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Transformational Learning Network for Resilience

Enabling Ukrainian higher education to ensure a sustainable
and robust reconstruction of (post-war) Ukraine

Adaptation to climate change in crisis situations

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PLAN

1. Climate change and its consequences

2. The concept of adaptation

3. Adaptation in crisis situations

4. Policy and governance

Who is this

Barry Commoner (1917-2012) was an American biologist, ecologist, and public figure.

Barry Commoner's Laws :

1. Все пов'язано з усім / *Everything is connected to everything else*

2. Все повинно кудись діватися / *Everything must go somewhere*

3. Природа знає краще / *Nature knows best*

4. Ніщо не дається задарма / *There is no such thing as a free lunch*

Barry Commoner «The Closing Circle: Nature, Man, and Technology» (1971), New York: Knopf. ISBN 978-0-394-42350-0.

The urgency of the problem

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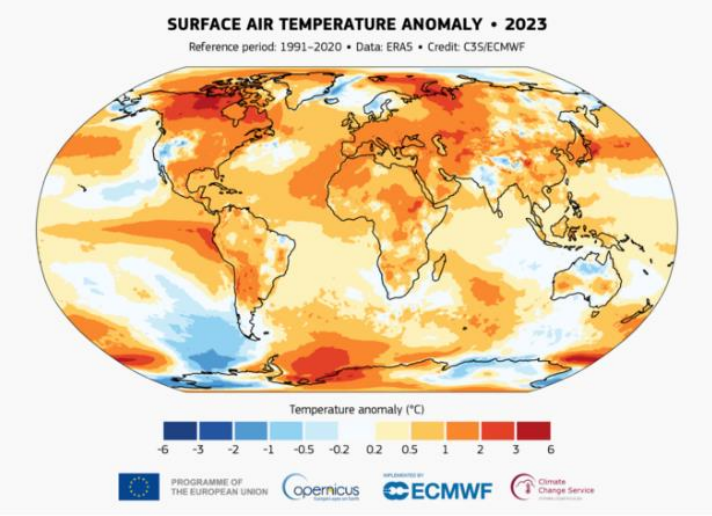
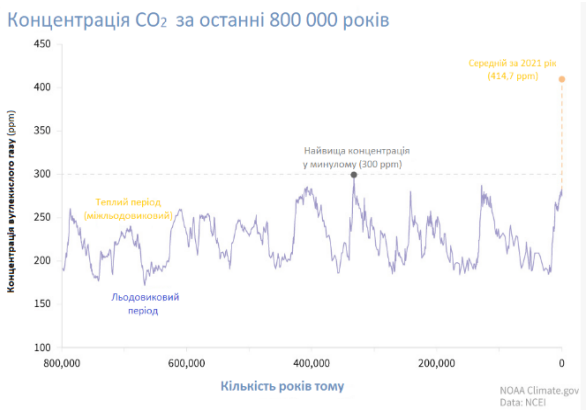
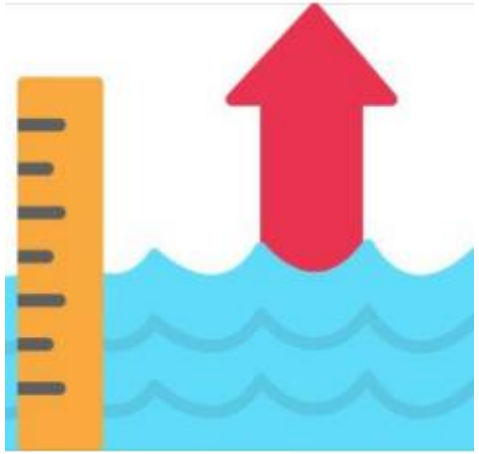
Manifestations: rising temperatures, changes in precipitation patterns, rising sea levels.



