The 15th e-ICON World Contest

Preliminary Training - Session 1



Exploring SDG GOAL 13 : Climate Action -Session 1-

Learning Guide

Let us explore the SDGs and Goal 13: "Climate Action."

- 1. What are the SDGs?
- 2. What is "Climate Action?"

<Introductory Video for session 1>

😰 영상 링크: https://youtu.be/seFeL95gWBc

What is the e-ICON World Contest?

Let us watch the video below to learn about the e-ICON world Contest.

< What is the e-ICON World Contest?>

늘 영상 링크: https://youtu.be/Dj_xvi_-O_A

The Importance of International Cooperation in Addressing Climate Change

Climate change is a global issue that affects the entire world, transcending national borders. Addressing this challenge requires international cooperation. Individual countries face limitations in responding independently, and by sharing knowledge and technology between developed and developing nations, more effective solutions can be sought.

Programs like the **e-ICON World Contest** provide an opportunity for students from various countries to collaborate on developing climate change response apps.

This process goes beyond a simple project; it offers students a hands-on experience in understanding climate change and actively considering potential solutions.

Through this experience, students realize that climate change is not an issue detached from their lives, and they come to appreciate the importance of global solidarity and collective action.



Ultimately, global issues like climate change cannot be solved by the efforts of any single country alone. International cooperation, where nations and people share knowledge and experiences to find solutions together, is the most powerful key to a sustainable future.

Sustainable Development Goals (UN-SDGs)

The term **SDGs** stands for **Sustainable Development Goals**, which represent an international commitment to sustainable development.

The Sustainable Development Goals, adopted at the 70th UN General Assembly in 2015, set **17 goals** and **169 targets** to be achieved by 2030. These goals provide a framework for guiding humanity's progress across five key areas: **People**, **Planet**, **Prosperity**, **Peace**, and **Partnership**.

Let us learn about the Sustainable Development Goals (SDGs) through the following video.

(Video) Go to the video (Click)

'늘 영상 링크: https://www.youtube.com/watch?v=M-iJM02m_Hg



(Activity) Based on the video and reading materials, please select the correct descriptions of the Sustainable Development Goals (UN-SDGs).

Sustainable Development Goals (UN-SDGs)

The Sustainable Development Goals (SDGs), which were resolved to be achieved by 2030 at the 70th UN General Assembly in 2015, are 17 common goals for humanity to realize the idea of sustainable development. The Sustainable Development Goals (SDGs), also known as the '2030 Agenda for Sustainable Development', present the direction humanity should take in five areas - people, planet, prosperity, peace, and partnership - with 17 goals and 169 detailed goals, along with the slogan of 'Leave no one behind'.

International background and significance

In 2015, as the deadline for the MDGs expired, governments needed to continue their efforts to achieve the goals and address new challenges. Over the past period, the United Nations has been discussing what global priorities should be for the next 15 years (2016-2030). And at the Rio+20 conference held in June 2012, the global development system after 2015 was agreed upon and 17 new goals or global priorities were derived, the Sustainable Development Goals (SDGs).

The MDGs applied to all countries in principle, but in practice, the goals were focused on developing countries. The SDGs are important because they are much more comprehensive. They call on all countries, including developed countries, developing countries, and underdeveloped countries, to work for human prosperity while protecting the environment.

The MDGs were a useful development agenda, but their scope was too narrow, while the SDGs are a more

comprehensive agenda than the MDGs. In addition, the Sustainable Development Goals (SDGs) are flexible to fit the various national circumstances, allowing each country to select the most appropriate and relevant sub-targets and indicators within the goals and use them as a benchmark.

Even now, countries around the world are making great efforts to implement the Sustainable Development Goals (SDGs), and Korea is implementing individual goals of the UN-SDGs through government policies and related laws such as the Sustainable Development Act, the Framework Act on Low Carbon, Green Growth, and the Framework Act on International Development Cooperation.

UN Sustainable Development Goals [View original text]



(Activity) Based on the video and reading materials, please select topics and images related to **Goal** 13.

