



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**



The EcoMystery Project:
Interactive Escape Rooms for Climate Crisis
Awareness and Civic Engagement in School Education

WP3

Escape the Climate Crisis Coursework
Module 1: Why is Our Climate in Crisis?

Project partners



UNIVERZITA
KOMENSKÉHO
V BRATISLAVE

 **Bluechain**



ecomystery.eu



[EcoMystery](https://www.facebook.com/EcoMystery)



[@ecomystery](https://www.instagram.com/ecomystery)



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**

Module 1: Why is Our Climate in Crisis?

The EcoMystery Project: Interactive Escape Rooms for Climate Crisis Awareness and Civic Engagement in School Education

(2024-1-IT02-KA220-SCH-000248873)

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the Erasmus+ National Agency INDIRE. Neither the European Union nor the administering body can be held responsible for them.

Creative Commons License



CC BY-NC 4.0

Creative Commons Attribution-NonCommercial 4.0 International

This license requires that reusers give credit to the creator. It allows reusers to distribute, remix, adapt, and build upon the material in any medium or format, for noncommercial purposes only.



Module 1: Why is Our Climate in Crisis?

Table of Contents

Module 1: Understanding the Climate Crisis	3
Learning Objectives.....	3
Time Required	3
Applicability	3
Executive Summary.....	3
Unit 1: The Earth's energy balance	4
Weather vs. Climate	4
Earth's Energy Balance	4
Unit 2: Natural Greenhouse Effect.....	6
Unit 3 - Introduce the Carbon Cycle.....	7
Unit 4 - What is Environmental Degradation?	9
Classroom Activities.....	12
Activity 1 – Greenhouse Effect Jar Experiment.....	12
Activity 2 – Carbon Cycle: Balance Under Pressure.....	16
Activity 3 – Biodiversity Loss Musical Chairs	27
Extra Resources (Additional classroom material for teachers)	32
References	34



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**

Module 1: Why is Our Climate in Crisis?

Module 1: Understanding the Climate Crisis

Learning Objectives

- Students will learn how energy from the Sun and heat from Earth must balance, and what happens if they don't.
- Students will recognize that certain gases in our atmosphere trap heat (like a blanket), keeping Earth warm enough for life.
- Students will understand how carbon (as carbon dioxide) moves through plants, animals, air, and oceans in a continuous cycle
- Students will see how a balanced carbon cycle and energy flow keep Earth's climate stable, and why upsetting this balance can change climate
- Students will be able to identify how deforestation, pollution, and overconsumption contribute to environmental degradation, explain their impacts on ecosystems and climate, and propose concrete actions they can take to reduce these pressures on the environment

Time Required

1-2 hours

The estimated completion time is based on the average time expected to complete the entire module, excluding the additional resources (1 hour), or else including them (more than 2 hours).

Applicability

The Units of this module are designed for all teachers; however, they may be of greater relevance to teachers in natural science disciplines.

Executive Summary

This Module will explore the root causes of the climate crisis, focusing on human impacts, gas emissions and environmental degradation, helping educators teach the key drivers of climate change in an interactive, age-appropriate way.



Module 1: Why is Our Climate in Crisis?

Unit 1: The Earth's energy balance

Weather vs. Climate (10 min): Begin by asking students if they know the difference between *weather* and *climate*. Guide them to understand that **weather** is the daily condition (sunny, rainy, hot, etc.), while **climate** is the average weather over a long time in a region. For example, one hot day is weather, but many hotter summers over years indicate a changing climate. Briefly anticipate that today's climate change refers to unusually **rapid, human-caused changes** in Earth's long-term climate since the 19th century.

- Here you can find more information and a useful graphic for explaining the difference between weather and climate, provided by the European Space Agency:
https://www.esa.int/Applications/Observing_the_Earth/FutureEO/Space_for_our_climate/Weather_vs_climate_What_s_the_difference
- [Climate.ec.europa.eu: Weather vs Climate](https://climate.ec.europa.eu/en/education/teaching-materials/primary/primary-lesson-plan-weather-vs-climate) → here you will find a downloadable lesson plan with worksheet to expand this topic.

Earth's Energy Balance (15 min): To explain this scientific concept it is very useful to start with a simple experiment and an engagement tip: ask students if they ever notice the difference about wearing a black or a white T-shirt on a sunny day: with the back one, they feel hotter because it absorbs more sunlight than a white one. To illustrate this concept, shine two lamps, one on a black surface and one on a white surface, for 2 minutes. Have students feel which is warmer. The dark surface will be warmer because it absorbed more energy, while the light surface reflected more and will be cooler. This shows how colour/brightness (like ice or clouds being white vs. ocean being dark) affects absorption of sunlight.

Then explain that the same happens with the Sun and the surface of the earth. The sun is Earth's main energy source. When sunlight reaches Earth, some bounces off clouds



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ INDIRE

Module 1: Why is Our Climate in Crisis?

or ice back to space, and the rest is absorbed by land and oceans, warming them. Then Earth gives off this energy as heat. In a stable climate, **energy in = energy out**. If more energy comes in than leaves, Earth warms up; if more leaves than comes in, Earth cools.

- This link provides a graphic overview of the Earth's energy balance: [Absorption / reflection of sunlight - Understanding Global Change](#)



Module 1: Why is Our Climate in Crisis?

Unit 2: Natural Greenhouse Effect

****Before beginning the lesson, complete Step 1 (setup) of the Greenhouse Effect Jar Experiment activity (see activity sheet)**

As engagement tip, you can ask the students what happens to a car parked in the sun with windows closed – the car gets very hot inside. That’s because sunlight got in, but the heat got trapped. The ask: *“If Earth warms up in the day, why doesn’t all that heat just escape into space at night?”* Then explain that our **atmosphere** acts like a blanket (or the doors of the car). Certain gases in the air – called **greenhouse gases** – trap some of Earth’s heat and keep the planet warm. This is the **natural greenhouse effect** – and it’s a good thing! Without it, Earth would be a frozen “ice ball” – scientists estimate the average surface temperature would be about -18°C , instead of the comfy $+15^{\circ}\text{C}$ we have. You can use an analogy: greenhouse gases (like carbon dioxide and methane) act like a **warm blanket or a greenhouse around Earth**, letting sunlight in but preventing some heat from escaping.

These links provide further explanations of the greenhouse effect for students:

- [What Is the Greenhouse Effect? - NASA Science](#)
- [Graphic: The Greenhouse Effect - NASA Science](#)
- [The Greenhouse Effect and our Planet](#)

****To conclude Unit 2, complete the Greenhouse Effect Jar Experiment activity (step 2 and reflection questions).**



Module 1: Why is Our Climate in Crisis?