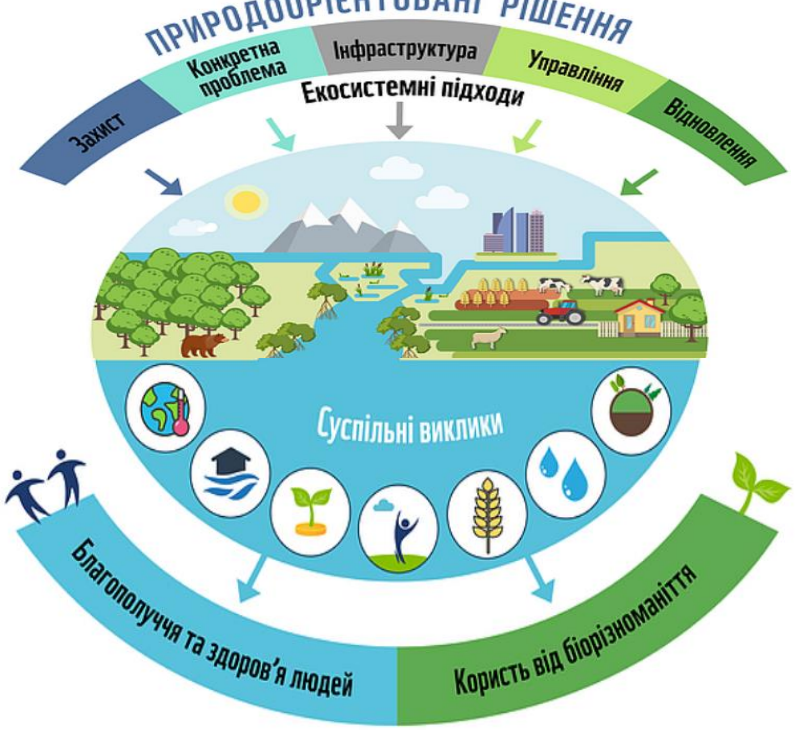




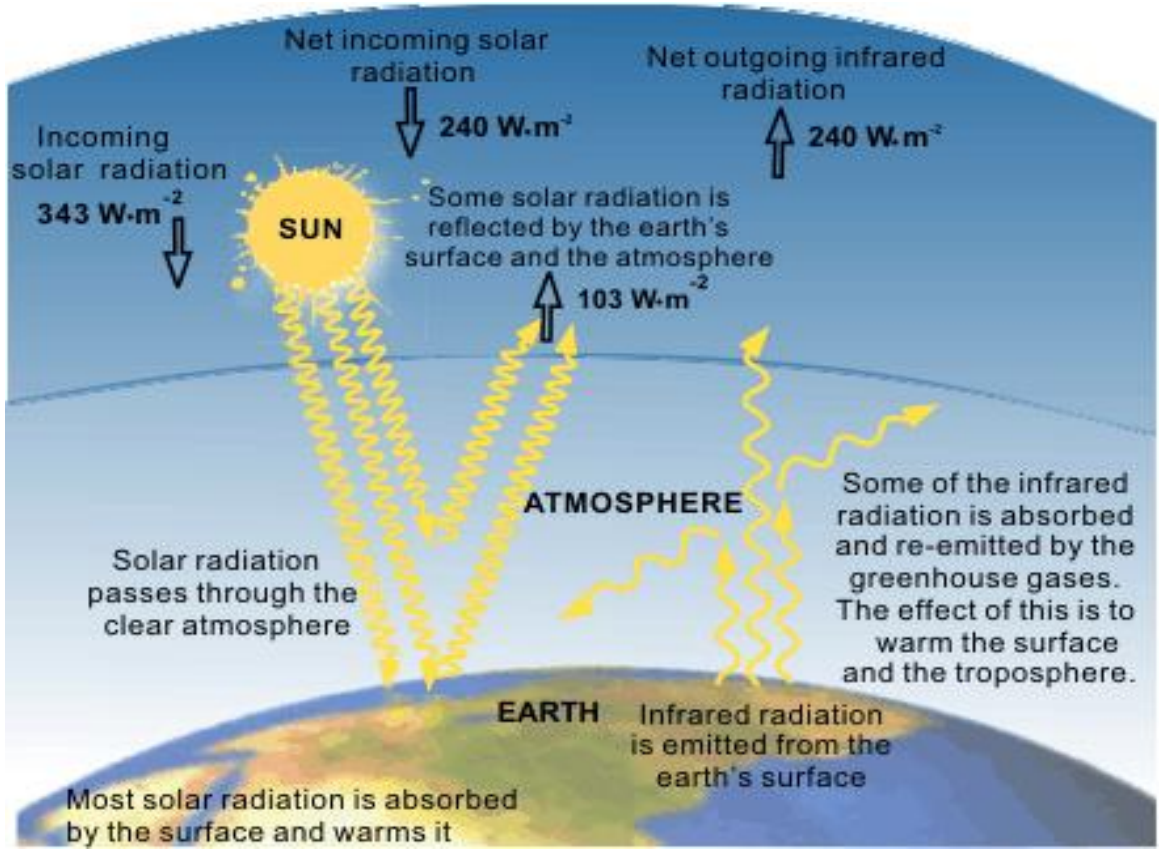
The purpose of adaptation is to:

