



**Federal Democratic Republic of Ethiopia
Ministry of Labor and Skills**

Technical and Vocational Training (TVT)

Green TVT Guideline

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Abbreviations

TVT	Technical and Vocational Training
ESD	Educational Sustainable Development
GTVT	Greening Technical and Vocational Training
OS	Occupational Standard
CM	Curriculum
TTLM	Teaching, Training, and Learning Material
IGCC	Integrated gasification Combined cycle
SWOT	Strength, Weakness, Opportunity, and Treat
LO	Learning Outcome
R&D	Research and Development

1 Part One

1.1 Introduction

In the global world; Technical and vocational training (TVT) is the backbone of the economy that prepares qualified and competent citizens to respond to changing technology. It plays an important role in equipping youth and adults with the skills, knowledge, and attitude required for employment, decent work, entrepreneurship, and lifelong learning. TVT can also improve responsiveness to changing skills demanded by companies and communities, and increase productivity and wage levels.

Implementing ESD in TVT can serve as an enabler of transformation in TVT institutions by enhancing the sustainability scope of an institutional vision and increasing opportunities to build the capacities of the community and stakeholders in it. In effect, ESD in TVT provides an enhanced tool to equip youth and adults with the skills needed in the changing world of work, including the knowledge and competency requirements to make the transition to green economies and societies.

Greening an institution is a method of modifying the institution's awareness, behaviors, and activities to match them up with the broader principle of sustainability - that is, economically, socially, and environmentally responsible. Any aspect of the practices of an organization can be addressed through the greening process. Technical and Vocational Training (TVT) institutions may also engage in greening through a holistic comprehensive framework that aims to improve awareness, expertise, and behaviors that could contribute to more productive workplace and community practices. Greening a TVT institution as a whole will make young people active members of the green economy, resulting in increased human well-being and social justice, while reducing environmental risks and ecological scarcity.

Thus; serious concerns about decent occupation, climate change, environmental degradation, and scarcity of resources place great pressure on TVT to develop skills and competencies that pave the way towards a green economy and society. This calls for the development of a guideline for greening TVT.

1.2 Definitions of terms

Ecosystems: -is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life.

Green Economy: -is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.

Biodiversity: - is the natural world around us, and the variety of all of the different kinds of organisms - the plants, animals, insects and microorganisms that live on our planet.

Green Jobs: -“positions in agriculture, manufacturing, R&D, administrative, and service activities aimed at substantially preserving or restoring environmental quality”.

this includes jobs that help protecting the ecosystems and biodiversity, reducing energy, materials and water consumption through high efficiency strategies, decarbonization of the economy and reducing at its minimum or completely avoiding the generation of all types of residues and

Green skills: -are those skills needed to reduce environmental impacts and support economic restructuring with the purpose of attaining cleaner, more climate resilient and efficient economies that preserve environmental sustainability and provide decent work conditions

Green competent:

Organization: - is an entity—such as a company, an institution, or an association—comprising one or more people and having a particular purpose.

- 1. Innovation:** Innovation is the process of creating value by applying novel solutions to meaningful problems.
- 2. Relevance:** Relevance in TVET refers to learning experiences that are either directly applicable to the personal aspirations/interests or that are connected to real-world issues, problems, and contexts. Mostly, relevance in TVET refers the degree to which the training provided is aligned with all stakeholders’ needs and labor market demands.

Occupational Standard shall mean a standard defined by experts from the world of work indicating the competencies that a person shall possess to be able to productively perform in the world of work

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- 1. Occupational Competency Assessment** shall mean the process of ensuring whether the occupational competency has been achieved.

1.3 Objectives of Green TVT Guide Line

1.3.1 General objective

The general objective of this guideline is to create an enabling environment to understand, design, incorporate, and implement green TVT concepts in the whole TVT system.

1.3.2 Specific Objective

The specific objectives of this guideline are to:

- Incorporate green TVT concepts in to the occupation
- Design curriculum and training materials with the green TVT concept
- Implement green TVT concepts in TVT institutions
- Apply green technology
- Create a green culture
- Promote green research
- Green training methodology

1.4 Scope of the guideline

This guideline will be implemented by all TVT system implementers at the federal and regional levels and in all TVT institutions.

2 Part Two

2.1 Concepts of Greening TVT

A green economy can be linked to both theories of environmental economics and ecological economics. The implementation of these two theories in practice results in different concepts and approaches. Environmental economics is closely related to cleaner production and resource efficiency, whereas ecological economics relies on advanced concepts such as industrial ecology or circular economy. All these concepts are based on practical approaches or solutions to achieve the green economy objectives of environmental, economic, and social benefits. The green economy requires a new mindset for doing business, a new level of skilled workers, and professionals who can work across sectors and work as part of multidisciplinary teams. The transition to a green economy requires preparing these staff through formal training and education. Vocational training packages should be developed with an emphasis on greening the sectors. Then, the TVT system should also be integrated with environmental and social considerations in various disciplines.

