

Introduction

Is climate change for real or just a scare to make us care? Not everyone believes in climate change but almost all of the world's scientists agree that the world is getting hotter and that humans are responsible for it. The Earth would not be such a hospitable place to live in without the greenhouse gas (GHG) effect. It is a natural process that functions a bit like isolation on Earth, allowing the sun's rays to pass through while at the same time capturing some of the emitted heat. The problem today is the enhanced greenhouse effect, meaning that more GHGs accumulate in the atmosphere, more heat is trapped and thus causing climate change. The main reason for this to happen is the burning of fossil fuels namely oil, coal and gas. This produces large amounts of carbon dioxide, CO₂. The problem with greenhouse gases is that they are being added to the atmosphere faster than natural processes can remove it.

We are already seeing many effects of a changed climate: a decrease in Arctic sea ice, rising sea levels and warming of the ocean and atmosphere. Those people who are already disadvantaged are also the ones most vulnerable to climate change. The worst effects are expected in poor countries. In this course you will learn more about the effects of climate change, how it affects the planet and its people and what can be done to reduce its impacts.

Mission 1 - What we talk about when we talk about "Climate Change"

The Earth's climate has always been changing. For a very long time this has been a result of changes in natural systems. The climate change that has concerned the world greatly is what we called human-induced climate change. Why is this change not good for the Earth? What have human societies done to cause this change? By going through this mission, you will get a broad understanding of the human-induced climate change and its main causes.

Objective 1 - "It's a game that we're all stuck playing"

Explore

By now, the amount of scientific evidence that confirms human-induced climate change (another way to call it is global warming) is a reality, not a theory. From the IPCC's 5th Assessment Report to the latest State of the Earth report, studies are telling us that the Earth's average temperature keeps rising.

As the materials below explain, climate change is a game that we're all stuck playing, no matter how reluctant we might be. So be brave, take a deep breath and dive into the facts.

Climate Change, physical science basis

<https://youtu.be/6yiTZm0y1YA>

Climate change: Earth's giant game of Tetris:

<https://youtu.be/ztWHqUFJRTs>

State of the Climate:

<http://www.bloomberg.com/news/articles/2015-07-17/the-freakish-year-in-broken-climate-records>

Climate change is global change

<https://youtu.be/OhKZgf1W73o>

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Climate Change: The State of Science

https://www.youtube.com/watch?v=_EWOzQ3L-c

Global Warming 1880-2013

http://climate.nasa.gov/climate_resources/28/

Signs of Climate Change

<http://www.epa.gov/climatechange/kids/images/scientists-clues-print.jpg>

Create

Not all of us have spent decades studying changes in climate pattern, but almost everyone of us has experienced some form of extreme climate events like drought, flood and rainstorm.

- When that happened, how was your and your family affected?
- Now imagine that such extreme climate events happen a lot more often. How your daily life, and the local economy be affected?

Objective 2 - Human's relationship with carbon

Explore

Carbon has been identified as the main contributor to the Earth's greenhouse effect, leading to the global warming that we're experiencing. Let's give it some attention.

You will need to view the materials on a computer or tablet.

Use the tool "Carbon Story" to understand the human's relation with carbon, from the past to the present and the future.

You can also look at your country's carbon emission trend in the past decades.

The Carbon Story

<http://www.globalcarbonatlas.org/?q=en/outreach>

Emissions database

<http://www.globalcarbonatlas.org/?q=en/emissions>

Create

Now let's hear your thoughts after reading the Carbon Story.

- The Past: What's the one thing in the story that you're most surprised to find out?
- The Present: What's the one thing in the story that you're most surprised to find out?
- The Future: What's the one thing in the story that worry you the most?
- What can you do NOW so that the worrying future scenario will not happen?

Objective 3 The Water Cycle

A warmer atmosphere triggers many other changes in the natural systems, a significant one being the Earth's water cycle. A change in rainfall changes the waterflow and makes some areas drier and some wetter. Watch the two videos to learn more about how we humans alter the water cycle and how this will affect communities around the world.

Explore

Water in the Anthropocene

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<https://vimeo.com/66087863>

Water reservoir as climate change adaptation strategy

<https://youtu.be/7DbIBxQm8K8>

Create

After looking at particularly the first video, how would you describe your region is affected by a change in the water cycle?

Can you think of any water regulation or water storage in your community? Please share why the system is needed or where you think one should be.

Now that you have investigated the water cycle, water scarcity, water regulations and storage, how do you want to share that knowledge with your peers?

