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1862 RĪGAS TEHNISKĀ UNIVERSITĀTE

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Tere tulemast

laipni lūdzam

Välkommen

Witamy

Welcome

CommitClimate

Learning Platform

Training Module *Climate Change Basics*

Outlines

- Introduction
- Icebreaker activity
- Definition and Basics of Climate Change
- Causes of Climate Change
- Evidence of Climate Change
- Impacts of Climate Change
- Responses and Mitigation Strategies
- Common Q & A
- Closing Remarks

Introduction

- Climate change refers to significant, long-term changes in the average temperature, weather patterns, and other climate parameters on Earth

Icebreaker

- What comes to your mind when you hear ‘climate change’?
- How do you think climate change affects our daily lives?

Why should we care?

- **Global impact:** Climate change is a global issue affecting all nations and ecosystems
- **Human health:** Altered weather patterns contribute to the spread of diseases and affect overall well-being
- **Economic consequences:** Disruptions in agriculture, infrastructure, and industry impact economies worldwide

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Climate change environmental and societal impacts

Match correct pairs!

1. Biodiversity loss
2. Rising sea levels
3. Extreme weather
4. Food security
5. Migration

A: Increased frequency of hurricanes, droughts, and wildfires

B: Coastal habitats face submersion, impacting marine life

C: Climate-induced displacement due to rising sea levels or extreme weather events

D: Changes in climate affect crop yields and food production

E: Changing climate threatens the existence of many species

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Risks Associated with Climate Change in Cities

- Many cities are already coping with a variety of climate change-related effects
- Urban heat islands, flooding from heavy rains, worsened air quality, damaged built infrastructure, and increased energy demand are some of examples how climate change affects cities
- Furthermore, the built environment is interdependent with other economic sectors, including, energy, transportation, water supply, and health.
- According to the European Commission, heat and cold waves have caused nearly 90 thousand fatalities in Europe since 1980.

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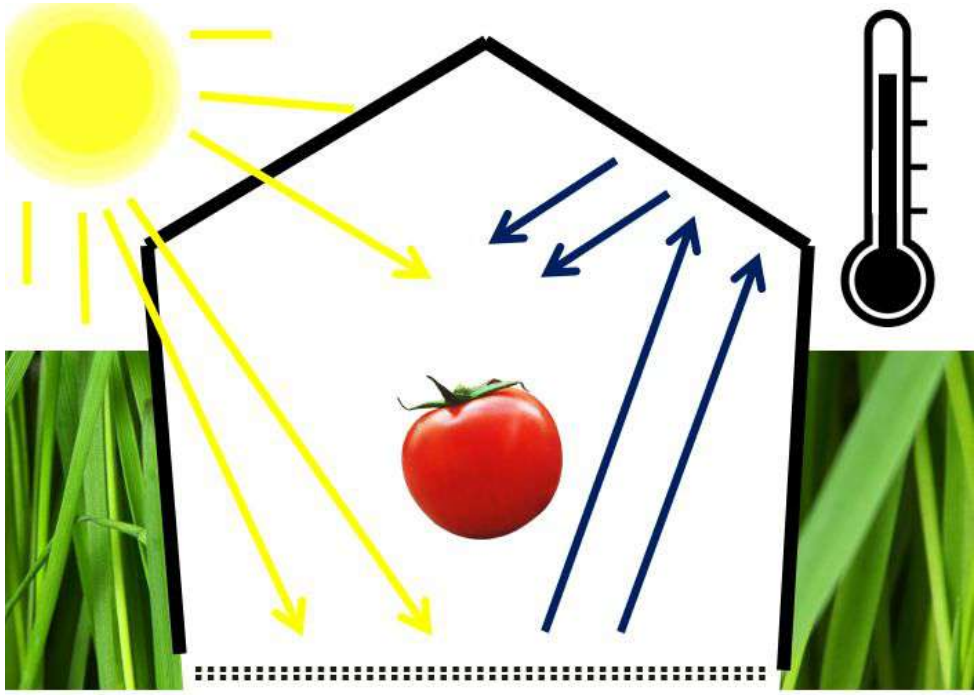
Regional Differences