Goal 13. Climate Action

"Emergency response to combat climate change and its impacts"

Climate change is now affecting every country across the continent. It is disrupting national economies, impacting lives, and taking a heavy toll on people, communities and nations, today and in the future. Weather patterns are changing, sea levels are rising, extreme weather events are becoming more frequent, and greenhouse gas emissions are at record levels. Without action, sea surface temperatures are projected to rise by more than 3 degrees Celsius on average this century, disproportionately affecting the poor and the most vulnerable.

By finding economic and scalable solutions, countries can leapfrog into cleaner and more resilient economies. The pace of change is accelerating as more people look to renewable energy and reduce and adapt to greenhouse gas emissions. But climate change is a global challenge that transcends borders. Improvements at the international level are needed to help

developing countries move toward a low-carbon economy.

To strengthen the international response to the threat of climate change, countries adopted the Paris Agreement at the Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change in November 2016. In this agreement, all countries agreed to limit the global temperature increase to well below 2 degrees Celsius. In April 2018, 175 countries ratified the Paris Agreement, and 10 developing countries submitted their first national adaptation plans to respond to climate change.

Figures and Status

- As of April 2018, 175 countries had ratified the Paris Agreement, and 168 Parties had submitted their Intended Nationally Determined Contributions (INDCs) to the UN Climate Change Secretariat.
- As of April 2018, 10 developing countries have successfully completed and submitted their first national adaptation plans to address climate change.
- Parties in advanced economies are making steady progress toward their goal of mobilizing \$ 100 billion annually by 2020 for mitigation measures.

The Intergovernmental Panel on Climate Change (IPCC) tells us:

- From 1880 to 2012, the global average temperature rose by 0.85°C. To put this in perspective, for every 1°C increase in temperature, grain yields fall by about 5%. Corn, wheat, and other major crops experienced significant yield losses of 40 megatons per year between 1981 and 2002 due to climate change.
- The oceans have warmed, snow and ice have diminished, and sea levels have risen. From 1901 to 2010, global average sea level has risen 19 centimeters (7.6 inches) as warming has melted ice. Arctic sea ice extent has declined every decade since 1979, with a loss of 1.07 million km² of ice per decade.
- Given current greenhouse gas concentrations and continued emissions, global warming is expected to exceed 1.5°C by the end of the 21st century compared to 1850–1900. The world's oceans will warm and ice will continue to melt.

 Average sea level rise is projected to be 24–30 cm by 2065 and 40–63 cm by 2100. Even if most emissions were stopped, climate change would persist for centuries.
- Global carbon dioxide (CO2) emissions have increased by nearly 50% since 1990.
- Emissions between 2000 and 2010 grew faster than in any of the previous three decades .
- A range of technological measures and behavioral changes can limit the global average temperature rise to 2°C above pre-industrial levels .
- Major institutional and technological changes would give us a better chance than not of global warming exceeding this limit.

Original source: UN website (https://www.un.org/sustainabledevelopment/climate-change/)



Exploring SDG GOAL 13: Climate Action

Climate Change: A Threat to Human Life

Climate change is no longer a distant future concern. Rising sea levels, heatwaves, floods, and heavy snowfall are just a few examples of how climate change is threatening our lives.

Let us watch the video and reflect on the emotions you experience regarding climate change.

(Video) Go to the video (Click)

'늘' 영상 링크: https://www.youtube.com/watch?v=OphQhMa7H9k

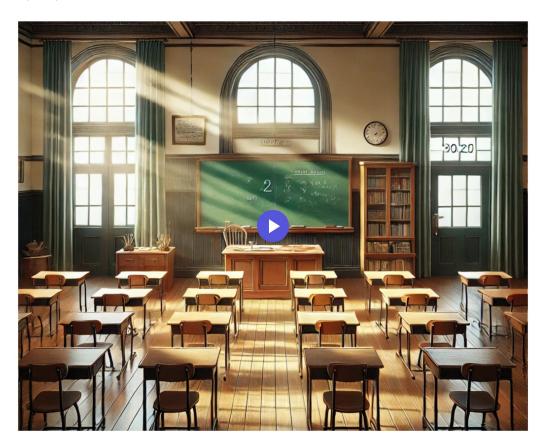
(Activity) Select the words that reflect your feelings about **climate change** from the list and click the Emotion Box to place them.



