

Guidance on the use of the Training Materials

Introduction

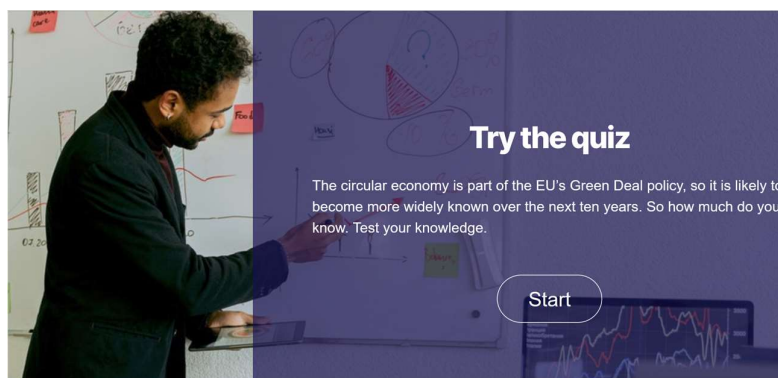
The CIRCLE project seeks to introduce vocational teachers and students to the principles of the circular economy. It applies to several sectors, namely tourism transport agriculture and construction. Each of these sectors employs a significant number of young people. Introducing them to how we can make material resource and produce less waste, is more efficient in our everyday workplace is an important step in moving towards a circular economy reducing waste and rethinking how we use materials.

The material provided is principally aimed at teachers. Full PowerPoint presentations are made available to allow the teacher to adapt and use the material as they see fit. In addition, we have provided slideshow material which is a visual means for students to access and review the content.

All training material is described in Units. For each unit there are:

- Two training presentations in the form of slideshows, including an interactive exercise to test your knowledge gained
- Two PowerPoint presentations for download and adaptation or use by teachers
- A lesson plan for each presentation which describes how the teacher can use the material in a classroom context. Each lesson plan might last for 60 -120 minutes. The lesson plans break the learning activities down into individual student review, group discussions and individual exercises.

An initial **Readiness questionnaire tool** is provided which invites the user to answer several questions as a means of introducing the circular economy topic.



Any vocational trainer engaged on educating students at level EQF4 can download, use and configure for their use in the classroom, directing students to relevant materials.

The training material is provided in English, Spanish, Lithuanian, Italian and Turkish.

Generic Training

The Circular Economy approach is part of the EU Green Deal and offers a new way of considering waste prevention and recycling by focusing on the business models that can be developed. These business models and examples are set out in the generic training module.



Organisations can play a major role in redefining their products and services that reduce materials and challenge the status quo. The training stresses the importance of all employees to contribute to opportunities to contribute to circular economy thinking within their organisation.

Tourism

The tourism sector is a major employer across Europe, from hotels, attractions, events, theatres. Any organisation that caters for visitors to their community are part of the tourism sector. From a circular economy perspective, the focus is very much in the hotel sector, where small changes can help reduce waste. The course material considers the role of accommodation, the provision of car hire and transport services, particularly targeted at tourists.



Discussion Points

- Why is it crucial to involve accommodation and food in the process of change from a linear to a circular economy?
- List the key factors for sustainable accommodation and food in order of importance in your personal view and explain the reasons behind your choices.



Transport

How society moves products around is subject to advanced transport logistics. Yet there are opportunities to consider circular economy thinking. This module explores several aspects of the transport sector.

Urban Logistics & Closed-Loop Supply Chain

- **Urban logistics** is challenging for smaller hauliers (85% transport market) particularly and results in fragmented freight flows, difficulty in planning efficient routes
- **Closed-loop** is a supply chain incorporating product return flows (after consumption or use) which are returned to manufacturers, in addition to typical material flows from suppliers to end users. Carried out through reverse logistics. Key features:

- commercial return
- warranty repair and replacement
- recycling and reuse,
- rental of equipment or machinery.



First logistics and the movement of good is explored to optimise and reduce fuel consumption. Next the role of reverse logistics in support product take-back and producer responsibility. The role of public transport systems in moving people and how they support circularity is described. Finally. Innovation in the adoption of hydrogen and Electric vehicles creates a new opportunity to reduce demand for fossil fuels, although it does bring their own challenges in terms of rare earth materials.

Agriculture

The agriculture course looks across farming activities and considers how farming practices can be more resource efficient, from the use of artificial fertilisers and good use of farmyards waste use as manure to minimising on-farm wastes. Opportunities around selling local produce and the relationship between agriculture and carbon reduction is described.



Introducing Anaerobic Digestion



BIOGAS	DIGESTATE
Composed by methane (50-75%), carbon dioxide and small amount of other gases	Composed by liquid and solid phases that are processed in different ways
Can be used to provide heat and power	Can be used for animal bedding, as nutrient-rich fertilising, an input for bio-based products or simply as soil amendment ¹

¹ How does anaerobic digestion work? EPA

Construction

The construction sector is a major employer across Europe, with vocational student finding distinct roles on site. The sector is however a major consumer of materials and generates a significant amount of wastes on site. Reducing material needs and waste is key to a more resource efficient sector.

The construction modules describe the quantities of materials consumed by the sector and how the EU is encouraging more resource efficiency. Supply chain management is particularly critical for the sector and how each stakeholder operates, plays an important role in achieving circular economy

principles. The sector use significant quantities of concrete, bricks and steel, all of which have high embodied energy and carbon associations. Yet the industry has been slow to adopt new practices such as modular build, prefabrication and the selection of refurbishment rather than new build.



Measuring Embodied Energy

- Operating buildings emit carbon – especially if fossil fuels such as natural gas are used for heating.
- However, CO₂ and other greenhouse gases are emitted well before a building is in operation.
Embodied carbon is what we call CO₂ emissions associated with materials and construction processes through the whole lifecycle of a building, from design and raw material extraction, to life and maintenance and end of life.



These issues are all explored in the course.