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Knowledge on the Topic



WORKBOOK

Dear Earthian,

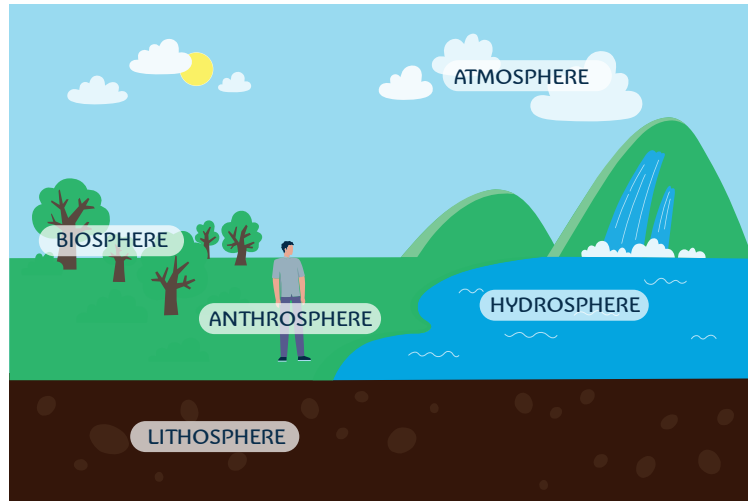
Welcome to the FIRST MODULE: Knowledge on the topic. In this section, you explore our planet's vital topics and will dive into key environmental concepts that shape our world. Each topic is a step towards understanding and taking action for a better world. Dive in, reflect, and get ready to make a difference!

Section 1

1.1 Environmental concept and environmental science overview.

The concept of the environment encompasses the relationship between natural systems and human activities. It includes all living and non-living elements that interact to form the ecosystems in which we live. Key components of the environment include air, water, soil, flora, fauna, human beings, and the physical, chemical, and biological processes that influence them.

Now you see a picture where the key elements of the environment are presented.



Now you will be working in small groups discovering each element! Discuss each element's importance in supporting life on Planet Earth and connection to other elements.

Atmosphere Station: Explain how little air is actually surrounding Earth.

Hydrosphere Station: Discuss the importance of water for life and climate regulation.

Lithosphere Station: Discuss how the lithosphere provides nutrients for plants and is the foundation for human infrastructure.

Biosphere Station: Discuss the variety of life and its interactions with the other elements.

Anthroposphere Station: Discuss human impact on natural systems.

Also as a group discuss the following questions

Sustainability

How can we ensure that our current use of resources does not compromise the ability of future generations to meet their needs?

Ecosystem Services

- How does biodiversity contribute to the resilience of ecosystems and their ability to provide services like clean water and air?

Biodiversity

- How can human activities such as deforestation and urbanization affect biodiversity at different levels (genes, species, and ecosystems)?

Pollution

- What are the major sources of pollution in your local area, and what impact do they have on the environment and human health?

Climate Change

- How do human activities contribute to greenhouse gas emissions and global warming?

1.2 Biodiversity and ecosystems.

Biodiversity plays a crucial role in many aspects of our lives. We appreciate biodiversity for what it provides to humans and for its inherent worth. Biodiversity also holds potential for undiscovered benefits, including new medicines and other unknown services.

To understand how simple actions can contribute to biodiversity, we invite you to play the “Biodiversity Bingo” game.

Move around the room and ask your peers if they have recently done any of the actions listed on your Bingo card.

If someone answers “Yes,” write their name in the corresponding square on your card.

You can only write a person’s name in two different squares.

Your goal is to fill in all the squares with different names. Once your card is complete, shout “Bingo!” and gather with the group

The facilitator will read out the actions, and the group will confirm if the names match the actions.

