Lesson Plan for Sustainable Waste Management
Topic 3: Sustainable mobility

Target Audience

Vet Trainers

Goal (50-60 words)

Help learners explore and understand sustainable transportation options. Identify different solutions like electric vehicles and public transit, then evaluate the benefits and challenges of each, considering factors like cost, technology, and infrastructure needs. This will guide them in identifying effective, sustainable mobility solutions.

Objectives (1-3 Objectives)

Upon completing the Module, Trainers should be able to:

- **Build VET trainers' competences** to create a green education action plan for the VET sector
- Provide VET trainers with **a collection of hands-on teaching and learning material to engage sustainable waste management** and green skills within the VET sector
- Provide a **collection of digital resources focusing on sustainable waste management** to be adopted and adapted by VET trainers in their everyday practices

OR

- **Investigate** various sustainable transportation solutions and their potential impact on urban mobility.

- **Compare** the advantages and disadvantages of different eco-friendly transportation options
- **Explore** innovative approaches to improving urban transportation systems while reducing environmental impact.
- **Design** strategies to mitigate the identified risks in transportation systems.
- **Assess** potential obstacles to adopting sustainable transportation methods in different regions.

Optional
Theoretical Background (200-400 words)

The current transportation systems, especially in busy and developed (urban) areas, is made out of man-made (artificial) constructions. This in return has overall both positive and negative outcomes (consequences). Some of the positive examples of the current transportation systems are ease and convenience to use the already known modes. However, these common modes and mediums of transport are also linked with health, socioeconomic and environmental risks to societies globally. Such risks can be tackled by promoting examples of sustainable mobility. According to the European Commission Sustainable mobility is: 'Development of transport systems that are safe, accessible, inclusive, affordable, smart, resilient and emission-free' (EC Europa, 2023). This means that you should be able to travel from any point to any destination safely, cheaply, easily and in a way that does not harm nature and the environment. Water, air and noise pollution are key examples of how the quality of the environment and nature are affected negatively (i.e. Global Warming) which altogether can also affect your healthy state. Other negative environmental impacts resulting from the current transportation systems are the loss of biodiversity when constructing new transportation mediums like roads and motorways (TheCityFix, 2023; RepublicofCyprus, 2022). In order to start creating a better transportation system, both for your health, socioeconomic development and for the environment, start by using ways with less emissions to travel around. A useful example is the use of bicycle or even public transport. These and other many actions can help reduce both the amount of traffic and loudness on the roads, but also your personal wellbeing.

- This lesson plan covers the discovery of various solutions that can bring progress on sustainable mobility.

- Another topic of this training is examining existing data is important to understand what are the challenges of why some solutions are more difficult to apply.

- At the end of this training you will have the ability to put your ideas into action by creating tools and communicating with the relevant organisations, communities and other stakeholders.

Lesson Plan Details

Lesson Plan title	Exploring and Evaluating Sustainable Transportation Solutions
21st Century Skills	Choose the skills that will be developed in the lesson: ■ Critical Thinking ■ Creativity ■ Collaboration ■ Communication ■ Information / Data literacy ■ Technology literacy ■ Leadership ■ Initiative ■ Productivity ■ Social skills
Duration	Define how long the Lesson shall last in minutes. Total: 120 minutes. *Introduction: 5-6 minutes* *Engagement with Mentimeter: 20 minutes* *Activity 1: 30 minutes*

	Activity 2: 20 minutes *Scenario 1: 15 minutes* *Activity 3: 15 minutes* *Scenario 2: 15 minutes*
Classroom setting	Select how the class needs to be organized for the lesson: ● in groups ● individually ● Complete class discussion
Required material/resources	List any material that will be required throughout the lesson *For all activities:* ● *an electronic device – smartphone (recommended) and a laptop (preferred) for each of learner* ● *accessibility to online assessment tool e.g. Mentimeter* ● *accessibility to Online meeting platform* ● *accessibility to Online spreadsheet platform*
Prerequisites	Plot graphs in spreadsheet platforms Use of smartphones and internet to enter a provided website to access assessment tool
Final Assessment (if applicable)	● *M/C quiz*
Additional resources	N/A
References	Deignan, S. (2022, September 01). *8 Best Assessment Tools for Educators.* From Mentimeter: https://www.mentimeter.com/blog/education/best-assessment-tools EC Europa. (2023, June 9). *Sustainable Urban Mobility.* From Mobility and Transport: https://transport.ec.europa.eu/transport-themes/urban-transport/sustainable-urban-mobility_en European Commission. (2018, April). *Transport in the European Union:Current Trends and Issues.* From MOBILITY AND TRANSPORT: https://transport.ec.europa.eu/system/files/2018-06/2018-transport-in-the-eu-current-trends-and-issues.pdf Europpean Commission. (2019, March). *Transport in the European Union: Current Trends and Issues.* From Mobility and Transport: https://transport.ec.europa.eu/system/files/2019-03/2019-transport-in-the-eu-current-trends-and-issues.pdf

