

**Interreg
Europe**



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GreenGov

GreenGov Thematic Brief

Climate Proofing of Infrastructure

CLIMATE PROOFING OF INFRASTRUCTURE



Climate Proofing is the result of years of joint climate action, guided by landmark frameworks like the Paris Agreement, the European Climate Law, and the EU Adaptation Strategy.

Climate Proofing

It is a process that integrates **measures for climate change mitigation and adaptation** into the development of infrastructure projects. It is aimed at:

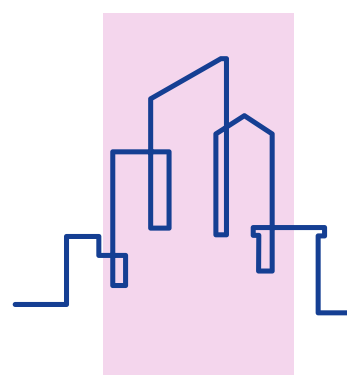
- **ensuring** that the principle of **energy efficiency** is respected as a priority and that the level of greenhouse gas emissions (GHG) of the project is consistent with the **2050 climate neutrality objective** - **mitigation pillar**.
- **avoiding the vulnerability** and improving the resilience of infrastructures to current and future potential climate impacts, such as heavy rainfall, flooding, heat waves, windstorms, etc - **adaptation pillar**.

Regulatory framework

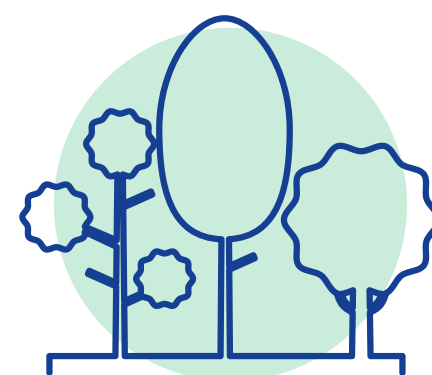
In the period 2021-27, climate proofing of infrastructure is a requirement for investments under several EU Regulations, including: the InvestEU Regulation, the Common Provision Regulation, the Resilience and Recovery Facility Regulation. Technical guidance is provided in the Commission Notice 2021/C 373/01.



network
infrastructure
(transport, ICT,
water and energy
infrastructure)



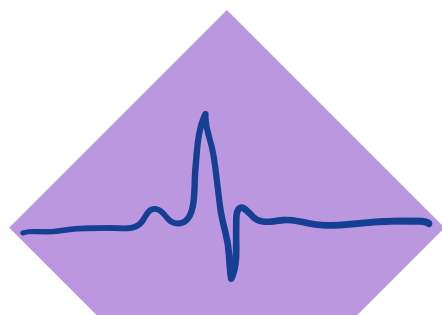
buildings (private
homes, schools,
industrial facilities)



nature-based
infrastructures (green
roofs, walls, green
spaces, drainage
systems)

What do we mean by infrastructure?

Source: European commission
Technical guidance on the climate proofing of
infrastructure in the period 2021-2027



other physical assets
(emergency services,
finance, government,
health, education,
research)

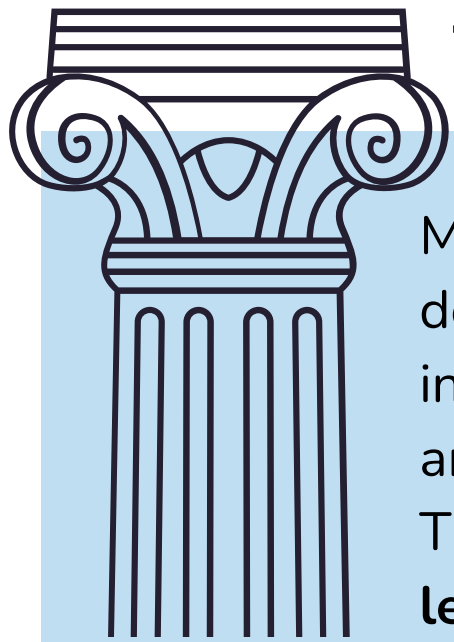


systems to manage
waste (collecting
points, recycling
facilities, incinerators
and landfills)

CLIMATE PROOFING OF INFRASTRUCTURE



The Commission's technical guidance provides a two-pillar methodology for climate proofing of infrastructure. The methodology is structured in two phases for both pillars: a preliminary screening, followed by a detailed analysis, if necessary.