Reuse a glass jar
for storage

Plant a tree in
your yard or
community

Shop at a local
farmer’s market

Turn off lights
when leaving a
room

Learn about
birds in your
area

Organize a
local event to
clean up litter in
your
neighborhood

Choose to walk
or bike instead of
driving for short
trips

Visit a local
nature reserve

Reduce water
usage

Read a book
about native
plants

Buy products
with eco-friendly
packaging

Volunteer with a
local organization
that rehabilitates
injured or
orphaned animals

Join a local
garden club

Choose
eco-friendly
travel options

Swap clothes
with friends
instead of buying
new

Take shorter
showers

Start a compost
bin at home

Use a reusable
water bottle

Use digital notes
instead of paper

Avoid products
with palm oil

Adopt a
plant-based meal
once a week

Volunteer with
organizations that
protect oceans and
marine life

Volunteer at a
nature reserve

Replace old bulbs
with LEDs

Help start a
community
garden

Find out exactly
what can and
can’t be recycled
in your area

Learn about
Endangered
Species

Discuss
Biodiversity with
a Friend or Family
Member

Reflect on Your
Connection to
Nature

Create art using
recycled
materials

1.3 Climate change and global warming.

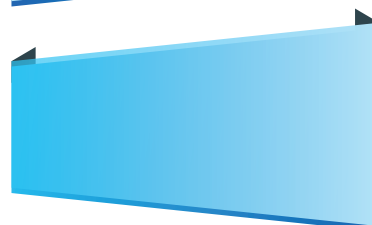
Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change. Climate change affects peoples' health, food production, housing, safety and work.

You get a set of cards with different statements. You need to put it into three categories: Causes, Consequences, and Solutions.

Cause Cards

Consequences Cards

Solution Cards



Now you'll work with a group to create a visual "Climate Change Impact Map" using a large sheet of paper or a whiteboard.

Draw arrows to show connections between human activities (Causes), their impacts on the environment (Consequences), and possible actions to address these impacts (Solutions). For example, you might draw a line from "Burning Fossil Fuels" (Cause) to "Rising Temperatures" (Consequence), then from "Rising Temperatures" to "Melting Polar Ice" (Consequence), and finally connect it to "Switching to Renewable Energy" (Solution).

Feel free to adjust the cards or add your own ideas to better reflect your understanding of the relationships between causes, consequences, and solutions.

1.4 Ocean literacy.

The concept of Ocean Literacy (OL), defined as "the understanding of the ocean's influence on peoples' lives and their influence on the ocean," initially was focused on providing content knowledge about marine issues. Later it has evolved into a comprehensive approach promoting interdisciplinary and intercultural competencies. This evolution supports ocean conservation, management, and sustainability.

It is very important to familiarize yourself with the seven principles that guide our knowledge about the ocean.

Take some time to answer the reflection questions in your workbook. Think about your own connection to the ocean and how the principles of Ocean Literacy relate to your life.

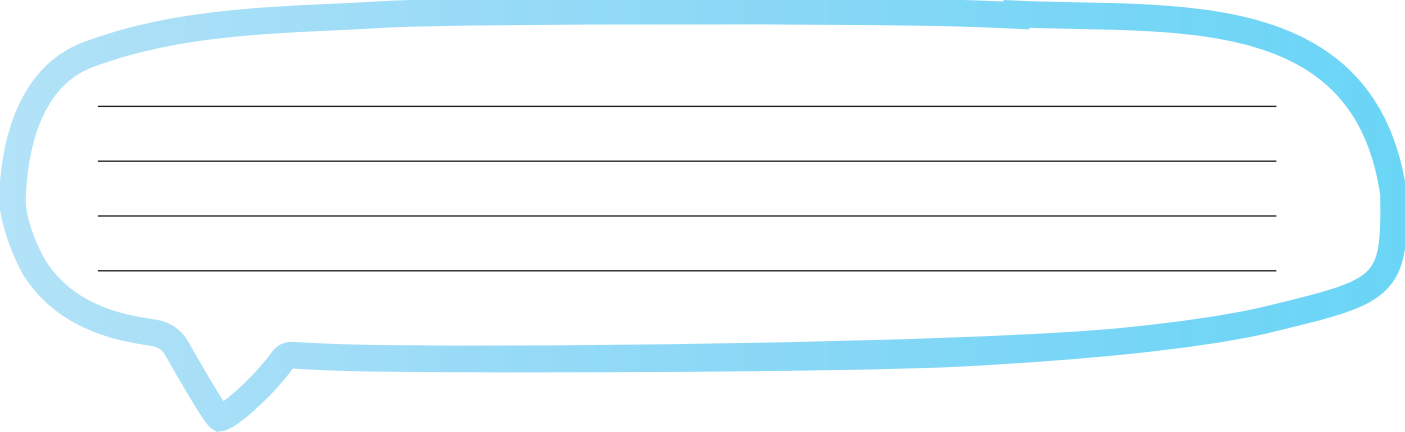
1. Earth has one big ocean with many features.