Europpean Commission. (2024, June). *Transport in the European Union: Current Trends and Issues.* From Mobility and Transport: https://op.europa.eu/en/publication-detail/-/publication/d8a8fbfe-32b4-11ef-a61b-01aa75ed71a1

Google Meet. (n.d.). *Use breakout rooms in Google Meet.* From Google Meet Help: https://support.google.com/meet/answer/13054147?hl=en-GB&co=GOOGLE_MEET._MeetingUserType%3DHost

Heinrich Böll Stiftung. (2021, February). *Facts and figures about transport and mobility in Europe.* From EUROPEAN MOBILITY ATLAS: https://eu.boell.org/sites/default/files/2021-02/EUMobilityatlas2021_FINAL_WEB.pdf

Mentimeter. (2020, January 01). *What will you ask your audience?* From mentimeter: https://www.mentimeter.com/

Mentimeter. (2022, July 29). *How to Create Your First Mentimeter Presentation - 7 Minute Crash Course Tutorial.* From https://www.youtube.com/watch?v=on_Ib7SP6Go

MS TEams. (n.d.). *Use breakout rooms in Microsoft Teams meetings.* From https://support.microsoft.com/en-us/office/use-breakout-rooms-in-microsoft-teams-meetings-7de1f48a-da07-466c-a5ab-4ebace28e461

RepublicofCyprus. (2022, December 9). *Sustainable Mobility Project.* From https://sustainablemobility.cy/en/

TheCityFix. (2023, March 22). *5 Key Transport Challenges Facing Developing Countries and What to Do About Them.* From The City Fix: https://thecityfix.com/blog/5-key-transport-challenges-facing-developing-countries-and-what-to-do-about-them/

Zoom. (2023, November 08). *Managing meeting breakout rooms.* From Zoom Support: https://support.zoom.com/hc/en/article?id=zm_kb&sysparm_article=KB0062540

Lesson Plan for Activities & Scenarios #1 (include 1-3 activities & 1-2 scenarios)

Duration:

1. Upon lesson start, engage with trainees by introducing yourself, the topic (sustainable mobility) and briefly the importance of this lesson goal. State how activities will take place and

the equipment suggested to proceed. Include a statement that the use of an electronic device (laptop or preferably smartphone) will be required for the surveys responses and activities. The use of both laptop and smartphone can be more efficient and is recommended, but not essential for the activities (*5-6 minutes*).

- o Mention Room for questions will be available at the end of each section
- o Request participants to use their smartphones or other electronic devices to login in the 'Mentimeter' space (Mentimeter, 2020), using a provided link and access
  - ▪ <u>NOTE:</u> The purpose of this digital lesson plan is to use a platform suitable for presenting open response platforms and other audiovisual content. If you are accustomed to using different platforms following similar concepts, feel free to introduce that to your lesson plan instead. Additionally if you would like to practice other assessment tools suitable for educators, you can use this [link](#) for further suggestions.
  - ▪ Step-by-step instructions on how to create Mentimeter Presentations can be found on this video [link](#).
  - ▪ Prepare beforehand a presentation and add a questionnaire that participants will respond to during the lesson.
- o Ensure all participants have gained access to the Mentimeter link provided.

2. To involve interaction and promote mind initiation for thought, Ask trainees Mentimeter: (*20 minutes*)
   - o 'What transportation mode are you using to go to work?'
     - ▪ Address each response individually and expect multiple similar responses (*2 minutes*)
   - o Continue on the same topic on a different question: 'What are the most common modes of transport in your region?'
     - ▪ Address each response individually and expect multiple similar responses (*5-6 minutes*)
   - o Continue interaction by asking trainees to choose from the multiple choice question: 'Which timeframe applies for them to reach your working place?' (*2 minutes*)
     a. 5-15 minutes
     b. 15-30 minutes
     c. 30 - < minutes

   - o Proceed by asking participants to answer the open-ended question on Mentimeter: 'What are the situation risks of the current transportation system in your country / area of residence?', and allow a 5-10 minute interaction through Mentimeter between Learner –Participants to address current Limitations of the existing transportation system in their region (Bulgaria, Cyprus, Greece, Italy, Poland, Portugal, Romania)

▪ A list of 5 examples would suffice

3. Activity 1: (*30 minutes*):
   o Now that the issues of the current transport system are examined and the alternative approaches are introduced, encourage the learners to use all the previous (and more if interested) attached links to list alternative solutions that are more environmentally friendly in terms of impact, emissions or renewable energy. (*15 minutes*)
   o Prepare the learners to compare the feasibility of the listed alternative solutions while also analyzing the challenges around their execution based on each country's policies, plans, budget etc. The learners should evaluate the benefits and challenges of different sustainable transportation options, considering factors such as cost, infrastructure requirements, technological advancements, and potential barriers to implementation. (*15 minutes*)

4. Activity 2: (*20 minutes*)
   o Divide the learners into different breakout rooms
      ▪ Encourage learners from different countries to share possible alternative solutions of their region to evaluate the possibility of being implemented in other regions as well
      ▪ In the same Google Sheet ask the participants to include in a given table the list of each proposed solution to the different regions and to write next each, the potential challenges each region could possibly face in actually executing them
5. Scenario 1 – Best case: (*15 minutes*)
   o Raise the open-ended question on Mentimeter: 'Is it possible to have a perfect sustainable transportation system?'
      ▪ Introduce concepts such as, technological and economic development, natural resource accessibility, ecosystem impact, population growth etc.
   o Learners need to write their response after they critically thought of it
   o Discuss altogether the included answers

Scenario:

Step 1: Present this real-life mini scenario to your trainees.