Unit 3 - Introduce the Carbon Cycle

Transition by explaining that another part of Earth's system that keeps climate stable is the **carbon cycle** – the way carbon moves through the air, living things, and earth. Define **carbon dioxide (CO₂)** as a gas in the air that is one of the main greenhouse gases. To explain the carbon cycle, you can use graphical help like slides or interactive platform available online. These are some good examples:

These links provide further explanations of the carbon cycle for students:

- [Encounter Edu: Carbon cycle \(foundation\)](#)
- [Encounter Edu: Carbon cycle interactive \(intermediate\)](#)
- [PBS Learning Media: Carbon Dioxide and the Carbon Cycle](#)
- [Science Learning Hub, University of Waikato \(NZ\): Carbon Cycle](#)
- [What is the Carbon Cycle? - NASA Science](#)

With the support of these resources, you can explain the theory of the carbon cycle. Carbon moves through different parts of the Earth system (air, plants, animals, ocean, soil) in a continuous loop. For example, CO₂ from the atmosphere is absorbed by plants, then eaten by animals, then exhaled back to the air; it also cycles in and out of the ocean. Maintaining this natural balance keeps atmospheric CO₂ levels steady over time. More in details: **plants** on land and in water (like phytoplankton) **take in CO₂** from the air for photosynthesis (they use carbon to grow and release oxygen). Animals (and we humans) eat those plants and later breathe out CO₂. When plants and animals **die and decay**, the carbon goes into the soil and can be released as CO₂. The **oceans** also absorb a lot of CO₂ from the air and later release it back. This cycling of carbon has stayed **balanced** over long periods – meaning the amount of CO₂ removed by natural processes about equalled the amount put back, so CO₂ levels in the air stayed relatively stable for thousands of years.

However, there are various industrial activities that have put this cycle out of balance since the 1700s – most notably the burning of fossil fuels. This has caused a



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**

Module 1: Why is Our Climate in Crisis?

significant increase in the amount of CO₂ and other Greenhouse Gases in the atmosphere, which have negative consequences for the Earth and the biosphere. These include:

- **A warming planet**, which creates imbalances in seasonal changes and more intense natural disasters (flooding, storms, wildfires, blizzards, etc.)
- **Warming oceans**, which also causes **acidification**, thus producing a double consequence of less CO₂ absorption and more CO₂ release from the oceans;
- **Biodiversity loss**, as species do not have enough time to adapt to a quickly warming climate
- **Health Hazards** caused by rising temperatures that increase deaths from heatwaves and expand the range of diseases like malaria. CO₂ and other pollutants also aggravate respiratory conditions



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ INDIRE

Module 1: Why is Our Climate in Crisis?

Unit 4 - What is Environmental Degradation?

Start by asking students: *“What do you think happens when humans take too much from nature without giving it time to recover?”*

Guide them to understand that environmental degradation means the damage to Earth’s natural systems – air, water, soil, and living organisms – caused mainly by human activity. Explain that our daily actions, such as cutting trees, throwing away plastic, or using too much energy and resources, can harm the balance of the environment, just like taking too many bricks from a house makes it collapse.

Visualize the problem by showing few images (forest before/after logging, plastic in the ocean, crowded city smog) or using extra resources (linked below).

Then introduce at least the three big causes of this damage: deforestation, pollution, and overconsumption.

a) Deforestation – Losing our green lungs (10 min)

Engagement tip: ask, *“Have you ever seen a forest being cut down in a video or picture? What might live there?”* Forests act like **Earth’s lungs**, absorbing carbon dioxide and releasing oxygen. They also provide homes for countless species and keep the soil healthy. When trees are cut down faster than they grow back – for farming, wood, or building cities – it’s called **deforestation**.

Consequences:

- More CO₂ in the air, worsening climate change.
- Loss of biodiversity, as animals and plants lose their homes.
- Soil erosion, because roots that hold the soil are gone.

Module 1: Why is Our Climate in Crisis?

Small Experiment:

Materials needed: 1 small pot with grass, herbs, or similar; 1 small pot with only soil; a pitcher of water. Make sure both pots have holes in the bottom.

Place both small pots (1 with soil and grass/plants and 1 with only bare soil) on a flat surface. Pour half of the pitcher in the pot with grass and the other half in the pot with only soil. Which one retains the most water? The grass-covered one absorbs water, while the bare soil will not retain the water and will let it drain out of the pot. This demonstrates forests' role in protecting the land.

b) **Pollution – When waste becomes a problem (5 min)**

Ask: “What types of pollution can we find around us?” Collect ideas (air, water, soil, noise, plastic).

Explain that **pollution** happens when harmful substances enter the environment.

Examples:

- Air pollution from cars, factories, and burning fuels leads to smog and health issues.
- Water pollution from chemicals and plastics harms fish and drinking water.
- Soil pollution from pesticides and waste reduces the fertility of land.
- Encourage reflection: “We often think pollution disappears, but it just moves – from our hands to the air, soil, or water.”

c) **Overconsumption – Taking more than the planet can give (10 min)**

Ask: “Do you think we need everything we buy?”

Explain that **overconsumption** means using resources faster than Earth can replace them – for example, buying new clothes instead of reusing, or wasting food and energy.

Use the concept of the Earth Overshoot Day: the date each year when humanity has used all the resources Earth can regenerate that year. (You can find the updated date on <https://www.overshootday.org/>).



Module 1: Why is Our Climate in Crisis?

Here are some links to other resources that can further explain these topics:

Pollution:

- [Encounter Edu: Recycling quiz, Plastic Quiz, Plastic investigator](#) → all in the website section "Take Action" activities are made of quizzes and instructions for the teacher on how to conduct them in class and some theoretical basis for students to improve their knowledge on that topic before doing the quiz

Biodiversity

- *Preparing a poster to show effects of climate change on biodiversity in local community – convince locals of the gravity of the issue*
https://climate.ec.europa.eu/document/download/6c3786a7-f624-4df5-8522-2d8da27415ee_en?filename=impacts_5_effects_on_biodiversity_en.pdf

Soil erosion

- [Let's Keep our soil healthy](#) → a Marie-Curie project proposing a simple experiment to study soil erosion with a short video instruction and supporting information for teachers

Loss of biodiversity, human impact

- [op.europa.eu: Can wolves and people coexist?](#) → a role play game with cards. Pdf with instructions and material downloadable in all project languages

Conclusion & Discussion (optional reflection 1–2 min)

Ask:

- "Which of these three problems affects your community the most?"
- "What small actions could we take to reduce our impact?"