When you think of the ocean, what comes to mind first? Describe what the ocean means to you personally.

Reflect on how your local environment might be connected to the ocean. Can you find any links, even if you live far from the sea?

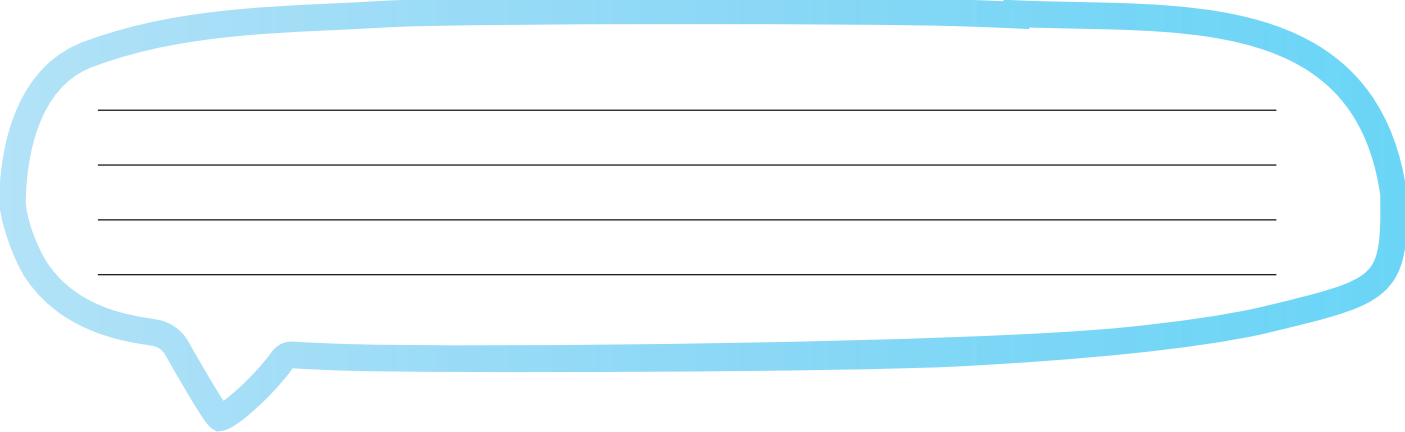
2. The ocean and life in the ocean shape the features of Earth.

Imagine the world without the ocean's influence. How do you think it would look different?