Greening TVT is an essential and cross-cutting theme for sustainable development. It refers to the efforts to reorient and reinforce existing TVET institutions and policies to reinforce the achievement of sustainable development. Thus; in greening TVET, it is important that attention is paid not only to technical knowledge and skills but also to developing green awareness, behaviors, and broader skills.

Green skills are those skills needed to reduce environmental impacts and support economic restructuring to attain cleaner, more climate-resilient, and efficient economies that preserve environmental sustainability and provide decent work conditions. The main aspects of greening TVT (GTVT) include decent occupation, work culture, training methodology, transition to greater use of energy from renewable sources, transition to greater use of products and services that increase energy efficiency transition to greater use of processes that reduce/remove pollution and greenhouse gas emission and transition to recycling and reuse, transition to greater use of products and services that conserve natural resources, and transition to greater use of products and services that comply with environmental regulations and standards.

The green TVT concept is mainly reflected in the TVT system in the way:

1. Renewable Energy Generation: This covers activities related to developing and using energy

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sources such as solar, wind, geothermal, and biomass.

2. **Transportation:** covers activities related to increasing efficiency and/or reducing the environmental impact of various modes of transportation including trucking, mass transit, freight rail, and so forth.
3. **Energy Efficiency:** Consider activities related to increasing energy efficiency, making energy demand response more effective, constructing “smart grids,” and so forth.
4. **Green Construction:** Constructing new green buildings, retrofitting residential and commercial buildings, and installing other green construction technology.
5. **Energy Trading:** This covers financial services related to **buying and selling** energy as an economic commodity, as well as carbon trading projects.
6. **Energy and Carbon Capture and Storage:** This also covers activities related to capturing and storing energy and/or carbon emissions, as well as technologies related to power plants using the integrated gasification combined cycle (IGCC) technique.
7. **Environment Protection.** Include activities related to environmental remediation, climate change adaptation, and ensuring or enhancing air quality.
8. **Agriculture and Forestry.** This sector covers activities related to using natural pesticides, efficient land management or farming, and aquaculture.
9. **Manufacturing.** This sector covers activities related to industrial manufacturing of green technology as well as energy-efficient manufacturing processes.
10. **Recycling and Waste Reduction.** This sector covers activities related to solid waste and wastewater management, treatment, and reduction, as well as the processing of recyclable materials
11. **Resource Utilizations** =Alternative use and maximizing the use of resource
12. **Continues improvements**= parallel to the dynamic nature of the world market always at any time fit for purpose

2.2 Principles of Greening TVT

- Green culture
- Green technology
- Efficient use of resource
- Decent occupation
- Green research
- alternative use of energy
- waste management
- eco-friendly workplace

2.3 Significance of Green TVT

The adoption of green innovation in TVET systems and in the workplace, and green skills development go hand in hand, so it requires efficient ways to determine the new green qualifications and competencies that are needed for skill development. Greening TVET does not only equip the workforce with the necessary skills to perform well in the workplace but also enhances essential knowledge and competencies to cope with existing and future social, economic and ecological challenges (Hanoi, 2018.). Some of the significances are:

- Enable decent work for TVT completers
- Improved human well-being and social equity
- Reduce environmental risks
- Improves resources utilization
- Reduce consumption of energy
- Minimize waste and pollution
- Limit greenhouse gas emissions
- Protect and restore ecosystems
- Increase productivity and profitability of the industry
- Improves job motivation and satisfaction

2.4 Pillars of green TVT

In many countries greening the institutions/campuses, greening the curriculum and training, greening research, greening technology, greening the community and workplace, and greening the institutional culture are taken as main pillars of the green TVT. Whereas in Ethiopian context there are key challenges related to labor market mismatch, unemployment, inappropriate technologies and research, and lack of providing appropriate skills and knowledge. Hence, in addition to the five most popular pillars, greening occupation, and Curriculum are taken as pillars for greening TVT.

Fig 1: The Seven Pillars of Greening TVT



Source: ILO, Adopted

2.4.1 Greening Occupational Standards

The occupational and/or qualification standards represent one of the answers to globalization, to the knowledge-based society, and to the rapid implementation of the appropriate Technology, concerning the labor market. Green newly emerging occupation and Green Enhanced Skills are the two green occupational categories assigned to the occupations based on the impact of the economy. The impact of green economy activities and technologies is sufficient to create the need for unique work and worker requirements results in the generation of new occupations where as the impact of green economy activities and technologies results in a significant change to the work and worker requirements of an existing occupation.