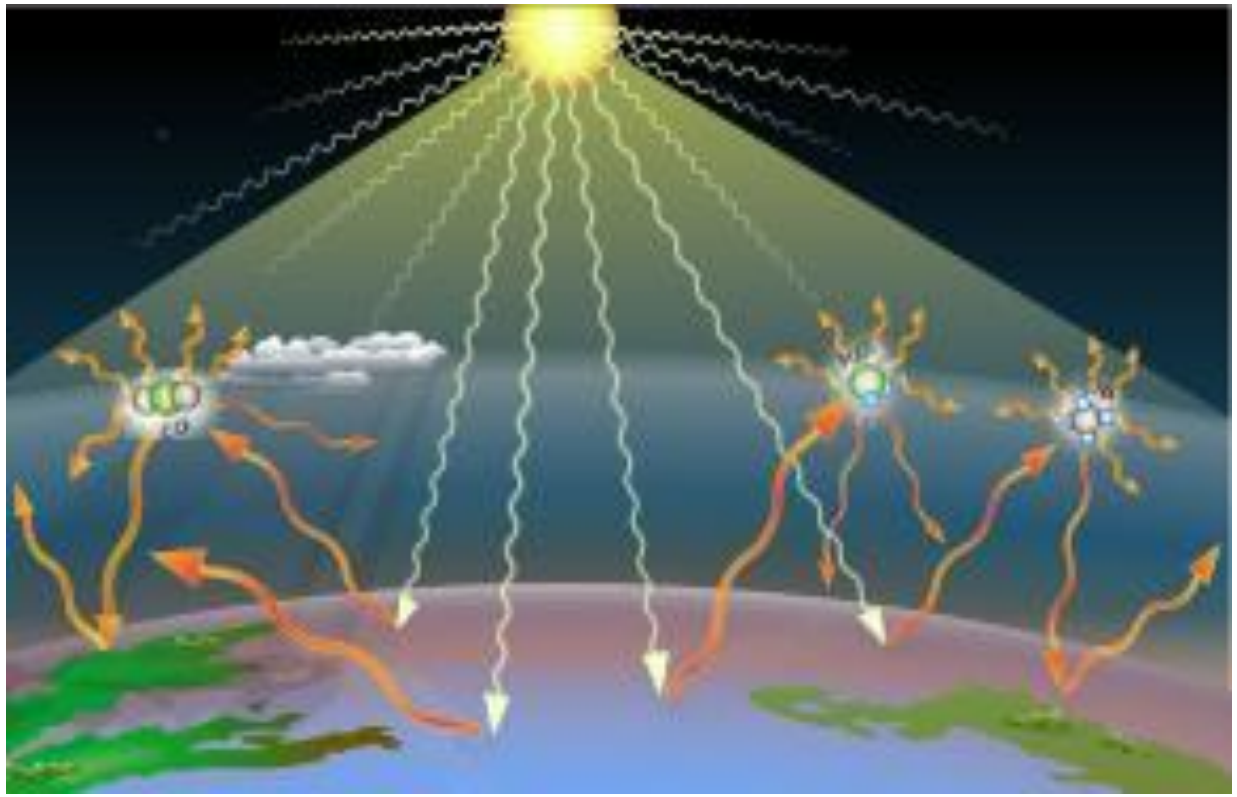
-Reducing risks to societies, economies, ecosystems.