Depending on where they are, cities are affected by climate change in different ways. For example,

- **Central and Western Europe:** likely to experience more frequent and intense extreme weather events, such as storms and heavy rainfall, causing flooding and infrastructure damage. Increased health risks from heatwaves.
- **Eastern Europe**: Changes in precipitation patterns affecting crop yields, with potential benefits in some areas but losses in others due to increased droughts and heatwaves. Forest health and productivity are affected by changing climate conditions and increased incidence of pests and diseases.
- **Southern Europe:** More prolonged and severe droughts impacting water supply, agriculture, and hydroelectric power generation. Intensified and more frequent heatwaves, leading to health risks, particularly for vulnerable populations. Increased incidence and severity of wildfires, threatening forests, biodiversity, and human settlements.
- **Northern Europe**: Warmer winters and reduced snow cover, affecting winter tourism and ecosystems dependent on cold conditions. Longer growing seasons can benefit some crops but also increase pest and disease prevalence.

Why is the climate changing?

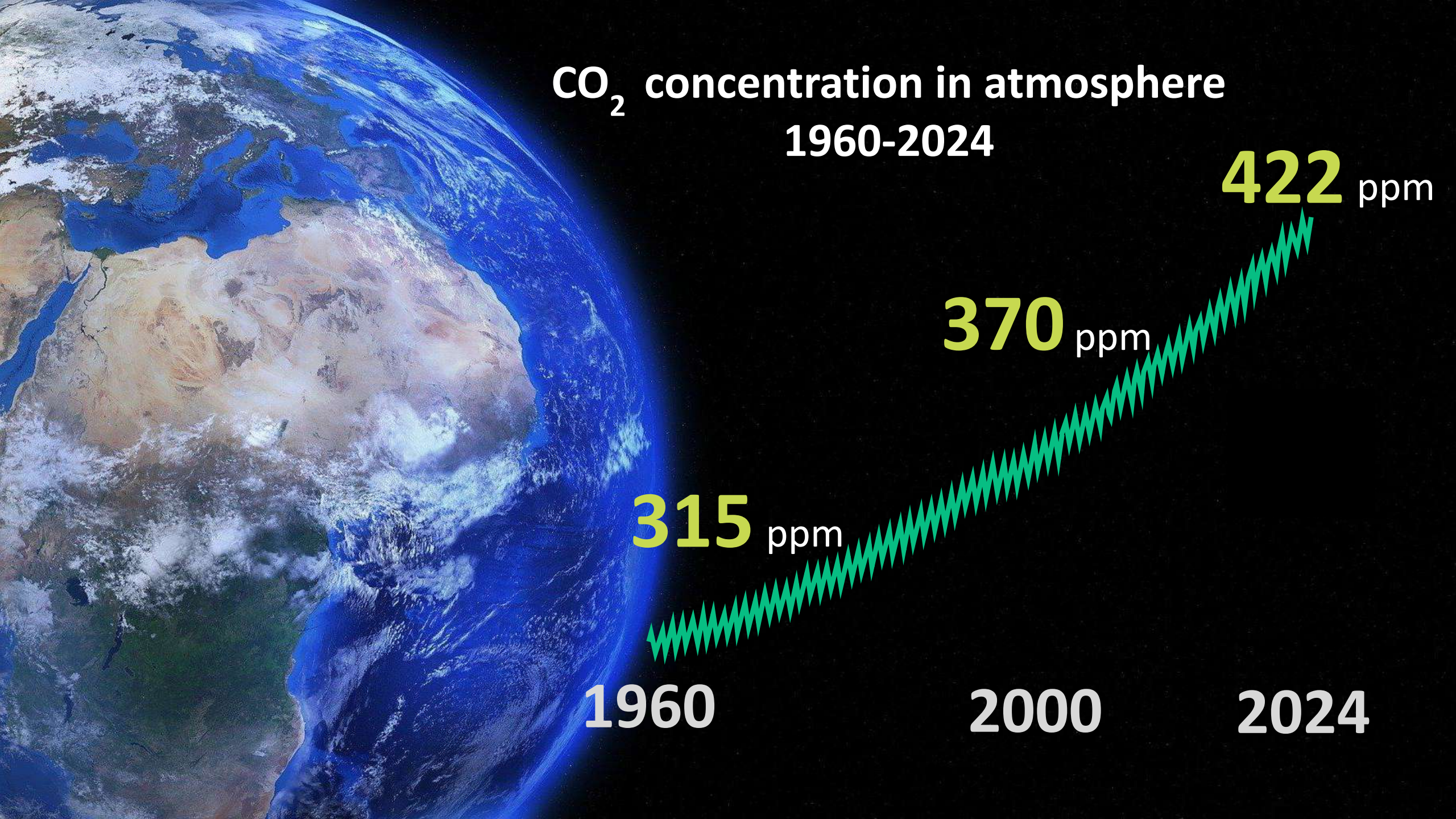
- The main diver of climate change is the greenhouse effect
- Similar to the glass of a greenhouse, certain gases in the Earth's atmosphere retain solar radiation, preventing it from escaping back into space and contributing to global warming