Greening Occupational Standard: - Is the Process of developing or revising the occupational standard with relevant units of competencies that can provide green skills, knowledge, and attitude to the workers/trainers and enable them to develop an appropriate work culture that enhances contributions to the green economy. The development should also consider the indigenous knowledge and skills. These Occupational standards have great roles to create green Jobs in the market/world of work.

A. Designing Occupational standards for greener jobs.

A good understanding of the skills needs for green jobs provides a sound basis for **designing** and **developing** Occupational standards with relevant units of competence. It makes it possible to identify both **new green occupations** and the **new skills** that are emerging **within existing occupations**. This information can be used as a starting point for probing deeply into occupations and identifying the knowledge, skills, and attitudes/behaviors that people need to be **“green competent”** in the workplace. Greening occupational standards can be done during the development of new occupational standards or during the revision of the existing OS as described in sections A.1 and A.2 respectively

A.1. Greening Occupational Standards for new occupations.

New occupations are likely to be developed out of existing occupations and it must be based on the labor market demand/Industry need and participation of stakeholders by deciding when and how the emergence of **green technology and green concepts** should be reflected in new occupational standards. This OS should contain competencies with green skills, knowledge, and

attitude that enable the worker to perform activities eco-friendly. (See Annex1).

A.2. Greening Occupational Standard in existing occupations

Most greening takes place within existing occupations. In such cases, and where a competency specification already exists, greening the Occupational Standard will involve a process of review including identification of Strengths, Weaknesses, Opportunities, and Threats (SWOT analysis) related to the green economy, and the gaps where new skills might be introduced. Alongside the existing skills, new skills related to the green agenda have been identified. (See Annex 2)

During a process of this kind, decisions will need to be made as to how best to deal with the new skills required, e.g., whether green elements should be integrated into existing competency standards and/or whether entirely new groups of skills.

B. Steps to greener Occupational standards

Greener Occupational standards either for the new or existing occupation involves several steps, as shown in the figure below.