-Preventing significant economic losses.



The greenhouse effect **is a phenomenon in the atmosphere of the Earth and other planets in which the energy of the sun's rays, reflected from the surface, cannot return to space because it is retained by molecules of various gases, which leads to an increase in surface temperature.**





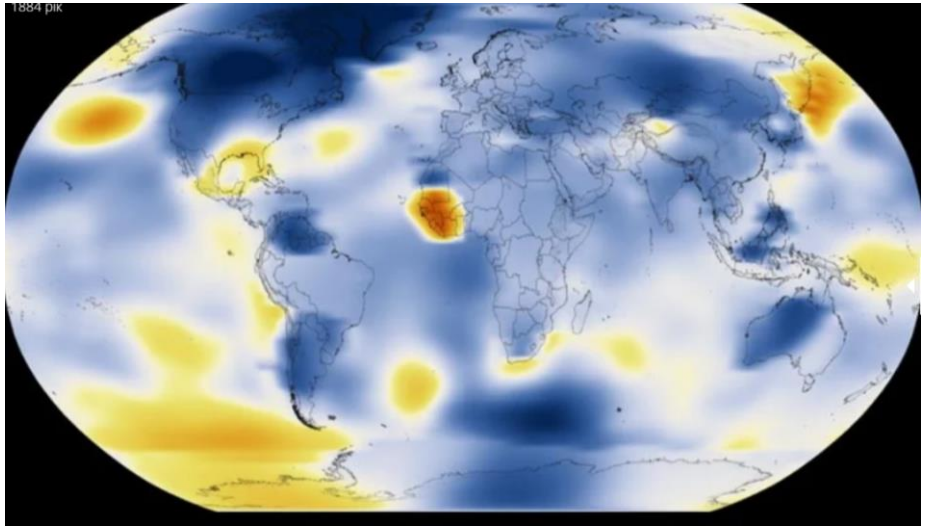
Greenhouse gas isa gas in the planet's atmosphere that can absorb thermal radiation from the planet's surface and clouds (infrared radiation) and reflect it back, further heating the planetary atmosphere.

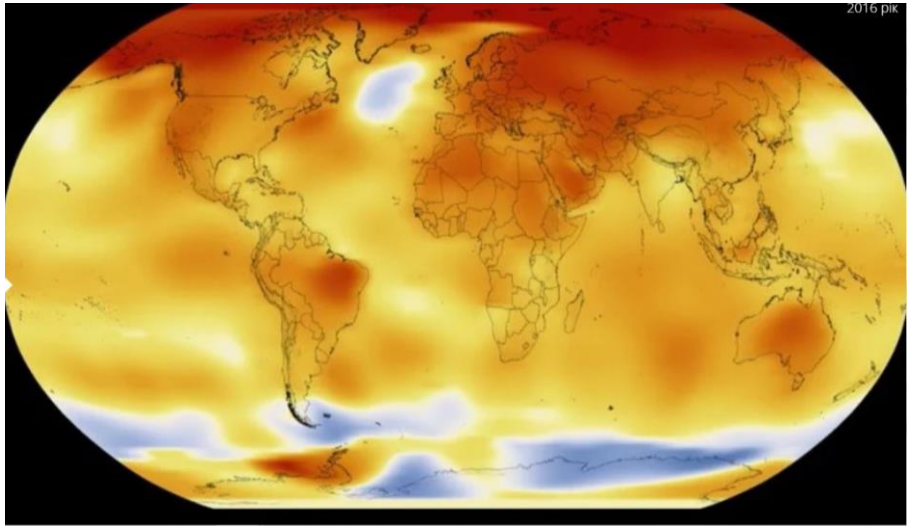
According to Annex A to the Kyoto Protocol, 6 main greenhouse gases have been identified as having the greatest impact on climate change :

- carbon dioxide, CO_2;
- methane, CH_4;
- nitrous oxide, N_2O;
- -hydrofluorocarbon compounds;
- -Perfluorocarbon compounds;
- Sulphur hexafluoride, SF_6.