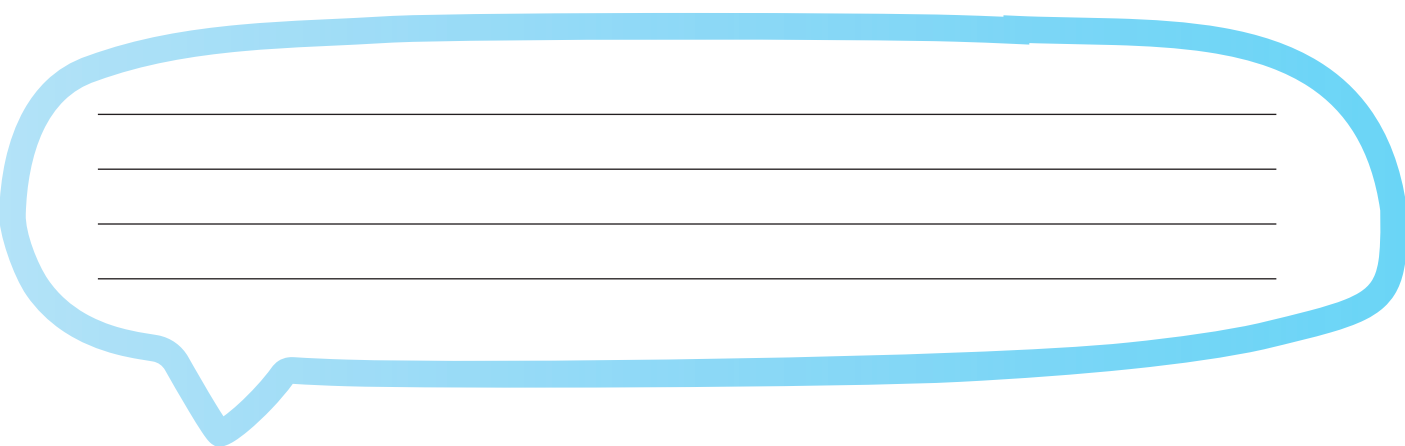
3. The ocean is a major influence on weather and climate.

Consider the concept of climate change. How do you think the ocean is impacted by and also impacts climate change?



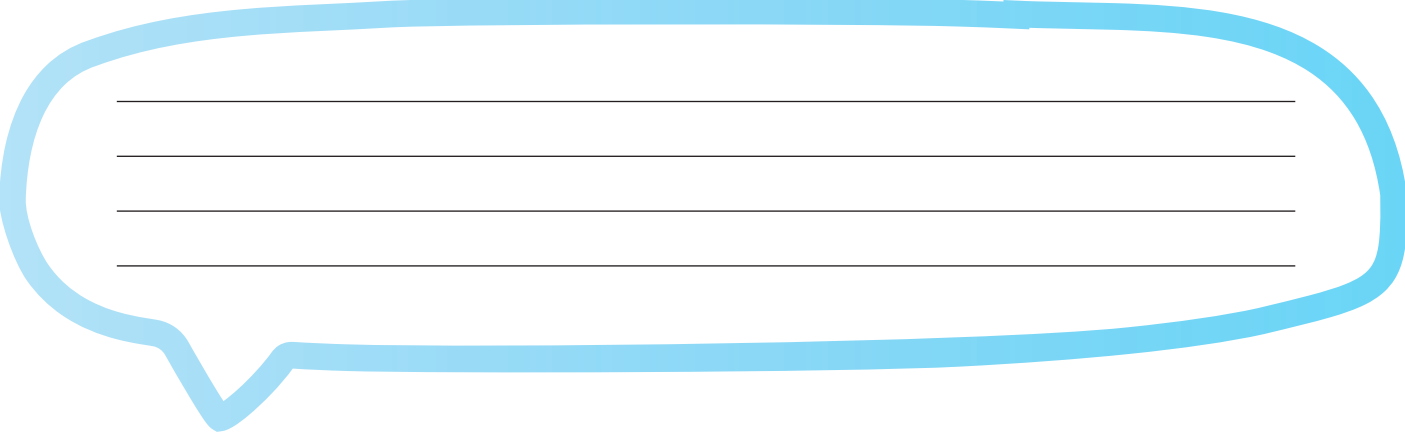
4. The ocean is largely unexplored.

If you could be part of an ocean exploration team, what would you hope to discover?



