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ADAPTATION TO CLIMATE CHANGE

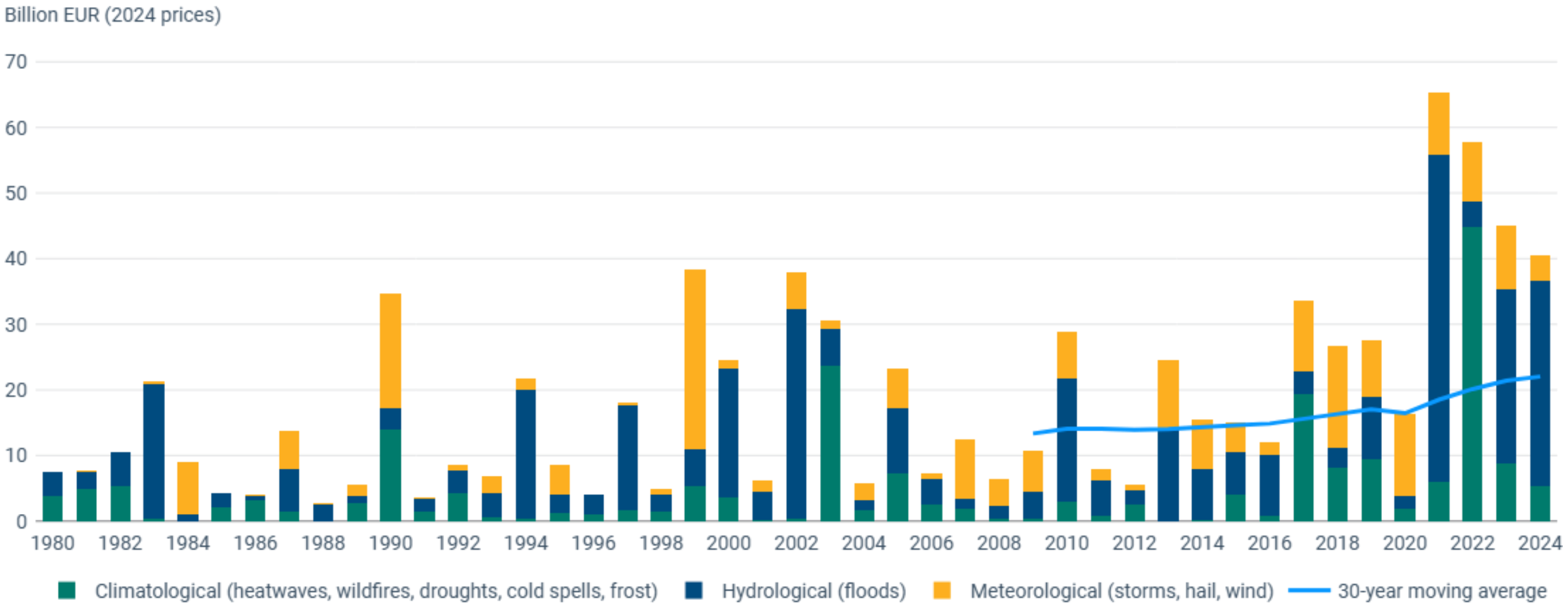
Climate adaptation (Climate resilience) & Nature-Based Solutions

Vanessa Bruynooghe DG CLIMA

6 November 2025

#EUmissions #HorizonEU #MissionClimate

Climate and weather extremes cause economic losses



Source: EEA, 14 August 2025, https://www.eea.europa.eu/en/analysis/indicators/economic-losses-from-climate-related