The climate crisis is an excessively rapid climate change «due to» an increase in global average temperature.

1884





2016

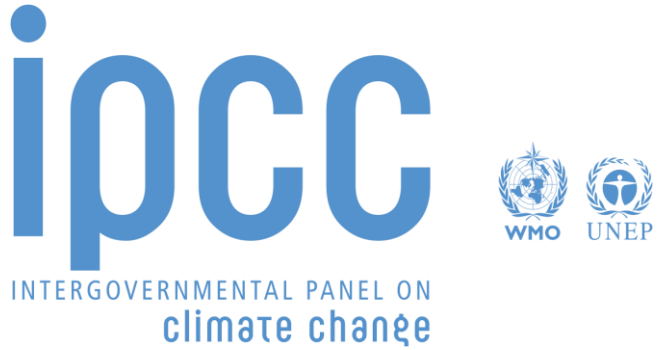
The mechanism for regulating greenhouse gas emissions enshrined in the Paris Agreement is the creation of the Extended Reporting Framework (ERF), according to which, starting from 2024, states will report on the measures taken to combat climate change and progress in mitigation, adaptation and support received or provided in compliance with the principles of transparency. The agreement also provides for procedures for reviewing targeted reporting with the participation of international experts.

Activities of the Intergovernmental Panel on Climate Change

Міжурядова група експертів з питань зміни клімату (МГЕЗК) *(The Intergovernmental Panel on Climate Change (IPCC))* була заснована у 1988 році

The WTO was developed by the World Meteorological Organisation (WMO) and the United Nations Environment Programme (UNEP) and later approved by the United Nations General Assembly. Membership is open to all WTO and UN members.

The IPCC prepares reports that contribute to the work of the United Nations Framework Convention on Climate Change (UNFCCC), the main international climate change treaty.



The goal of the UNFCCC is to «stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous gases in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system».

IPCC does not conduct its own original research. ***It produces comprehensive assessments, reports on specific topics and methodologies. These assessments build on previous reports and reflect the most recent knowledge. For example, the wording of the reports prepared between the first and fifth assessment reflects the growing evidence of human-induced climate change***.

IPCC has adopted and published «principles governing the work of the IPCC», which state that the IPCC will assess:

-the risk of global warming

-its potential impacts, and

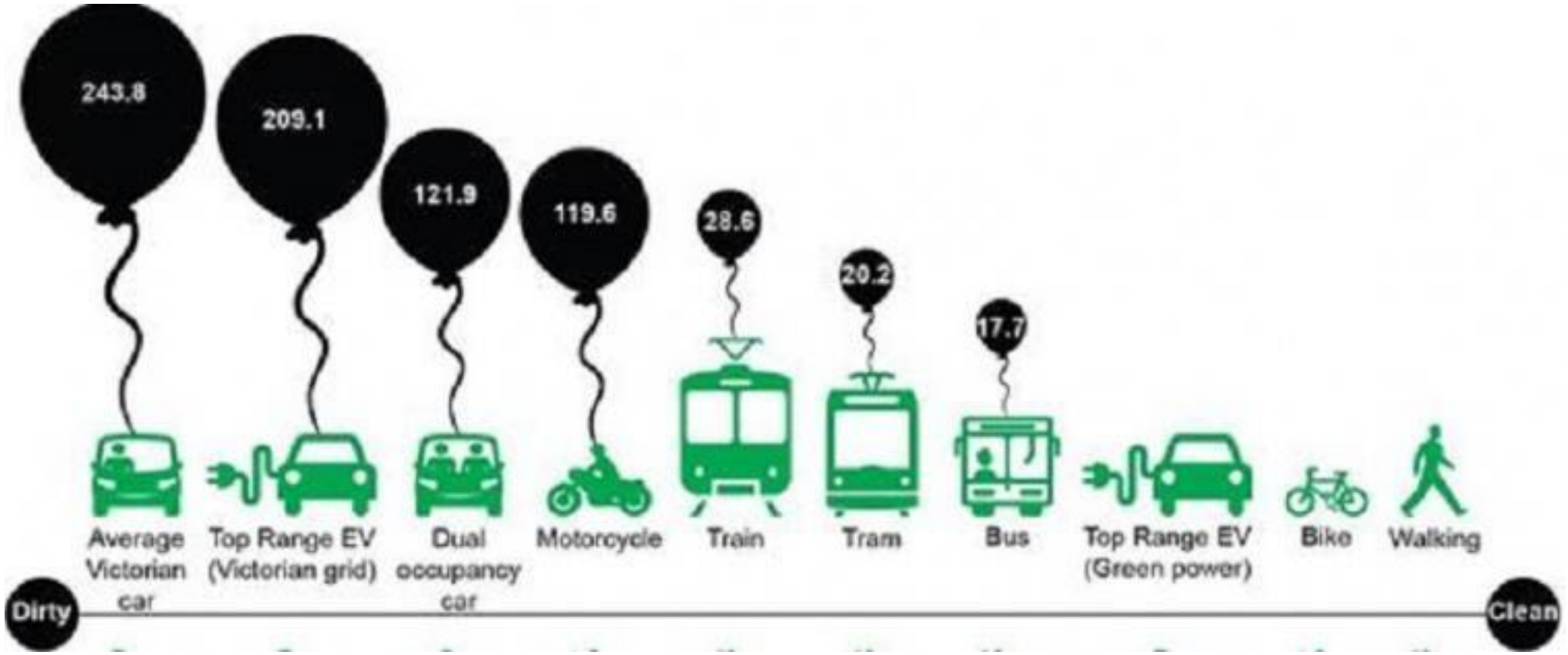
-possible options for combating it.

