Co-funded by the European Union

LOVE EARTH to the moon and back

LE MOON project

Scenario book with the Glossary

Love Earth to the Moon and Back: Development of E-Curriculum on Climate Change and Environmental Education for Secondary Education Students in Online Learning Platform (2021-1-CZ01-K220-SCH-000034484-E10117458)

Le Moon project partners created lesson scenarios for the e-curriculum on ENVIRONMENTAL EDUCATION AND CLIMATE CHANGE in 6 modules and translated them into partner languages. The Modules and supporting documents (in English) are available in VLE Moodle (with *guest* or *no* login). Modules in English:

1. LeMOON Module 1. Human and Nature – https://teacamp.vdu.lt/course/view.php?id=90
2. LeMOON Module 2: Cyclical nature – https://teacamp.vdu.lt/course/view.php?id=108
3. LeMoon Module 3: Nature and climate change – https://teacamp.vdu.lt/course/view.php?id=109
4. LeMOON Module 4: The Impacts of the Environmental Problems and Climate Change (Part 1: Ecosystems) – https://teacamp.vdu.lt/course/view.php?id=110
5. LeMoon Module 5: The Impacts of the Environmental Problems and Climate Change (Part 2: Climatic and Environmental Challenges) – https://teacamp.vdu.lt/course/view.php?id=111
6. Module 6: Sustainable Development and Solutions to Climate Change - https://teacamp.vdu.lt/course/view.php?id=112

Each module scenario (or a lesson) uses a 5E learning cycle and instructional model: Engage, Explore, Explain, Elaborate, and Evaluate (Bybee, 1997) or its adaptations (such as Engage, Explore, Explain, Extend, and Evaluate; see VanTassel, 2024). This model is usually used in inquiry-based short online courses and science online teaching and requires active student participation.

LeMOON Module 1. Human and Nature

Module 1 aims to help students observe nature, discover its delicate balance, and develop a positive attitude towards preserving natural balance by recognising the interaction between humans and nature and the roles of living and inanimate beings in this interaction.

Module 1 keywords: nature, living and inanimate beings, natural equilibrium/ balance settlement.

Module 1.1. (2 Lessons) **The interaction between humans and nature.**
ENGAGE: Discover the interaction between humans and nature in discussion.
EXPLORE: Comment on the provided diagram.
EXPLAIN: Read the text explaining the interaction between humans and nature.
EXTEND: Discuss the results of the negative impact of humans on nature
EVALUATE: Observe the interaction between humans and nature and answer the evaluation questions based on your observations.

Module 1.2 (2 Lessons). **The effects of unplanned settlement, industrialization, transportation and other actions**
ENGAGE: Build up your own city (draw a city map according to instructions)
EXPLORE: Ask and Answer - Causes and Consequences of Urbanization
EXPLAIN: Read the text and watch the video - WHAT IS URBAN PLANNING?
EXTEND: Study the materials delivered. Discuss your notes in groups- explain and comment on 'urbanisation and health/injustice/disasters/ migration'.
EVALUATE: Please work in groups, discuss the problems caused by unplanned urbanisation and create a solution proposal.

Module 1.3 (4 lessons). **The positive and negative effects of nature on human beings. The natural and artificial environment**
Lesson 1-2: The positive and negative effects of nature on human beings
Part 1 - Lithosphere:
ENGAGE: answer the questions, watch the video;
EXPLORE: watch the videos and compare Chemical fertilisers vs Natural fertilisers;
EXPLAIN: discover elements in chemical fertilisers;
EXTEND: create your own- vermicomposter, plant and grow your beans
Part 2 - Atmosphere:
ENGAGE: answer why trees are important.
EXPLAIN: discuss topics about deforestation and how trees can heal.
EXPLORE: compare monoculture to polyculture and find out about FSC.
EXTEND: Learn the right way of cutting a tree; how trees communicate
Lesson 3-4: The natural and artificial environment.
Part 1 - Hydrosphere:
ENGAGE: Discuss the significance and benefits of irrigation
EXPLAIN: Study and discuss the terminology – dams, meanders, ponds
EXPLORE: Explore the effects of straightening of rivers
EXTEND: Compare different approaches towards hydrology
Part 2 - Biosphere:
ENGAGE: Read about ZOOs and their purpose
EXPLAIN: Discuss the welfare of animals
EXPLORE: Read and find out about Przewalski´s horse
EXTEND: Discover more information about levels of the biosphere
Module 1.4. (2 lessons) The roles of producers and consumers on the natural balance
Lesson 1: Producers and consumers in ecosystems
ENGAGE: Initial representation and recall

