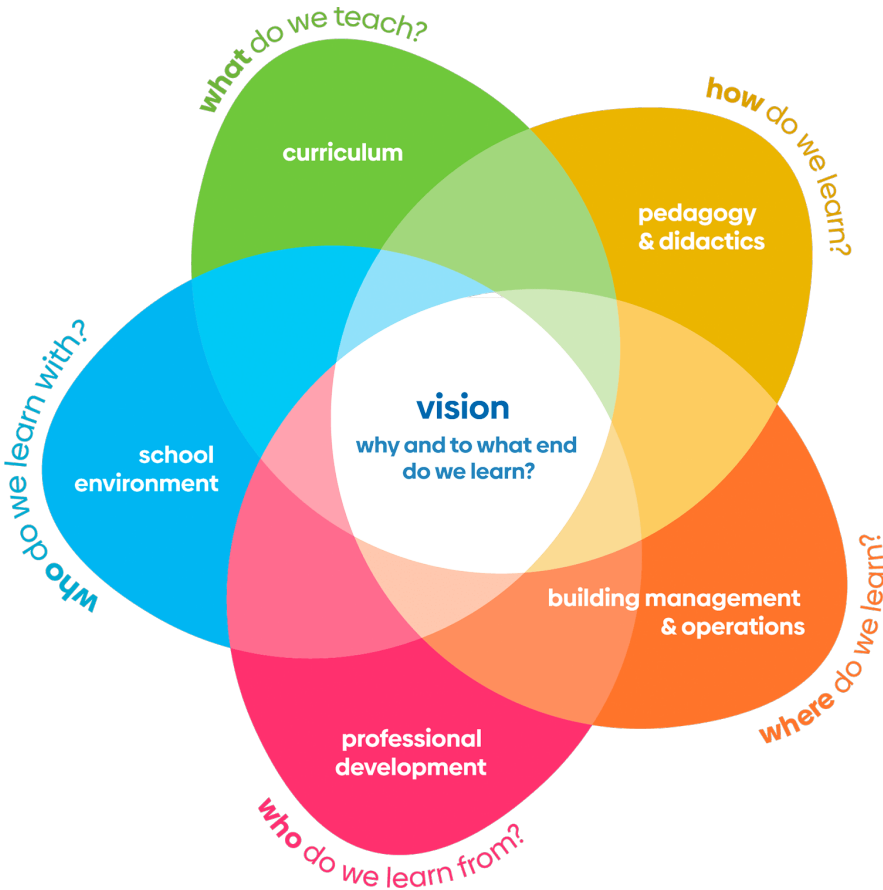


Figure 3: Whole School Approach to Sustainable Development¹¹

¹¹ <https://wholeschoolapproach.lerenvoormorgen.org/en/>

Chapter 3: The 5 Approaches of Education for Sustainable Development

VET institutions play a pivotal role in pursuing sustainable development. As centres of learning and skill development, they are uniquely positioned to equip future professionals with the knowledge, skills, and attitudes necessary for contributing to a sustainable future. To this end, integrating Education for Sustainable Development (ESD) into VET institutions involves a multifaceted approach that touches upon all education and institutional operation aspects.

This chapter outlines five critical approaches to embedding sustainability within VET institutions:¹²

1. **Greening the Campus:** Transforming the physical and operational aspects of the institution to reflect and encourage sustainable practices.
2. **Greening the Curriculum and Training:** Integrating sustainability principles into all learning and professional development areas to prepare students for green jobs and sustainable living.
3. **Fostering Sustainable Research and Innovation:** Encouraging research and innovation that contribute to sustainability solutions, both locally and globally.
4. **Building Capacity for Sustainability:** Enhance the knowledge and skills of educators, administrators, and students in sustainability principles and practices.
5. **Engaging the Community and Strengthening Partnerships:** Collaborating with local communities, industry, and other stakeholders to promote sustainability beyond the campus.

¹² International Labour Organization (ILO), Greening guidelines for TVET Institutes https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-dhaka/documents/publication/wcms_815337.pdf

Each approach is essential for creating a comprehensive and effective ESD integration within VET institutions. They are interconnected, with success in one area often supporting and enhancing efforts in others. The following chapters will explore each approach in detail, providing guidance, strategies, and examples to assist VET institutions in their journey towards sustainability.

