Lesson Plan for Sustainable Waste Management
Topic 3: Sustainable mobility

Target Audience

Vet Trainers

Goal (50-60 words)

Help learners understand the key environmental, health, and economic risks of current transportation systems. Assist them to identify major issues like pollution and traffic and analyze data on transportation emissions and urban air quality to understand the impact on public health and the environment.

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

- **Understand** current transportation system risks

- **Identify** the key factors contributing to pollution and traffic congestion in transportation systems.
- **Analyze** transportation system data
- **Evaluate** the consequences of current transportation practices on public health and the environment.
- **Investigate** the sources and levels of greenhouse gas emissions from various modes of transportation.

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

bicycles 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	Identify and Evaluate Transportation Risk
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:

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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*).
    - Mention Room for questions will be available at the end of each section
    - Request participants to use their smartphones or other electronic devices to login in the 'Mentimeter' space (Mentimeter, 2020), using a provided link and access
        - NOTE: 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 added questionnaire that participants will respond to during the lesson.
    - 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*)
    - 'What transportation mode are you using to go to work?'
        - Address each response individually and expect multiple similar responses (*2 minutes*)
    - 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*)
    - 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

- 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*):
   - Instruct learners that the purpose of the first activity is to identify, list and articulate the primary environmental, health, and economic risks associated with the current transportation systems, focusing on pollution, greenhouse gas emissions, and traffic congestion. State also that learners will be divided into groups and they can use their laptops and smartphones find information from the provided sites which will be used later as data analysis in both Word and Mentimeter platforms
   - Attach the following links about European Mobility (available also in IT, ES, FR, EL, PT, CZ here) and Current Trends and Issues in the Transportation system within the EU.
     - The first link is to identify the general transportation concerns and compare the findings with the already listed examples in Mentimeter
     - The second link is to identify specific information based on the learners' regions
   - Ensure all learners obtained access to the links
   - Instruct the learners that divided groups will be asked to work on the first task of this activity (Already included on Mentimeter) using the attached links
     - Suggested methods on how to skim through the required information could be:
       - Search key words (Issues, Environment, Health, Economic, Risks, 'Country's name')
       - Each learner to focus on specific page ranges shown in the table of contents
   - Duration of each task
     - Identify, list and articulate the primary environmental, health, and economic risks associated with the current transportation systems, focusing on pollution, greenhouse gas emissions, and traffic congestion, European Mobility (*10 minutes*)
     - Identify/ List issues and numerical values for each selected country in comparison with the EU average, Current Trends and Issues in the Transportation system within the EU (*10 minutes*)
       - Issues

        - Modal Split
        - Road fatalities
        - Alternative transport fuels
    - Bring all learners and Discuss altogether the findings using Mentimeter (*10 minutes*)
- Assure the learners that you will be shifted through the breakout rooms for clarifications and guidance
- Divide learners into virtual (breakout) groups based on EITHER similar region, OR common responses from the first question: 'What transportation mode are you using to go to work?' (IF there is a somewhat similar distribution of responses)
    - NOTE: In both breakout examples, learners are expected to feel comfortable to observe similar patterns within their group and share / build similar understanding in the following activity.
    - Instructions how to create breakout rooms in common online meeting platforms can be found here: 'Google Meet', 'Microsoft Teams', 'Zoom'.
- At the end of 20 minutes, ask all learners to add their results in Mentimeter targeted question and altogether discuss the findings

4. Activity 2: (*20 minutes*):
    - Attach these additional reports: Current Trends and Issues in the Transportation system within the EU for 2019 and Current Trends and Issues in the Transportation system within the EU for 2024
    - Repeat actions similar to Activity 1 (*5 minutes*)
    - Plot in a provided graph (e.g Google Sheet) the findings to compare the changes in the listed years (*5 minutes*)
    - Discuss and compare findings altogether to identify potential trends (*10 minutes*)
        - NOTE: Limit the expansion of the reasons behind the value transitions to a minimum as they will be further examined on Activity 3
5. Scenario 1: (*15 minutes*)
    - Raise the open-ended question on Mentimeter: 'What could happen if we continue to ignore the environmental impact of current transportation systems?'
        - Introduce concepts such as, accelerated climate change, public health crises, worsening air quality, economic decline due to increased healthcare costs, and irreversible damage to ecosystems.
    - Learners need to write their response after they critically consider the consequences.
    - Discuss as a group, exploring the potential long-term impacts of inaction.