Conclude with the idea that every positive action helps restore balance – when we protect nature, it protects us back.



Module 1: Why is Our Climate in Crisis?

Classroom Activities

Activity 1 – Greenhouse Effect Jar Experiment	
Subject or subjects	Chemistry/Natural Sciences
Age/Level	This activity is suited for students aged 9 – 12
Time required	About 1 hour/one classroom period
Learning goals	Students will conduct an experiment simulating the Greenhouse Effect using jars, plastic bags, ice cubes and water. The activity provides a practical demonstration of the Greenhouse Effect, where the jars represent the Earth with and without the Greenhouse gases trapped in the atmosphere. At the end of this activity students will be able to: • Understand the basics of the Greenhouse Effect • Identify the natural and manmade contributions to the Greenhouse Effect • Reflect on the negative effects of increasing greenhouse gases that continue to build up in the atmosphere
Prior knowledge & skills	Students should know how read a thermometer. This activity can be conducted at the beginning of the class before explaining the Greenhouse effect (MOD 1 – Unit 2) this ensures students will have a better understanding of the results at the end of the experiment.
Materials, resources & settings	This activity will be conducted in class or outside on a warm, sunny day. Teachers will need: • 2 glass jars • 4 cups of cold water • 10 ice cubes • 1 clear plastic bag • 1 Thermometer



Module 1: Why is Our Climate in Crisis?

Activity description

Step 1: Introduction and setup

Briefly introduce the topic and experiment. You can either give the lesson on the Greenhouse Effect the day before completing this activity or teach it while waiting for the experiment to finish.

Take two identical glass jars each containing 2 cups of cold water (fill to about halfway up each jar). Add 5 ice cubes to each jar. Wrap one in a plastic bag (this is the greenhouse glass). Leave both jars in the sun or under a heat lamp for one hour/the rest of the class period.

Step 2: Analysis and Reflection

After one hour, or at the end of the class period, measure the temperature of the water in each jar. Which is warmer?

The plastic bag acts like the greenhouse gases in the atmosphere. It traps some of the sun's energy as heat. This heat builds up inside the jar. Imagine this on a massive scale – this is what is happening to the Earth's atmosphere.

Ask students the following questions:

- What are some examples of natural emitters of greenhouse gases?
 - (**For teachers**) Some examples include volcanic eruptions, wildfire smoke, animal waste, water vapor from evaporation, animal (including human) respiration, decomposing organisms. The ocean also releases some GHGs.
- What are some examples of manmade emitters of greenhouse gases?
 - (**For teachers**) Some examples include fossil fuels burned for factories, energy, and transport; gases from landfill waste (half CO₂ and half methane); and fluorinated gases from refrigerators, aerosols, and air conditioners
- What do you think would happen if the Earth continues to trap more greenhouse gases?
 - For example, if more gasses continue to be trapped in the atmosphere by the Greenhouse effect, this leads to global warming and disruptions to other natural processes and ecosystem balances. This can have cascading consequences for plants, animals, and humans. What kind of consequences and scenarios can students come up with?



Module 1: Why is Our Climate in Crisis?

Accessibility & Inclusion	<i>During the analysis and reflection portion, teachers should try to encourage one answer from multiple students, not letting one or a few students provide all of the answers. Teachers should ask students to raise their hands and call on individual students to answer, encouraging students who are usually quieter to participate; though be careful not to make them uncomfortable (they are of course allowed to pass on answering if they prefer, but giving them a chance is important).</i> <i>If there are students that struggle with hearing, ensure the analysis summary (paragraph 2 of Step 2) and reflection questions are displayed on a white board (either with a marker or a PowerPoint presentation). For students that struggle with speaking, ensure they have a pen and piece of paper where they can write their answers.</i>
References / Bibliography	<u>Link</u> to activity (from "Our Planet Our Future" teacher resources, European Commission)
Assessment	
Formative Assessment	<i>Teachers can assess students' understanding and critical observation of the Greenhouse Effect, as well as their ability to understand the future implications for all planet life. Teachers can focus their assessment on students' ability to:</i> ● <i>Provide clarity and relevance to their observations</i> ● <i>Demonstrate a correct general understanding of the Greenhouse Effect, as well as natural and manmade contributions</i> ● <i>Respect for other students and remaining silent until called upon to answer</i>
Summative Assessment (optional)	<i>Using the compiled student responses to the reflection questions, teachers can briefly report on how well students understand the Greenhouse Effect after teaching the lesson and conducting the activity.</i>
Student Self-Assessment (optional)	<i>Students can give a quick self-rating on how they answered the reflection questions ("What did I learn?, What will I improve?", etc.)</i>
Documentation, Evidence & Follow-Up	



Module 1: Why is Our Climate in Crisis?

Evidence to Collect	<i>Photos during student observations of the jars (with permissions) and while responding to reflection questions; compile student responses to reflection questions (can collect verbally and record responses on paper or whiteboard, or else students can send their responses via Wooclap, Slido, Mentimeter, or similar platforms).</i>
Impact Tracking	<i>Before beginning the lesson, teachers can ask students what they know about the topic. This can be assessed through open-ended questions, administered verbally and/or on paper. Then at the end of the lesson and activity, teachers can identify whether the students' knowledge of the topic has been improved by asking the reflection questions suggested and adaptations of the questions asked before beginning the lesson.</i>
Dissemination	<i>Teachers can share the outcomes of the activity through the school's social media, newsletter, and internal reports, as well as during meetings with parents and other teachers and school staff.</i>
Next Steps	<i>Ask students if they can think of a similar experiment or activity that they have done at home, in another class, or a previous year and describe it to the class. Then ask students if they have feedback or suggestions for improving the experiment/activity.</i>
Teacher Reflection	
<i>What worked well & why? What would I change next time? Evidence of learning (how well did students understand the topic based on the reflection questions?) Inclusion & wellbeing: who was (and was not) reached?</i>	



Module 1: Why is Our Climate in Crisis?