The mitigation pillar

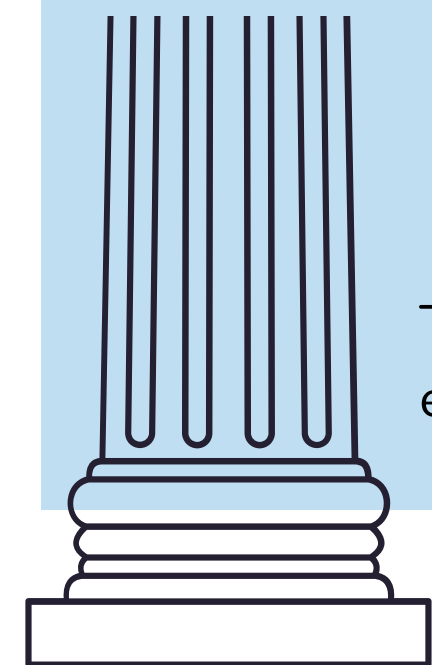
Mitigating climate change involves **decarbonisation**, **energy efficiency**, **energy savings**, and the development of **renewable energy** sources. It requires taking action to **reduce GHG emissions** or increase GHG sequestration, in line with EU policy objectives and emission reduction targets for 2030 and 2050.

The climate neutrality **screening phase** consists in a **preliminary assessment of the project's expected level of emissions**, either through a specific quantitative analysis, or via a comparative/qualitative approach, using data from similar past projects or other reputable sources.

If a project is expected to generate absolute and/or relative **GHG emissions exceeding 20.000 tons of CO₂equivalent/year** (positive or negative), in a typical year of operation, a **detailed analysis is necessary**, that includes:

- **carbon footprint quantification** and, where applicable, **monetization** of GHG emissions, to support a possible cost-benefit analysis or other forms of economic assessment of the investment;
- **assessment of the compatibility** of the investment with the EU's emission reduction targets for 2030 and 2050. For projects with an expected lifespan beyond 2050 the assessment includes the project's compatibility with operation, maintenance and final decommissioning under the conditions of climate neutrality.

Types of projects that are exempted from the mitigation analysis are listed, as they are not expected to exceed the 20.000 tons of CO₂eq/year (e.g. R&D, telecommunication, property development).



The adaptation pillar

The climate **resilience assessment** aims to ensure that the infrastructure is **resilient to the impacts of climate change** throughout its entire life cycle. It addresses both **extreme events** (e.g. storms, floods, heatwaves, droughts) and **chronic trends** (e.g. sea level rise, changes in humidity and precipitation patterns).

The **screening phase** includes:

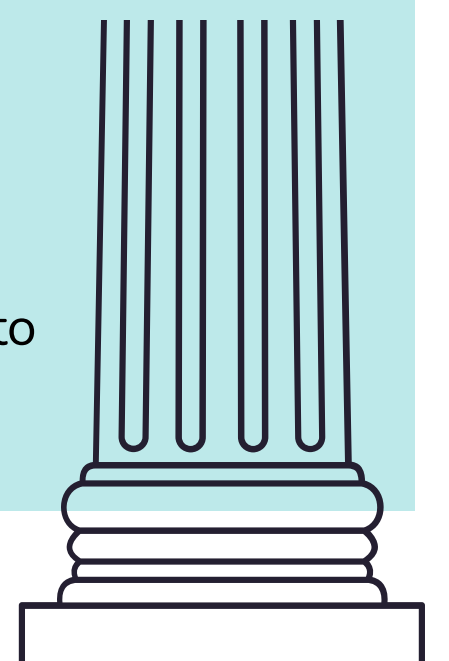
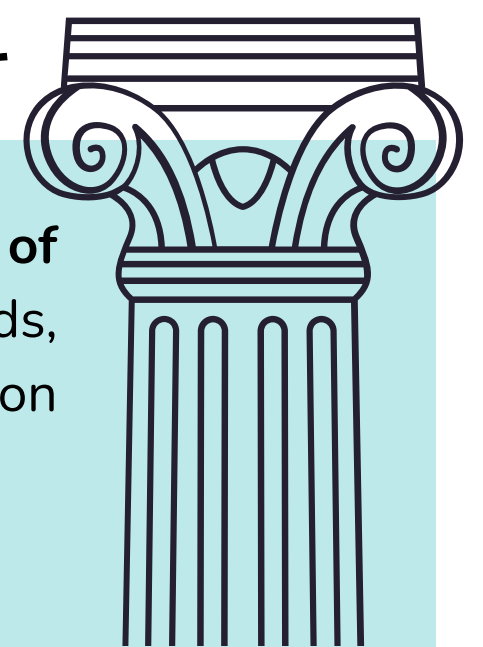
- **sensitivity analysis** to identify relevant **hazards for a specific project type**.
- **exposure analysis** to identify potential **climate risks based on the project's location**, and
- a **vulnerability analysis**, which combines the previous two analysis. If **vulnerabilities are low** or negligible, the **infrastructure is considered resilient**.