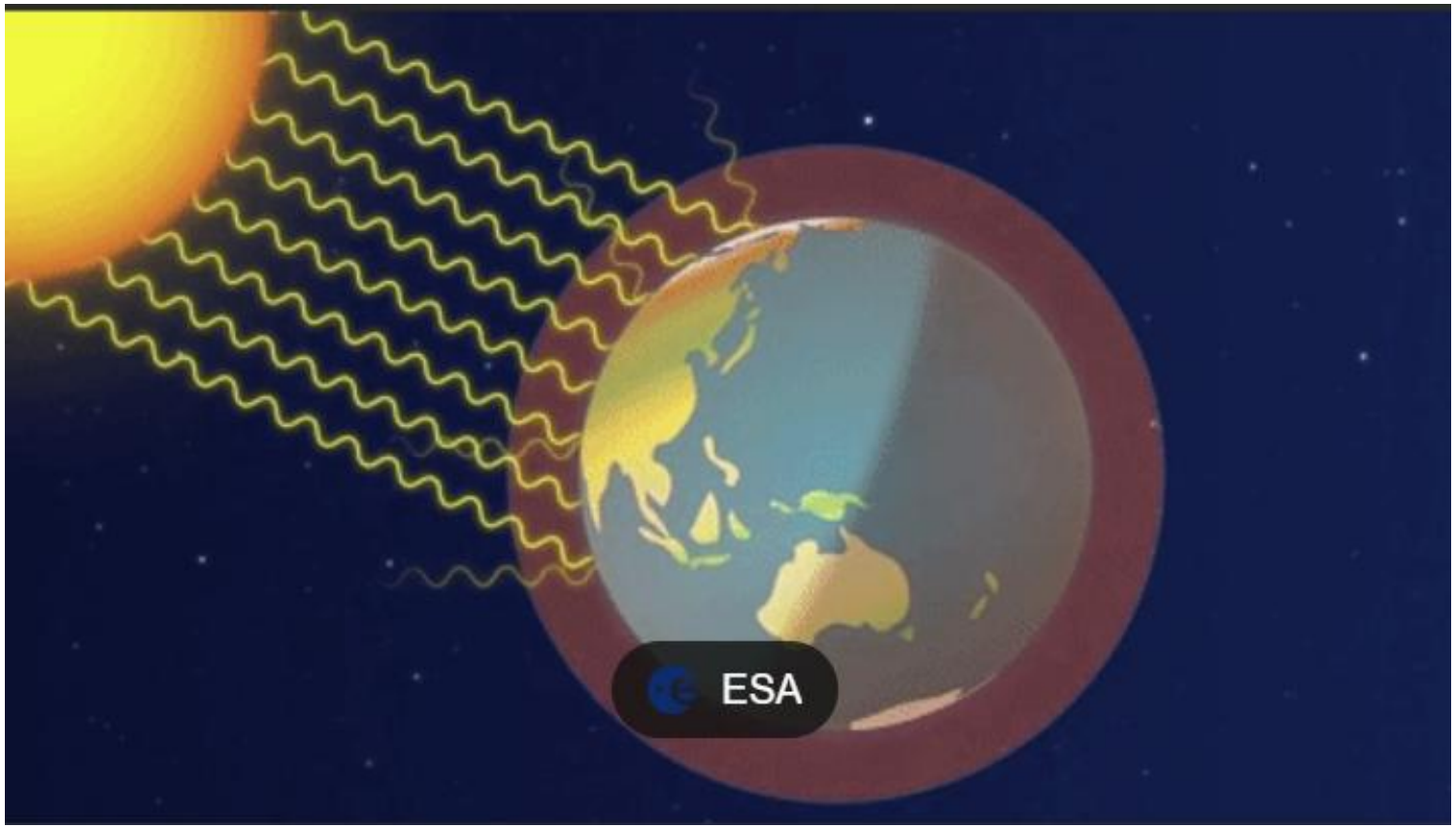
Why? Greenhouse gas emissions increase the greenhouse effect

The main driver of climate change is the greenhouse effect. Some gases in the Earth's atmosphere act like the glass in a greenhouse, trapping the sun's heat and stopping it from leaking back into space and causing global warming.

Many of these **greenhouse gases** occur naturally, but human activities are increasing the concentrations of some of them in the atmosphere, in particular:

- **carbon dioxide (CO_2)**
- **methane**
- **nitrous oxide**
- **fluorinated gases**

CO_2 produced by human activities is the largest contributor to global warming.