3.1 Greening the Campus: A Practical Guide for VET Institutions

An educational institution's physical environment and operational practices significantly influence its sustainability footprint and the learning experience it offers. "Greening the Campus" is about transforming these aspects to minimize environmental impact and create a living laboratory for sustainability that educates and inspires students, staff, and the community.

3.1.1 Key Components of Greening the Campus

Sustainable Infrastructure and Buildings:

- Design and construct new buildings with green standards in mind, focusing on energy efficiency, water conservation, and sustainable materials.
- Retrofitting existing buildings to improve environmental performance, including insulation upgrades, installation of energy-efficient windows, and green roofing.

Energy Management:

- Transitioning to renewable energy sources, such as solar and wind, for campus operations.
- Implement energy-saving measures like LED lighting, energy-efficient appliances, and intelligent building systems to reduce consumption.

Waste Reduction and Recycling:

- Establishing comprehensive waste management systems prioritizing waste reduction, segregation, recycling, and composting.
- Engaging the campus community in zero-waste initiatives and circular economy practices.

Water Conservation:

- Employing water-saving fixtures, rainwater harvesting systems, and sustainable landscaping practices to reduce water use.
- Promoting water conservation through awareness campaigns and behavioural change initiatives.

Biodiversity and Green Spaces:

- Preserving and enhancing green spaces, gardens, and habitats on campus to support biodiversity and provide recreational and educational spaces for the campus community.
- Incorporating native plants and ecological landscaping practices supports local wildlife and reduces maintenance needs.

Sustainable Transportation:

- Encouraging sustainable transportation options, such as cycling, walking, public transit, and carpooling, through infrastructure support and incentives.
- Developing policies and facilities that reduce the need for car travel and promote a pedestrian- and cyclist-friendly campus.

Procurement and Sustainable Operations:

- Adopting sustainable procurement policies that prioritize eco-friendly and ethically sourced products and services.

- Implementing sustainable practices in campus operations, including dining services, by focusing on local sourcing, reducing plastic use, and offering sustainable food options.

Community Engagement and Awareness:

- Involving students, faculty, and staff in sustainability initiatives through participatory programs, workshops, and events.
- Collaborating with local communities, organizations, and businesses on sustainability projects that extend the impact beyond the campus.

3.1.2 Implementing the Greening Campus Initiative

- **Assessment and Planning:** Conduct a sustainability audit to assess current campus practices and identify areas for improvement. Develop a comprehensive green campus plan with clear goals, timelines, and responsibilities.
- **Stakeholder Engagement:** Ensure broad participation and buy-in from all campus stakeholders, including leadership, faculty, students, and staff, through inclusive planning and decision-making processes.
- **Pilot Projects:** Start with pilot projects to demonstrate the feasibility and benefits of sustainability initiatives, which can then be scaled up based on success and learning.
- **Monitoring and Evaluation:** Establish metrics and regular evaluation processes to monitor progress, celebrate successes, and adjust strategies.
- **Continuous Improvement:** Foster a culture of sustainability that encourages ongoing learning, adaptation, and innovation in green campus practices.

Greening the campus is a dynamic and ongoing journey that contributes to environmental conservation and enhances the educational experience, promoting a culture of sustainability among students and staff. By taking proactive steps towards sustainable infrastructure, operations, and community engagement, VET institutions can lead by example in transitioning to a more sustainable future.

3.2 Greening the Curriculum and Training: A Strategic Approach for VET Institutions

Education equips individuals with the knowledge, skills, and attitudes necessary for sustainable development. "Greening the Curriculum and Training" focuses on weaving sustainability principles into the fabric of educational programs and professional development initiatives, ensuring that all learners are prepared to contribute to a sustainable future in their professional and personal lives.

3.2.1 Key Strategies for Greening the Curriculum

1. Curriculum Integration:

Embed sustainability concepts across all subjects and courses, ensuring every learner is exposed to environmental, social, and economic sustainability principles, regardless of their field of study.

2. Interdisciplinary Learning:

Foster an interdisciplinary approach that breaks down traditional silos, encouraging collaboration and a holistic understanding of complex sustainability challenges.

3. Competency-Based Education:

Focus on developing specific sustainability competencies that enable students to think critically, act responsibly, and innovate in their future professions.

4. Experiential Learning and Real-World Application:

Provide hands-on learning experiences through projects, fieldwork, and community engagement, allowing students to apply sustainability knowledge in practical contexts.