EXPLORE: The Earth, a set of ecosystems - watch a video, do Internet research, and make a short presentation.
EXPLAIN: Ecosystems, communities of interacting living beings - work in groups to complete a table.
EXPLAIN: An ecosystem is a delicate natural balance - pick a case study and discuss it in a group, then present a summary for the class.
EXTEND: You're an exobiologist - create an imaginary ecosystem.
Lesson 2: Nature has a delicate balance
ENGAGE: talk about the world's first national park and debate about the reintroduction of species
EXPLORE: When the Wolf is not here… (watch a video, make a concept map).
EXPLAIN: And when the Wolf returns! (analyse scientific data)

Module 1.5 (2 lessons) Maintaining the natural balance

Lesson 1: How to maintain the natural balance?
ENGAGE: Work out a definition of 'balance'
EXPLORE: Draw conclusions from the presented visuals (pictures, headlines, etc.) to discover the topic of the class
EXPLAIN: Work with the song lyrics ('Big Yellow Taxi' by Joni Mitchell); have a discussion about the state of the planet & human influence; read the article for detailed information;
EXTEND: answer the questions in a survey; summarise students' answers; students' comments
Lesson 2: Designing a social awareness for the natural balance project.
ENGAGE: Recall the knowledge from the previous lesson
EXPLORE: What is environmental sustainability? (students: come up with a definition, do research on significant numbers and the U.S. Environmental Protection Agency's of environmental sustainability, and discuss what can be done in order to live in accordance with this rule: "meeting today's needs without compromising the ability of future generations to meet their needs.")
EXPLAIN: Inform about the project, its aims and outcomes
EXPLORE: Group work (creating a social media account, a name, a logo, tasks, deadlines, target audience)
EXTEND: Project execution
EVALUATE: Evaluation criteria are suggested in the attached document

Module 1 Workshop: The environmental ethics and dilemmas.

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LeMOON Module 2: Cyclical nature

Module 2 aims to help students classify natural resources, notice the flow of matter and energy in nature through the cycles of matter and energy, and comprehend the effect of this flow on natural life and living things.
Module 2 keywords: natural resources, material cycles, energy flow

Module 2.1 (2 lessons) Naming various natural resources within their qualifications

ENGAGE: Define the natural resources.
EXPLORE: Do research on natural resources.
EXPLAIN: Explain the features of natural resources.

EXTEND: Discuss and compare the natural resources in different countries and make connections with their geographical features.
EVALUATE: Reflect on your presentations about natural resources. Expand your research to include various more natural resources. Discover and highlight the similarities and differences in the natural resources.

Module 2.2 (2 lessons) Grouping the natural resources on Earth

Lesson 1: How do we group natural resources?
ENGAGE: Poster and quote presentation, exchanging ideas about what natural resources are
EXPLORE: Group work (assigning a resource to each group)
EXPLAIN: Poster and findings' presentation
EXTEND: Case study analysis
Lesson 2: Pros and cons of the use of natural resources
ENGAGE: Explanation of the concept of natural resources.
EXPLORE: A discussion on the significance of natural resources.
EXPLAIN: Exploring the pros and cons of various natural resources considering environmental, social, and economic aspects.
EXTEND: Preparation of visual presentations or posters highlighting the advantages and disadvantages of a chosen natural resource.

Module 2.3 (2 lessons). Sustainability of the natural resources.