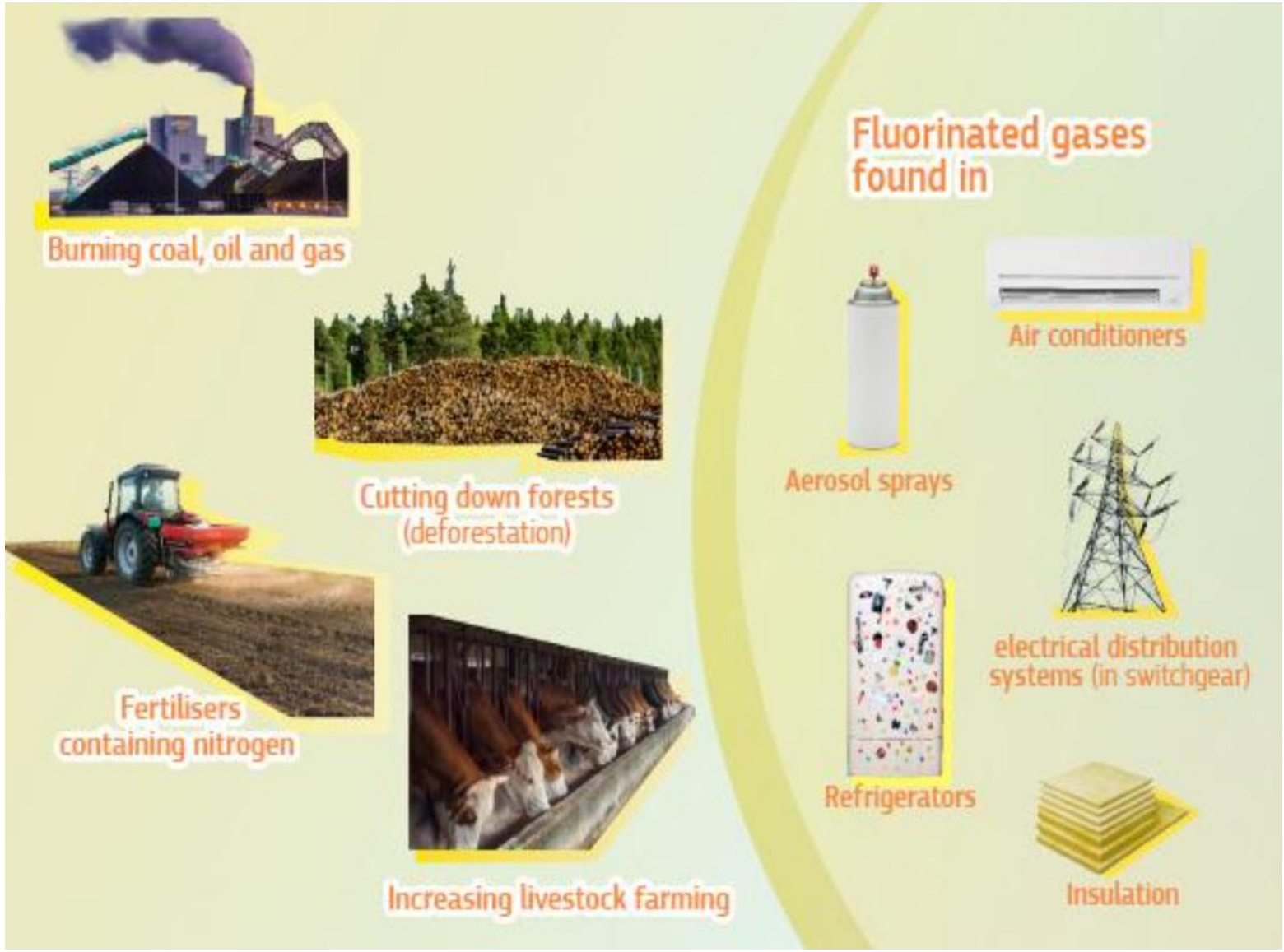


Sources: Causes of climate change - Climate Action - European Commission; ESA The greenhouse effect