(Activity)Press the play button to enter the metaverse and converse with your AI friend to share your thoughts and feelings about the climate change phenomenon.

<Interaction Guidelines>

- 1. Press the play button to enter the metaverse and approach your AI friend to start a conversation.
- 2. Share your findings and insights from the previous video about plastic pollution.
- 3. Ask your AI friend any questions about plastic pollution and actively engage in the discussion.
- 4. Express your thoughts or feelings about plastic pollution.
- 5. Exchange your perspectives and conclude the conversation.



Exploring the Meaning and Impact of Climate Change

What is Climate Change?

The United Nations (UN) defines climate change as "a phenomenon where the Earth's climate system undergoes long-term changes in temperature, precipitation, wind patterns, and more."

In the past, the climate was relatively stable and changed gradually. However, today, due to the increase in greenhouse gases, industrialization, and deforestation, global temperatures are rising, and extreme climate changes are occurring at a faster pace.

(Video) Go to the video (Click)

(Activity)Watch the video and provide a summary of your understanding of climate change.

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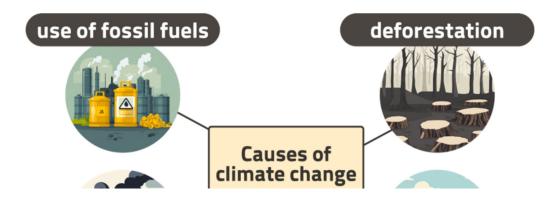
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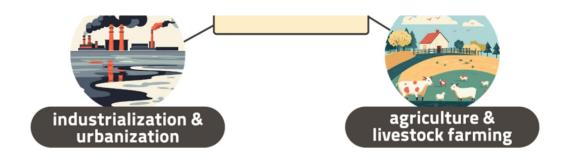
(Activity) Below are image cards depicting phenomena related to climate change. Select the cards that represent the impacts of climate change.



Exploring the Causes of Climate Change: (1) Fossil Fuels

The United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) identifies the primary causes of climate change as the use of **fossil fuels**, **deforestation**, **industrialization and urbanization**, as well as **agriculture and livestock farming**.





Exploring the Causes of Climate Change: (1) Fossil Fuel Use

Let us explore how the use of fossil fuels contributes to climate change.

What are fossil fuels?

Fossil fuels are energy sources such as coal, oil, and natural gas, formed from the remains of organisms that have been buried and subjected to pressure over long periods. Burning fossil fuels produces electricity and heat, but it also releases greenhouse gases like **carbon dioxide (CO₂)**, **methane (CH₄)**, and **nitrous oxide (N₂O)** into the atmosphere.



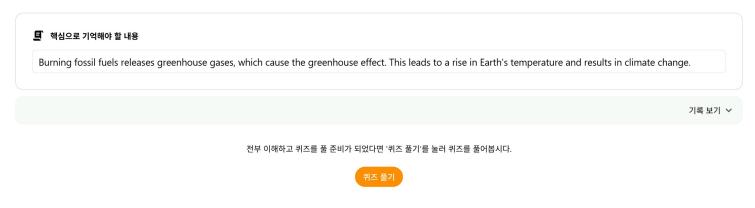
These greenhouse gases trap heat in the atmosphere, causing the Earth's temperature to rise — a phenomenon known as the **Greenhouse Effect**.

If the greenhouse effect continues, the Earth's average temperature will keep rise, leading to climate changes such as heatwaves, sea level rise, and droughts.