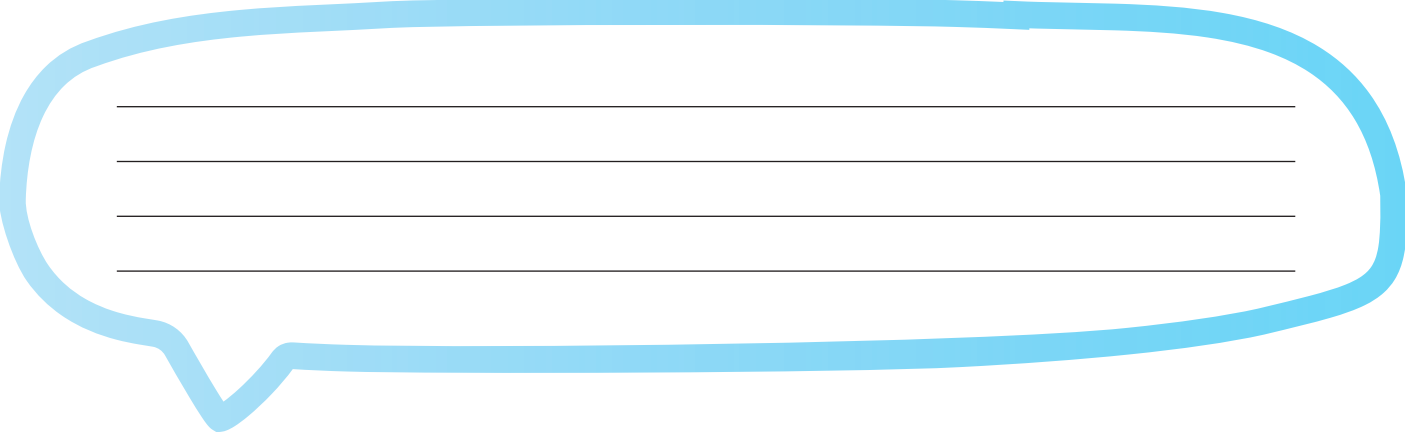
5. The ocean and humans are inextricably interconnected.

In what ways do you rely on the ocean in your daily life? Consider things like food, products, or even the air you breathe.



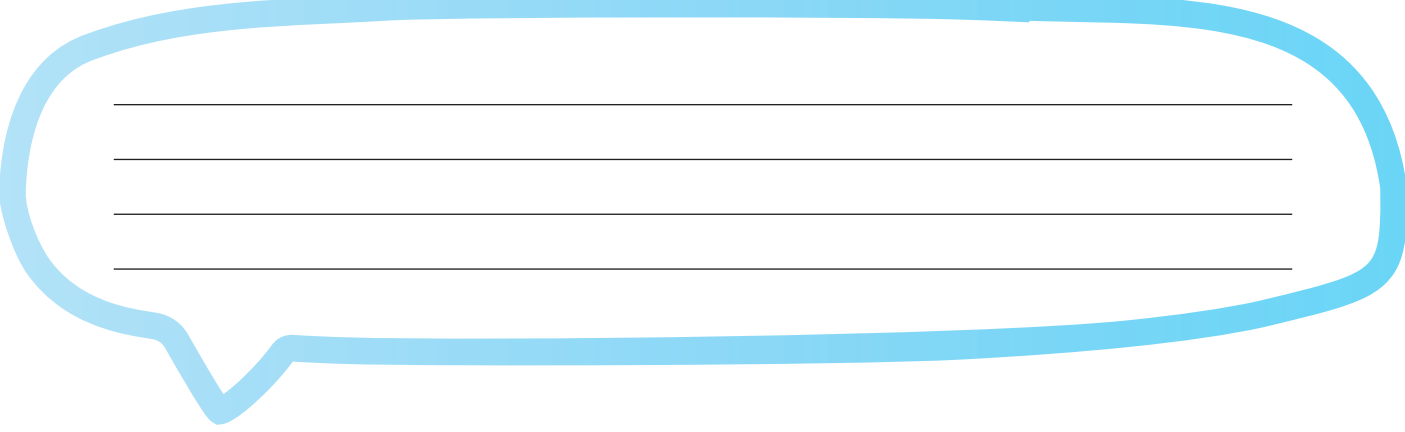
6. The ocean makes Earth habitable.

How do you think the ocean's health impacts human health and wellbeing?



7. The ocean supports a great diversity of life and ecosystems.

How do human activities threaten ocean biodiversity, and what can we do to protect it?



After reflecting individually, join a small group of 3-4 people. Share your thoughts with your group members and discuss how your perspectives align or differ. As a group, summarize your key insights from the discussion. Prepare to share these insights with the larger group.

Some quotes that can be at the end of this section.

"The sea, once it casts its spell."