5. Global and Local Contexts:

Balance the curriculum with global sustainability issues and local relevance, enabling students to understand their impact and influence within a global ecosystem and their local community. Enhancing Professional Development for Sustainability

6. Educator Training:

Offer comprehensive professional development programs for educators to deepen their understanding of sustainability and learn innovative teaching methods that integrate sustainability into the curriculum.

7. Learning Resources and Materials:

Develop and provide access to high-quality sustainability-focused educational materials and resources to support effective teaching and learning.

8. Collaborative Networks and Communities of Practice:

Establish networks and communities of practice among educators within and across institutions to share knowledge, resources, and best practices in sustainability education.

9. Continuous Learning and Improvement:

Encourage a culture of continuous professional growth and adaptation to new sustainability knowledge and pedagogical approaches.

3.2.2 Implementing Sustainability in Curriculum and Training

Curriculum Review and Development: Conduct a comprehensive review of existing curricula to identify opportunities for integrating sustainability. Develop new courses and programs that are centred on sustainability themes and challenges.

Stakeholder Engagement: Involve students, faculty, industry partners, and community stakeholders in curriculum development to ensure relevance and applicability.

Pilot Programs and Scaling: Initiate pilot programs to test new sustainability-focused courses and teaching methods. Based on evaluation and feedback, scale successful practices across the institution.

Assessment and Accreditation: Incorporate sustainability criteria into assessment frameworks and seek accreditation for sustainability-focused programs to validate and recognize efforts.

By greening the curriculum and training, VET institutions can play a transformative role in preparing a new generation of professionals who are not only skilled in their trades but also committed to sustainable development principles. This approach ensures that sustainability becomes a core value in education and professional practice, driving positive change in communities.

3.3 Fostering Sustainable Research and Innovation in VET Institutions

Research and innovation are critical drivers of sustainable development, offering new solutions to environmental challenges and advancing knowledge in sustainability. This chapter explores how VET institutions can foster a sustainable research and innovation culture, encouraging students and faculty to engage in projects that contribute to a sustainable future.

3.3.1 Key Elements of Sustainable Research and Innovation

1. **Research in Sustainability:** Promote research initiatives focused on sustainability issues, encouraging faculty and students to explore innovative solutions to environmental challenges.
2. **Collaborative Projects:** Facilitate collaborative research projects that bring together students, faculty, and external partners, such as local businesses, community organizations, and other educational institutions, to work on sustainability-related problems.
3. **Interdisciplinary Approach:** Support interdisciplinary research efforts by combining insights from different fields, enhancing understanding of complex sustainability issues, and fostering holistic solutions.
4. **Innovation and Entrepreneurship:** Encourage the development of sustainable products, services, and processes through innovation labs, incubators, and entrepreneurship programs within the institution.
5. **Community Engagement:** Engage with local and global communities in research projects, ensuring that the outcomes are relevant and beneficial to society and contribute to sustainable development goals.



3.3.2 Enhancing the Research and Innovation Environment

Infrastructure and Resources: Provide the necessary infrastructure and resources, such as labs, equipment, and funding, to support high-quality research and innovation in sustainability.

Professional Development: Offer training and development opportunities for faculty and students to enhance their research skills, particularly in sustainability-related areas.

Recognition and Incentives: Recognize and reward outstanding research and innovation in sustainability, incentivizing students and faculty to pursue projects in this area.

Dissemination and Application: Ensure that sustainability research and innovation outcomes are widely disseminated and applied within the institution and the broader community.

3.3.3 Implementing Sustainable Research and Innovation Initiatives

Research Agenda Setting: Develop a clear sustainability research agenda that aligns with institutional goals and addresses pressing environmental challenges.

Funding and Support: Secure funding and support for sustainability research and innovation projects. Leverage internal resources, grants, and partnerships.

Capacity Building: Build research capacity within the institution by investing in professional development and creating a supportive research environment.

Community and Industry Partnerships: Establish strong partnerships with community organizations and industry to ensure research relevance and facilitate the application of innovations.

VET institutions can contribute significantly to advancing sustainability knowledge and practices by fostering sustainable research and innovation. This proactive approach enhances the institution's academic and research profile and equips

students with the skills and experiences needed to become leaders in sustainable development.

3.4 Building Capacity for Sustainability in VET Institutions

Capacity building for sustainability involves equipping educators, administrators, students, and other stakeholders with the necessary knowledge and competencies to engage effectively in sustainable practices. This chapter outlines how VET institutions can implement comprehensive capacity-building programs that foster an institutional culture of sustainability.