Lesson 1. Literature review on how natural resources are sustained.
1. EXPLORE: Define your topic; Find reliable sources
2. ENGAGE: Read and take notes
3. EXPLAIN: Organize your review; Cite your sources properly
4. EVALUATE: Revise and edit

Lesson 2. Writing and presenting a research report on the sustainability of natural resources.
1. EXPLORE: Choose a Natural Resource; Define Sustainability
2. ENGAGE: Conduct Research
3. EXPLAIN: Organize Your Report; Cite Your Sources
4. EVALUATE: Review and Edit; Recommended Resources
5. EXTEND: Present a Research Report on Natural Resource Sustainability

Module 2.4. (2 lessons). The differences between matter cycle and flow of energy in an ecosystem: Cycling or flowing?

ENGAGE: Energy Tango, the Great Escape from the Organisms (discussion or modelling)
EXPLORE: The journey of a Carbon atom (video or stop motion)
EXPLAIN: Why do matter cycles and energy flow? (poster)
EXTEND: Pick a card (inferences)

Module 2.5. (2 lessons). Ultimate source of energy and the form of energy while leaving the ecosystem

Lesson 1: Source of energy, the ultimate source and its functions, positive and negative effects
ENGAGE: Discuss with your family members.
EXPLORE: The absence of the ozone layer.
EXPLAIN: The impact of the greenhouse effect on the Earth.
EXTEND: Your knowledge on freons.
Lesson 2: Living organisms and green energy.
ENGAGE: learn about the effects of the sun.

EXPLORE: the effects of the sun on living organisms.
EXPLAIN: the term of light pollution.
EXTEND: your knowledge of melanin.
Module 2.6 (2 lessons). The effects of exploitation of natural resources
ENGAGE: Let's play Apple – Banana- Orange or Listen to the songs and fill in the blanks
EXPLORE: Look at the images. Ask and Answer - Discover the topic of plants
EXPLAIN: Do the pre-test. Read the text and answer the post-test about plants
EXTEND: Prepare a fact sheet draft with statistics and numbers on forest resources in France, Türkiye, Czechia, Lithuania, Austria, Iceland, and Poland.
EVALUATE: List the different uses of plants. Fill in the blanks and, watching the video, consider, ' If we remove the natural resources from this video, what is left?'
Module 2.7. WORKSHOP Cyclical nature: Circadian Rhythm.
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LeMoon Module 3: Nature and climate change
Module 3 aims to introduce students to climate change and includes the greenhouse effect and global warming as causes of climate change. While studying the greenhouse effect and global warming, it is also suggested that meaningful combinations with consumption and other reasons be made, and pollution and some other environmental problems should be studied as well.
Module 3 keywords: Greenhouse Gases, Greenhouse Effect; Climate systems, Ecological footprint
Module 3.1 (2 lessons). Ecological footprint
ENGAGE: Introduce online carbon footprint calculators.
EXPLAIN: Define "carbon footprint".
EXPLORE: Discuss the different aspects of our lives that impact the environment. Discuss various strategies and lifestyle changes that can help reduce carbon footprints. (group work)
EXTEND: Make research and present case studies or success stories of individuals, communities, or businesses that have successfully reduced their carbon footprints. Make a class discussion on the feasibility and challenges of adopting these strategies
EXTEND: Create awareness posters or presentations for the school or community about the importance of reducing carbon footprints and practical steps to achieve this goal.
EVALUATE: Reflect on your own carbon footprint and propose at least one change you can make to reduce it. Discuss your proposed changes with your families and report back on the feasibility and potential impact in the next class.
Module 3.2 (2 lessons). Greenhouse gasses
Lesson 1: Greenhouse gases-their characteristics and impacts
ENGAGE: Interpretation of the graph, introduction to the topic
EXPLORE: Exploring the topic of greenhouse gases and the greenhouse effect (pair work/group work, presentation of the results)
EXPLAIN: The impacts of greenhouse gases (discussion)
EXTEND: Preparing a poster on the subject of greenhouse gases
Lesson 2: What are the sources of greenhouse gas emissions?

