



# Train2Sustain – developing capacity to teach sustainability in VET

## Unit 1

### Introduction to the Training Package

Project number: 2020-1-FI01-KA202-066632

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# Index

|  |    |
|--|----|
| Glossary.....                                    | 3  |
| 1 Introduction to the Training Package.....      | 8  |
| 1.1 Overview of the Content Units .....          | 8  |
| 1.2 Important Information for the Learners ..... | 11 |



# Glossary

## Glossary for Units 1 – 7 ALPHABETIC ORDER

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| Artificial intelligence | <b>Artificial intelligence (AI)</b> is <a href="#">intelligence</a> —perceiving, synthesizing, and inferring information—demonstrated by <a href="#">machines</a> , as opposed to intelligence displayed by <a href="#">non-human animals</a> and <a href="#">humans</a> . Example tasks in which this is done include speech recognition, computer vision, translation between (natural) languages, as well as other mappings of inputs. |
| Biocapacity             | The <b>biocapacity</b> or <b>biological capacity</b> of an <a href="#">ecosystem</a> is an estimate of its production of certain biological materials such as <a href="#">natural resources</a> , and its absorption and filtering of other materials such as <a href="#">carbon dioxide</a> from the atmosphere  |
| Biodiversity            | <b>Biodiversity</b> or <b>biological diversity</b> is the variety and variability of <a href="#">life on Earth</a> . Biodiversity is a measure of variation at the <a href="#">genetic (genetic variability)</a> , <a href="#">species (species diversity)</a> , and <a href="#">ecosystem (ecosystem diversity)</a> level.   |
| Carbon footprint        | A <b>carbon footprint</b> is the total <a href="#">greenhouse gas (GHG) emissions</a> caused by an individual, event, organization, service, place or product, expressed as <a href="#">carbon dioxide equivalent</a> (CO <sub>2</sub> e)   |
| Carbon handprint        | A carbon handprint is <b>the opposite of a footprint</b> . It recognises the actions you take to have a positive impact on the climate, over and above reducing your own carbon footprint if you do enough of these, they might even outweigh the size of your carbon footprint.  |
| Circular economy        | A <b>circular economy</b> is a model of <a href="#">production</a> and <a href="#">consumption</a> , which involves <a href="#">sharing</a> , leasing, <a href="#">reusing</a> , repairing, refurbishing, and <a href="#">recycling</a> existing materials and products as long as possible   |
| Decarbonization         | The term decarbonization literally means <b>the reduction of carbon</b> . Precisely meant is the conversion to an economic system that sustainably reduces and compensates the emissions of carbon dioxide (CO <sub>2</sub> )   |
| Deforestation           | <b>Deforestation</b> or <b>forest clearance</b> is the removal of a <a href="#">forest</a> or stand of trees from land that is then <a href="#">converted</a> to non-forest use.[3] Deforestation can   |

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|                                       | involve conversion of forest land to <a href="#">farms, ranches</a> , or <a href="#">urban</a> use. The most concentrated deforestation occurs in <a href="#">tropical rainforests</a>  |
| Eco-design                            | <b>Ecological design</b> or <b>ecodesign</b> is an approach to designing products and services that gives special consideration to the environmental impacts of a product over its entire <a href="#">lifecycle</a>   |
| Ecological footprint                  | The <b>ecological footprint</b> is a method promoted by the <a href="#">Global Footprint Network</a> to measure human demand on <a href="#">natural capital</a> , i.e. the quantity of nature it takes to support people and their economies.   |
| Energy-efficient                      | Energy efficiency is <b>the use of less energy to perform the same task or produce the same result</b> . Energy-efficient homes and buildings use less energy to heat, cool, and run appliances and electronics, and energy-efficient manufacturing facilities use less energy to produce goods.  |
| Environmentally friendly              | <b>Environment friendly processes</b> , or <b>environmental-friendly processes</b> (also referred to as <b>eco-friendly</b> , <b>nature-friendly</b> , and <b>green</b> ), are <a href="#">sustainability</a> and <a href="#">marketing</a> terms referring to <a href="#">goods and services</a> , <a href="#">laws</a> , guidelines and policies that <a href="#">claim</a> reduced, minimal, or no harm upon <a href="#">ecosystems</a> or the <a href="#">environment</a> . |
| European circular economy action plan | The EU's Circular Economy Action Plan (CEAP) was a <b>comprehensive body of legislative and non-legislative actions adopted in 2015, which aimed to transition the European economy from a linear to a circular model</b> . The Action Plan mapped out 54 actions, as well as four legislative proposals on waste.  |
| Fertilisers                           | <b>Fertiliser</b> is any material of natural or synthetic origin that is applied to soil or to plant tissues to supply <a href="#">plant nutrients</a> .  |
| Fossil fuels                          | A <b>fossil fuel</b> is a <a href="#">hydrocarbon</a> -containing material formed naturally in the <a href="#">Earth's crust</a> from the remains of dead plants and animals that is extracted and <a href="#">burned</a> as a <a href="#">fuel</a> . The main fossil fuels are <a href="#">coal</a> , <a href="#">oil</a> , and <a href="#">natural gas</a> .  |
| Greenhouse emission                   | <b>Greenhouse gas emissions</b> from human activities strengthen the <a href="#">greenhouse effect</a> , contributing to <a href="#">climate change</a> . Most is <a href="#">carbon dioxide</a> from burning <a href="#">fossil fuels</a> : <a href="#">coal</a> , <a href="#">oil</a> , and <a href="#">natural gas</a> .   |
| Greenhouse Emissions                  | Greenhouse gas emissions from human activities strengthen the greenhouse effect, contributing to climate  |