Mission 2 - Consequences of Climate Change

In this mission you will look into how climate change affects some of the most basic aspects of daily lives such as food and health, and how the consequences of climate change are not felt equally.

Objective 1 - Climate change and food

Explore

Our food supply is heavily dependent on agriculture, which in turn is heavily dependent on the climate. Global warming is changing the landscape of agriculture.

Climate impact on food production

<https://ccafs.cgiar.org/bigfacts/#theme=climate-impacts-production>

Climate change and food security

https://cgspace.cgiar.org/bitstream/handle/10568/35215/IPCC_info_note-3April14.pdf

Climate change and crop yield

http://www.wri.org/sites/default/files/uploads/climate_and_crop_yields_2.jpg

Create

Now let's use the information you just read to reflect on what changes could be done.

- Look at the study result on crop yields. Is your group located in a green or red area? What do you think about the impacts on your area?
- Do the future scenarios outlined in the document "Climate change and food security" make you want to change some of your habits, in particular those related to eating. What will you change?
- After checking out the impacts described in "Climate impact on food production", what three impacts do you think are the closest to you? How will they affect your life?
- Think of 3 things you can do to reduce the impact on your community.

Objective 2 - Climate change and health

Explore

If you have taken the Health course, you already know that the environment is an important determinant of human health.

Climate change health risks

<http://www.unmultimedia.org/tv/unifeed/2014/08/who-climate-change-health-risks/>

Climate change is a medical emergency

<http://www.voanews.com/content/climate-change-medical-emergency-lancet-researchers-say/2834228.html>

WHO's assessment

<http://www.who.int/globalchange/environment/en/ccSCREEN.pdf?ua=1>

Create

Divide the group in smaller groups of 2-3 persons. Pick a climate change consequence of your choice (heatwave, flood, food shortage, and water scarcity etc.) and identify three health risks related to it.

When you are done, get back together as a whole group and compare your notes.

- How many smaller groups did you have?
- Which consequences did you pick?
- Which health risks are identified in more than one group?
- Which health risks are identified by one group only?
- Given these risks, what kind of support will your community need to cope with increased health burden?

Objective 3 - Climate change does not affect us equally

Explore

The poorest areas in the world are projected to be the ones hit the hardest by climate change, according to the UN expert panel on climate change. This means that those who contribute the least greenhouse gases will be most impacted.

How countries cope with climate change

<http://www.dailymail.co.uk/sciencetech/article-2908213/How-country-cope-climate-change-Map-reveals-best-worst-places-live-planet-warms-up.html>

Climate change in Africa will affect the poor even more

<https://youtu.be/7njmXZL0Sx8>

Help small island states win their battle against climate change

<http://www.theguardian.com/environment/2014/aug/29/small-island-states-climate-change-sea-level>

Create

Whether you live in one of the most hardly hit societies or in a country that is well-equipped to cope with climate change, the following questions are equally important.

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- Why are poor people in the tropics affected much more severely than most other people?
- How is climate change and poverty forming a vicious cycle?
- Do you see any signs of the links between poverty and climate change in your own community?
- What is needed to break this cycle?

Mission 3 - Less vulnerable. More resilient.

Climate change is already happening, and is expected to get worse even if we reduce emissions. But as the case of the ozone crisis has shown, nature is able to recover, provided that the damage done is not beyond repair.

Objective 1 - Can nature fix the climate?

Explore

We already know that the oceans and land based ecosystems like forests absorb a tremendous amount of all the carbon dioxide that we humans have emitted. In other words, they can be our best allies in the fight against climate change IF we keep them in good conditions. Take a look at this text from UNEP to learn more.

Also take a look at a campaign called "Plant for the Planet: Billion Tree Campaign", inspired by Professor Wangari Maathai, Nobel Peace Prize laureate for 2004 and founder of Kenya's Green Belt Movement.

The natural fix?

http://www.grida.no/files/publications/natural-fix/bioseqA4_english_scr.pdf

Plant for the Planet

https://youtu.be/ZzksgMrS_7o

Create

The Natural Fix report mentions a number of different ecosystems that are extra important when it comes to fixing carbon and preventing climate change.

- Which of these types of ecosystems can you find in the region where you live?
- What can you find out about their status today? Are they threatened or healthy?
- How much carbon does each tree contain? Search the internet and do your best to find it out?
- Trees do not only fix carbon dioxide. Can you list five other reasons to plant trees?