ENGAGE: Revise the definition of greenhouse gases and their impact on the natural environment,
EXPLORE: Students list the sources of greenhouse gas emissions, watch a video, if there is time, do the Internet research,
EXPLAIN: Inform the students about the task – creating a mini model/calendar and present its aims and outcomes, group division, task assignment,
EXPLORE: The students make a mini model or a calendar presenting the world with controlled greenhouse gas emissions,
EXTEND: Discussion on the importance of controlling greenhouse gas emissions, connecting the student-created calendars or models to real-world initiatives and policies aimed at reducing greenhouse gas emissions,

Module 3.3 (2 lessons). Greenhouse effects

Lesson 1: What is the greenhouse effect?
ENGAGE: Life is allowed thanks to greenhouse effect (discussion)
EXPLORE: Any heated body emits infrared radiation (read and make a diagram)
EXPLAIN: Describe the greenhouse effect (presentation or stop motion)
EXTEND: Modelling the greenhouse effect (modelling)
Lesson 2: What is the greenhouse effect?
ENGAGE: Why does the Earth's temperature remain stable? (calculate and discussion)
EXPLORE: The two faces of radiative forcing (read and make a diagram)
EXPLAIN: Pick a card of radiative forcing factors (discussion and explanation)
EXTEND: A technological project based on aerosols (Internet research and presentation)

Module 3.4 (2 lessons). Climate systems

Lesson 1: Climate systems
This lesson introduces and promotes knowledge of the climate system. Students explain the major components of the climate system and comprehend the factors influencing it.
ENGAGE: Introduction to climate systems
EXPLAIN: Discuss the key role of each climate system
EXPLORE: Deepen the understanding of climate systems.
EXTEND: Field studies and home projects
Lesson 2: Climate systems
In this lesson, students comprehend the factors influencing the climate system, including ocean currents and weather patterns.
ENGAGE: Components of climate systems
EXPLORE: Feedback Mechanisms
EXPLAIN: Weather patterns and human activities; ocean currents
EXTEND: Field trip studies and group discussions; hands-on experiments

Module 3.5 (2 lessons). Climate change vs climate variability

ENGAGE: Being a Time-traveller. Travelling in time and telling about the period.
EXPLORE: Answering the discussion questions.
EXPLAIN: Studying The Characteristics of La Niña and El Niño (Climate Variability)
EXTEND: Studying ancient civilisations affected by climate change and /or variability
EVALUATE: Answer the questions to check your comprehension of climate change and climate variability.

Module 3.6. WORKSHOP: Weather and climate

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LeMOON Module 4: The Impacts of the Environmental Problems and Climate Change (Part 1: Ecosystems)

Module 4 keywords: Ecosystems, Human impact

Module 4.1 (2 lessons). Ecosystem complexity (roles - relationships - population dynamics)

ENGAGE: Who wins? (discover the complexity of ecosystems)

EXPLORE: Endangered kudus (use a model about population dynamics)

EXPLAIN: A tweet from James Bullock (explain the link between complexity and functions)

EXTEND: Bugs in abundance (Calculate the complexity of ecosystems)

Module 4.2 (2 lessons). Aquatic/Marine Ecosystems

ENGAGE: Initial representation and recall

EXPLORE: The Earth, a set of ecosystems (watch a video, if there is time, do Internet research and a short presentation)

EXPLAIN: Ecosystems, communities of interacting living beings (work in groups to complete a table)

EXTEND: You're an exobiologist (create an imaginary ecosystem)

EVALUATE: Give feedback through anonymous surveys and /or classroom discussions. Answer a puzzle-themed marine ecosystem

Module 4.3 (2 lessons). Terrestrial Ecosystems (Land Use Change and Forestry; Agriculture; Food Supply)

LESSON 1. Terrestrial ecosystems, their characteristics and human impact.

ENGAGE: Introduction to the topic: a definition of a terrestrial ecosystem.

EXPLORE: Characteristics of particular terrestrial ecosystems (group work)

EXPLAIN: Class presentations / peer-teaching (sharing knowledge on particular terrestrial ecosystems)

EXTEND: Students' reflections on the key issues of the lesson.