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|                    | change. Most is carbon dioxide from burning fossil fuels: coal, oil, and natural gas. The largest emitters include coal in China and large oil and gas companies.  |
| Greenwashing       | is a form of <u>advertising</u> or <u>marketing spin</u> in which <u>green PR</u> and <u>green marketing</u> are deceptively used to persuade the public that an organization's products, aims and <u>policies</u> are <u>environmentally friendly</u> .   |
| Holistic process   | <b>relating to or concerned</b> with wholes or with complete systems rather than with the individual parts.  |
| Innovation         | <b>Innovation</b> is the practical implementation of <u>ideas</u> that result in the introduction of new <u>goods</u> or <u>services</u> or improvement in offering goods or services  |
| Lean management    | <b>Lean manufacturing</b> is a <u>production method</u> aimed primarily at reducing times within the <u>production system</u> as well as response times from suppliers and to <u>customers</u> .   |
| Lean principles    | The five principles are considered a recipe for improving workplace efficiency and include: 1) defining value, 2) mapping the value stream, 3) creating flow, 4) using a pull system, and 5) pursuing perfection.  |
| Linear economy     | he traditional model where raw materials are collected and transformed into products that consumers use until discarding them as waste, with no concern for their ecological footprint and consequences.   |
| Muda, Mura, Muri   | <b>Muda, mura and muri</b> are three types of wasteful actions that negatively impact workflow, productivity and ultimately, customer satisfaction.  |
| Organic farming    | Organic farming, also known as ecological farming or biological farming, is an agricultural system that uses fertilizers of organic origin such as compost <u>manure</u> , <u>green manure</u> , and <u>bone meal</u> and places emphasis on techniques such as <u>crop rotation</u> and <u>companion planting</u> . |
| Pesticides         | In general, a pesticide is a chemical (such as <u>carbamate</u> ) or <u>biological agent</u> (such as a <u>virus</u> , <u>bacterium</u> , or <u>fungus</u> ) that deters, incapacitates, kills, or otherwise discourages pests   |
| Product Life cycle | Product life-cycle management is the succession of strategies by business management as a product goes through its life cycle. The conditions in which a product is sold changes over time and must be managed as it moves through its succession of stages.   |