Activity 2 – Carbon Cycle: Balance Under Pressure

Subject or subjects	Science, Geography, Biology, Ecology
Age/Level	<i>This activity is suited for students aged 9 – 14</i>
Time required	<i>Approximately 45 minutes/most of a class period</i>
Learning goals	<i>This activity aims to develop students' understanding of the carbon cycle and the impact of human actions on climate systems. Through an interactive and collaborative game, learners explore how carbon moves between Earth's reservoirs and how different decisions influence environmental balance.</i> <i>It also fosters environmental awareness, decision-making, and the ability to evaluate sustainable solutions in complex, real-world contexts.</i> <i>At the end of this activity students will be able to:</i> <i>• describe the main components of the carbon cycle,</i> <i>• explain how carbon moves between different Earth systems, identify the impact of human activities on atmospheric CO₂ levels,</i> <i>• evaluate the effectiveness of sustainable actions,</i> <i>• collaborate to make informed decisions aimed at maintaining environmental balance.</i> 21st-Century Skills Enhanced Systems Thinking & Critical Analysis – including critical thinking, problem-solving, collaboration
Prior knowledge & skills	<i>Students should have a basic understanding of ecosystems and the role of gases in the atmosphere. Familiarity with simple scientific concepts such as cycles in nature (e.g. water cycle) and cause-effect relationships is recommended.</i>

Module 1: Why is Our Climate in Crisis?

Materials, resources & settings

The activity requires:

- a printed game board representing the 5 main reservoirs – atmosphere, ocean, soil, forests and geosphere (**provided as annex**),
- a printed sets of cards (natural events, human actions, sustainable actions - **provided as annexes**),
- physical tokens (at least 87, to represent carbon units (e.g. counters, coins, or paper circles).

The activity is designed for a classroom setting, ideally with students working in groups (6-10 participants), with a teacher acting as facilitator to guide gameplay and discussion.

Activity description

This activity is a collaborative simulation game designed to help students understand the dynamics of the carbon cycle and the impact of human actions on climate balance. Through a structured sequence of turns, students actively manipulate “carbon units” moving across different Earth reservoirs. The game unfolds over **eight rounds**, which do not correspond to fixed time intervals but can be interpreted as representing a **progressive timeframe – such as phases of a human lifetime or broader societal development** – allowing learners to observe how cumulative actions influence the system over time. Throughout the game, students must continuously monitor the level of CO₂ in the atmosphere in relation to a defined **climate threshold**, which represents the limit beyond which the system becomes unstable.

The game encourages discussion, decision-making, and reflection, enabling students to explore how natural processes and human choices interact within a complex system. The different levels of sustainable actions—low (individual), medium (community), and high (systemic) impact—represent distinct scales of intervention in real-world climate action. This structure requires students to compare and combine actions at different levels, strengthening strategic thinking and fostering a deeper understanding of how individual behaviours, collective initiatives, and policy-level decisions contribute to managing environmental challenges.

Step1- Introduction and game set-up: The teacher introduces the concept of the carbon cycle (Unit 1 of MOD1) and explains the objective of the game: maintaining atmospheric CO₂ below a critical threshold. The class is divided in groups of 5- 6 students. In each team, a game board is placed at the center, tokens are distributed among the different reservoirs according to the initial setup:

- Atmosphere: **15**
- Forests: **20**



Module 1: Why is Our Climate in Crisis?

- Oceans: **25**
- Soil: **15**
- Geosphere: **12** (necessary for the game, but in reality unlimited – this area can store as many carbon tokens as needed)

and the three decks of cards are prepared:

- natural events (green cards)
- human impact (red cards)
- sustainable actions (blue cards), divided into three sub-decks:
 - Low impact (individual actions)
 - Medium impact (community actions)
 - High impact (systemic actions)

Important Note

This is a **simplified educational model!**

The real carbon cycle includes much larger reservoirs like deep ocean sediments and rocks, which contain far more carbon than all of these combined. In the game, CO₂ flows are proportional to each other (not realistic in absolute value, but realistic in ratios).

For sustainable actions (blue cards), when the instructions state to “Remove n CO₂ from Red Card Action”, the corresponding token amount is removed from the red card that was previously drawn. For example, players draw a red card that emits 2 carbon tokens into the atmosphere, but then select a medium impact blue card to mitigate this action. This action would cancel out the red card action; thus, no carbon tokens are emitted to or removed from the atmosphere. If the red card emitted 4 carbon tokens and the players chose a medium impact blue card that mitigates only 2 of the tokens, then only 2 tokens would be transferred to the atmosphere.

Students are divided into teams of 5 - 6 students each. Each group collaborates as a decision-making team responsible for managing the system, keeping it within these climate thresholds:

- **15–17 CO₂ units in the Atmosphere → Stable**
- **18–22 CO₂ units in the Atmosphere → Risk**
- **23+ CO₂ units in the Atmosphere → Crisis (Game Over)**

Step2 - Game rounds: The activity is implemented in “Rounds” each one following a fixed sequence:



Module 1: Why is Our Climate in Crisis?

- **Natural process phase:** A card from the natural events deck is drawn and applied. This represents processes occurring in nature that influence carbon flows.
- **Human impact phase:** A card from the human actions deck is drawn. This introduces anthropogenic pressures on the system.
- **Decision-making phase:** Students draw 1 card from each blue sub-deck:
 - Individual actions (low impact)
 - Community actions (medium impact)
 - Systemic actions (high impact)

Analyse the current state of the system, including the amount of carbon that would be emitted from the red card previously drawn, and choose 1 blue card to play. This will mitigate/eliminate the action (carbon emissions) from the red card – the remaining carbon tokens not eliminated (if any) will then be moved to the location indicated in the red card.

🔗 This rule ensures that students:

- compare actions at different societal levels (individual, local, systemic)
- balance short-term and long-term strategies
- engage in discussion, negotiation, and strategic reasoning

🔗 Additional rules:

- High-impact (systemic) cards can be used **a maximum of 2 times per game. They are also jolly cards**, which means they can be saved for later use depending on the players' strategy. This means that, when players draw a high impact card and decide to save it for another turn, the full carbon amount of the red card will be emitted to the atmosphere for that round, as the players chose not to play a blue card to mitigate. Then, when players decide to use this card, they will skip drawing a blue card during the current round in which they play the high impact card.
- When a deck is empty, the discard pile is reshuffled and reused.
- **System update phase (end of each round):** Students move the carbon tokens according to the red card drawn, minus the mitigation effects of the sustainable action card chosen, and then count the total amount of carbon in the atmosphere.

Step3 - Monitoring and progression: At the end of each round, the teacher guides students in evaluating the system's state (stable, at risk, or critical). The game is played over a fixed number of 8 rounds. If the critical threshold (23+ carbon tokens in the atmosphere) is reached at the end of any round, the game ends immediately. At the end of the final round, the level of CO₂ in the atmosphere determines the outcome:



Module 1: Why is Our Climate in Crisis?