3.4.1 Key Strategies for Capacity Building

1. **Professional Development for Educators:** Develop and offer targeted professional development programs for educators, focusing on integrating sustainability into teaching and learning processes.
2. **Sustainability Training for Administrators and Staff:** Provide training programs for administrative and support staff to incorporate sustainability principles into campus operations, procurement, and decision-making.
3. **Student Engagement and Leadership:** Encourage student leadership and involvement in sustainability initiatives through workshops, clubs, and projects that empower students as agents of change.
4. **Stakeholder Involvement:** Engage all institutional stakeholders, including local communities and industry partners, in capacity-building efforts to ensure a broad approach to sustainability.
5. **Learning Resources and Tools:** Develop and disseminate high-quality learning resources and tools that support sustainability education and practice across the institution.

3.4.2 Implementing Capacity-Building Programs

1. **Needs Assessment:** Conduct a comprehensive assessment to identify specific capacity-building needs concerning sustainability among educators, staff, and students.
2. **Program Design and Development:** Design capacity-building programs tailored to the identified needs, incorporating best practices in sustainability education and adult learning.
3. **Delivery and Facilitation:** Implement the programs using effective delivery methods, such as workshops, seminars, online courses, and experiential learning opportunities.
4. **Monitoring and Evaluation:** Establish mechanisms to monitor the effectiveness of capacity-building programs and evaluate their impact on sustainability practices within the institution.
5. **Continuous Improvement:** Use feedback and evaluation outcomes to continually improve capacity-building programs, ensuring they remain relevant and practical.

Building capacity for sustainability is a critical component in VET institutions. By investing in developing educators, staff, and students, institutions can create a knowledgeable and motivated community committed to implementing and advancing sustainability practices. This collective capacity is essential for achieving broader sustainability goals and preparing students to meet future challenges.

3.5 Engaging the Community and Strengthening Partnerships for Sustainability in VET Institutions

Sustainability challenges transcend institutional boundaries, requiring collaborative efforts that engage various community stakeholders. This chapter outlines how VET institutions can extend their reach and impact by fostering strong partnerships and engaging with local communities, industry, and other educational institutions in sustainability initiatives.

3.5.1 Strategies for Community Engagement and Partnership Building

1. **Community Outreach Programs:** Develop and implement outreach programs that involve the local community in sustainability projects, such as environmental clean-ups, sustainable agriculture initiatives, and community-based renewable energy projects.
2. **Industry Collaboration:** Establish partnerships with local businesses and industries to co-develop sustainability-focused training programs, internships, and research projects that align with industry needs and contribute to sustainable practices.
3. **Inter-Institutional Partnerships:** Collaborate with other educational institutions, both locally and globally, to share knowledge, resources, and best practices in sustainability education and research.
4. **Public-Private Partnerships:** Engage in public-private partnerships that leverage the strengths and resources of both sectors to address sustainability challenges and support community development.
5. **Stakeholder Engagement in Institutional Decision-Making:** Involve community stakeholders in institutional decision-making processes related to

sustainability, ensuring that diverse perspectives are considered and initiatives have broad support.

3.5.2 Implementing Effective Community Engagement and Partnership Initiatives

- **Stakeholder Mapping:** Identify key community, industry, and institutional stakeholders interested in or could be impacted by sustainability initiatives.
- **Partnership Development:** Build partnerships based on mutual interests, shared goals, and complementary strengths, establishing clear roles, responsibilities, and expectations.
- **Collaborative Projects:** Initiate collaborative projects that address specific sustainability challenges, providing opportunities for hands-on learning, applied research, and community service.
- **Communication and Dissemination:** Establish effective communication channels to share the outcomes and impacts of community engagement and partnership initiatives, fostering transparency and building public support.
- **Feedback and Adaptation:** Solicit feedback from partners and community members to continuously improve engagement strategies and ensure that initiatives remain relevant and practical.

Engaging the community and building strong partnerships are essential for extending the impact of sustainability initiatives beyond VET institutions. By working collaboratively with local communities, industries, and other partners, VET institutions can contribute to creating sustainable societies, enhance the relevance of their programs, and prepare students for active participation in sustainable development efforts.