Why? Causes for rising greenhouse gas emissions

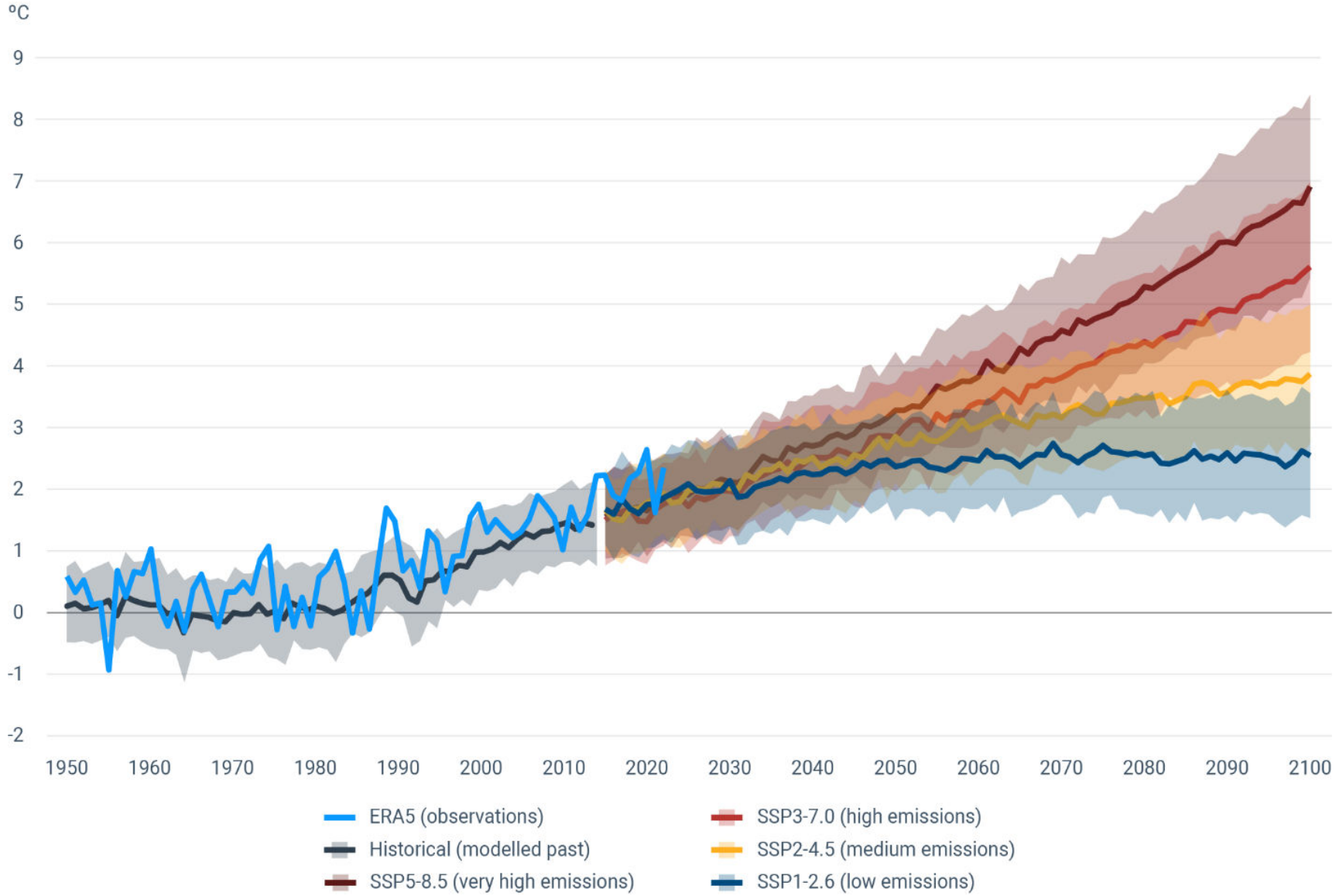
- **Burning coal, oil and gas** produces CO_2 and nitrous oxide.
- **Cutting down forests.** Trees help to regulate the climate by absorbing CO_2 from the atmosphere. When they are cut down, that beneficial effect is lost and the carbon stored in the trees is released into the atmosphere, adding to the greenhouse effect.
- **Increasing livestock farming.** Cows and sheep produce large amounts of methane when they digest their food.
- **Fertilisers containing nitrogen** produce nitrous oxide
- **Fluorinated gases**

Source: Causes of climate change - Climate Action - European Commission



Climate impacts will increase

- Current **action is not sufficient**
- Policy-makers can make a difference: risks **can and should be managed**