Did you know that CO_2 concentration in the atmosphere is measured in ppm (parts per million)?

What is your estimation of the current concentration of greenhouse gases in the atmosphere?

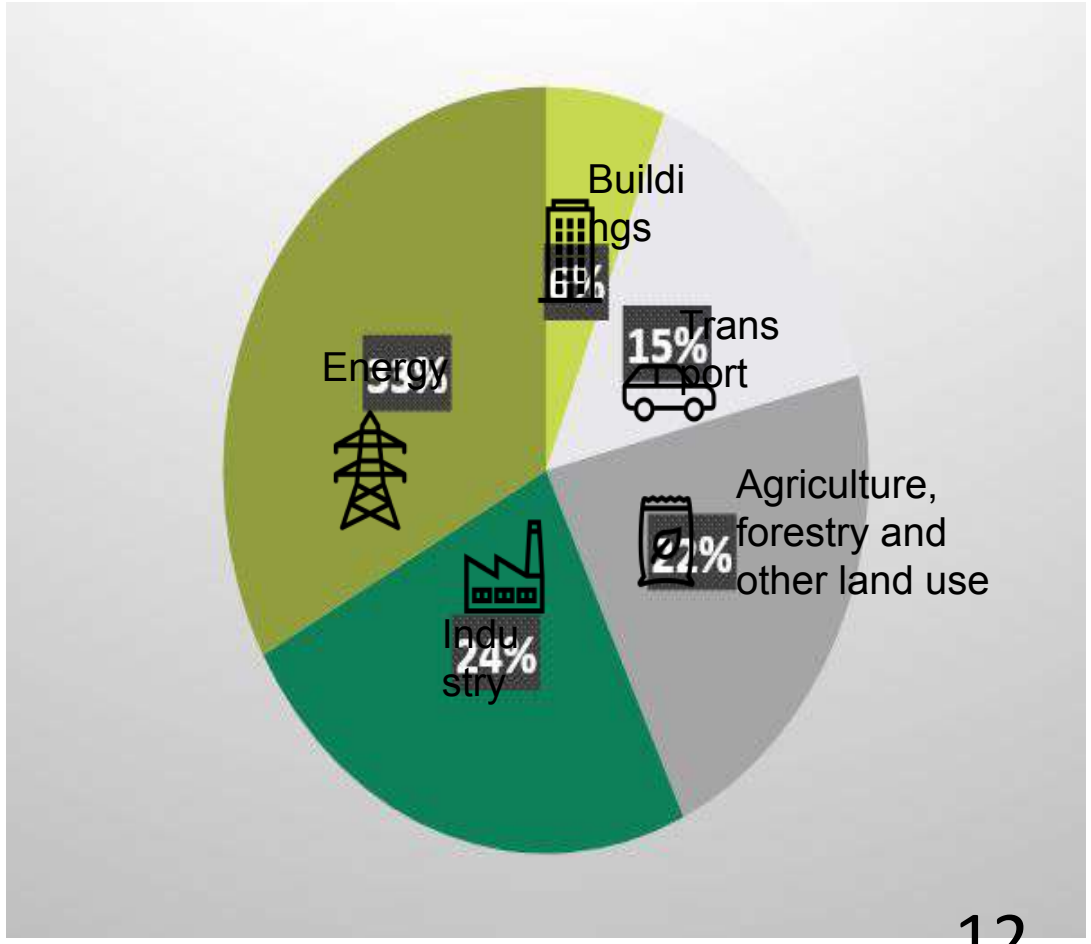
A: 4777 ppm B: 422 ppm C: 48 ppm D: 40579 ppm