FIG. 1
STEP-BY-STEP GUIDE FOR IMPLEMENTING ESD IN TVET INSTITUTIONS

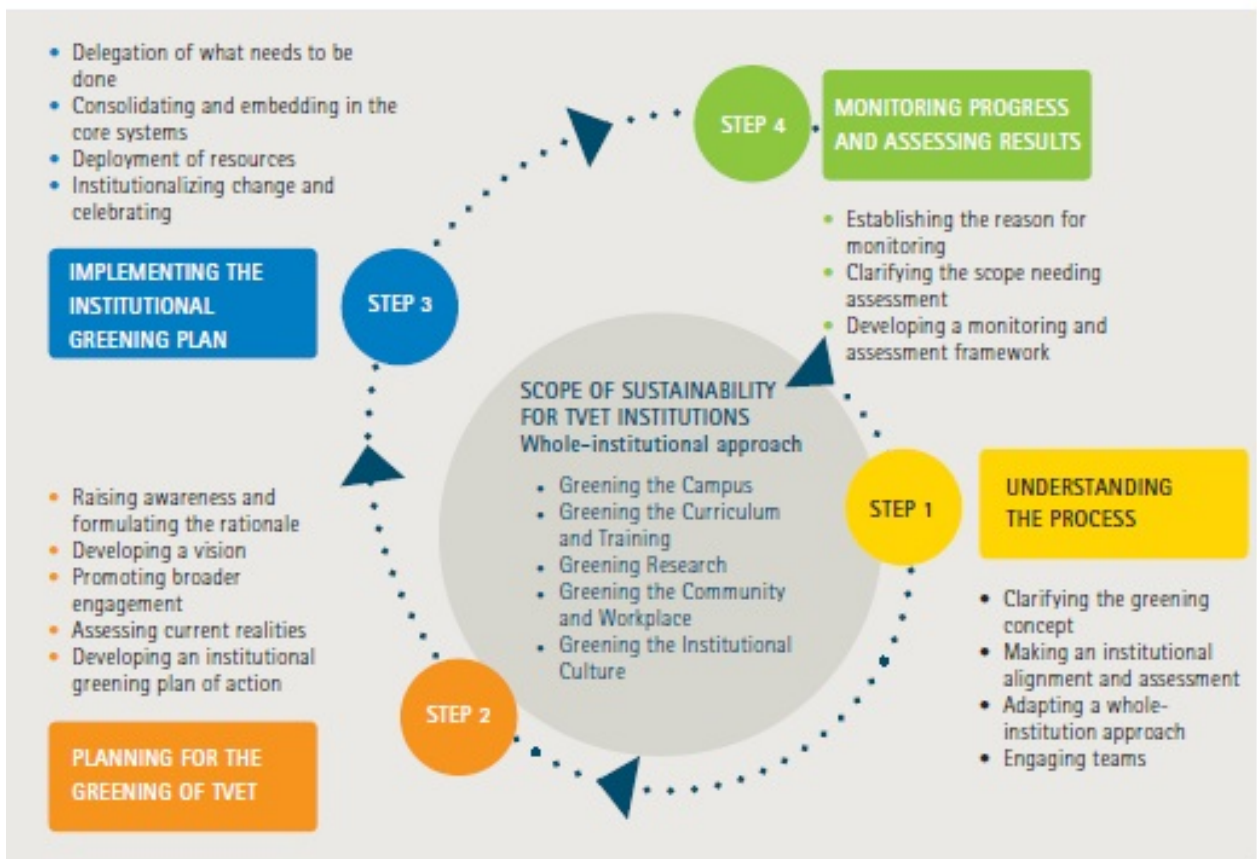


Figure 4: First steps to greening in VET Institution¹³

¹³ <https://unevoc.unesco.org/yem/Workshop+on+Greening+TVET,+job+roles,+and+curricula>

Chapter 4 - From Approaches to Action: Creating a Comprehensive Action Plan for VET Institutes

Having previously explored the five key approaches for embedding sustainability within VET institutions, now is the time to translate these concepts into action. This chapter provides a step-by-step guide to developing a comprehensive action plan encapsulating the whole institution approach, ensuring a systematic and effective implementation of sustainability initiatives.¹⁴

Step 1: Consolidating Understanding and Commitment

Synthesizing Approaches: Review the five key approaches to sustainability integration within the institution, ensuring a clear understanding of their implications and interconnections.

Garnering Institutional Commitment: Secure a firm commitment to sustainability from all institutional levels, emphasizing the importance of a unified approach to achieving the envisioned sustainability goals.