LESSON 2. Exploring terrestrial ecosystems.

ENGAGE: Group discussions to revise the information from the previous lesson.

EXPLORE: Land Use Time Travel – playing a game during which the students are to become time travellers on a mission to investigate changes in land use in Europe and the world over the centuries. They will travel through different historical periods (1800s, 1900s, 2000s, and the future), analyse land use data, and report their findings.

EXPLAIN: Groups present their "time travel reports" to the class

EXTEND: Students design a sustainability action project.

Module 4.4 (2 lessons). Freshwater Ecosystems (Water Cycle; Water Use; Hydrology)

ENGAGE: What is Hydrology? The benefits of water for the human body

EXPLORE: Water for everybody

EXPLAIN: Water cycle and other terminology

EXTEND: The usage of water

Module 4.5 (2 lessons). Human impact on the ecosystem (Human Settlement & Infrastructure)

ENGAGE - Ice Breaker: Visit the poetry website and choose a poem about trees to read in front of the class.
ENGAGE: Look at the photo and answer questions about it
EXPLORE: Tell that the photo is from the rainforests. Answer some more questions for discussion about the usage of rainforests.
EXPLAIN: Visit the websites. Study the texts and define ecosystems and rainforests as an ecosystem.
EXTEND: Study the materials delivered. Create a short presentation outlining the causes and effects of the chosen impact. Present your findings to the class.
EVALUATE: Share what you found most surprising or impactful during the lesson. Tell about the importance of human impacts on ecosystems and the need for responsible environmental stewardship. Write a reflective assignment and explain how your own daily choices may contribute to or mitigate human impact on ecosystems in the context of human settlement and infrastructure.

Module 4.6. WORKSHOP. Ecosystem services

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LeMoon Module 5: The Impacts of the Environmental Problems and Climate Change (Part 2: Climatic and Environmental Challenges)

Module 5 aims to explore some of the challenges and implications associated with climate change and environmental issues. It complements Module 4, which focuses on ecological impacts, by analysing and examining the impact of climate change in its social, cultural and economic aspects.

Module 5 keywords: Economic Consequences, Displacement, Global Implications, Environmental Injustice, Cultural and Educational Disruption

Module 5.1 (2 lessons). Economic Consequences - Ecosystem complexity
ENGAGE: Dominoes of climate change (use dominoes to work on cause-effect)
EXPLORE: Awareness-raising by the Climate action (make a poster from a text)
EXPLAIN: Find a way in the puzzle (write explanatory sentences with a mindmap)
EXTEND: Can you reach net zero by 2050? (play a game)

Module 5.2 (2 lessons). Displacement and Migration

ENGAGE: Discussion on the impacts of climate change on migration, focusing on climate refugees; ask and answer to understand the multifaceted challenges posed by environmental shifts
EXPLORE: Consider various factors such as geography, socio-economic conditions, existing infrastructure, government policies, and international cooperation mechanisms like refugee resettlement programs on migration.
EXPLAIN: Assess the risk of climate refugees
EXTEND: Students' projects (themed Climate Change and Migration)
EVALUATE: Prepare a multimedia presentation communicating key concepts, data, and findings on climate refugees

Module 5.3 (2 lessons). Health Risks

Lesson 1: How do environmental problems affect human health?

ENGAGE: Watch a short clip from a 2000 film entitled 'Erin Brockovich' and answer the water pollution-related questions.
EXPLORE: Digging time (students look for data on the internet and prepare short presentations concerning the impact of various environmental problems on human health)
EXPLAIN: What have you dug out? (presentation of the key findings)
EXTEND: At the doctor's (students play role plays further to explore the impacts of environmental problems on human health)
Lesson 2: Infectious diseases and disasters- cause and effect relationship
ENGAGE: Introduction to the topic: students recall basic natural disasters' names and their consequences
EXPLORE: Natural disasters and potential infectious diseases (students do their research)
EXPLAIN: Students present their findings
EXTEND: Students prepare a quiz testing the knowledge from the lesson