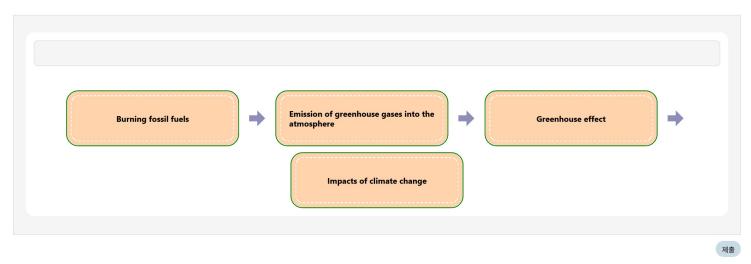
Key Sources of Greenhouse Gas Emissions from Fossil Fuel Use

- **Power Plants:** Burning coal and natural gas to generate electricity releases large amounts of carbon dioxide.
- Transportation: Exhaust gases from cars, airplanes, and ships.
- **Industrial Processes:** Greenhouse gases emitted during the manufacturing of steel, cement, and chemicals.
- Residential and Commercial Heating: The use of gas and oil heating systems.

(Activity) Interact with the AI tutor and review the following key points. Click the key points for personalized explanations and complete the quiz.



(Activity) Place the cards in order to show how fossil fuels impact climate change.



Exploring the Causes of Climate Change: (2) Deforestation

The Role of Forests

Forests play a vital role in regulating the Earth's climate by absorbing carbon dioxide (CO_2) and releasing oxygen (O_2). Known as the "**lungs of the Earth**," the Amazon rainforest produces about 20% of the world's oxygen and acts as a carbon sink.

The Amazon rainforest, often called the "lungs of the Earth," produces **about 20%** of the world's oxygen and acts as a carbon sink.





However, in recent years, **forests have been rapidly destroyed** due to **logging, wildfires, and agricultural land development**. As the number of trees decreases, the ability to absorb CO₂ from the atmosphere diminishes.

As a result, more carbon dioxide accumulates, **intensifying the greenhouse effect**. This leads to a gradual rise in the Earth's temperature, worsening climate change impacts such as **heatwaves**, **droughts**, and **floods**.

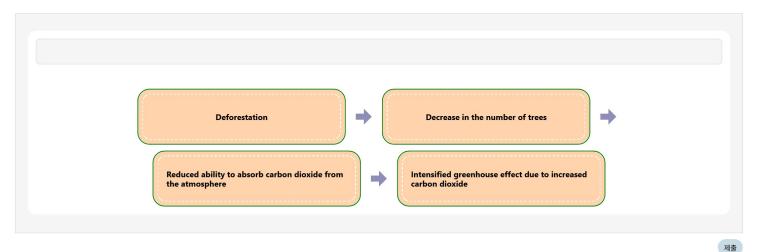
(Activity) Interact with the AI tutor and review the following key points. Click the key points for personalized explanations and complete the quiz.



전부 이해하고 퀴즈를 풀 준비가 되었다면 '퀴즈 풀기'를 눌러 퀴즈를 풀어봅시다.

퀴즈 풀기

(Activity) Place the cards in order to show how deforestation impacts climate change.



Exploring the Causes of Climate Change:

(3) Industrialization and Urbanization

What are industrialization and urbanization?

Industrialization is the process in which factories and businesses develop, leading to mass production, while urbanization refers to the concentration of population in cities, resulting in increased construction of buildings, roads, and energy use.



As industrialization and urbanization progress, **energy consumption increases** sharply, leading to **large-scale greenhouse gas emissions**. The greenhouse gases emitted from factories and power plants rise, and in urban areas, the increase in traffic leads to higher emissions from vehicle exhausts.

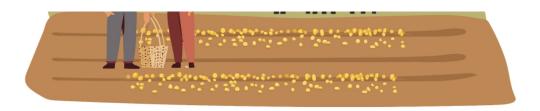
As a result, regions affected by industrialization and urbanization experience worsened air pollution. Additionally, the asphalt and concrete in cities absorb heat, leading to the **urban** heat island effect, where urban temperatures are higher than those of surrounding areas.

Exploring the Causes of Climate Change: (4) Agriculture and Livestock

How do Agriculture and Livestock Faming Impact Climate Change?