If **medium or high vulnerabilities** are detected, a **detailed risk assessment** is required. The aim of this second step is to identify longer cause-effect chains between climate hazards and project performance.

The risk assessment includes:

- **probability analysis** of hazard occurrence over the infrastructure's lifespan,
- **impact analysis**,
- **risk quantification** by combining probability and impact.

For each significant risk, appropriate **adaptation measures** should be assessed and integrated into design and operation to enhance climate resilience and reduce risk to an acceptable level.



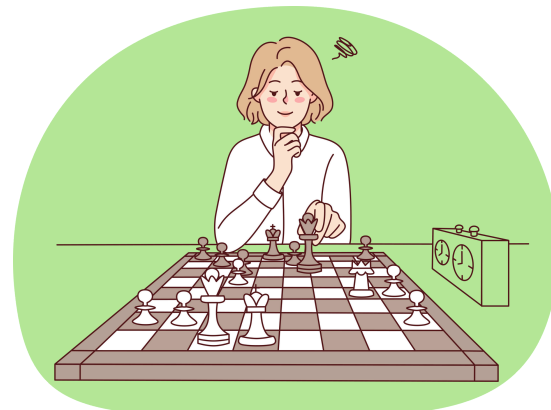
CLIMATE PROOFING OF INFRASTRUCTURE



CHALLENGES AND PROPOSED ACTION

The GreenGov partnership has identified the main challenges faced by EU regions and local authorities in effectively climate-proofing infrastructure, along with potential actions to address them. These challenges fall into three key areas for improvement:

Awareness and commitment



Technical complexity and data availability

Governance



Awareness and commitment

Challenges

Insufficient political commitment

Political will is essential to drive systemic change and prioritize climate resilience in policy and funding decisions.

Weak institutional climate culture

A lack of understanding, concern, and proactive behaviour around climate change leads to resistance.

Viewing climate proofing as a burden rather than a strategic necessity

CP is often perceived as a threat for the economic competitiveness of project (especially for micro-SMEs). Many beneficiaries are unaware that CP not only helps infrastructure withstand climate change impacts but also offers long-term cost savings and resilience benefits.

Actions

Shift the narrative around Climate Proofing

Overcome the perception that CP is a long, complex, and bureaucratic process, as perceived by both administrations and beneficiaries and promote effective awareness campaigns highlighting the benefits of CP.

Provide practical examples and showcase good practices

Share concrete examples of successful CP projects, demonstrating their real benefits across different project types and scales.

Focus on targeted and local communication

Disseminate messages tailored to the specific local context and emphasise “visible” climate change effects, such as severe local storms, to make the issue more tangible and relatable.

Create a guide for local communities

Explain what CP is, why it is important, and how communities can get involved and benefit from it.

Encourage community engagement to increase awareness and adoption of climate-proofing practices.