As the mayor of a bustling city, you're committed to creating a more sustainable transportation system that addresses the challenges of traffic congestion, air pollution, and economic inequality.

Step 2: Ask them to reflect on it and present them these three choices:

Develop a comprehensive plan to transition your city to a more sustainable transportation system. Consider the following factors:

1. **Environmental Impact:** How can you reduce greenhouse gas emissions and improve air quality?
2. **Public Health:** What measures can you take to protect citizens' health from traffic-related pollution and accidents?
3. **Economic Development:** How can you ensure that your transportation plan supports continued economic growth and job creation?
4. **Social Equity:** How can you make your transportation system accessible and affordable for all residents, regardless of income or ability?
5. **Technological Advancements:** How can you leverage emerging technologies to improve transportation efficiency and sustainability?
6. **Infrastructure:** What investments in infrastructure are necessary to support a more sustainable transportation system?
7. **Policy and Regulations:** What changes in policies and regulations are needed to encourage sustainable transportation choices?

Step 3: Based on their responses, share with them the feedback below.

1. **Comprehensive and Sustainable:** Your plan effectively addresses all aspects of sustainable transportation, proposing long-term solutions that prioritize environmental sustainability, public health, economic development, and social equity.
2. **Innovative and Forward-Thinking:** Your plan incorporates emerging technologies and innovative approaches to transportation, demonstrating a commitment to a sustainable future.
3. **Addresses Challenges Effectively:** You've identified and addressed the key challenges facing your city's transportation system, proposing practical solutions that are feasible and sustainable.
4. **Prioritizes Equity:** Your plan ensures that sustainable transportation is accessible and affordable for all residents, regardless of income or ability.
5. **Needs Further Refinement:** While your plan shows promise, it could benefit from further elaboration on specific strategies or a more detailed analysis of potential costs and benefits.

Note: Encourage trainees to be creative and think outside the box in their solutions. They may consider a combination of strategies, such as improving public transportation, promoting cycling and walking, implementing congestion pricing, or investing in sustainable transportation technologies.

6. Activity 3: (*15 minutes*)
   o Generate a final assessment in the form of multiple choice quiz summarizing the key learnings of this lesson plan, using Mentimeter (10 -15 questions would suffice)
     ▪ Suggested questions could include
       1. What are possible alternative solutions that governments can promote
       2. What are alternative actions that individuals can contribute with

3. Which of the following is an example of a sustainable transportation solution?
4. What is one major benefit of bike-sharing programs/ carpooling?
5. What is a potential barrier to implementing electric vehicles widely?

7. Scenario 2 – Best case: (*15 minutes*)
   o Raise the open-ended question on Mentimeter: "What are the potential positive outcomes of widespread adoption of electric vehicles?"
      ▪ Introduce concepts such as, reduced greenhouse gas emissions, lower fuel costs, decreased air pollution, and technological innovation.
   o Learners need to write their response after reflecting on the benefits of electric vehicle adoption.
   o Discuss as a group, emphasizing the environmental and economic benefits.

Scenario:

Step 1: Present this real-life mini scenario to your trainees.

Imagine a future where electric vehicles are the dominant mode of transportation. What would the potential positive outcomes be?

Step 2: Ask them to reflect on it and present them these three choices:

Discuss the potential benefits of widespread electric vehicle adoption. Consider the following factors:

1. **Environmental Impact:** How could electric vehicles contribute to reducing greenhouse gas emissions and improving air quality?
2. **Economic Benefits:** What are the potential economic benefits of electric vehicle adoption, such as job creation and reduced fuel costs?
3. **Technological Innovation:** How could the transition to electric vehicles stimulate technological innovation and development?
4. **Social Impacts:** What positive social impacts could electric vehicle adoption have, such as improved public health or reduced traffic congestion?

Step 3: Based on their responses, share with them the feedback below.

1. **Comprehensive Analysis:** You've effectively identified a range of potential benefits associated with electric vehicle adoption.
2. **Prioritizes Environmental Impact:** You've highlighted the significant environmental benefits of electric vehicles, such as reduced greenhouse gas emissions and improved air quality.
3. **Consider Economic Benefits:** You've recognized the potential economic advantages of electric vehicle adoption, including job creation and reduced fuel costs.
4. **Addresses Technological Innovation:** You've explored the potential for electric vehicle adoption to stimulate technological innovation and development.

5. **Recognizes Social Impacts:** You've considered the positive social impacts of electric vehicles, such as improved public health and reduced traffic congestion.