Step 2: Strategic Planning Aligned with the Five Approaches

Vision and Goal Setting: Define a sustainability vision and goals that reflect the institution's commitment to the five approaches, ensuring they are specific, measurable, achievable, relevant, and time-bound (SMART).

Inclusive Stakeholder Engagement: Engage a broad spectrum of stakeholders, including faculty, staff, students, and external partners, in the planning process, leveraging their insights and fostering a sense of ownership.

Action Plan Development: Develop a detailed action plan that outlines initiatives across the key areas identified in the five approaches—greening the campus,

¹⁴ UNESCO, Greening Technical and Vocational Educational and Training
https://unevoc.unesco.org/up/Greening%20technical%20and%20vocational%20education%20and%20training_online.pdf

curriculum, research and innovation, capacity building, and community engagement. Assign responsibilities, set timelines, and allocate resources for each initiative.

Step 3: Implementing the Action Plan

Prioritization and Phased Implementation: Prioritize initiatives based on impact and feasibility, adopting a phased approach to implementation that allows for early wins and sustained progress.

Building Capacities: Implement targeted training and development programs to equip stakeholders with the necessary skills and knowledge to execute the plan effectively.

Communication and Collaboration: Maintain open lines of communication throughout the implementation phase, ensuring continuous collaboration and adaptation based on feedback and emerging opportunities.

Step 4: Monitoring, Evaluation, and Continuous Improvement

Establishing Monitoring Mechanisms: Set up systems for ongoing monitoring of the action plan's implementation, using predefined indicators and milestones to measure progress.

Evaluation and Reflection: Regularly assess the outcomes of sustainability initiatives, reflecting on successes, challenges, and lessons learned to inform future planning.

Iterative Planning: Embrace an iterative approach to action planning, allowing for adjustments and enhancements to the plan based on evaluation outcomes and evolving sustainability priorities.

By following this step-by-step guide, institutions can effectively operationalize their sustainability vision, integrating sustainability principles into every facet of their operations and educational offerings. This proactive and structured approach ensures that VET institutions contribute to global sustainability goals and equip their students with the knowledge and skills necessary for a sustainable future.

4.1 Step 1: Consolidating Understanding and Commitment

This initial step involves synthesizing the conceptual approaches to sustainability and securing institutional-wide commitment.

Understanding Sustainability in VET

- *Comprehensive Awareness:* Conduct workshops, seminars, and discussions to deepen the understanding of sustainability among all stakeholders, including faculty, staff, administrators, and students. Focus on sustainability's environmental, social, and economic dimensions and their relevance to vocational education and training.
- *Integration of Approaches:* Review and discuss the five key approaches to embedding sustainability (greening the campus, curriculum, research and innovation, capacity building, and community engagement) to ensure a holistic understanding of their application within the VET context.

Building Commitment

- *Leadership Endorsement:* Secure explicit support and commitment from the institution's leadership, ensuring that sustainability is recognized as a strategic priority at the highest level.
- *Institutional Policy:* Develop or revise institutional policies to reflect the commitment to sustainability, embedding sustainability principles into the mission, vision, and values of the institution.
- *Stakeholder Engagement:* Engage a broad range of stakeholders in dialogue about the importance of sustainability, encouraging their input and fostering a shared vision for a sustainable future.

Setting the Stage for Action

- *Establishing a Sustainability Committee:* Form a committee or task force dedicated to sustainability, comprising representatives from across the institution, to lead and coordinate the sustainability efforts.
- *Initial Assessment:* Conduct an initial sustainability assessment to establish a baseline of current practices and identify areas for improvement. This may involve evaluating existing curricula, campus operations, research activities, and community engagement efforts concerning sustainability criteria.
- *Goal Setting:* Based on the initial assessment and the comprehensive understanding of sustainability, set preliminary sustainability goals aligned with the institution's strategic objectives and the identified areas for improvement.

The first step in creating an action plan for sustainability in VET institutes is crucial for ensuring a shared understanding and firm commitment. By engaging all stakeholders in this foundational phase, institutions can build a strong base for developing and successfully implementing a comprehensive sustainability action plan.

4.2 Step 2: Strategic Planning Aligned with the Five Approaches

With a solid foundation of understanding and commitment, the next step is to develop a strategic action plan that aligns with the five key approaches to sustainability. This planning phase is critical for setting clear directions, objectives, and strategies for integrating sustainability across all aspects of an institution.