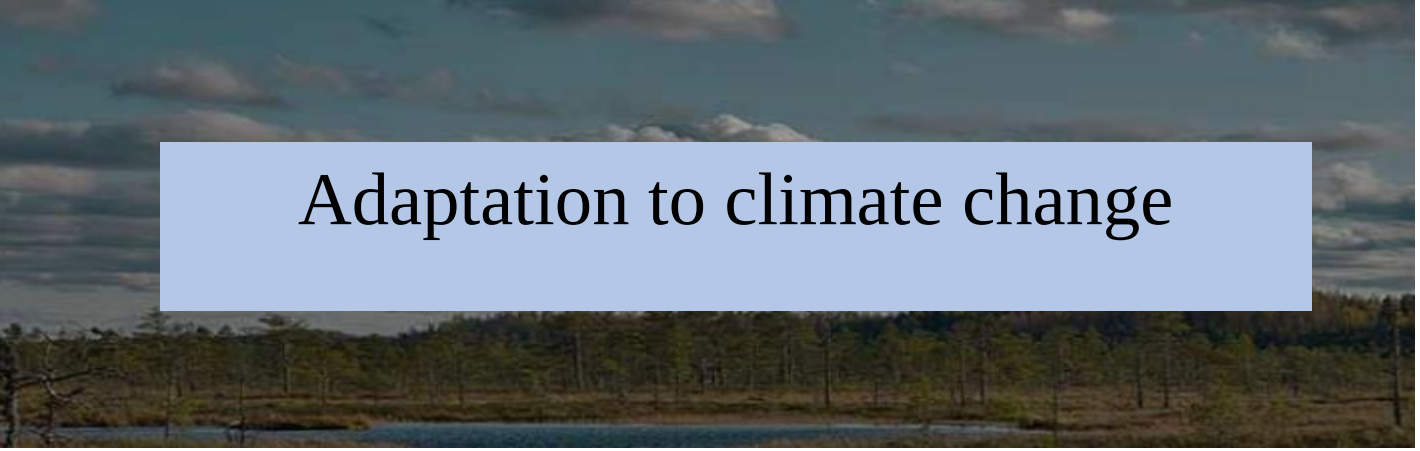
The**carbon footprint** is the total amount of greenhouse gas emissions caused by the activities of an individual, event, organisation or product over its entire life cycle. It is typically measured in carbon dioxide equivalents (CO_2e), which takes into account the impact of different greenhouse gases and adjusts for their ability to retain heat.