Module 5.4 (2 lessons). Global Implications

ENGAGE - Ice Breaker: Turning the disaster into a dance show.
Instructions: Imagine that when you are preparing for a dance competition, an earthquake strikes. Instead of panicking, you should turn the disaster into a dance-off. Showcase your best moves and integrate drop, cover, and hold-on techniques into your performance (song: you choose – performance duration 30-1.30 seconds – preparation duration 3 min)
ENGAGE: Do the Puzzle. Are there disasters hidden in the puzzle? How many of them can you find?
EXPLORE: Timelines of major disasters - Answer the questions
EXPLAIN: Unscramble the text. Study it and define the causes and effects of various disasters.
EXTEND: How would you respond to the given disaster scenarios? Create and present your response plan to the class.
EVALUATE: Considering Immediate Response, Local Knowledge and Connections, Capacity Building, Flexibility and Adaptation, Psychosocial Support, and Community Cohesion, sustainable recovery volunteers play the most crucial role.

Module 5.5 (2 lessons). Environmental Injustice

Lesson 1: Environmental services; urban sprawl
EXPLORE: Environmental injustice, Introduction to urban sprawl
ENGAGE: The impact of urban sprawl
EXTEND: Urban sprawl - the serious phenomenon of city development
Lesson 2: Indigenous communities
EXPLORE: Indigenous communities
ENGAGE: Group discussion and research, searching for Indigenous tribes on all continents
EVALUATE: Revising various effects of urban sprawl on Indigenous communities

Module 5.6. WORKSHOP: Cultural and Educational Disruption

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Module 6: Sustainable Development and Solutions to Climate Change

Module 6 aims to study and explore sustainable development, focusing on solutions to environmental problems and climate change.

Module 6 keywords: Sustainable Development, Ecological Restoration, Mitigation and Adaptation Strategies, Renewable Energy

Module 6.1 (2 lessons). Sustainable Development

Lesson 1. Respecting the nature

1. EXPLORE: 3 ESG Pillars
2. ENGAGE: The 4th pillar
3. EXPLAIN: Respect the nature: renewable and non-renewable sources
4. EXTEND: Respect the nature: David Attenborough

Lesson 2. How to measure sustainability?

1. ENGAGE: Sustainable Development and the 2030 Agenda
2. EXPLORE: The Sustainable development goals (SDGs)
3. EXPLAIN: The 3 pillars and SDGs
4. EXTEND: Tools to measure sustainability

Module 6.2 (2 lessons). 2. Stewardship and Restoration of Ecosystems

ENGAGE: Show a short video depicting various ecosystems and discuss the impact of human activities

EXPLORE: (Group- work) Assign each group a specific traditional ecological practice from First Peoples (e.g., controlled burning, sustainable hunting, seasonal harvesting)

EXPLAIN: Provide a mini-lecture on the role of First Peoples' knowledge in modern conservation efforts, including examples from different regions and cultures.

EXTEND: Students' project: develop a conservation project incorporating traditional ecological knowledge and local knowledge and create a poster to illustrate the conservation project.

EVALUATE: Peer Review: Review each other's posters and provide constructive feedback.

Reflection Essay: Write a short essay reflecting on what you learned about traditional ecological knowledge and its application in modern conservation efforts.

Module 6.3 (2 lessons). Mitigation and Adaptation Strategies

Lesson 1: I am part of my local environment

ENGAGE: My footprint in my local environment (calculation and identification of actions)

EXPLORE: The world has changed (interviews to identify changes over time and actions around me)

EXPLAIN: I'm in a network (interviews of school administration and policymakers)

EXTEND: What can I do? (choice of actions to take among 35)

Lesson 2: All the ways to fight climate change

ENGAGE: The ecological deficit of my country (use an online tool to identify the ecological deficit/reserve of my country)

EXPLORE: Adaptation and/or mitigation? (web research to define and compare adaptation and mitigation)

EXPLAIN: Find and share strategies! (design mindmap thanks to online resources)

EXTEND: Make your voice heard as a citizen (write a charter for the political decision-makers)

Module 6.4 (2 lessons). Renewable Energy and Technological Innovations

Lesson 1: Technologies for sustainable development and the role of innovation in addressing environmental issues and climate change

ENGAGE: Introduction to the topic: the concept of sustainable development.