Vision and Goal Setting

- *Sustainability Vision*: Articulate a clear and inspiring vision for sustainability that reflects the institution's aspirations and commitment to sustainable development.
- *SMART Goals*: Set specific, measurable, achievable, relevant, and time-bound (SMART) goals for sustainability aligned with the institution's strategic objectives and the five key approaches.

Inclusive Stakeholder Engagement

- *Broad Participation*: Ensure broad stakeholder participation in the planning process, including faculty, staff, students, and external partners, to gather diverse perspectives and foster a sense of ownership and commitment to the sustainability goals.
- *Collaborative Workshops*: Organize collaborative workshops and brainstorming sessions to identify priorities, brainstorm initiatives, and co-create the action plan.

Action Plan Development

- *Key Focus Areas*: Identify key focus areas for sustainability initiatives based on the five approaches, ensuring a comprehensive and holistic plan that covers curriculum integration, campus operations, research and innovation, capacity building, and community engagement.
- *Initiatives and Projects*: Outline specific initiatives and projects for each focus area, detailing the actions to be taken, responsible parties, required resources, and timelines.
- *Integration into Institutional Planning*: Ensure the sustainability action plan is integrated into the broader institutional planning processes, aligning with the institution's overall strategic plan and objectives.

Resource Allocation and Support Structures

- *Resource Identification*: Identify the resources needed to implement the action plan, including financial, human, and material resources, and develop a plan for securing these resources.
- *Support Structures*: Establish support structures, such as a sustainability office or dedicated project teams, to oversee the implementation of the action plan and provide ongoing support.

Communication and Documentation

- *Communication Plan*: Develop a communication plan to keep all stakeholders informed about the progress of the sustainability initiatives, fostering transparency and continued engagement.
- *Documentation*: Document the action plan in a clear and accessible format, ensuring it is readily available to all stakeholders and can serve as a reference point for implementation and monitoring.

The strategic planning phase is essential in translating commitment into action. By developing a comprehensive and aligned action plan, VET institutions can ensure a structured and practical approach to integrating sustainability, setting the stage for successful implementation and lasting impact.

4.3 Step 3: Implementing the Greening Plan

With a comprehensive action plan in place, the focus shifts to implementation. This stage involves executing the planned sustainability initiatives across the institution, from greening the campus and curriculum to engaging the community and fostering research and innovation in sustainability.

Prioritization and Phased Implementation

- *Prioritizing Initiatives:* Assess the initiatives outlined in the action plan to determine their priority based on impact, feasibility, and alignment with institutional goals. This prioritization helps to focus efforts on high-impact areas.
- *Phased Approach:* Adopt a phased approach to implementation, starting with initiatives that can generate quick wins or have a significant immediate impact. This approach helps to build momentum and demonstrate the value of sustainability efforts.

Mobilizing Resources and Building Capacities

- *Resource Mobilization:* Secure the resources identified during the planning phase, including funding, personnel, and materials. This may involve allocating budget funds, seeking external funding, or reallocating existing resources.
- *Capacity Building:* Implement capacity-building programs for faculty, staff, and students to ensure they have the necessary skills and knowledge to contribute effectively to sustainability initiatives.

Launching Initiatives and Engaging Stakeholders

- *Initiative Launch:* Officially launch sustainability initiatives, ensuring they are well-communicated across the institution and that all stakeholders know their roles and responsibilities.

- *Stakeholder Engagement:* Maintain active engagement with all stakeholders, including students, faculty, staff, and external partners, to ensure their continued involvement and support for the initiatives.

Monitoring Progress and Adjusting Strategies

- *Monitoring Mechanisms:* Establish mechanisms for monitoring the progress of each initiative using the indicators and milestones defined in the action plan.
- *Feedback Loops:* Create feedback loops that allow for regular review of progress and challenges, facilitating timely adjustments to strategies and approaches as needed.

Celebrating Successes and Building Momentum

- *Recognizing Achievements:* Celebrate successes and milestones achieved through sustainability initiatives, recognizing the contributions of individuals and teams.
- *Communicating Impact:* Share stories of success and the positive impact of the sustainability efforts with the broader institution and community to build momentum and foster a culture of sustainability.

The implementation phase is where planning meets action. By systematically executing the sustainability action plan, VET institutions can make tangible progress towards their sustainability goals, creating a more sustainable campus environment, enriching the curriculum, and engaging the broader community meaningfully.