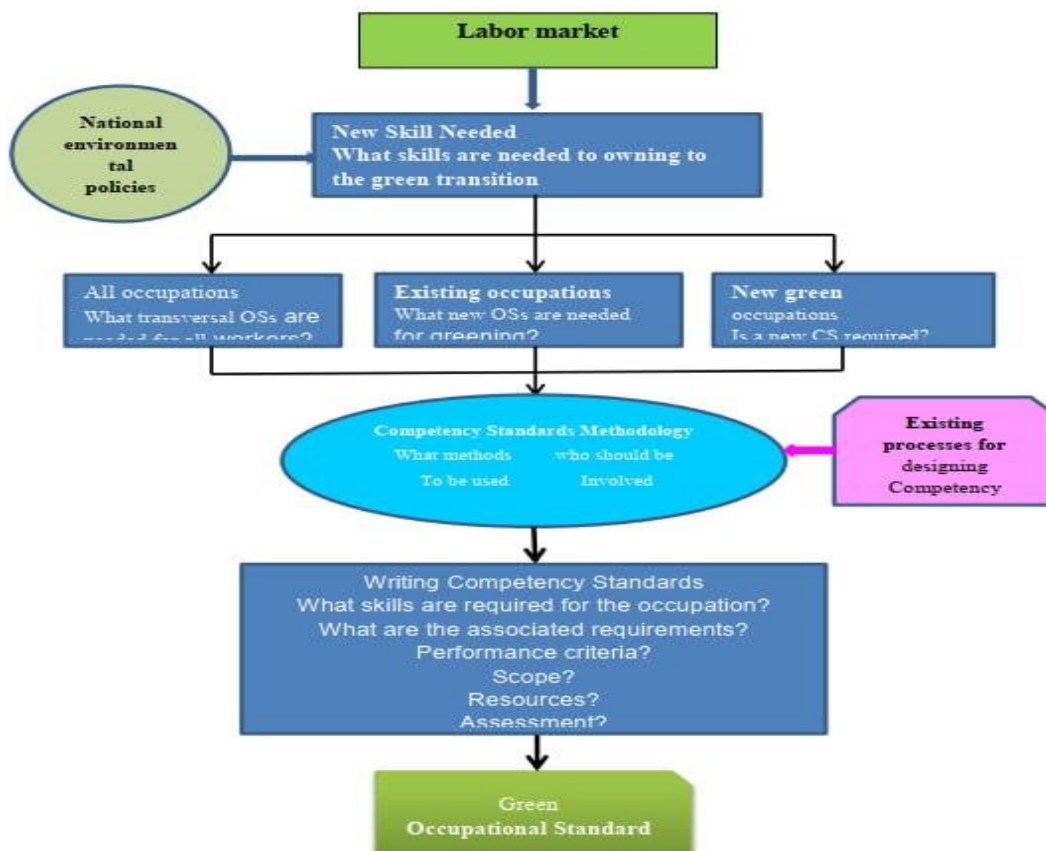


Figure 1: The process of greening new or existing Occupational standard

2.4.2 Greening the Curriculum and the Training

Greening the curriculum and training methodology is one of the key areas. Hence, the TVT curriculum is vital document in the TVT training. It includes the competencies to be acquired, training objectives, training components/contents, training methods, training resources, assessment methods, qualification and role of trainers, and others. A curriculum is a detailed description of the objectives, content, duration, expected outcomes, learning and training methods of an education or training program (ILO, 2019, Skills for a Greener Future). In short, a curriculum specifies all the key elements of a program or qualification. In Green curricula each part of the document promotes green concepts, developing a competence alone or incorporating green concepts which can promote greening skill activities.

Designing green curricula

An important element of the process of designing green curricula for the green transition is to focus on the concepts of greening stated in competence standards specific to the occupations and green skills in general. Broadly speaking, competency standards express the needs of the labour market incorporated with in, while curricula require details descriptions elaborate more to enable trainees in acquiring green skills/professions. Competency standards focus on the level of competence required for a person to perform effectively in an occupation, which they may achieve in TVET and must subsequently be able to transfer into employment. When competency standards accurately reflect the skills needed for the greening of products and services, and if curricula in turn accurately reflect the competency standards, then TVET programs stand a good chance of being well attuned to the needs of the green transition. The development of the curricula and implementation of training materials needs to re-think how the curriculum integrates the green concepts to enable trainees in acquiring green skills and knowledge. To make sure that curricula accurately reflect the green concepts in the structure/ frameworks.

The objectives in the training module are expressed as outcome-oriented, to a pattern using SMART criteria-

- S-Specific includes who, and what. Where-use only one action verb to avoid issues with measuring success
- M-focus on how much is expected
- A-Achievable/ realistic
- R- Relevant relates directly to the program/activities goal

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- T-Focus on when the objective will be achieved

The curriculum greening concepts can also fulfil the following activities

- 1- Adapt relevant content to ensure that learners acquire skills and knowledge to perform jobs in a more sustainable manner
- 2- Adaptations and mitigations of **resources used** to practice as well as used to deliver service/ produce products in the real work areas
- 3- How to preserve **environmental quality** /reduce environmental degradations in line with the jobs performed in the occupations
- 4- Promotion in protecting ecosystems and biodiversity
- 5- Enhance explorative learning using appropriate facilities.
- 6- New modules on green technologies/ green processes can be added to existing courses
- 7- Leadership/Practice in reducing energy, materials, and water consumption
- 8- De-carbonization of the economy and encouragement of reductions of pollution and waste.
- 9- Entrepreneurship
- 10- Core values and ethics needed for green culture
- 11- Safety issues/ system integrations, regulations
- 12- Adding new courses that focus on renewable energy or resource efficiency
- 13- The curriculum documents and training methods should be audited in line with basic concepts
- 14- Incorporating indigenous knowledge and skills in the curriculum

Greening training process

Greening the training for work-based learning emphasizes what is taught to trainees or employees in a work-based setting, the ‘greening of the workplace’ focuses on what TVT training can contribute to influencing the greening of work environments or industries. In simple terms, this means promoting practices that contribute to reducing the environmental impact of professional practices and, where possible, jointly developing sustainability programs and projects to address local issues.

There is a need to prepare students or learners (trainees) with the fundamentals of sustainability within the workplace in which they find employment and within communities where skills are valued as an integral part of local or community-based development. While greening the program emphasizes the sustainability skills and contents that can be applied to a workplace

setting, the ‘greening of the workplace’ focuses on what TVT training can contribute to influencing the greening of work environments, places of work, or spaces where occupational activities are mostly carried out using processes, technologies, and tasks. In practice, TVT institutions are in a strategic position to promote practices that contribute to reducing the environmental impact of professional practices and, where possible, jointly develop sustainability programs and projects in which skills and training could be instrumental to addressing local issues. Institutions involved in developing capacities and providing professional training services to stakeholders in the community could play a key role in demonstrating this sustainability approach.