Scenario:

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

As the mayor of a bustling city, you've been presented with a proposal to maintain the status quo regarding your city's transportation system. The proponents of this approach argue that significant changes are unnecessary and could disrupt the city's economic activity.

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

Evaluate the potential consequences of continuing with a "business as usual" approach. Consider the following factors:

1. **Environmental Impact:** What are the long-term environmental consequences of relying heavily on cars and other fossil fuel-powered vehicles?
2. **Public Health:** How might increasing traffic congestion and air pollution affect the health and well-being of your city's residents?
3. **Economic Development:** Could the current transportation system become a barrier to future economic growth and job creation?
4. **Quality of Life:** How might traffic congestion and air pollution impact the overall quality of life for your city's residents?

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

1. **Recognizes the Risks:** You've identified the potential negative consequences of maintaining the status quo, demonstrating a clear understanding of the challenges your city faces.
2. **Prioritizes Short-Term Gains:** While you may have considered the immediate benefits of a "business as usual" approach, you've also acknowledged the potential long-term costs.
3. **Seeks Alternative Solutions:** You've expressed a willingness to explore alternative solutions that could address the city's transportation challenges while minimizing disruption.
4. **Needs Further Analysis:** While you've identified some potential risks, your analysis could benefit from a more in-depth examination of the long-term consequences of a "business as usual" approach.
5. **Fails to Address Key Issues:** Your evaluation has not adequately considered the critical issues of environmental sustainability, public health, and economic development.

6. Activity 3: (*15 minutes*)
    - 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 the main issues of the current transportation system
            2. Which country faces the most / least risks
            3. What is the primary cause of greenhouse gas emissions in urban areas?
            4. Which health issue is most commonly associated with poor urban air quality?

5. What is the biggest environmental risk associated with traffic congestion?

7. Scenario 2: (*15 minutes*)
    - Raise the open-ended question on Mentimeter: "How could worsening traffic congestion affect urban living in the next 20 years?"
        - Introduce concepts such as: increased pollution, reduced quality of life, economic losses, rise in respiratory diseases, and urban sprawl.
    - Learners need to write their response after reflecting on the future impacts of congestion.
    - Discuss as a group, considering potential social and economic disruptions.

Scenario:

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

Imagine your city in 20 years. Traffic congestion has worsened significantly, leading to increased pollution, longer commute times, and a decline in overall quality of life.

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

Discuss the potential social and economic disruptions that could result from worsening traffic congestion in your city. Consider the following factors:

1. **Public Health:** How might increased exposure to air pollution affect the health and well-being of residents?
2. **Economic Development:** Could traffic congestion hinder economic growth and job creation?
3. **Social Equity:** How might traffic congestion disproportionately affect certain groups of people, such as low-income residents or those with disabilities?
4. **Quality of Life:** What other negative impacts could worsening traffic congestion have on the overall quality of life in your city?

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

1. **Comprehensive Analysis:** You've effectively identified a range of potential social and economic disruptions that could result from worsening traffic congestion.
2. **Prioritizes Public Health:** You've highlighted the significant health risks associated with increased air pollution and traffic-related accidents.
3. **Considers Economic Impacts:** You've recognized the potential economic consequences of traffic congestion, such as reduced productivity and increased business costs.
4. **Addresses Social Equity:** You've considered how traffic congestion could disproportionately affect certain groups of people, demonstrating a commitment to social justice.

5. **Needs Further Elaboration:** While your analysis is strong, you could benefit from providing more specific examples or exploring additional potential consequences.