As defined by Wright, Kemp and Williams (2011), a **carbon footprint** is *'a measure of the total amount of greenhouse gas emissions directly or indirectly associated with the activities of an individual, organisation, event or product'*.

This concept includes not only **carbon dioxide (CO_2)** emissions, but also other greenhouse gases (CH_4, N_2O, HFCs, PFCs, SF_6), which are converted into **CO_2-equivalents** (CO_2e) based on their global warming potential (GWP).

Carbon footprint of travel





Adaptation to climate change

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is an important aspect of the global strategy for responding to the challenges posed by climate change. It covers a wide range of actions aimed at reducing the negative impact of climate change on society, the economy and the environment. Adaptation involves not only responding to the already visible climate change, but also preparing for future challenges in order to increase the resilience of systems and communities. Adaptation to climate change is an important element of the climate change management strategy. The main principles of adaptation include evidence-based science, community participation, integration with other policies, flexibility and resilience, and risk assessment.

Adaptation Strategies in Different Countries

1 Netherlands

Implementing water management strategies with dams and drainage systems to combat flood risks.

2 Australia

Focusing on water management and biodiversity conservation to address droughts and wildfires.

3 Japan

Investing in infrastructure and early warning systems to withstand extreme weather conditions.

4 Kenya

Improving water management and developing sustainable agricultural practices to combat droughts.

Adaptation measures and their classification

Adaptation measures are divided into the following groups:

- Engineering and technical;
- Construction and architectural;
- Economic;
- Organisational measures.

Classification of adaptation measures by purpose:

- Measures aimed at building adaptive capacity (climate change impact studies, floodplain maps);
- Measures aimed at reducing risk and sensitivity (new varieties of drought-resistant plants);
- Measures to increase the capacity to cope with the consequences of emergency events (special teams for road clearing);
- Measures aimed at benefiting from changed climatic conditions (savings on heating).

The principle of prevention: The uncertainty of the harm being caused should not be an argument for delaying action.

The principle of an integrated approach:

- adaptation to short-term climate variability and extreme weather events is the basis for reducing vulnerability to long-term climate change;

- Adaptation strategies and measures are assessed in the context of socio-economic development;

- Following the principle of sustainable development, adaptation strategies and measures should take into account social, economic and environmental interests and guarantee the needs of the present generation without compromising the needs of future generations;

- Adaptation policies/strategies are developed at different levels of society, including levels of society, including the local level.

Basic requirements for adaptation measures:

1.Prevention, including action plans and legislation, and addressing the worst impacts of natural disasters such as droughts and floods.

2. Improving the resilience or resilience of urban ecosystem components through improved water supply, greening, land use planning, etc.

3) Preparing for extreme weather events through awareness-raising, fair resource allocation and co-management.

4) Preparedness to respond to extreme weather events, including evacuation measures, emergency medical care, safe drinking water distribution, hazardous substance management, institutional development, training and information dissemination.

5: Preparedness for recovery and rehabilitation, including reconstruction, legislation, information collection and dissemination.

6) Financing of adaptation strategies to ensure their cost-effectiveness, efficiency and sustainability.

7) Assessment of adaptation strategies to identify barriers to their implementation, with Evaluate adaptation strategies to identify barriers to their implementation, with clear outcomes and cost-effectiveness.

The Concept of Climate Change Adaptation

Scientific Evidence

Adaptation is based on scientific research to understand climate change impacts and vulnerabilities.

Community Participation

Involving local communities ensures adaptation strategies meet local needs.

Integration with Policies

Adaptation should be integrated into land planning, water management, and infrastructure development.

Flexibility and Resilience

Adaptation strategies must be flexible to respond to changing conditions and build system resilience.

Methods of Adaptation: A Multi-Faceted Approach

Technological Approaches

Utilizing innovations like drip irrigation and climate monitoring systems to reduce vulnerability.