2.4.3 Competency Assessment for the green economy

The success of greening TVET depends not only on the accuracy of Occupational standards in reflecting the skills required in green(er) occupations, and the ability of curricula and training to enable trainees to acquire skills in line with those OS; it also depends very much on the packages of Competency assessment methods put together to measure trainee’s achievements. A competency assessment system is used to ascertain whether trainees have developed the knowledge, attitudes and skills stipulated in the occupational standards of the areas in which they have been trained. Assessment strategies and methods need to be appropriate to the types of competency being developed and the context in which training takes place. Greened TVET curricula and training methods need suitable assessment packages, and the range of assessment methods that can be deployed are similar to those that would be deployed in other circumstances. But there are also particular features of greening TVET that need to be taken into account in assessment and certification system such as how to assess the development of transversal skills like green awareness and behaviors, how to ensure that assessment methods are tuned to inclusivity for a just transition and how to assess and recognize skills acquired through upskilling and reskilling programmes, which are so important for developing a greener economy. Thus the assessment and certification system for green occupation/economy needs:

- ❖ Designing assessment packages for greener TVET (Develop projects which are environmentally friendly and put necessary resources to perform the project)
- ❖ Select proper Assessment methods
- ❖ Accredited Assessment centers fit with green environment
- ❖ Develop green attitude/culture/ for the Assessors

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- ❖ Follow appropriate Assessment procedures suited for environment

In designing the assessment package for green TVT; Evidence of the following is essential:

- ❖ Understanding the basic principles of climate change and global warming
- ❖ Demonstrated ability to understand and follow green procedures.
- ❖ Demonstrated ability to analyze and propose solutions/.
- ❖ Demonstrated ability to inspect the work area & identify common environmental hazards/risks
- ❖ Demonstrated ability to maintain green attitude and conduct to minimize environmental impact, use of water and energy consumption knowledge of greening strategies
- ❖ Context of assessment: Assessment must relate to the individual's work area or area of responsibility.
- ❖ **Resource implications:** Training and assessment to include access to a real or simulated workplace and workplace documents, and access to workplace standards, procedures, policies, guidelines, tools and equipment.
- ❖ **Assessment methods:** the nature of competency standards (or learning outcomes) is a key driver of the types of assessment methods selected.

Competency standards comprise a mix of technical (or “hard”) and core (or “soft”) knowledge, skills and attitudes/behaviors. In greening TVET, it is important that attention be paid not only to technical knowledge and skills but also to developing green awareness, behaviors and broader generic skills like critical thinking and problem-solving, oriented towards tackling environmental crises. The new skills may also involve new forms of assessment to ensure that they can be evidenced and validated effectively. However, core (transversal) skills like teamwork and having a positive work ethic are known to be more challenging to assess effectively and efficiently than technical skills. This is a serious important challenge when it comes to **devising greening assessment packages**, in which so many of the core skills are related to attitudes and behaviors. In addition, where greening TVET is concerned, these skills might be acquired within local communities and not just within the two traditional TVET settings of school and workplace. This opens up another environment where assessment might also take place. There is likely to be a need for professional development

2.4.4 Greening the Campus

Green Campus is an environmental sustainability assessment and strategic road mapping tool that helps companies to become more environmentally sustainable by better managing their carbon emissions, energy, water, and waste impacts, as well as chart strategic roadmaps for their transformation based on their current status (März, 2023).

TVET campus: of vital importance to prepare the workforce to be able to meet the skills requirements of a greening economy. Since all trainees spent a certain time of their lives in a TVT institution, there is a good chance to reach many people and to train them to become ambassadors of the greening process and to use and pass on their green skills in business and private life. It is not sufficient just to train technical skills; one must raise awareness and support a change of mindset both with the trainers and the trainees TVT institutions have to become green, too.

- Place notices above light switches to remind people to turn lights off if there is enough daylight or when lights are not being used.
- Do not use electricity-requiring decorations.
- To reflect the sun and heat outwards, use light-colour curtains.
- When using air-conditioning systems, shut doors and windows.
- To take advantage of natural light, put the workspace closer to the windows.
- Consistently reduces the campus environmental impacts Improves the quality of staff- and students trainees' working conditions
- Creates a healthy and safe environment for all social groups, religious beliefs, and genders
- Makes the campus accessible for people with disabilities

Greening TVT Campus includes;

- Greenhouse gas emission reduction and Air pollution reduction
- Waste minimization and Recycling
- Handling of hazardous substances
- Reduction of water consumption and water pollution
- Efficient use of energy
- Renewable energy use

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- Green areas preservation and biodiversity
- Use Local and healthy food products
- Design and construction
- Operation and maintenance

2.4.5 Greening Organizational Culture

Green Culture: is intended to focus on strengthening values of training, ethical standards, attitudes, and behavior that respects ecological resources and values the future requirements of the future generation.