Jacques Cousteau

"The ocean stirs the heart, inspires the imagination, and brings eternal joy to the soul."

Robert Wyland

"To me, the sea is a continual miracle; The fishes that swim-the rocks-the motion of the waves-the ships, with men in them, what stranger miracles are there?"

Walt Whitman

"You can never cross the ocean unless you have the courage to lose sight of the shore."

Christopher Columbus

"We are tied to the ocean. And when we go back to the sea, whether it is to sail or to watch - we are going back from whence we came."

John F. Kennedy

"The ocean is a mighty harmonist."

William Wordsworth

"Individually, we are one drop. Together, we are an ocean."

Ryunosuke Satoro

1.5 Waste management and circular economy.

Waste management and the circular economy are interrelated concepts that advocate for sustainable environmental practices.

Waste management aims to minimize environmental risks, waste production, and disposal through recycling, reuse, and proper handling. The circular economy, in contrast, focuses on creating sustainable products, reducing waste, and enhancing efficiency to address environmental, economic, and social challenges.

Reflect on what you threw away yesterday. Categorize each item as:

- household / food scraps, packaging materials, paper towels, broken items e.g plates or glass, etc./
- biological / e.g grass clippings, tree branches, eggshells, spoiled fruits, animal waste e.g manure etc./
- commercial /office paper, plastic wrapping, used cooking oil, wood scraps etc./
- industrial waste/used batteries, toxic chemicals/

If you have items you don't know which category to put, search for answers online.

Once you have list try to for each item, note:

- The type of material (e.g., plastic, paper, organic)
- How it was disposed of (e.g., trash, recycling, compost)
- Whether it could have been reduced, reused, or recycled instead of being discarded.

Form small groups. Choose one product from your waste audit. Imagine you are tasked with redesigning this product to align with circular economy principles. Each group should create a visual presentation or a poster summarizing their ideas and solutions.

1.6 Air pollution.

Air pollution refers to the contamination of both indoor and outdoor environments by chemical, physical, or biological agents that influence and alter the natural composition of the air/atmosphere and can be caused by both human activities and natural phenomena. Both outdoor and indoor air pollution can lead to many diseases, mostly respiratory ones and they significantly contribute to global mortality. Air pollution is also harmful to other living organisms such as animals and crops.

Begin by working individually in your workbook. You will find sections with reflection questions related to various aspects of air pollution. Take your time to thoughtfully answer these questions based on your understanding and observations.

1. Sources of Air Pollution

Identify common sources of air pollution in your area.

How do these sources contribute to air pollution?

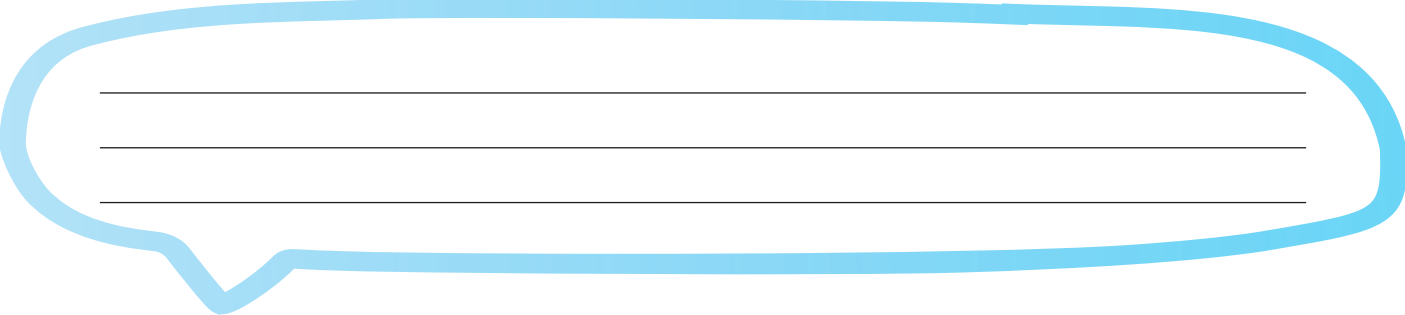
What are some strategies to reduce emissions from these sources?