Winning and losing conditions are determined by the final atmospheric CO₂ level:

- *Stable → successful management*
- *Risk → partial success (system under pressure)*
- *Crisis → system failure*

After the game, the teacher facilitates a discussion to reflect on:

- *the outcomes achieved*
- *the effectiveness of different strategic choices*
- *the role of timing and decision-making*
- *the interaction between individual, community, and systemic actions*

Students are encouraged to analyse cause–effect relationships and consider how collective decisions influence global environmental systems.

1. Deck of GREEN CARDS – NATURAL EVENTS

INTENSE PHOTOSYNTHESIS

Plants absorb a large amount of CO₂ from the atmosphere and store it in biomass. Intense photosynthesis happens when environmental conditions (light, CO₂, temperature) are optimal, allowing plants to absorb CO₂ at the highest rate.

Move 3 CO₂ | Atmosphere → Forests

NORMAL PHOTOSYNTHESIS

Plants absorb CO₂ from the atmosphere and store it in their biomass under normal conditions.

Move 2 CO₂ | Atmosphere → Forests

RESPIRATION

Plants release CO₂ through respiration into the atmosphere.

Move 2 CO₂ | Forests → Atmosphere

DECOMPOSITION

Microorganisms break down dead organic matter in the soil, releasing stored carbon as CO₂ into the atmosphere.

Move 2 CO₂ | Soil → Atmosphere

OCEAN ABSORPTION

The ocean absorbs CO₂ from the atmosphere, dissolving it in water and storing it as dissolved carbon.

Move 2 CO₂ | Atmosphere → Oceans



Module 1: Why is Our Climate in Crisis?

OCEAN RELEASE

CO₂ dissolved in ocean water is released back into the atmosphere through natural degassing processes when water becomes warmer or when CO₂ concentration is higher in the water than in the atmosphere.

Move 1 CO₂ | Oceans → Atmosphere

NATURAL WILDFIRE

Natural wildfires burn vegetation, releasing stored carbon from forests into the atmosphere as CO₂ and the forest also loses its ability to sequester carbon into the future.

Move 2 CO₂ | Forests → Atmosphere

VOLCANIC ERUPTION

Volcanic eruptions release carbon stored in the Earth's interior (geosphere) into the atmosphere as CO₂.

Move 2 CO₂ | Geosphere → Atmosphere

SEDIMENTATION

Carbon dissolved in the ocean settles and is stored in sediments, transferring carbon from the ocean to the soil over long periods.

Move 1 CO₂ | Oceans → Soil

2. Deck of RED CARDS – HUMAN IMPACT

FOSSIL FUEL COMBUSTION

Burning coal in power plants and natural gas for heating or cooking releases carbon stored underground into the atmosphere as CO₂.

Move 3 CO₂ | Geosphere → Atmosphere

INTENSIVE TRANSPORT

Using petrol or diesel in cars and trucks, and fuel in airplanes, releases carbon stored underground into the atmosphere as CO₂.

Move 3 CO₂ | Geosphere → Atmosphere

HEAVY INDUSTRY

Industrial processes such as steel and cement production use large amounts of fossil fuels, releasing carbon from the geosphere into the atmosphere as CO₂.

Move 4 CO₂ | Geosphere → Atmosphere

DEFORESTATION



Module 1: Why is Our Climate in Crisis?

Cutting forests stops CO₂ absorption and leads to the gradual release of stored carbon from trees into the atmosphere (decomposition).

Move 2 CO₂ | Forests → Atmosphere

INTENSIVE AGRICULTURE

Intensive farming disturbs the soil, exposing stored carbon and releasing it into the atmosphere as CO₂.

Move 2 CO₂ | Soil → Atmosphere

URBANIZATION (CEMENT USE)

Urbanization and cement use release CO₂ and reduce the land's ability to absorb and store carbon in the long term.

Move 2 CO₂ | Soil → Atmosphere

INTENSIVE LIVESTOCK FARMING

Livestock farming releases greenhouse gases from animals and manure, contributing to carbon emissions and reducing the land's ability to store carbon.

Move 2 CO₂ | Soil → Atmosphere

3. Deck of BLUE CARDS – SUSTAINABLE ACTIONS with 3 level of impact

LOW IMPACT • (INDIVIDUAL LEVEL) - daily behaviours, small but consistent impact

REDUCED ENERGY USE

Reducing everyday energy use, such as turning off lights or using less heating, lowers CO₂ emissions into the atmosphere

Remove 1 CO₂ from Red Card Action

INDIVIDUAL SUSTAINABLE MOBILITY

Choosing to walk, cycle, or use public transport instead of private cars reduces CO₂ emissions from daily travel

Remove 1 CO₂ from Red Card Action

RESPONSIBLE CONSUMPTION

Buying less, reusing products, and reducing waste lowers demand for production and reduces CO₂ emissions

Remove 1 CO₂ from Red Card Action



Module 1: Why is Our Climate in Crisis?

HOUSEHOLD ENERGY EFFICIENCY

Using efficient appliances and saving energy at home reduces CO₂ emissions from energy use

Remove 1 CO₂ from Red Card Action

MEDIUM IMPACT ●● (COMMUNITY / LOCAL LEVEL) - collective actions, local policies, sector improvements

SUSTAINABLE MOBILITY SYSTEMS

Improving public transport and cycling infrastructure reduces fossil fuel use and lowers CO₂ emissions

Remove 2 CO₂ from Red Card Action

LOCAL ENERGY EFFICIENCY PROGRAMS

Improving building insulation and energy systems at community level reduces overall energy consumption

Remove 2 CO₂ from Red Card Action

SUSTAINABLE AGRICULTURE

Sustainable farming practices improve soil health, increasing the amount of carbon stored in the soil and reducing CO₂ in the atmosphere

Remove 2 CO₂ from Red Card Action

SUSTAINABLE FOREST MANAGEMENT

Sustainable forest management protects and maintains forests, enhancing their ability to absorb and store CO₂ over time

Remove 2 CO₂ from Red Card Action

CIRCULAR ECONOMY INITIATIVES

Reusing, repairing, and recycling materials at community level reduces production needs and CO₂ emissions

Remove 2 CO₂ from Red Card Action

HIGH IMPACT ●●● (SYSTEMIC / NATIONAL LEVEL) - structural change, policy, large-scale transformation

REFORESTATION PROGRAMS

Large-scale reforestation increases forest cover, allowing more CO₂ to be absorbed and stored in biomass

Remove 4 CO₂ from Red Card Action



Module 1: Why is Our Climate in Crisis?

