

### TRAINING LESSON 6 - Part 2 (Wood sector)

<b>Title</b>	<b>Environmental-friendly practices at the workplace</b>
<b>Part of the training course referred to in this lesson</b>	<p>Part 1 <input type="checkbox"/> General information about sustainability and CE</p> <p>Part 2 Specific Information about:</p> <p><input checked="" type="checkbox"/> Wood sector</p> <p><input type="checkbox"/> Plastic sector</p> <p><input type="checkbox"/> Agrifood sector</p>
<b>EQF level</b>	3 level
<b>Where the lesson was tested</b>	//
<p><b>General Learning objective(s) according to the Bloom Taxonomy</b></p> <p><a href="https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/">https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/</a></p>	<p><input type="checkbox"/> <b>Create</b> Produce new or original work (design, assemble, construct, investigate, formulate)</p> <p><input type="checkbox"/> <b>Evaluate</b> Justify a stand or decision (appraise, argue, defend, critique, select, support)</p> <p><input checked="" type="checkbox"/> <b>Analyze</b> Draw connections among ideas (differentiate, organize, relate, compare, distinguish, test, experiment)</p> <p><input type="checkbox"/> <b>Apply</b> Use information in new situations (execute, implement, solve, use, demonstrate, operate)</p> <p><input checked="" type="checkbox"/> <b>Understand</b> Explain ideas or concepts (classify, discuss, describe, identify, locate, translate)</p> <p><input checked="" type="checkbox"/> <b>Remember</b> Recall facts and basic concepts (define, duplicate, list, memorize, repeat)</p>
<b>Specific learning objective(s)</b>	<ul style="list-style-type: none"> <li>● <i>To introduce the importance of sustainable forest management</i></li> <li>● <i>To present eco-friendly practices at the wood sector workplace</i></li> </ul>
<p><b>Cognitive, socioemotional and behavioral outcomes based on</b></p> <p><a href="https://www.unesco.d">https://www.unesco.d</a></p>	<p>Topic based on SDG9 goals and below described outcomes</p> <p><b>Cognitive learning objectives:</b></p> <p>The learner understands the concepts of sustainable infrastructure and industrialization and society's needs for a systemic approach to their development.</p>

<p><a href="https://e/sites/default/files/2018-08/unesco_education_for_sustainable_development_goals.pdf">e/sites/default/files/2018-08/unesco_education_for_sustainable_development_goals.pdf</a></p>	<p><b>Socio-emotional learning objectives:</b></p> <p>The learner is able to understand that with changing resource availability (e. g. peak oil, peak everything) and other external shocks and stresses (e. g. natural hazards, conflicts) their own perspective and demands on infrastructure may need to shift radically regarding the availability of renewable energy for ICT, transport options, sanitation options, etc.</p> <p>The learner is able to argue for sustainable, resilient, and inclusive infrastructure in their local area.</p> <p><b>Behavioral learning objectives:</b></p> <p>The learner is able to work with decision-makers to improve the uptake of sustainable infrastructure (including internet access).</p>																
<p><b>Green skill(s) addressed</b></p>	<table border="0"> <tr> <td><input type="checkbox"/> Creative problem-solving</td> <td>X Management skills</td> </tr> <tr> <td>X Forward-thinking</td> <td><input type="checkbox"/> Impact quantification</td> </tr> <tr> <td>x Monitoring skills</td> <td><input type="checkbox"/> Life-cycle management</td> </tr> <tr> <td>x Analytical skills</td> <td>x Science skills</td> </tr> <tr> <td>x Lean production</td> <td><input type="checkbox"/> Waste management</td> </tr> <tr> <td><input type="checkbox"/> Maintenance and repair skills</td> <td><input type="checkbox"/> Environmental auditing</td> </tr> <tr> <td>x Pollution prevention</td> <td><input type="checkbox"/> Ecosystem management</td> </tr> <tr> <td>x Eco-design</td> <td><input type="checkbox"/> Other _____</td> </tr> </table>	<input type="checkbox"/> Creative problem-solving	X Management skills	X Forward-thinking	<input type="checkbox"/> Impact quantification	x Monitoring skills	<input type="checkbox"/> Life-cycle management	x Analytical skills	x Science skills	x Lean production	<input type="checkbox"/> Waste management	<input type="checkbox"/> Maintenance and repair skills	<input type="checkbox"/> Environmental auditing	x Pollution prevention	<input type="checkbox"/> Ecosystem management	x Eco-design	<input type="checkbox"/> Other _____
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<p><b>Duration</b></p>	<p>15 – 20 min.</p>																
<p><b>Structure and content of the lesson</b></p>	<p><b>Lesson Wood sector</b> „Environmental-friendly practices at the workplace“ <b>consist of two main topics:</b></p> <p><b>Topic 1: Sustainable forest management</b></p> <p><b>Topic 2: Eco-friendly practices at the wood sector workplace</b></p> <p><b>Introduction</b></p> <p>Forests are one of the most important ecosystem elements which supply water, mitigate climate change, and provide green jobs. Today we are talking about sustainable forest management as a way to protect and use natural resources with a huge responsibility.</p>																