2. Health Impacts

How does air pollution affect human health, including both short-term and long-term effects?



Are there any specific health issues in your community related to air pollution?



What actions can be taken to address these health impacts?



3. Environmental Impact

How does air pollution affect local ecosystems and wildlife?



What are some visible signs of air pollution's impact on the environment in your area?

4. Personal Actions

Reflect on your daily habits: How do they contribute to or reduce air pollution?

What changes can you make in your life to lessen your air pollution footprint?

How can you motivate others to take similar actions?

After completing the reflection questions, form small groups.
Share your answers with your group members and discuss your reflections. Focus on how your perspectives align or differ from those of your peers.
As a group, summarize the key insights from your discussion. Be prepared to share these insights with the larger group.

1.7 Sustainable agriculture and food system.

Sustainable agriculture means growing food in a way that keeps our environment, soil, and water healthy over the long term. This type of farming is about meeting today's food needs without harming the ability of future generations to produce food.

Today, you'll have the chance to explore and imagine a world shaped by sustainable agriculture and responsible food choices.

Start by taking a moment to think about sustainable agriculture and why it matters. Reflect on the questions below and write down your thoughts:

What does sustainable agriculture mean to you personally?

What memories do you have of food and farming from your childhood?

How do your food choices impact the environment now and in the future?

What are some effective ways to reduce food waste in your household?

What specific actions can you take to support sustainable farming in your community?

What types of food would you like to incorporate more into your daily diet?

What kinds of food do you envision your children and grandchildren enjoying decades from now?

If you could change one aspect of our current food system, what would it be and why?

Next, you'll learn about the Dear Tomorrow initiative—a project that helps people connect personally with climate change and share their stories for the future. After discussing this with your group and educator, sit back, relax, and enjoy a short visualization exercise

Once you've completed the visualization, imagine writing a letter to someone in the future—a farmer, a friend, a family member, or even yourself. Describe your hopes and dreams for a future with sustainable agriculture, and consider any personal commitments you'd make to help create that future.

Take your time to reflect, then find a quiet space to write. Use the next section to pour your thoughts onto paper and share why sustainable agriculture is important to you.

A large, light blue, hand-drawn style rectangular box with rounded corners and a small notch at the bottom center, intended for writing reflections.

1.8 Environmental concept and environmental science overview.

Policies are principles or rules that guide decisions and actions to achieve specific outcomes. They are typically established by governments, organizations, or institutions to ensure consistent and organized responses to particular issues or goals. Policies can be formal, written documents or informal, unwritten guidelines and can cover a wide range of areas, such as environmental protection, public health, education, and business practices. They serve as frameworks within which decisions are made and actions are taken, helping to steer behavior and achieve desired results.

However, policies are not made by politicians only! All of us can contribute to it!

Now let's have a simulation game to see how it should work ideally!
Imagine you need to address air pollution issues in urban areas and create a new EU environmental policy.

You will form 5 groups. Each group will have a specific role. You need to discuss how people in your role would approach the scenario and contribute to policy and principles development. Consider how your role's interests and responsibilities align with or conflict with the policies and develop a brief proposal or action plan based on your role's perspective.

EU policymakers.

As EU policymakers, your role is to draft, negotiate, and implement environmental policies across member states. You focus on creating legislation that balances economic growth, environmental protection, and social equity.

Think about how to create a policy that can help reduce air pollution across cities in Europe. Consider how to balance different needs and ensure the policy is effective for all urban areas.

What types of rules or actions can make a significant impact on reducing air pollution?
How can you ensure that cities follow these rules?

Environmental NGOs.

As representatives of environmental NGOs, your role is to advocate for strong environmental protection measures and ensure that policies address critical ecological issues. You focus on raising awareness and influencing policy through public engagement and research.

Focus on how to reduce air pollution and improve air quality. Think about what actions are essential for protecting health and the environment in cities.

What are the major sources of air pollution in urban areas? What measures can be taken to address these sources effectively?