EXPLORE: Preparation of presentations on technologies contributing to sustainable development

EXPLAIN: Reflections on recent innovation in sustainability (examples, discussion)
EXTEND: Discussion on our role in promoting sustainable development and ways of applying innovation and creativity to address environmental issues in our community.
Lesson 2: What are the benefits and challenges of adopting green technologies?
ENGAGE: Trailer watching – the students watch the trailer of Al Gore's documentary entitled 'An Inconvenient Sequel: Truth to Power'
EXPLORE: Sustainable Technology Quest – the students work at the stations in small groups and do tasks allowing them to explore green technologies and environmental issues
EXPLAIN: Explanation time – students explain what they have discovered or learnt at the assigned stations
EXTEND: Fishbowl discussion (exchange of the arguments presenting benefits and challenges of adopting green technology)

Module 6.5 (2 lessons). Policy and Governance

ENGAGE - Ice Breaker: Sustainability Bingo.
Instructions: Create a bingo card - draw a 5x5 grid with different sustainability-related activities or facts in each square. Find classmates who match the descriptions in the bingo squares.
EXPLORE: Watch the video and make connections within the words given (the words are policy, governance, community projects, sustainable practices). Answer the questions about the key components of the policy.
EXPLAIN: Study the text and check the key components of the policies (goals and objectives, Successes and challenges in implementation, the role of local governments and communities in these policies).
EXTEND: Group -work / Each group seeks and studies a case study of a successful community-led sustainability project. Work in groups and develop your own proposal for a community-led sustainability project in your local area.
EVALUATE: Consider a specific environmental issue or need, propose sustainable practices to address the issue, engage local stakeholders and the community, and outline the steps for implementation and policy support required. Review each other's proposals and provide constructive feedback.

Module 6.6. WORKSHOP: Global Citizenship, Policy Learning, Lifestyle Choices and Consumer Behaviour

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Glossary

(created from Module keywords and external glossaries:

- *GPM/(2024). Glossary of Sustainability and Sustainable Project Management Terms. https://greenprojectmanagement.org/gpm-standards/glossary-of-sustainability-terms*
- *Hope Solutions, 2024. Glossary of Sustainability Terms. https://www.vision2025.org.uk/glossary-of-sustainability-terms/*

- *Lutkevich, B. 2024, Sustainability and ESG glossary: 52 terms to know. https://www.techtarget.com/sustainability/feature/Sustainability-and-ESG-glossary-Terms-to-know*
- *UNESCO World Heritage Convention (2024) Glossary; https://whc.unesco.org/en/glossary/*
- *The Britannica Dictionary, 2024. https://www.britannica.com/dictionary)*

- **Adaptability**: Ability to adjust to new conditions or changes in the environment. (GPM, 2024)
- **Climate change** - 'Climate change' means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods. (UNESCO World Heritage Convention (2024) Glossary: Climate change)
- **Climate mitigation** - The process of decreasing the flow of heat-trapping pollution. For example, reducing fossil fuel burning by using renewable energy sources may help. (Lutkevich, B. 2024)
- **Climate Change Mitigation**: Policies and measures aimed at reducing greenhouse gases from companies and governments to lessen global impacts of climate change. (GPM, 2024)
- **Climate –** the usual weather conditions in a particular place or region (The Britannica Dictionary, 2024)
- **Displacement** - the act of displacing something: such as the act of forcing people or animals to leave the area where they live; or the movement of something from its original or regular position; or the amount of water that is moved by an object when it is placed in water (The Britannica Dictionary, 2024)
- **Carbon Footprint** - A measure of the amount of CO2e released into the atmosphere as a result of the activities of a particular individual, organisation or community over a defined timeframe. (Hope Solutions, 2024)
- **Ecological footprint** - A measure of human impact on Earth's ecosystems, expressed as the amount of land required to sustain their use of natural resources (GPM, 2024).
- **Ecosystem Restoration**: The process of aiding the recovery of ecosystems that have been degraded, damaged, or destroyed to enhance biodiversity and ecosystem functions (GPM, 2024)
- **Ecosystem services** - Ecosystem services are processes by which the environment produces benefits useful to people, akin to economic services. They include: Provision of clean water and air; Pollination of crops; Mitigation of environmental hazards; Pest and disease control; Carbon sequestration. Accounting for the way in which ecosystems provide economic goods is an increasingly popular area of development. The concept of ecosystem services is similar to that of natural capital. The Millennium Ecosystem Assessment released in 2005 showed that 60% of ecosystem services are