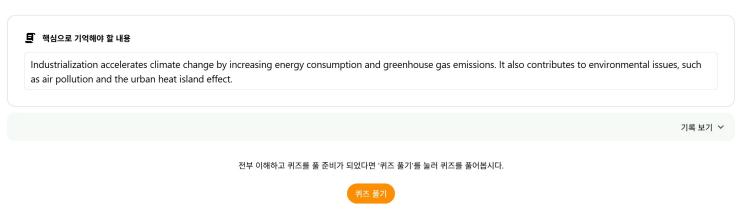
- When forests or natural areas are cleared to make land for farming, deforestation occurs, reducing the land's ability to absorb carbon.
- Additionally, the use of fertilizers increases the emission of nitrous oxide (N₂O), which has **298 times** the greenhouse effect of carbon dioxide.
- Cattle, sheep, and other livestock emit methane (CH₄) during digestion, and methane has **25 times** the greenhouse effect of carbon dioxide.



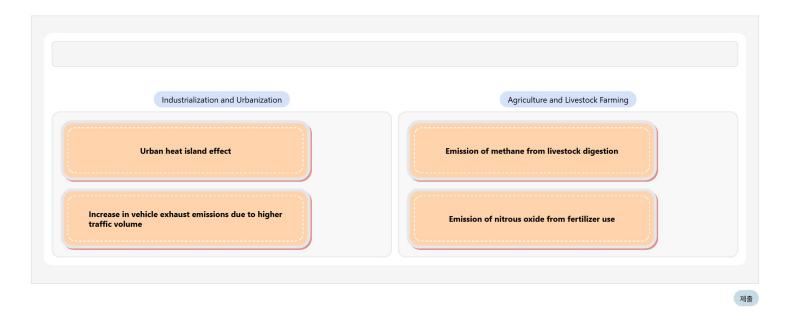


As a result, agriculture and livestock farming contribute to climate change by destroying forests that absorb carbon dioxide and intensifying the greenhouse effect through greenhouse gas emissions.

(Activity) Interact with the AI tutor and review the following key points. Click the key points for personalized explanations and complete the quiz.



(Activity) Classify the cards below into Industrialization and Urbanization and Agriculture and Livestock Farming.



Everyday Actions That Affect Climate Change

What actions in our daily life have an impact on climate change?

Actions That Have a Positive Impact Climate Change

1. Energy Conservation Practices

- . Unplugging electrical devices when not in use
- •Turning off unnecessary lights
- Using air conditioners and heating systems at optional temperatures

2. Using Public Transportation and Eco-friendly Transportation

- Walking or using a bicycle for short distances
- Taking public transportation such as buses or subways

3. Reducing Single-Use Plastics

- Using personal tumblers and eco-bags
- Reducing food delivery and using reusable containers

4. Eco-friendly Consumption Habits

- Purchasing only necessary items
- Using second-hand products or recycled materials









Actions That Have a Negative Impact on Climate Change

1. Energy Overconsumption

- Using electricity, heating, or air conditioning for longer than necessary
- Leaving unused electronics plugged in
- Overusing air conditioning in the summer and keeping indoor temperatures too high in the winter

2. Excessive Car Use

Using cars even for short distances

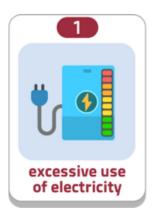
3. Excessive Use of Single-Use Plastics

- Using disposable cups, straws, and plastic bags indiscriminately
- Overconsuming delivery or takeaway food
- Not properly sorting waste for recycling

Two property sorting waste for recycling

4. Overconsumption and Use of Environmentally Harmful Products

Frequently purchasing unnecessary clothes, electronics, or furniture









(Activity) Based on what we have learned today, reflect on your actions and write down those that have a positive and negative impact on climate change.

My Actions That Have a Positive Impact on Climate Change

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[2794] tiptap

My Actions That Have a Negative Impact on Climate Change

[2828] is-empty [2827] tiptap

제출

What is Climate Action?

Among the Sustainable Development Goals (SDGs) established by the United Nations (UN), SDG 13 emphasizes "Climate Action," aiming to reduce the crises and damages caused by climate change and to implement measures for building a sustainable future.

Let us learn about climate action through the video below.

(Video) Go to the video (Click)

'빨' 영상 링크: https://youtu.be/Xk4-kOcPPJE