This will reflect the institutional vision through hiring and promotion procedures, evaluation schemes, rewards, and celebrations, and should also be present in the everyday behavior of the managers, the training personnel, other workers, and trainers. This should eventually become part of the institution's branding and reputation, making it easier for graduates to attain better jobs, while better serving the community's citizens and enterprises. A strong basis of green values and ethics, combined with knowledge, skills, and competencies, is an important foundation for social transformations that will affect all other sectors, such as the economy and the environment.

HOW TO CREATE A GREEN CULTURE – A STEP BY STEP GUIDE

1. Designate Champions and Create a Green Team

Creating a green culture that truly engages employees or learners requires not only leadership from management but passionate individuals from various levels and departments within the organization. This confirms a greater movement happening within the training institution and will encourage participation greatly due to the established group.

2. Ensure training in sustainability aligned with institutional goals

It is important to ensure that employees or the learner not only understand the concept of sustainability and the green culture that the institution is trying to achieve but also why the training institution is focused on it and how they intend to achieve it. The clearer the message the more aligned the employee will feel with the training institution's mission and engagement.

3. Invite Observation and Suggestion

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Individuals, when empowered with training and actionable outlets, will look for ways to weave sustainability into their daily routine and professional practices. This avoids any unwanted disruption of regular professional culture but rather presents a gradual change to a green culture. Primarily, the focus is to ensure that employees feel that they can contribute and influence training institution actions based on their firsthand observations. This not only applies to sustainability but also to general professional practice.

4. Hold Consistent Meetings

When implemented across departments it will allow cross-collaboration between different areas of the occupation that may have different resources or understanding to tackle a particular issue. This creates a sense of permanence and directs ownership of ongoing issues. Keep a cadence, whether that's weekly, monthly, or quarterly, to keep the momentum and engagement level high.

5. Participate in Local Initiatives

Participating in local community initiatives provides a sense of relevance for those employees who may not jump immediately at the thought of sustainability. One could argue that after successful involvement with community initiatives, those employees can see tangible results and are more likely to participate. Either way, the purpose is to achieve goals that affect your employees' daily lives outside work.

6. Communicate Results

Keep employees fully updated on training institution updates pertaining to green and local initiatives, as well as broader sustainability goals. Focus on how the initiatives are benefiting the environment, the professionals, and the local community. This created new ideas and leads to the goal of making every employee a sustainability participant.

7. Include a section in the Employee Handbook

When new employee comes into a training institution, they are more likely to participate in the sustainability culture when they see it as part of their job/occupational description. This has the benefit too of reminding the trainer of the institutional focus on a green culture as well.

2.4.6 Greening the Community

Refers to TVT's contribution to the greening of work environments/training skill development

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and the community through promoting practices to reduce environmental impacts of training operations joint development of sustainability programs to address local issues by using renewable energy, participation in resource support, and promoting unique practice. Aims to co-develop and implement with enterprises and communities the institution's sustainability plans and programs in which shared goals can be pursued, and sustainable practices in the workplace and sustainable lifestyles become the norm.

Greening the community and the workplace sustainability approach implemented to engage industries, training institutions, enterprises, and the wider community in the institution's institutional greening plan (IGP) and programs, whereas the need for greening training skill development has emerged as a top priority in the occupational world, there is a need to prepare trainees with the fundamentals of sustainability within the workplace in which they find employment and within communities where skills are valued as an integral part of local or community-based development.

2.4.7 Green Research

Green research is a term that refers to research, development, and innovation that directly or indirectly contributes to the green transition of society with specific solutions and technologies as well as basic knowledge. This applies in terms of reduction of greenhouse gas emissions, energy efficiency, climate adaptation, renewable energy, water treatment, green innovations, waste recycling, and more.

Greening research is and must be an integral component of the institutional culture. As well as investigating concepts, beliefs, and theories on how to better manage the greening of operations, products, trainee/community outcomes, and the correction of unsustainable patterns of consumption and production, it stimulates the commitment of both trainers and trainees to carry out research on matters that contribute to discovering practical solutions to problems.

Green research can be focused on:

- Check the best technologies, equipment, and processes to enhance **building energy** efficiency to reduce energy usage.