**Topic 1: Sustainable forest management**

**What is sustainable forest management – watch video**  
<https://www.youtube.com/watch?v=cT-mWi5x2Jo>

Sustainable Forest Management: a dynamic and evolving concept, intended to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations (UN Forest Instrument, A/RES/70/199)

Sustainable wood means that wood was used from protected and maintained forests. Promoting wood value chains that are environmentally friendly, socially responsible, and economically sound is an important step forward in transitioning to sustainable landscapes, with positive impacts on the wider society. Sustainable wood value chains are critical to mitigating climate change in several ways, including carbon storage in standing forests and harvested wood products, as well as 2 through the substitution of fossil-based raw materials and products. The contribution to mitigation in the construction sector is of particular interest. Enhancing investments to promote sustainable wood value chains requires a critical assessment of financial risks, investment barriers, and opportunities along the value chain as well as better securitization.

Guidelines for Forest Management Planning define the aim to maintain or increase forest and other wooded areas, and enhance the quality of the economic, ecological, cultural, and social values of forest resources, including soil and water. Management plans should be periodically revised and updated based on legislation, and land use plans.



## SUSTAINABLE FOREST MANAGEMENT



Picture source: <https://theaseanpost.com/article/malaysia-leader-sustainable-forest-management>

The picture above defines the main aspects of sustainable forest management – legal, policy, and institutional framework, the importance of forest biological diversity, an extension of forest resources, protective and productive functions based on forest health and vitality that provides socio-economic functions of forests.

### ***Topic 2: Eco-friendly practices at the wood sector workplace***

Technology development and suitable work conditions can optimize workplace efficiency and minimize the impact on the environment such as energy consumption, dust, noise, chemical impact, and waste management efficiency. Respectful attitude to the resource - forest (raw material) and environment should be one of the main wood sector process points.

#### **Use local lumber**

How to save the environment, and how to save money brings not only creativity together but also people's engagement to find more sustainable solutions. One of the main important pieces of advice is to use local lumber that comes from your region's forest. Buying from local lumber minimizes carbon footprint because of minimized travel distance.

### **Use of timber from a GFS (sustainable forest management)**

The improvement is to propose into the processes of production, timber from forests which have been groomed sustainably, in other words, of the way that regards the environment. In this sense, the timber certification pitches this warranty as well as in the case of alternative industries in the wood sector, making traceability of this (chain of custody). Once of environmental value, the use of timber in forest management enables forest owners and managers to share in the need to practice sustainable forest management to contribute not only to legal compliances but also to the conservation and prevention of natural resources.

### **Use reclaimed wood**

Reclaimed wood is reused wood from old buildings, mill used furniture, and other not needed sources. You can find them in the neighborhood, second-hand shops, in landfill, in mills, on the internet, you can ask someone who is renovating a building if some materials are not in use anymore.



### **Use eco-friendly chemicals**

To reduce environmental impact it's important to be aware of the toxicity of chemicals used in lumber projects and figure out how to change chemical materials to less harmful for people and the environment. Be alert with wood products if they are fabricated with an unfriendly group of compounds, volatile organic compounds (VOCs). Environmentally friendly alternatives, such as water-based paint or stains. There are also VOC-free pore cleaners and fillers in store. Switch to eco-friendly woodworking products that are good for your health and make cleaning and disposal an eco-friendly suggestion. Leveraging timber, or sourcing it locally, has become a popular way for woodworkers to be environmentally friendly. This reduces waste and helps promote proper forestry.

### **Control of the humidity of the wood.**

It is suggested to try to keep the moisture content of the wood within a specific range and to vary according to the type of wood used, thus avoiding problems such as distortion or defects in the quality of the film formed with the use of adhesives. This requires that you have a hygrometer and adjust the wood storage devices so that the wood is in an environment that is not too hot and dry. Moreover, maintaining the correct level of moisture in the wood improves its performance, reduces losses, and, accordingly, improves the overall performance of this roller. When it comes to sustainability, in most companies, structures are usually sufficient to maintain, roughly speaking, optimum moisture conditions in the wood. In such cases, it is highly recommended to purchase a hygrometer, as it can, at a small cost, improve the performance of the main raw materials. In companies that do not have a sufficient number of factories, improvements are doubly necessary, as they will support wastage in the production process, which already has a negative impact on both the economy and the environment.