CLIMATE PROOFING OF INFRASTRUCTURE



CHALLENGES AND PROPOSED ACTION

Technical complexity and data availability

Challenges

Contexts-specific demands

CP must be tailored to each region's specific climate risks, economic realities, and social factors, requiring a flexible and phased approach.

Climate data availability and access

The lack of open, accessible and reliable climate historical data and future scenarios can jeopardize the design of effective adaptation measures.

For certain hazards (heavy rainfalls, windstorms) climate models need to be further developed and implemented.

Lack of clear guidance and available tools

Beneficiaries often lack clear instructions, practical tools, and standardized methodologies, resulting in inconsistent implementation, and reduced effectiveness.

Actions

Provide guidance and methodologies

Create and disseminate standardized, accessible and user-friendly guidance to improve consistency, confidence, and quality across CP applications.

Develop practical tools, such as:

- Web-based guides, forms and checklists for climate proofing
- Interactive maps displaying potential climate risks exposure
- Collection of methods to assess vulnerability
- List of adaptation measures proven to be effective for different climate risks, types of infrastructure and local contexts, with a strong focus on Natural Based Solutions.
- Open-source data, databases, or a guide to existing data

Apply simplified methodologies and tools for small infrastructure for the adaptation pillar:

- Tools applicable by designers (architects, engineers) without needing a climate expert
- Considering the links with existing plans and legislation (e.g. EU Floods Directive)

For the mitigation pillar:

- Pre-screening at regional level for small scale projects
- Use of energy certification for buildings as evidence of CP.

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CHALLENGES AND PROPOSED ACTION

Governance

Challenges

Limited human and technical resources

The CP process is time-consuming and requires skilled staff, which is often lacking in both public administrations and among project beneficiaries.

Low administrative competence on CP

As CP is a relatively new process, many administrations are only beginning to build the knowledge base needed for sound decision-making and effective implementation.

Demand for expertise

Effective CP requires interdisciplinary expertise and alignment with long-term project cycles, which many regions are not fully equipped to manage.

Lack of certification on CP and certified providers

To date, there is no established pathway to become a CP expert at the European level.

Actions

Offer training and capacity building for public administration (PA)

Develop specialized training programs for PA staff focused on climate mitigation, adaptation, and risk assessment. Use practical workshops, case studies, and simulations to improve understanding and application of CP procedures.

Promote capacity building for professionals

Provide professional training, with a specific focus on sensitivity assessment, use of climate data in the design process, integrating adaptation measures into project design and developing architecture for adaptation (e.g. green roofs).

Use certification for professionals or agencies

Develop systems to ensure that CP is carried out by professionals with the right competences: certification systems at national level; certified training programs; list of accredited experts etc.

Support knowledge-sharing among professionals and public authorities

Create platforms or repositories accessible to all relevant stakeholders. Develop concrete guidance documents providing dos and don'ts and innovative approaches.

Foster intersectoral collaboration both in PAs and in designers' teams

Establish formal partnerships between climate specialists (scientists, consultants) and managing authorities. Create interdisciplinary teams to address climate-related issues holistically within projects and policies.

Integrate climate proofing and environmental assessment

Embed climate proofing into existing processes like Environmental Impact Assessments (EIAs).

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ABOUT US

GreenGov Project

GreenGov is a **Interreg Europe** project selected under the Governance topic that promotes sustainability by supporting the implementation of the EU taxonomy and improving financing schemes in European regions. The project started in April 2024 and will conclude in June 2028.

The partnership, lead by Ile de France Region, includes 9 territorial partners, 1 discovery partner and 1 associated policy authority, and is supported by Poliedra, the advisory partner. The partnership covers the 4 geographical zones of the Interreg Europe programme. The project partners exchange their experiences and best practices to help local public authorities to to finance their projects in a more sustainable way, including aligning their strategies to the EU taxonomy, implementing the Do No Significant Harm principle and climate proofing of infrastructure, exploring green bonds and green budget.

The aim and target audience of the thematic brief

This thematic brief provides an overview of the results from the GreenGov partnership's thematic activities on Climate Proofing. It is intended for Public Authorities at national, regional, local level that are dealing with the climate proofing of infrastructure, including the European Structural and Investment Funds (ESI Funds) Managing Authorities.