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- Calculate and compare costs and monetary impact of, for example, alternative use of energy, using various lighting systems or **energy**-saving processes in classrooms, workshops, offices, etc.
- Research how human commitment and attitudes can better be improved to conserve resources and contribute to the growth of a green culture.
- Test and compare the efficiency and efficacy of various forms of renewable energy systems.
- Skilling, up-skilling, de-skilling, green jobs with effectiveness for employability and improvements of lively hood.
- Research on the development of curriculum using infusion and diffusion models and establish a prototype model that can be institutionalized as part of academic offering.
- Improvement of the climate screen research can be done by improving the existing buildings through better insulation, replacement of windows, securing windows that tightly close, etc.;
- Energy smart installations-research on energy smart installation can be done on the improvements of buildings and facilities through installations of efficient ventilation, lighting-systems resulting in savings in energy consumption;

2.4.8 Green Technology

Green technology refers to the use of technology and science to create products and services that are environmentally friendly. It is related to clean technology, which specifically refers to products or services that improve operational performance while also reducing costs, energy consumption, waste, or negative effects on the environment. The goal of green tech is to protect the environment, repair damage done to the environment in the past, and conserve the Earth's natural resources. Many indicators measure the technology's effects on various aspects of green technology. Among them: -

Cost Savings

Reducing energy bills often tops the list of reasons to implement green technology in operations. Especially in the area of automobile fuels, alternative energy technologies can cost significantly less than traditional energy sources. It also includes optimal utilization of resources, recycling/reuse/ materials, and waste and pollution reduction.

Power Usage

Energy-efficient machinery and production processes reduce the amount of energy consumed by

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individual companies.

Environmental Factors

Manufacturing companies may switch to green technologies to reduce their negative impact on the environment. Green technology can reduce pollution in the air and water in addition to reducing the amount of toxic byproducts created from manufacturing processes. These changes can benefit employee health and the health of local community members as well;

Regulatory Compliance

Despite the myriad of benefits that green technology provides to users; a company may implement environmentally friendly technology solely to comply with regulations imposed by industry groups or government agencies.

Types of Green Tech

Green technology is a broad category that encompasses several forms of environmental remediation. While climate change and carbon emissions are now considered among the most pressing global issues. The most familiar types of green technologies are:

- **Alternative Energy**
- **Electric Vehicles**
- **Sustainable Agriculture**
- **Recycling and waste management**
- **Carbon Capture**
- **Vertical Garden and Farm**
- **Green Buildings**
- **Bio-fuel**
- **Waste-to Energy**
- **Plastic Roads**

3 Part Three

3.1 Implementation of Green TVT

Having the above concepts and pillars of GTVT, its implementation process in the whole TVT system consists of several steps. These steps are awareness creation, Planning, implementation, and monitoring of the greening process in line with sustainable development through Green TVT.

Step 1: Develop partnership

To effectively implement greening TVET, it is important to develop partnership with different key stakeholders and partners. The greening TVET encourages stakeholders involvement in the OS, curricula and training material development, competency assessment implementation, institutional capacity building, technology and research aspects. Stakeholders to be involved in developing and implementing green TVET; includes

- ✓ Policymakers
- ✓ Educational experts
- ✓ Government institutions responsible for the design and conceptualization of training
- ✓ Institutions responsible for the accreditation of programmes/qualifications
- ✓ Industry experts
- ✓ Individual enterprises, employers' organizations and sector bodies
- ✓ Trade unions
- ✓ TVET providers
- ✓ NGOs and development partners
- ✓ Community organizations
- ✓ Associations

Step 2: -Create awareness for Implementer's greening process.

It is necessary to create awareness for the implementers at each level of delegations/positions/ who will participate in the process. The strategy, as a whole, boosts capacity-building skills that allow citizens to actively participate in green economies, sustainable and climate-resilient societies, and to undertake decent, lifetime working opportunities.

Step 3: Planning and developing an implementation strategy

It is important to develop a planning framework and strategy before starting the main greening process. The step outlines strategic planning approaches, such as building the motivation for a

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whole-institution approach, developing a vision, the engagement of key stakeholders, and helping in setting priorities. To give guidance on how these priorities could be implemented, examples are provided. These offer ideas and methods for organizing activities around a green plan.

Its suggestions will assist with the core tasks of creating an institutional policy framework to allow simultaneous work on Greening the Campus, Greening the Curriculum and Training, Greening Research, Greening the Institutional Culture, and assisting the broader workplace and community in their own greening efforts.

Step 4: Green TVT implementation.

This step focuses on the implementation of the seven GTVT Pillars and making them operational within the daily routine of the institution. It needs simultaneous work on greening the OS, Greening the Campus, Greening the Curriculum and Training, Greening Research, Greening the Institutional Culture based on an institutional policy frame work, and assisting the broader workplace and community in their own greening efforts.