RENEWABLE ENERGY TRANSITION POLICIES

Policies which replace fossil fuels with renewable energy systems such as solar and wind, drastically reduces CO₂ emissions

Remove 4 CO₂ from Red Card Action

ECOSYSTEM RESTORATION

Restoring wetlands, forests, and degraded land increases natural carbon storage capacity

Remove 4 CO₂ from Red Card Action

OCEAN PROTECTION POLICIES

Large-scale protection of marine ecosystems enhances the ocean's ability to absorb and store CO₂

Remove 4 CO₂ from Red Card Action

Guidance for Teachers to support students' strategic decision-making

Before starting the game, it is useful to remind students that the objective is not only to reduce CO₂ quickly, but to maintain balance over time. Encourage them to think of the system as dynamic: what works in one round may not be effective later. Students should be guided to consider both the current level of CO₂ and the number of rounds remaining, avoiding the temptation to use the most powerful actions too early.

Explain that different actions represent different levels of intervention. Individual actions are always available and useful for small adjustments, community-level actions help stabilise the system, while systemic actions are powerful but limited and should be used strategically, especially in critical situations. Students should therefore aim to combine actions thoughtfully, balancing immediate needs with long-term consequences.

Encourage discussion within groups by asking students to justify their choices: Why is this action needed now? What might happen in the next rounds? Highlight that there is no single correct strategy, but effective teams are those that plan ahead, adapt to changes, and coordinate their decisions. This approach helps students develop a deeper understanding of how different types of actions interact in managing complex environmental systems.

Accessibility & Inclusion

This activity is designed to be inclusive and adaptable to diverse learning needs. Instructions can be delivered both orally and visually, and the use of physical tokens supports kinaesthetic learners. Card texts can be simplified or supported with icons and colour coding (e.g. green, red, blue) to aid comprehension. The collaborative format encourages peer support and participation from all students, including those with different learning abilities. Teachers can adjust the pace, reduce the number of cards, or provide guided choices to ensure accessibility. The activity can also be

Module 1: Why is Our Climate in Crisis?

	<i>adapted for students with language barriers by using visual aids and simplified vocabulary.</i> <i>Teachers should ensure that all students are able to participate by clearly outlining the rules of the game both verbally and written on a white board (or similar).</i>
Assessment	
Formative Assessment	<i>Teachers will assess student's performance and ability to follow instructions throughout the activity. Teachers can focus their assessment on students' ability to:</i> • <i>Respect for rules of the game and not display disruptive behavior (pushing, shoving, name-calling, etc.)</i> • <i>Provide clarity and relevance to their reflection responses</i> • <i>Respect for other students and remaining silent until called upon to answer a reflection question</i> • <i>Demonstrate a correct general understanding of the carbon cycle and their connection to climate change, as well as how human activities or behaviours can contribute in a positive or negative way.</i>
Summative Assessment (if applicable)	<i>Using the compiled student responses to the reflection questions, teachers can briefly report on how well students understand the carbon cycle and their connection to climate change after teaching the lesson and conducting the activity.</i>
Student Self-Assessment (optional)	<i>Students can give a quick self-rating on how they answered the reflection questions and how well they participated in the game ("What did I learn?, What will I improve?", "Which strategy worked best? Why? " etc.)</i>
Documentation, Evidence & Follow-Up	
Evidence to Collect	<i>Photos of students playing the game (with permissions) and answering reflection questions; compile student responses to reflection questions (can collect verbally and record responses on paper or whiteboard, or else students can send their responses via Wooclap, Slido, Mentimeter, or similar platforms).</i>



Module 1: Why is Our Climate in Crisis?

Impact Tracking	<i>Before beginning the lesson, teachers can ask students what they know about the topic. This can be assessed through open-ended questions, administered verbally and/or on paper. Then at the end of the lesson and activity, teachers can identify whether the students' knowledge of the topic has been improved by asking the reflection questions suggested and adaptations of the questions asked before beginning the lesson.</i>
Dissemination	<i>Teachers can share the outcomes of the activity through the school's social media, newsletter, and internal reports, as well as during meetings with parents and other teachers and school staff.</i>
Next Steps	<i>Ask students if they can think of a similar game or activity that they have done at home, in another class, or a previous year and describe it to the class. Then ask students if they have feedback or suggestions for improving the experiment/activity.</i>
Teacher Reflection	
<i>What worked well & why?</i> <i>What would I change next time?</i> <i>Evidence of learning (how well did students understand the topic based on the reflection questions?)</i> <i>Inclusion & wellbeing: who was (and was not) reached?</i>	



Module 1: Why is Our Climate in Crisis?

Activity 3 – Biodiversity Loss Musical Chairs

Subject or subjects	<i>Science, Geography, Biology, Ecology</i>
Age/Level	<i>This activity is suited for students aged 9 – 12</i>
Time required	<i>Approximately 45 minutes/most of a class period</i>
Learning goals	<i>Students will simulate effects of deforestation, extreme weather events, urban expansion, etc. that lead to habitat loss for many species. They will reflect critically on how biodiversity loss negatively impacts the ecosystem and reflect on the role that any species has in the forest environment.</i> <i>At the end of this activity students will be able to:</i> <i>• Understand how human activities increase habitat loss for many species and disrupt ecosystem services.</i> <i>• Identify the consequences of biodiversity loss, especially for humans</i> 21st-Century Skills Enhanced • Systems Thinking & Critical Analysis – recognizing interconnections and chain reactions.
Prior knowledge & skills	<i>Basic knowledge of plants and animals, especially in forest environments, is necessary</i>
Materials, resources & settings	<i>• Classroom, single chairs (around 20-25)</i> <i>• Species role cards (see annex)</i>
Activity description	



Module 1: Why is Our Climate in Crisis?

This activity follows the same rules of the game *musical chairs*, based on participants walking around chairs while music plays and competing to sit down quickly when the music stops, with one chair removed each round.

The objective of this activity is to raise students' awareness of the loss of species' habitats and its impact on the natural environment, as well as on human livelihoods. The activity includes an annex of role-play cards (see attached) used to assign a specific species to each student, along with guidelines for teachers to facilitate discussion and encourage critical reflection.

Each card features an image and the name of the species on the front, and a brief description of its habitat and role within the ecosystem on the reverse side.

Step 1: Prior to the lesson, print the species role cards. Begin the session on environmental degradation (Module 1 – Unit 4). At the end of the lesson, provide a brief overview of the ecosystem services delivered by different species and their respective habitats (refer to the final slide of the unit presentation).