Objective 2 - Adaptive and resilient communities (1)

Explore

Societies in different parts of the world face different climate change-related challenges, which means they need to deal with them with different solutions. Climate change will not stop overnight, therefore it is important for societies to adapt to new realities, at the same time strengthen our abilities to cope with future changes.

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Rwanda

<https://youtu.be/Rs60SdRENqg>

Tanzania

<https://youtu.be/CbwkaMNoNP4>

The Netherlands

<https://youtu.be/FYbxFswzEjk>

Pacific Islands

<https://youtu.be/dq234w56n2o>

Stories of Change

<https://youtu.be/nozdbgeZFxQ>

Create

Investigate a good adaptation solution by a group or individual in your community. We are eager to find out solutions to our common problem to share!

First, show us the solution in a photo (perhaps with the people who created it!). Next you will tell us more about it.

Objective 3 - Adaptive and resilient communities (2)

Create

Now tell us more about the solution and your thoughts.

- How did the idea of this solution come about?
- How does this solution work?
- Why do you think this is brilliant?

Objective 4 - Taking actions

Explore

One essential tool to both prevent and prepare for climate change is to learn and take action as an individual. The following resources will give you more information about your own impact on the climate and also how you can contribute to a change.

UNEP Footprint Calculator

<http://www.unep.org/newscentre/Default.aspx?DocumentID=2661&ArticleID=8986&I=en>

UNEP Take Action

<http://www.un.org/climatechange/take-action/>

Eco Tips

<http://www.unep.org/newscentre/Default.aspx?DocumentID=2661&ArticleID=8986&I=en>

Create

Now it's time for you to decide what you're going to do next! Download the UNEP app and find out your individual Carbon Footprint. As a group, compare the scores, in particular the highest and the lowest.

- What are the main reasons that led to the largest and smallest footprints?

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- Take inspiration from the UN Take Action page and Eco Tips page. Commit to doing 10 actions. Which ones did you pick?

Mission 4 - Tomorrow's Climate

You are going to be bold and proactive in this mission. You will need your imagination and courage to outline a different future and change our climate. Are you up for the challenge?

Objective 1 - Our common future climate

Explore

The future may be unknown but one thing is certain - our future will depend on decisions taken today. The climate change challenges we face today is a result of years of actions. So by the same logic, our climate-friendly actions today should lead to a future with much less climate change challenge. What COULD that future look like? Take a look!

What's Possible

<https://youtu.be/-vaajVtgRul>

Create

Imagine this scenario: Tomorrow you'll receive a letter from the future. It's written by your grandchildren, telling you that thanks your generation's efforts, they are living in a world no longer threatened by human-induced climate change. That letter really gets you thinking what you do now that change the future of the better!

What could you, or human society at large, have done? Use your imagination and come up with three ideas.

Idea 1

Idea 2

Idea 3

Objective 2 - Leaders and positive climate future

Explore

Take a look at a timeline of global negotiations on climate issues. Things have not been easy when it comes to countries reaching agreements. Do you think you can help the process in some way?

Watch this inspiring speech by a 15 year old climate activist. It shows that you can make a difference, right from the start!

Towards a climate agreement

<http://www.un.org/climatechange/towards-a-climate-agreement/>

Indigenous climate activist

<https://youtu.be/27gtZ1oV4kw>

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A lot of work is done on a policy level to prevent climate change, but it is really down to taking actions on a national level.

Why do you think it is so difficult for countries to fulfill their commitments? Care to share some examples from your own country.

As young people, we will be the one's taking the responsibility to fix what generations before us neglected. With all the things you discovered during the course, what would be your key messages during the next climate conference? Show world leader's the difference you already make and want to continue to make! (We promise, it will impress them :-)

Objective 3 - The Sustainable Development Goal on Climate

Explore

From the course "Sustainable Development" you already know about the the Sustainable Development Goals (the SDGs). Now let's take closer look at the one directed pointing at climate change.

The SDG on Climate

<https://youtu.be/m03INcdB4hQ>

<http://www.globalgoals.org/global-goals/protect-the-planet/>

Create

This SDG is directed at actions by countries. How can you and your friends contribute to your country's actions?

- Read the SDG carefully, and discuss among yourselves. What do you think this SDG means, in your own words?
- Looking at the other SDGs, which ones do you think are also important to achieving the Climate SDG?
- In your community (your school, town, city, or even country), what would it look like to achieve this climate goal? Name three things the community of your choice can focus on?
- Name three things that YOU as individuals can do to help your community achieve this goal.