Step 5: Monitoring and assessing the efforts and results of the greening process

Greening activities should be enforced or supervised by the respective accountable individuals or action teams. Guiding the continual process of transformation through monitoring and assessment is an essential component of greening an institution. This component follows a sequence of actions and they are:

- The reason for monitoring needs to be established
- The scope needing assessment should be clarified
- A framework of monitoring and assessment should be developed

The assessment of actual success in each sustainability strategy for TVT institutions allows for tracking progress based on a collection of goals and predetermined performance measures. However, development in TVT greening is experimentally and numerically measurable.

4 Part Four

Annexes

Annex 1: -Green OS development for new Occupation

KEY PURPOSE & UNITS OF COMPETENCE	ELEMENTS of COMPETENCE	PERFORMAMNCE CRITERIA	EVIDENCE OF PERFORMANCE
OCCUPATION: ORGANIC PRODUCER Key purpose Grow plants by application of organic technologies, favoring environmental conservation and human health Units of competence 1 Prepare the farm for the organic cultivation of plants 2 Develop organic crops, applying agronomic techniques according to the selected species	UNIT OF COMPETENCE NO.2 Title: Develop organic crops, applying agronomic techniques according to the selected species. Elements of competence 2.1 Produce organic inputs according to established techniques. 2.2 Carry out agronomic practices to the crop, based on the requirements of the selected species. 2.3 Handle the harvested product, according to the characteristics of the species and to market requirements.	ELEMENTS OF COMPETENCE 2.1 Produce organic inputs according to established techniques. Performance criteria The person is competent when: ... The storage of organic inputs is carried out in compliance with the conditions required for each product and the current regulations. ... Scope 1 Organic inputs 1.1 Solid fertilizers 1.2 Liquid fertilizers ... 2 Methods of organic production 2.1 Aerobic fermentation 2.2 Anaerobic fermentation	HOW: 1. Raw material are selected 2. Organic inputs are prepared 3. Organic supplies are stored Evidence by product 1. The inputs produced. Evidence of Knowledge 1. General information on raw materials: origin, characteristics...handling of waste Evidence of attitude 2. Responsibility:... Efficient use of resources. Responsible waste management General guidelines for evaluation: Mastery of the element of competence can be evaluated by: 1. Evidence of performance will be verified through an observation guide. The checklist also contains aspects related to evidence of attitude...

Annex 2: Green OS development for Existing Occupation

Annex 3: Checklist greening curriculum

Parts of the CM	Statements/ issues to be checked	Points
Part one		
Horizontal and vertical Pathways		
Working areas and titles of working		
inclusiveness		
Flexibility (what things and how is going to be flexible)		
Green Curriculum	developing green culture –sustainable applications	
Part two		
Learning outcomes	Each training outcome objectives clearly defined w SMART criteria	
Contents	the contents were sequentially organized and easy to follow The time allotted for the training was sufficient Integrated green issues into the contents systematically	
Learning methods	experience sharing Real work areas visit/ site visit to TVT institutions or industry implementing green projects Video-supported links Greening campus practice Collections of data from the campus, industry, community visits- interventions areas in greening activities Digitally supported reporting and data analysis Producing saleable project work/service in the process of practical training	
Assessments	preparing key learning lessons reports from site visits/	

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	and presentations Successful history telling	
Assessment criteria's	alternative/ efficient utilization of resources Applications of quality measurements and confirmations Demonstrations and applications in environmental degradations protections	
Resources	Video supported links Alternative resources/ materials for training	

Annex 4: checklist greening training delivery

Parts of training	Statements/ issues to be checked	Points
Part one		
Trainers Capacity	• familiar with the OS, Curriculum, and Training materials • Adapt the Curriculum and Training materials in line with the environment • motivational speakers in promoting the occupations • Integrating green issues into the programs systematically • - Adapt relevant content to ensure that learners acquire skills and knowledge to perform jobs in a more sustainable manner • Apply and/or be able to apply relevant environmental protection regulations at the institutions and workplace/industry	
Learning outcomes	• Each training outcome objectives clearly defined with SMART criteria	
Contents	• Knowledge learned and Practical exercises aligned and organized sequentially • Utilization of time allotted for the training sufficiently • Good pre-training preparations	
Learning methods	• industry visit facilitations • Practical saleable Project designing • PPT presentations/21st-century skills/smart room presentations • Video-supported links presentations/digitalization/	
Assessments	• Training achievement evaluations and measurement • Assessment questioning and practical exam familiar with institutional and national assessments	
Resources	• video-supported links • Alternative resources/ materials for training • Environment-friendly arranged Workshop • Training materials recycling and waste management • saleable Project products/services • utilization of raw materials • utilization of water and energy	