So what do we need to do? Climate action =

Climate Mitigation

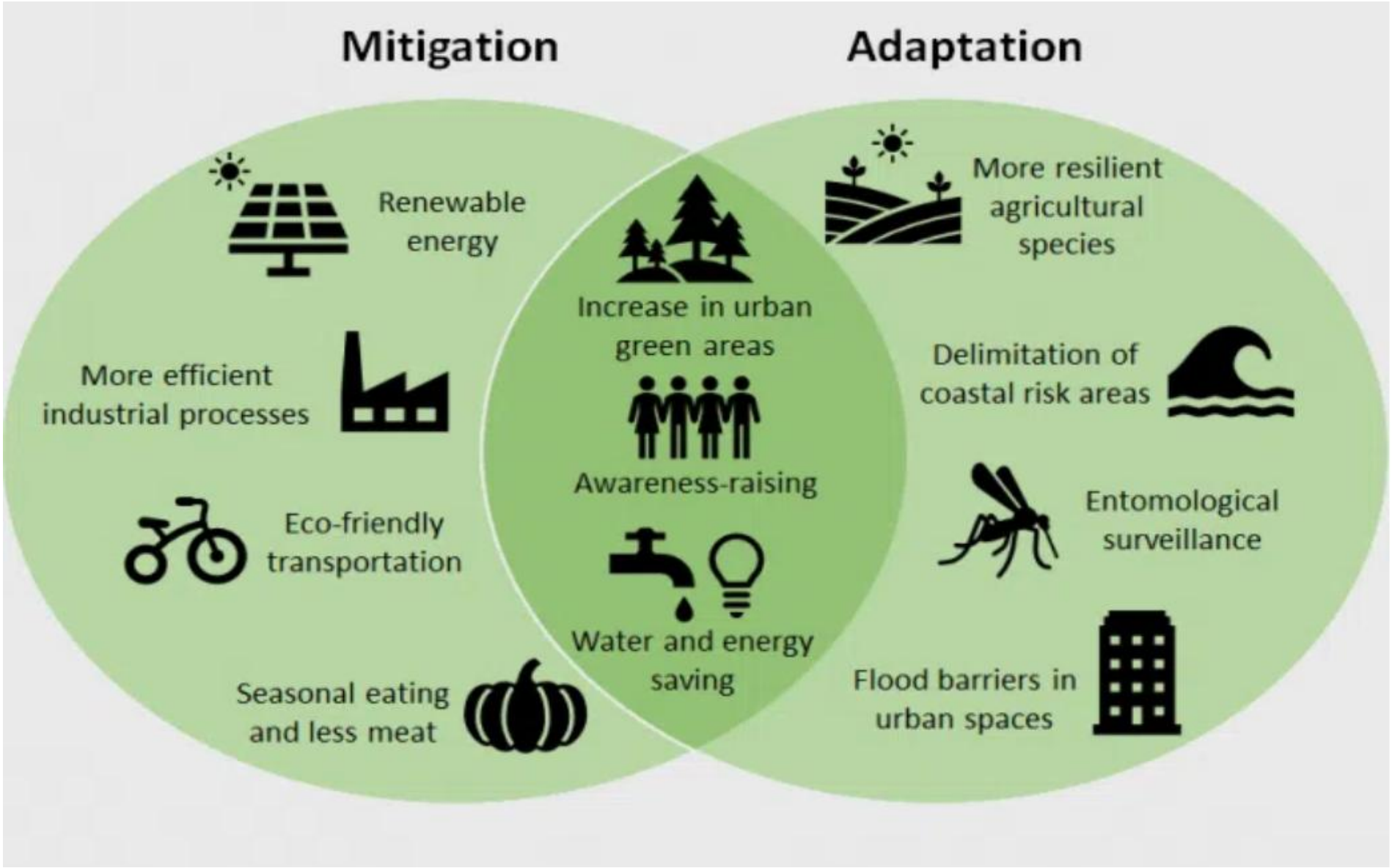
making the impacts of climate change less severe by reducing the emission of greenhouse gases (incl. CO_2) into the atmosphere

+

Climate Adaptation (Climate Resilience)

anticipating the adverse effects of climate change and taking action to minimise the damage they can cause, or taking advantage of opportunities that may arise