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| Product-as-a-service  | Product as a service is the concept of selling the services and outcomes a product can provide rather than the product itself.  |
| Pull production       | <b>A method of production control in which downstream activities signal their needs to upstream activities.</b> Pull production strives to eliminate overproduction and is one of the three major components of a complete just-in-time production system.  |
| Recycling             | <b>Recycling</b> is the process of converting <u>waste</u> materials into new materials and objects. The <u>recovery of energy from waste materials</u> is often included in this concept. The recyclability of a material depends on its ability to reacquire the properties it had in its original state                        |
| Renewable energy      | <b>Renewable energy</b> is energy that is collected from <u>renewable resources</u> that are naturally replenished on a <u>human timescale</u> . <sup>1</sup> It includes sources such as <u>sunlight</u> , <u>wind</u> , the movement of <u>water</u> , and <u>geothermal heat</u>   |
| Sustainability        | <b>Sustainability</b> is a societal goal that relates to the ability of people to safely co-exist on <u>Earth</u> over a long time.   |
| Sustainable household | A sustainable home is <b>one that is built or retrofitted in a way that conserves resources, optimizes energy and water use and that will last longer with quality systems.</b> A sustainable house is built with low-impact, high-performance materials. They are efficient in terms of manufacturing, shipping, and installing. |
| Sustainable label     | Eco labels <b>set minimum environmental and health standards and verify products that meet the criteria.</b> They're designed to inform consumers, brands, and manufacturers that labelled products are more environmentally friendly than most.  |
| Sway                  | Sway is a digital storytelling app that helps you create professional, interactive designs for your images, text, videos, and other media in minutes.   |
| The 5s                | 5S stands for the 5 steps of this methodology: <b>Sort, Set in Order, Shine, Standardize, Sustain.</b> These steps involve going through everything in a space, deciding what's necessary and what isn't, putting things in order, cleaning, and setting up procedures for performing these tasks on a regular basis.             |

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| The European action Plan | It aims to: Re-orient capital flows towards sustainable investment, in order to achieve sustainable and inclusive growth; Manage financial risks stemming from climate change, natural disasters, environmental degradation and social issues; and. Foster transparency and long-termism in financial and economic activity.   |
| Value chain              | A <b>value chain</b> is a progression of activities that a firm operating in a specific industry performs in order to deliver a valuable <u>product</u> (i.e., <u>good</u> and/or <u>service</u> ) to the end <u>customer</u> .  |
| Value stream             | A <b>value stream</b> is the set of actions that take place to add value to a customer from the initial request through realization of value by the customer. The value stream begins with the initial concept, moves through various stages of development and on through delivery and support. A value stream always begins and ends with a customer.                                    |
| Waste management         | <b>Waste management</b> or <b>waste disposal</b> includes the processes and actions required to manage <u>waste</u> from its inception to its final disposal. This includes the <u>collection</u> , transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste-related <u>laws</u> , technologies, economic mechanisms. |

# 1 Introduction to the Training Package

Sustainability has become a very important issue as it is something that affects our whole society. Unfortunately, there are still a lot of non-sustainable practices carried out by countries, organizations and also individuals, which contribute to climate change. To stop climate change and make our earth more sustainable and live-worthy again, it is important to work on different activities in this context.

Therefore, this training package was developed by the Train2Sustain project consortium to support people in enhancing their competences in relation to the topics of sustainability, circular economy and Lean management. The **main target group** of these learning materials is **teachers and trainers**, especially in vocational education, that want to include sustainability aspects in their teaching in future and thus want to further educate themselves regarding the above-mentioned topics.

## 1.1 Overview of the Content Units

To provide an extensive insight into this topic, this training package consists of six content units that deal with sustainability and that highlights how a circular economy and an efficient Lean management can contribute to a more sustainable planet:

- Sustainability
- UN Sustainable Development Goals
- Sustainability in Practice
- Circular Economy
- Lean Management
- Sustainability, Circular Economy and Lean in Education

In the following, you can find some more information about these training modules as well as the learning objectives within the units. This should help to you identify which units are relevant for you and what contents you want to learn in more detail.

### Content Unit 2 – Sustainability

This content units deals with the basics in relation to sustainability: You can find here different definitions in this context, you will get to know the three pillars of sustainability and you will get some information about the importance of sustainable actions. In addition, you will see how climate has changed during the last years and how we as humans contributed to this climate change. You will learn about the ecological footprint, and we will give you some insight in how our planet will further develop if we are not counteracting climate change. As there are already different action plans to promote sustainability, they will also be mentioned and explained in this training module.



The learning objectives within this content unit are the following:

- You will be able to define sustainability and relating terms.
- You will be able to explain how our behavior influences the environment and how this will progress over the next years if there are no counteractions.
- You will be able to name different international agreements and certificates regarding sustainability issues.

### Content Unit 3 – UN Sustainable Development Goals

In this content unit, you will find a lot of information about the 2030 Agenda for sustainable development and the defined sustainable development goals (SDG). It will give you an insight in how far we are in reaching these goals and what differences in relation to this exist within Europe. We will also present you some companies that are doing well in working on the SDG. But as it is not that easy to reach these goals, we will also show you the challenges that come along with working on the SDG and we will explain how these challenges could be counteracted.