CO_2 concentration in atmosphere
1960-2024
422 ppm
370 ppm
315 ppm
1960
2000
2024

Primary sources of greenhouse gas emissions contributing to climate change are:

- Burning fossil fuels (coal, oil, natural gas)
- Deforestation
- Industrial processes
- Increasing livestock farming, use of synthetic fertilizers
- Combustion of fossil fuels in vehicles

CO_2 emission sources globally in (IPCC, 2019)



The role of local authorities

- Local authorities play a crucial role in mitigating climate change as they have direct influence over various aspects of community life.

Explore different ways in which local authorities contribute to climate change mitigation

Urban planning and development

Local authorities can implement sustainable urban planning strategies, promoting compact and energy-efficient development, reducing urban sprawl, and encouraging the use of public transportation.

Renewable energy initiatives

By promoting and investing in renewable energy sources like solar, wind, and geothermal, local authorities can help reduce dependence on fossil fuels and lower greenhouse gas emissions within their jurisdictions.

Energy efficiency measures and programs

Implementing and incentivizing energy-efficient practices in buildings, street lighting, and public infrastructure can significantly reduce energy consumption and associated emissions.

Waste management

Local authorities can adopt sustainable waste management practices, including recycling programs, composting, and waste-to-energy initiatives, to minimize methane emissions from landfills.

Green spaces and tree planting

Creating and preserving green spaces and implementing tree-planting initiatives help absorb carbon dioxide, enhance biodiversity, and contribute to overall climate resilience.

Transportation policies

Implementing policies that encourage the use of public transportation, cycling, and walking can reduce reliance on individual vehicles, lowering emissions from the transportation sector.

Climate action planning

Developing and implementing comprehensive climate action plans that outline specific goals and strategies for emission reduction, adaptation, and resilience building.

Community engagement and education

Local authorities can engage with the community to raise awareness about climate change, promote sustainable practices, and encourage residents and businesses to adopt eco-friendly behaviors.

Emergency preparedness

Planning for the impacts of climate change, such as extreme weather events, and developing strategies for emergency response and community resilience.

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Climate Change Adaptation

- Climate change adaptation is a continuous and dynamic process of adjusting to current or expected future climate and its effects. The goal is to minimize harm, reduce vulnerability, and take advantage of potential opportunities arising from climate changes.
- Climate change adaptation measures vary significantly by region because each region faces unique climate challenges and has implemented different levels of adaptation, with some measures already in place and others not yet relevant.
- For example, coastal areas are focused on building sea walls and improving drainage systems to combat rising sea levels, while agricultural regions are implementing drought-resistant crops and efficient irrigation techniques to address increasing water scarcity

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Key Aspects of Climate Change Adaptation

- Risk reduction
- Behavioural changes
- Technological solutions
- Policy and governance
- Community engagement
- Economic diversification

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To explore concrete examples of cities actively mitigating climate impact, we encourage you to delve into Training Material "Best practice & case studies"

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Thank You for your attention!

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