Climate action =



Source:
Iceland
Liechtenstein
Norway
Grants

EU policy on climate resilience

- ☑ **European Climate Law**
  Establishing the ‘duty to adapt’
- ☑ **EU Adaptation Strategy**
  Making adaptation smarter, faster, systemic
- ☑ **Climate-ADAPT website**
  Sharing knowledge for a climate-resilient Europe
- ☑ **EU Climate Risk Assessment**
  Identifying the key risks
- ☑ **Communication ‘Managing climate risks’**
- **COMING end 2026: Integrated Framework for European climate resilience !**

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Some information on climate impacts & resilience:

- **ClimateAdapt website from European Environment Agency:** https://climate-adapt.eea.europa.eu/: ClimateAdapt database: search for Adaptation Options or Case Studies
- **Climate projections and services from Slovenian Environment Agency:** https://meteo.arso.gov.si/met/sl/climate/change/ and https://meteo.arso.gov.si/uploads/probase/www/climate/OPS21/Priloge-app/#/izbor and https://podatki.gov.si/data/search?s=%22podnebne+spremembe%22%2C+projekcije%2C+Slovenija
- **Climate indicators in Slovenia:** https://kazalci.arso.gov.si/sl/themes/climate-change-adaptation

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Some information on action for climate resilience (Slovenia)

- **EU Adaptation Mission: signatories:** Gorenjska Region, Goriska, Občina Lendava, Podravska
- Several Slovenian municipalities have Sustainable Energy and Climate Action Plans (SECAPs) under the **EU Covenant of Mayors** method, with climate risk and vulnerability assessments, and adaptation measures: FAQs | EU Covenant of Mayors

  As part of the Covenant of Mayors Europe movement, local authorities commit to (1) reduce greenhouse gas emissions on their territory, (2) increase resilience and prepare for the adverse impacts of climate change, and (3) tackle energy poverty for a just transition
- Slovenia is launching **project LIFE4ADAPT** (EUR 26.5 m incl 14.2m EU funds) to enhance the country's resilience to climate change via a monitoring & evaluation system for climate adaptation

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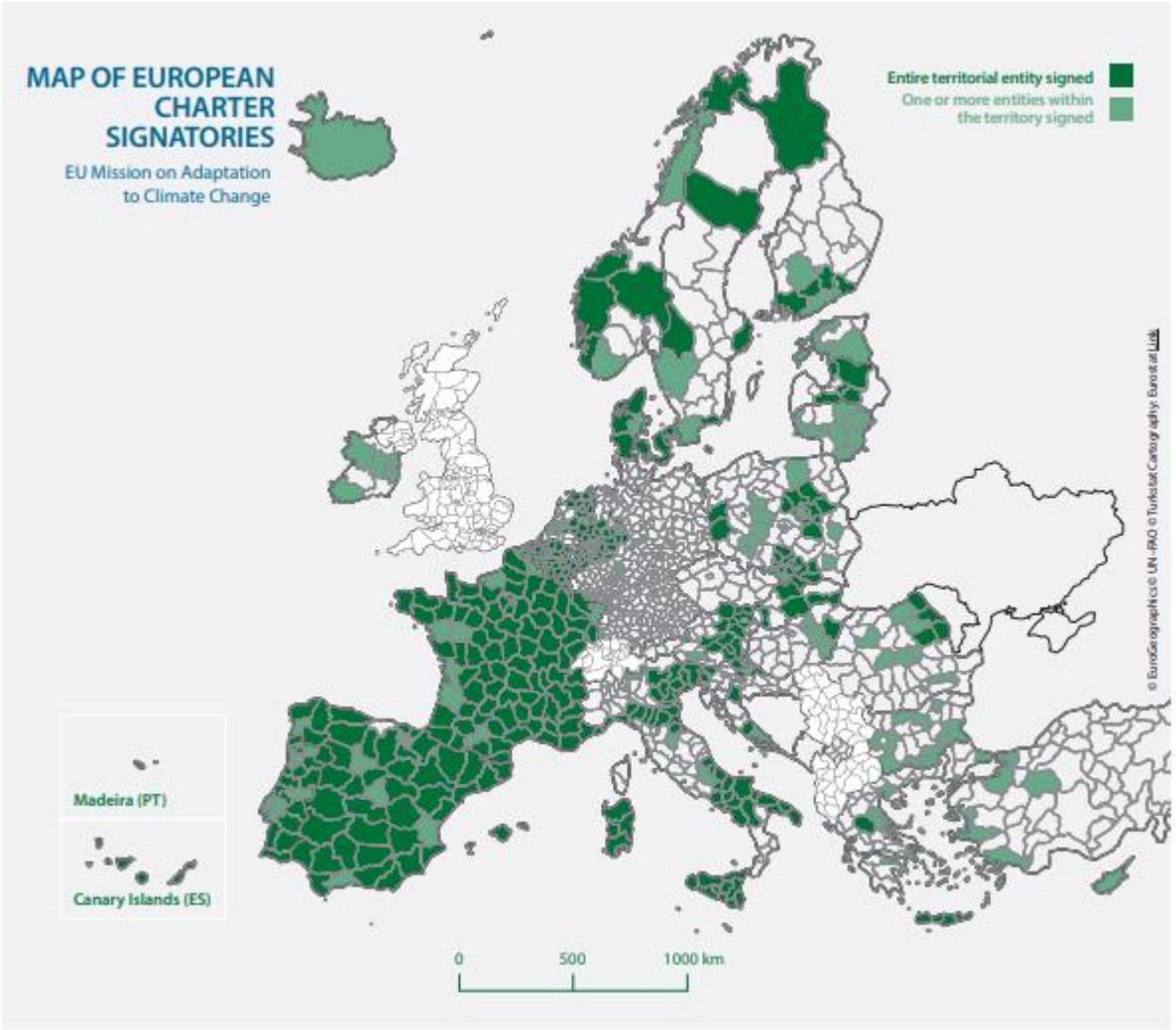
EU Adaptation Mission: signatories:

326 regions, cities and local authorities

Local authorities from Slovenia that are signatories of the EU Adaptation Mission:

- Gorenjska Region
- Goriska
- Občina Lendava
- Podravska



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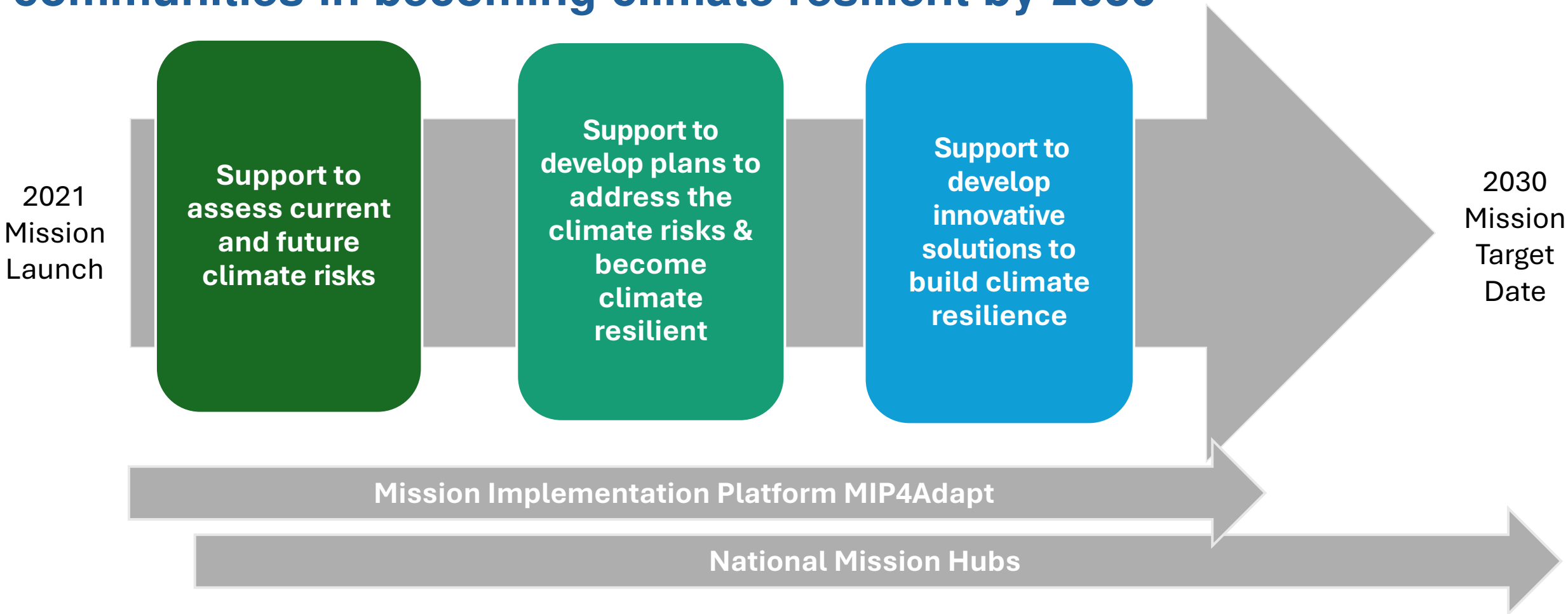
EU Mission on Adaptation to Climate Change: Objective: To support at least 150 European regions and communities in becoming climate resilient by 2030