	<p>A lot of tools used in the wood sector, especially woodworkers sometimes needs different tools that could be easily borrowed or rented just for a specific project. It's not necessary to have all tools that are will not work all the time. By combining tools, you can ultimately save individuals money, build relationships in communities, and save the environment without participating in consumer movements.</p> <p><b>Use scrap wood</b></p> <p>We are not owners of nature, that's why we should work respectfully and use every inch of wood. To avoid waste and be efficient with waste management scrap wood can be also used. Scrap wood can be transferred to compost, mulch, fuel, or pressed as a briquette and all this wood waste can get a new shape and be sold. Also, it can be reused by woodworkers for small projects. Find ideas on what can be done with scrap wood (<a href="https://www.anikasdiylife.com/simple-scrap-wood-projects/">https://www.anikasdiylife.com/simple-scrap-wood-projects/</a> )</p> <p><b>Conclusion</b></p> <p>Tips for working sustainably in the wood sector are mostly based on re-using aspects or using with minimized impact on the environment, for example, using reclaimed wood, using less toxic chemicals, using local wood/local lumber mills to avoid transportation, using everything that is left – scrap wood.</p>
<p><b>References</b></p>	<p>Arias, A.; Feijoo, G.; Moreira, M.T. Evaluation of Starch as an Environmental-Friendly Bioresource for the Development of Wood Bioadhesives. <i>Molecules</i> 2021, 26, 4526. <a href="https://doi.org/10.3390/molecules26154526">https://doi.org/10.3390/molecules26154526</a></p> <p><a href="https://medium.com/woodworkers-of-the-world-unite/5-simple-tips-to-make-your-woodworking-projects-more-eco-friendly-c260c3bb6ffb">https://medium.com/woodworkers-of-the-world-unite/5-simple-tips-to-make-your-woodworking-projects-more-eco-friendly-c260c3bb6ffb</a></p> <p><a href="https://www.interempresas.net/Mobiliario/Articulos/34939-Soluciones-medioambientales-en-carpinteria-y-mueble.html">https://www.interempresas.net/Mobiliario/Articulos/34939-Soluciones-medioambientales-en-carpinteria-y-mueble.html</a></p> <p><a href="https://greenbuildingcanada.ca/2021/5-tips-eco-friendly-woodworking/">https://greenbuildingcanada.ca/2021/5-tips-eco-friendly-woodworking/</a></p> <p><a href="https://www.fao.org/3/nd452en/nd452en.pdf">https://www.fao.org/3/nd452en/nd452en.pdf</a></p> <p><a href="https://www.accoya.com/uk/sustainability/production/of%20Forest%20wood">https://www.accoya.com/uk/sustainability/production/of Forest wood</a></p>
<p><b>Interactive questions for R3</b></p>	<p>To safe environment you should use foreign countries lumber</p>

	<p>Yes <b>No</b></p> <p><i>Sustainable timber refers to timber that has been harvested responsibly from well managed forests that are continuously replenished and ensure that there is no damage to the surrounding environment, or to native flora and fauna.</i></p> <p><b>True</b> False</p>
<p><b>Keywords</b></p>	<p><b>sustainable forest management, reclaimed wood, scrap wood</b></p>
<p><b>Questions for reflection</b></p>	<p>1.How you describe sustainable forest management?</p> <p>2. Could you list eco-friendly practices in the wood sector workplace?</p> <p>3.How scrap wood can be used?</p> <p>4.Why is it important to use reclaimed wood?</p>
<p><b>Additional resources</b></p>	<p><b>Video material:</b></p> <p>Sustainable forest management <a href="https://www.youtube.com/watch?v=ZeJwIzzbCaI">https://www.youtube.com/watch?v=ZeJwIzzbCaI</a></p> <p>The sustainable development goals need forests <a href="https://www.youtube.com/watch?v=EoxB5IxTig8">https://www.youtube.com/watch?v=EoxB5IxTig8</a></p> <p>Sustainable forest management in Western Australia <a href="https://www.youtube.com/watch?v=0infljY_vAA">https://www.youtube.com/watch?v=0infljY_vAA</a></p> <p>Forest ecology <a href="https://www.youtube.com/watch?v=NO7yYpSOuNg">https://www.youtube.com/watch?v=NO7yYpSOuNg</a></p>
<p><b>Icons &amp; related info for the hints of the PowerPoint presentation</b></p>	<p> This hint is used to show sources on further information according to the topic.</p> <p> This hint indicates that something important is written.</p>




# TREE

Micro- and project-based learning  
programme for Teaching ciRcular Economy  
and Ecological awareness in VET



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	 <p>This hint indicates a question/task for reflection.</p>
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