4.4 Step 4: Monitoring Progress and Assessing Results

After implementing the sustainability initiatives, it is crucial to monitor their progress and assess their outcomes. This final step ensures that the institution's sustainability efforts are on track, achieving the desired impact and contributing to continuous improvement.

Establishing Monitoring Mechanisms

- *Performance Indicators:* Identify clear and measurable indicators for each initiative to track progress against the objectives and goals outlined in the action plan.
- *Data Collection:* Set up systems for regular data collection related to the performance indicators, ensuring the data is reliable, timely, and accessible.

Regular Review and Assessment

- *Scheduled Reviews:* Conduct regular review meetings to assess the progress of sustainability initiatives, involving key stakeholders in the evaluation process.
- *Assessment Reports:* Compile assessment reports summarising the findings, highlighting successes, challenges, and areas for improvement.

Learning and Adapting

- *Lessons Learned:* Document lessons learned from the implementation and assessment processes, focusing on what worked well and could be improved.
- *Adaptive Management:* Use the insights gained from monitoring and assessment to make informed adjustments to the sustainability initiatives, enhancing their effectiveness and impact.

Stakeholder Feedback and Engagement

- *Stakeholder Feedback:* Solicit feedback from stakeholders, including students, faculty, staff, and external partners, on their perceptions of the sustainability initiatives and their suggestions for improvement.
- *Engagement in the Review Process:* Involve stakeholders in the review and assessment process, fostering a sense of ownership and collaborative improvement.

Communicating Results and Celebrating Success

- *Transparent Communication:* Communicate the results of the monitoring and assessment processes transparently to all stakeholders, highlighting achievements and acknowledging areas for growth.
- *Recognition and Celebration:* Recognize and celebrate the achievements and contributions of individuals and teams to sustainability efforts, reinforcing a culture of sustainability and appreciation.

Monitoring progress and assessing results are necessary for ensuring the success and continual improvement of sustainability initiatives in VET institutions. By systematically evaluating the impact of these initiatives, institutions can refine their strategies, celebrate achievements, and strengthen their commitment to sustainability.

Conclusion and Future Directions for VET Institutions

As we conclude these guidelines, we recognize the significant opportunity for Vocational Education and Training (VET) institutions to champion sustainability. These guidelines serve not just as a set of instructions but as an invitation for VET institutions to integrate sustainability at the heart of their mission, bridging education with environmental stewardship and community involvement.

The journey towards sustainability is both a responsibility and an opportunity. It demands a holistic integration of green practices across campuses, a curriculum imbued with the principles of sustainable development, and a culture that fosters research and innovation to solve environmental challenges. Beyond the confines of institutions, it calls for a concerted effort to engage and collaborate with communities, industries, and other educational entities to create a ripple effect of sustainability that transcends geographical and societal boundaries.

The emphasis on professional development within these guidelines underscores the pivotal role of educators as torchbearers of this transformative journey. Equipping them with the necessary skills and knowledge is foundational to cultivating a future workforce that is proficient in their respective trades and deeply committed to sustainability.

As VET institutions adopt these guidelines, they mark a commitment to a future where education is a powerful conduit for sustainable development. Though filled with challenges, this journey offers abundant opportunities for innovation, collaboration, and leadership in the green and digital sectors. It positions VET institutions as key players in the global sustainability agenda, enhancing their relevance and resilience in an ever-evolving world.

In the spirit of continual adaptation and evolution, VET institutions are encouraged to foster an adaptive mindset, recognizing the ever-changing sustainability landscape. Institutional agility will be paramount in navigating emerging challenges and seizing new opportunities in sustainability and education.

Looking ahead, we see VET institutions as strongholds of sustainability, at the forefront of equipping a skilled workforce proficient in green and digital technologies

and committed to a sustainable future. This vision is based on a complete view of sustainability, combining caring for the environment, being socially responsible, and ensuring economic health.

In conclusion, the call to action is clear. It is time for VET institutions to leverage the insights and strategies outlined in these guidelines to make tangible strides towards sustainability. By fostering a culture of collaboration and partnership, we can amplify the impact of our collective efforts and pave the way for a sustainable, resilient, and equitable future. The path forward is collaborative, innovative, and, most importantly, actionable. Together, we can turn the vision of a sustainable future into a reality.



Addressing skills mismatching in the green sector through Digital Upskilling of vET



Coordinator
CENTRO SUPERIOR DE FORMACION EUROPA-SUR SA
Spain



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