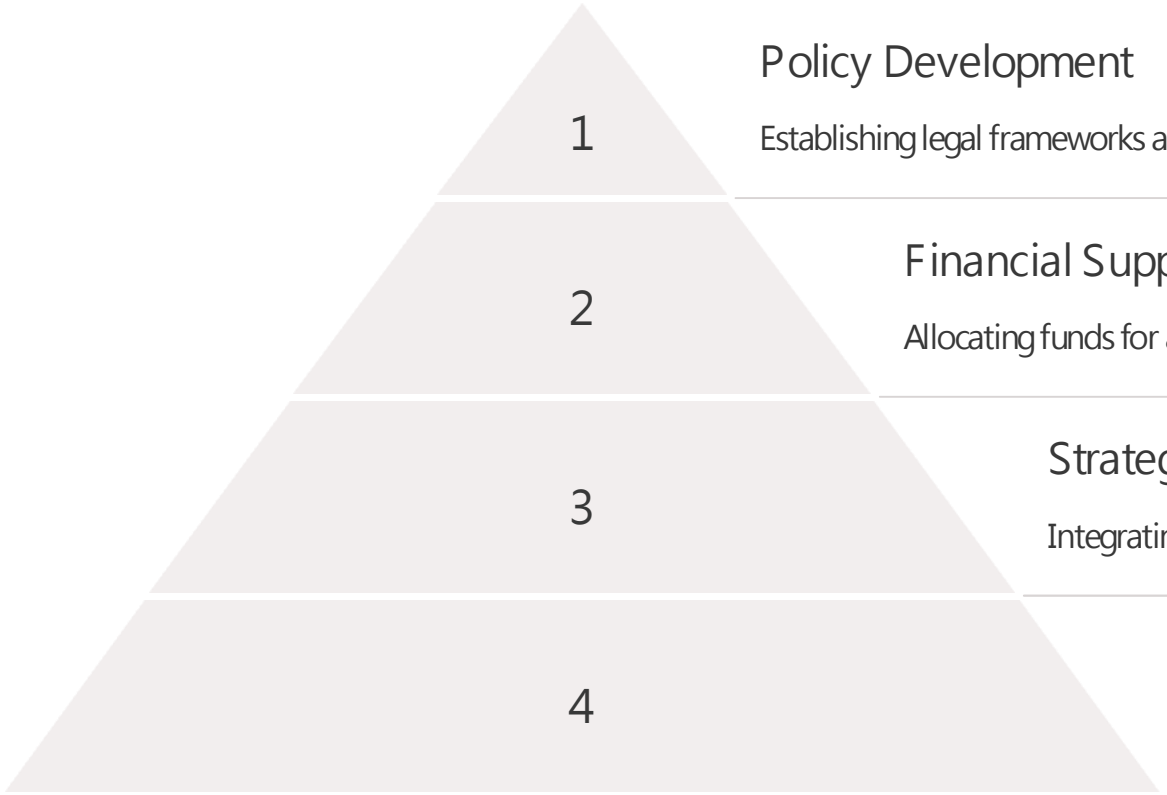
Environmental Approaches

Conserving and restoring natural systems like forests and wetlands to provide ecosystem services.

Social Approaches

Involving communities, raising awareness, and promoting preparedness for climate change impacts.

The Role of Governments and International Organizations



Policy Development

Establishing legal frameworks and environmental standards.

Financial Support

Allocating funds for adaptation projects.

Strategic Planning

Integrating climate risks into urban and rural planning.

Public Awareness

Launching programs to engage communities.

Governments and international bodies play a crucial role in climate change adaptation through policy development, financial support, strategic planning, and public awareness initiatives. Effective public policies and international cooperation are essential for increasing societal resilience and promoting sustainable development.

KHARKIV NATIONAL AUTOMOBILE and HIGHWAY UNIVERSITY «ХНАДУ»

DEPARTMENT OF ECOLOGY UNESCO KhNAHU, UKRAINE

Life in the power of eco!

(24.06.2024 – 28.06.2024, Rzeszow - Bezmiechowa, Poland)

Project: Transformational Learning Network for Resilience - Enabling Ukrainian higher education to ensure a sustainable and robust reconstruction of (post-war) Ukraine (TransLearnN)

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Thank you for your attention!