The learning objectives within this content unit are the following:

- You will be able to define the SDGs and their framework conditions.
- You will be able to explain how different European countries are working on the SDGs and which progress has been made.
- You will be able to describe the future challenges in relation to fulfilling the SDGs and how they can be managed.

### Content Unit 4 – Sustainability in Practice

It is very important that we all contribute to a more sustainable planet. Therefore, this module gives a lot of ideas and practical tips on how we as private people, as well as companies, can act in order to fight climate change and save our planet. You will learn how to calculate your carbon footprint and what to do to create a carbon handprint instead of a footprint. As Industry 5.0 is also an important issue in this context, this unit also provides some information about what Industry 5.0 is and how it is interrelated with sustainability.

The learning objectives within this content unit are the following:

- You will be able to describe how to act sustainably as a consumer/in private life.
- You will be able to explain how to act sustainably and how to promote sustainable actions as a company.
- You will be able to indicate how to reduce one's carbon footprint and how to generate positive impacts on the environment.
- You will be able to explain how Industry 5.0 contributes to a more sustainable world.

## Content Unit 5 – Circular Economy

In this content unit, you will find a lot of information and useful tips about circular economy. First, the term itself as well as the European Action Plan are described. You will also learn about the benefits, but also of the challenges that come along with a circular economy. This unit provides you with some information about what actions could be carried out in order to reach a circular economy and it shows you how different European countries and industries are trying to reach a circular economy.

The learning objectives within this content unit are the following:

- You will be able to define circular economy and what the European Action Plan stands for.
- You will be able to describe the benefits and challenges when implementing circular economy aspects.
- You will be able to explain which actions can be set in order to contribute to a circular economy.
- You will be able to explain how circular economy is integrated in different European countries.

## Content Unit 6 – Lean Management

This module includes different information relating Lean management and how it could contribute to sustainability. After some first definitions in this context, you will find out more about the goals, the history and the principles of Lean. You will learn about the 5 s and about how they could influence the success of a company. In addition, the 8 wastes of Lean are explained and we will provide you with some ideas on how to eliminate these wastes. To close this content unit, you will get a lot of ideas on what impact all these aspects of Lean have on sustainability.

The learning objectives within this content unit are the following:

- You will be able to describe the term Lean Management and the Lean principles.
- You will be able to explain why the 5s are that important for Lean management.
- You will be able to identify and eliminate the 8 wastes of Lean.
- You will be able to explain how Lean can support sustainability.

## Content Unit 7 – Sustainability, Circular Economy and Lean in Education

This last content unit was created to support you as a teacher or trainer in making your own teaching more sustainable. You will get some information on how sustainable framework conditions could be created in your teaching. In this module, you will also find some tips on how to prepare sustainable lessons and on how to behave sustainably during these lessons. You will also see how digitalization is influencing sustainability. At the end, we will also give you some ideas on how you could include sustainable topics in your existing courses.

The learning objectives within this content unit are the following:

- You will be able to explain which conditions are needed in order to include sustainability in education.

- You will be able to implement training courses in a sustainable way.
- You will be able to describe how sustainability, circular economy and Lean can be integrated in training courses.

## 1.2 Important Information for the Learners

All content units are structured in the same way. They consist of:

- An introduction to the topic
- The learning contents
- A short summary of the most important information within the unit

The learning contents contain some text to read and a lot of practical examples from different industries. In addition, you will find some explanatory videos to watch as well as some tasks where you can reflect on your own teaching.

The content units are not related to each other which means that it is possible to learn only the units you are interested in. For example, if you already know a lot about circular economy, but not about Lean management, you can only learn this one content unit without any problems.

The **learning duration** for each of these content units is **about two hours**.

The modules of the training package can be **downloaded from our project website** and, if necessary, printed out: <https://www.train2sustain.eu/instructors/theory-package/>

In addition to these learning materials for teachers and trainers, a **Sway presentation** was developed to bring these topics closer to VET learners. This presentation covers content units 1 to 6 and is directly addressed to VET learners. It consists of text to read, interactive cards, videos to watch as well as some assessment activities. The idea of this presentation is that teachers and trainers can directly use it in their teaching. It can be accessed here:

<https://www.train2sustain.eu/learning-package-for-students/>

To avoid that the learning on the topics of sustainability, circular economy and Lean management get boring, you could also include different **practical activities** in your lessons. Examples for such practical activities can be found in the toolbox which was also developed within this project:

<https://www.train2sustain.eu/instructors/electronic-toolbox/>