Step 2: Using the species cards, assign each student a species role. More than one student may share the same role; however, ensure an even distribution among species, particularly in smaller classes, and that all species are represented to simulate a forest ecosystem within the classroom. Depending on class size, each species role should be assigned to approximately 3–4 students.

The example provided refers to a forest environment.

The following roles can be assigned:

- 1. **Trees:** provide carbon sequestration, oxygen production, climate regulation, habitat provision, and soil stabilisation (i.e. oak, birch, cypress, pine)
- 2. **Shrubs and other plants:** support biodiversity, prevent soil erosion, and provide food and shelter for wildlife (i.e. hazelut, sagebrush, elderberry)
- 3. **Pollinators:** ensure plant reproduction and the maintenance of forest plant diversity (i.e. bees, butterflies, beetles, wasps, bats)
- 4. **Soil engineers and decomposers:** maintain soil fertility, nutrient cycling, and organic matter decomposition (i.e. fungi, earthworms, bacteria and microorganisms)
- 5. **Seed dispersers:** contribute to forest regeneration (i.e. squirrels, deer, wild boars, small birds)
- 6. **Predators:** contribute to population control, maintain ecosystem balance (i.e. wolves, foxes, large birds of prey)

Module 1: Why is Our Climate in Crisis?

Step 3: Arrange 20–25 individual chairs (one per student, depending on class size) in a circle in the centre of the classroom or in a larger available space. If weather conditions permit, the activity may also be conducted outdoors. The chairs represent the forest ecosystem as a whole. Ask students to sit on any chair of their choice; this represents a balanced and undisturbed ecosystem.

Step 4: If necessary, briefly explain the rules of the musical chairs game. Using a computer, mobile phone, or other audio device, play music for approximately 20–30 seconds while removing one chair. When the music stops, all students must try to sit down. The student who is unable to find a seat represents a species that has been eliminated from the ecosystem due to human activities or climate change. This student should briefly introduce the species they represent and explain its role within the ecosystem, then step out of the circle.

The game is repeated and each time one student leave the circle.

Once one species is completely eliminated from the game, the teacher make the students reflect on the repercussions of deforestation followign suggested questions provided in the annex guidelines. For example:

- *How does one species habitat loss affect other species in the ecosystem?*
- *What happens when all of the forest is removed? Where can these species go?*

Repeat the game, removing one chair each round so that one student exits the circle each time. When all individuals representing a specific species have been eliminated, guide a reflection on the consequences of habitat loss, using the suggested questions provided in the annex. For example:

- *How does the loss of one species' habitat affect other species within the ecosystem?*
- *What happens when the entire forest is removed? Where can these species relocate?*

These questions should first be addressed to students representing the eliminated species, and then opened to the wider class (inviting students to raise their hands and wait to be called upon) if further input is needed.

Step 5: During or at the end of the activity, facilitate a broader reflection on how deforestation affects ecosystem balance and human livelihoods. Suggested guiding questions include:

- *Without natural pest controllers, what happens to pest populations?*
- *When humans take over natural habitats, where do displaced species seek refuge?*
- *What are some of the environmental and human health impacts associated with deforestation (e.g. spread of diseases, loss of pollinators, increase in predators)?*
- *What are the interconnections between biodiversity loss and climate change?*

Module 1: Why is Our Climate in Crisis?

Accessibility & Inclusion	<i>Teachers should ensure that all students are able to participate by clearly outlining the rules of the game both verbally and written on a white board (or similar).</i> <i>For students that have difficulties hearing, the teacher should make sure the reflection questions are written on the white board or a piece of paper. For students who have difficulty speaking, they should be given an opportunity to record their responses on a piece of paper. Students with limited disability can be assisted by the teacher or other students if they are able, or else they can remain seated permanently and be engaged by activating and stopping the music device.</i> <i>The teacher will establish clear rules that allow every student an opportunity to respond to the reflection questions by asking them to raise their hands and wait to be called upon before responding. The teacher must also ensure that students play the game fairly and are respectful of others, avoiding pushing, shoving and name calling.</i>
Assessment	
Formative Assessment	<i>Teachers will assess student's performance and ability to follow instructions throughout the activity. Teachers can focus their assessment on students' ability to:</i> <i>• Respect for rules of the game and not display disruptive behavior (pushing, shoving, name-calling, etc.)</i> <i>• Provide clarity and relevance to their reflection responses</i> <i>• Demonstrate a correct general understanding of the effects of deforestation and biodiversity loss, as well as human activities that contribute to these</i> <i>• Respect for other students and remaining silent until called upon to answer a reflection question</i>
Summative Assessment (if applicable)	<i>Using the compiled student responses to the reflection questions, teachers can briefly report on how well students understand the deforestation and biodiversity loss and their connection to climate change after teaching the lesson and conducting the activity.</i>



Module 1: Why is Our Climate in Crisis?

Student Self-Assessment (optional)	<i>Students can give a quick self-rating on how they answered the reflection questions and how well they participated in the game ("What did I learn?, What will I improve?", etc.)</i>
Documentation, Evidence & Follow-Up	
Evidence to Collect	<i>Photos of students playing the game (with permissions) and answering reflection questions; compile student responses to reflection questions (can collect verbally and record responses on paper or whiteboard, or else students can send their responses via Wooclap, Slido, Mentimeter, or similar platforms).</i>
Impact Tracking	<i>Before beginning the lesson, teachers can ask students what they know about the topic. This can be assessed through open-ended questions, administered verbally and/or on paper. Then at the end of the lesson and activity, teachers can identify whether the students' knowledge of the topic has been improved by asking the reflection questions suggested and adaptations of the questions asked before beginning the lesson.</i>
Dissemination	<i>Teachers can share the outcomes of the activity through the school's social media, newsletter, and internal reports, as well as during meetings with parents and other teachers and school staff.</i>
Next Steps	<i>Ask students if they can think of a similar game or activity that they have done at home, in another class, or a previous year and describe it to the class. Then ask students if they have feedback or suggestions for improving the experiment/activity.</i>
Teacher Reflection	
<i>What worked well & why?</i>	
<i>What would I change next time?</i>	
<i>Evidence of learning (how well did students understand the topic based on the reflection questions?)</i>	
<i>Inclusion & wellbeing: who was (and was not) reached?</i>	

Module 1: Why is Our Climate in Crisis?