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EU Adaptation Mission support open to all (website):

https://climate-adapt.eea.europa.eu/en/mission

- **How to plan for climate resilience as a local / regional authority:** https://climate-adapt.eea.europa.eu/en/mission/knowledge-and-data/regional-adaptation-support-tool
- **DIY Manual for doing your Climate Risk Assessment + Excel**
- **DIY Manual on Engaging Stakeholders and Citizens in Climate Adaptation**
- Projects: eg project offering support for Climate Risk Assessment (CLIMAAX) and support for adaptation planning (P2R)
- Adaptation stories
- Information on financing
- Etc.

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Definition of Nature-Based Solutions (NBS)
agreed at the UN Environment Assembly in 2002:

Nature-Based Solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits.

https://wedocs.unep.org/bitstream/handle/20.500.11822/39864/NATURE-BASED%20SOLUTIONS%20FOR%20SUPPORTING%20SUSTAINABLE%20DEVELOPMENT.%20English.pdf

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Nature-Based Solutions (NBS)

- ✓ Actions to protect, restore, conserve or sustainably manage ecosystems
- ✓ Addressing one or more societal challenges (e.g. climate mitigation, climate resilience, water, health, food security, job creation, etc)
- ✓ While simultaneously benefitting people and biodiversity

Investing Less than 1% of World GDP into Nature-Based Solutions Can Tackle Climate Change and Biodiversity Crisis

Public.Affairs@weforum.og

Published

27 May 2021

2021

Share

- New study finds tripling of current investments into nature-based solutions needed by 2030 to tackle the climate crisis or face a $4 trillion financing gap
- Today, just one tenth of 1% of global GDP is invested in nature-based solutions
- Scaling up of private capital for nature-based solutions is one of the central challenges
- Read the report

Nature-Based Solutions working as infrastructure

- It is estimated that Nature-Based Solutions working as infrastructure could cost 50% less than grey infrastructure alternatives alone
- Nature-Based Solutions as infrastructure can deliver 28% in added value such as carbon sequestration, cleaner air and water, better health, recreational services, jobs and opportunities for growth in other sectors (e.g. real estate and tourism).

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EXAMPLES

'Le Mur' protecting Lemvig, Denmark from coastal flooding ©Mads Krabbe

A smart blue-green roof in Amsterdam ©Dakdokters

Ecosystem-based decentralized water drainage system, Ober-Grafendorf, Austria. ©Gerhard Gruber and Foto Durl

Restoration of a small surface stream on Gasteiz Avenue. Source: Vitoria-Gasteiz City Council

Nature-Based Solution

River restoration: benefits include: climate resilience: eg water retention against drought, flood zone and reducing flood risk by reducing speed; water purification; stimulating biodiversity; beautiful natural space for humans, etc.
Planting trees: heat protection, air pollution reduction, CO2 reduction, etc.

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NBS climate resilience in forestry

https://wedocs.unep.org/bitstream/handle/20.500.11822/40406/EbA_Forestry.pdf?sequence=5

Fire
Improve early warning systems.
Create fire breaks with fire-resistant trees (Figure 2, see Case Study I on page 9).
Plant fire-tolerant species, mix tree ages and densities and thin vulnerable areas.
Implement careful burn regimes - following natural cycles - to remove excess fuel.
Maintain and restore wetlands, and design water storage structures (ponds) to block fire

Fire break or belt. ©*Freepik/rafayanes*

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