being degraded or used unsustainably. (UNESCO World Heritage Convention (2024) Glossary: Ecosystem services)

- **Environmental justice** aims for fair treatment of all people regardless of race, colour, national origin or income equally regarding environmental laws, regulations and policies. The approach holds that no group should bear a disproportionate share of negative environmental consequences. (Lutkevich, 2024)
- **Environmental Justice**: The fair treatment and meaningful involvement of all people, regardless of race, colour, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws and policies. (GPM, 2024)
- **Environmental Footprint**: Measure of the environmental impact of an individual, organisation, or product. (GPM, 2024)
- **Global Warming:** The increasing of the Earth's average temperature due to greenhouse gas (GHG) emissions from human activity. (GPM, 2024)
- **Greenhouse Effect** - The result of carbon dioxide, methane and nitrous oxides in Earth's atmosphere trapping the sun's heat (Lutkevich, 2024)
- **Greenhouse Gas:** Gases such as carbon dioxide and methane, which trap heat in the atmosphere and contribute to climate change. (GPM,2024)
- **Greenhouse Gas Emissions:** Greenhouse gases, such as carbon dioxide and methane, which trap and hold heat in the atmosphere and contribute to climate change. (GPM, 2024)
- Greenhouse Gas emissions - The sum of emissions of various heat-trapping gases. Greenhouse gases include carbon dioxide, methane, nitrous oxides and fluorinated gases such as hydrofluorocarbons (Lutkevich, 2024)
- **Global warming** refers to Earth's heating from trapped greenhouses gases resulting from human activities such as transportation, agriculture, overfishing, fossil fuel energy production and overconsumption. Unless companies, governments and consumers make major shifts, global warming and climate change will heat the planet so much that it will be unlivable in the near future. (Lutkevich, 2024)
- Mitigate - to make (something) less severe, harmful, or painful (The Britannica Dictionary, 2024)
- **Mitigation** of a disaster is taking action in the timeframe before a disaster to lessen post-event damage to lives and property. In risk management, many hazards such as earthquakes cannot be reduced, but the risk from that hazard can be reduced, or mitigated, for example by constructing earthquake-resistant buildings, or shelves that prevent objects from sliding off. (UNESCO World Heritage Convention (2024) Glossary: mitigation (disaster))
- **Nature-Based Solutions:** Actions that use natural processes and ecosystems to tackle social challenges like climate change, food security, or disaster risk.(GPM, 2024)
- **Renewable Energy:** Energy from sources that are naturally replenishing but flow-limited; renewable resources are virtually inexhaustible in duration but limited in the amount of energy available per unit of time. .(GPM, 2024)

- **Renewable Resources:** Natural resources that can be replenished naturally with the passage of time. (GPM, 2024)
- **Settlement -** a place where people have come to live and where few or no people lived before. (The Britannica Dictionary, 2024)
- **Sustainable Development** – Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs (defined by the Brundtland Commission and multilaterally agreed by the UN Conference on Environment and Development – Rio 1992). (UNESCO World Heritage Convention (2024) Glossary: Sustainable development).

The creation of this document was funded by the European Commission. The European Commission's support for the production of that report does not constitute an endorsement of its contents, which reflect the views only of the authors. The Commission cannot be held responsible for any use which may be made of the information contained therein.