Extra Resources (Additional classroom material for teachers)

Title and link	Description	Available languages
European Commission – Science is Wonderful! website	Contains informational videos on various subjects and some small science experiments	Available in English, but can be automatically translated in multiple languages
European Commission – Teacher’s Hub for Climate Change topics	The Teacher’s Hub contains a selection of classroom exercises and relevant materials for the “Causes”, “Impacts” and “Solutions” modules of the interactive site for students “ Our planet, Our future ”. In each section, you’ll find an introduction worksheet, various thematic worksheets and one answer sheet.	Materials available in English
Subject to Climate	Contains activities and lesson plans on climate change topics	Available in English
ClickforSchools – Climate Change Kit for Schools	Contains various activity worksheets, experiments, and knowledge sheets on climate change topics	Available in English, Italian, Greek, French, and Croatian

Other activity ideas

Title and link	Description	Available languages
Carbon Footprint activity sheet	Short worksheet to test students’ knowledge on carbon footprint, with a low-	Available in English



Module 1: Why is Our Climate in Crisis?

	carbon meal plan activity at the end	
CO2 visualization experiment	Short experiment to show how CO2 is created and how it affects the Earth's temperature	Available in English, Italian, Greek, French, and Croatian
Carbon Footprint Calculator	Provides a simple estimation of one's individual carbon footprint based on lifestyle, eating habits, transport use, etc.	Available in English, German, Spanish, French, Indian, Italian, Portugues, and Chinese
River Runner Simulator	An interactive globe, similar to Google Earth, that shows where rain (and other deposited materials) enters into local streams, rivers, and eventually oceans. Useful for showing how pollution and water contamination has far-reaching effects	English



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**

Module 1: Why is Our Climate in Crisis?

References

Click for Schools. Educational Resources.

<https://www.clickforschools.eu/index.php/didactical-tools/>

Click for Schools. Colourless and odourless, but still present...I'm CO₂.

https://www.clickforschools.eu/wp-content/uploads/2020/02/Experiment_about_CO2_impact_on_earth_temperature.pdf

DG for Environment (European Commission). Dealing with differences: Can wolves and people coexist? Role play. European Commission.

<https://op.europa.eu/en/publication-detail/-/publication/48931fee-3c35-11f0-8a44-01aa75ed71a1>

Earth Overshoot Day. Earth Overshoot Day. <https://overshoot.footprintnetwork.org/>

EncounterEdu. Carbon cycle interactive (foundation).

<https://encounteredu.com/multimedia/images/carbon-cycle-interactive-foundation>

EncounterEdu. Plastic Investigator. <https://encounteredu.com/take-action/plastic-investigator>

EncounterEdu. Plastic Quiz. <https://encounteredu.com/take-action/plastic-quiz>

EncounterEdu. Recycling Quiz. <https://encounteredu.com/take-action/recycling-quiz>

European Space Agency (ESA). Weather vs Climate: What's the difference? ESA.

https://www.esa.int/Applications/Observing_the_Earth/FutureEO/Space_for_our_climate/Weather_vs_climate_What_s_the_difference

Global Footprint Network. Ecological Footprint Calculator.

<https://www.footprintcalculator.org/home/en>

NASA (2019). Graphic: The Greenhouse Effect.

<https://science.nasa.gov/resource/graphic-the-greenhouse-effect/>

NASA. Earth. <https://science.nasa.gov/kids/earth/>

NASA. What is the Carbon Cycle? [https://science.nasa.gov/kids/earth/what-is-the-carbon-](https://science.nasa.gov/kids/earth/what-is-the-carbon-cycle/#:~:text=All%20living%20things%20on%20Earth,over%20long%20periods%20of%20time)

[cycle/#:~:text=All%20living%20things%20on%20Earth,over%20long%20periods%20of%20time](https://science.nasa.gov/kids/earth/what-is-the-carbon-cycle/#:~:text=All%20living%20things%20on%20Earth,over%20long%20periods%20of%20time)



Module 1: Why is Our Climate in Crisis?

NASA. What is the Greenhouse Effect? <https://science.nasa.gov/kids/earth/what-is-the-greenhouse-effect/>

National Geographic (2024). The Greenhouse Effect and our Planet. <https://education.nationalgeographic.org/resource/greenhouse-effect-our-planet/>

National Geographic. Education. <https://education.nationalgeographic.org/>

Our Planet Our Future (European Commission). Teacher's Hub. European Commission. https://climate.ec.europa.eu/our-planet-our-future/teachers-hub_en#causes

Our Planet Our Future (European Commission). Worksheets for teachers: Carbon Footprint. https://climate.ec.europa.eu/document/download/02b6754f-a8e5-401b-aa18-53ee7271dd53_en?filename=causes_4_carbon_footprint_en.pdf

Our Planet Our Future (European Commission). Worksheets for teachers: Effects on Biodiversity. European Commission. https://climate.ec.europa.eu/document/download/6c3786a7-f624-4df5-8522-2d8da27415ee_en?filename=impacts_5_effects_on_biodiversity_en.pdf

Our Planet Our Future (EU). Worksheets for teachers: Weather vs Climate. European Union. https://climate.ec.europa.eu/document/download/7b23880d-d1a8-4b37-9d61-dcba10798b2c_en?filename=causes_3_weather_vs_climate_en.pdf

PBS Learning Media. Carbon Dioxide and the Carbon Cycle. <https://www.pbslearningmedia.org/resource/pcep14.sci.ess.co2cycle/carbon-dioxide-carbon-cycle/>

River Runner Global. River runner simulator. <https://river-runner-global.samlearner.com/>

Science is Wonderful! (European Commission). Let's keep our soils healthy! European Commission. <https://marie-sklodowska-curie-actions.ec.europa.eu/science-is-wonderful/classroom-activities/lets-keep-our-soils-healthy>

Science is Wonderful! (European Commission). Science is Wonderful classroom activities. European Commission. <https://marie-sklodowska-curie-actions.ec.europa.eu/science-is-wonderful/classroom-activities>

Subject to Climate. Teaching Materials. <https://subjecttoclimate.org/>



Co-funded by
the European Union

Erasmus+
Enriching lives, opening minds.

AGENZIA NAZIONALE
ERASMUS+ **INDIRE**

Module 1: Why is Our Climate in Crisis?

UN Environmental Programme (UNEP). Resources.
https://www.unep.org/resources/filter/sort_by=publication_date/sort_order=desc/page=0

UNESCO. Education for Sustainable Development.
<https://www.unesco.org/en/sustainable-development/education>

University of California Museum of Paleontology. Understanding Global Change: Absorption/reflection of sunlight. <https://ugc.berkeley.edu/background-content/reflection-absorption-sunlight/>

University of Waikato Te Whare Wānanga o Waikato – Science Learning Hub (2021). Interactive Carbon Cycle. https://www.sciencelearn.org.nz/image_maps/3-carbon-cycle