



Technical guidance on the climate proofing of infrastructure in the period 2021-2027

with focus on the resilience of inland waterways and ports

METEET – Workshop on the climate resilience of inland waterways and ports – 6 June 2023

Presented by Claus Kondrup, Senior Expert, DG Climate Action, European Commission



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From the guidance:

- **Climate proofing is a process** that integrates climate change mitigation and adaptation measures into the development of infrastructure projects.
- In general, the project promoter will include in the project organisation the **expertise** needed for climate proofing and coordinate with other work in the project development process, for instance, environmental assessments. Depending on the specific nature of the project, this may include bringing in a climate-proofing manager and a team of experts in climate change mitigation and adaptation.



- European Green Deal
- European Climate Law, recital (33), article 5(5)
- EU long-term budget 2021-2027, Council Conclusions 17-21/7/20
- European Parliament resolution of 15/1/20
- Fund-specific legislation (CEF, ERDF, Cohesion Fund, InvestEU, ...)
- EU Strategy on adaptation to climate change (adopted 24/2/21)

Climate change and inland waterways and ports



- Climate change may affect transportation on inland waterways, rivers and channels, and ports located along inland waterways. Some of the main impacts include droughts, floods, and navigation.
- There are several approaches to enhance the resilience of transportation on inland waterways, rivers and channels, and ports located along inland waterways to climate change, for instance adaptation planning, infrastructure improvements, technology, and water management.

Climate proofing 2014-2020



Climate change and major projects

Adaptation to climate change
Vulnerability/Risk Assessment
and adaptation response

Mitigation of climate change
EIB carbon footprint
EIB cost of carbon

- Legal basis (e.g. project information / application form)
- Integration in CBA and project cycle management
- JASPERS advisory service, verification, training etc.

<https://jaspers.eib.org/knowledge/events/third-climate-change-adaptation-in-the-transport-sector>

Climate Change and Major Projects

Outline of the climate change related requirements and guidance for major projects in the 2014-2020 programming period

Ensuring resilience to the adverse impacts of climate change and reducing the emission of greenhouse gases

Climate Action

<https://op.europa.eu/en/publication-detail/-/publication/5535c968-7a41-11e6-b076-01aa75ed71a1>



- More EU funds: InvestEU, Connecting Europe Facility (CEF), European Regional Development Funds (ERDF), Cohesion Fund (CF), and Just Transition Fund (JTF), ...
- Updated carbon footprint methodology and shadow cost of carbon
- Climate vulnerability and risk assessment as basis for adaptation
- Consistency with the Paris Agreement and climate objectives
- Documentation and verification
- Environmental Impact Assessment (EIA)
- Strategic Environmental Assessment (SEA)
- Recommendations to support climate proofing in Member States



Commission Notice — Technical guidance on the climate proofing of infrastructure in the period 2021-2027
C/2021/5430
OJ C 373, 16.9.2021, p. 1–92 (BG, ES, CS, DA, DE, ET, EL, EN, FR, HR, IT, LV, LT, HU, MT, NL, PL, PT, RO, SK, SL, FI, SV)

▼ Languages, formats and link to OJ

	BG	ES	CS	DA	DE	ET	EL	EN	FR	GA	HR	IT	LV	LT	HU	MT	NL	PL	PT	RO	SK	SL	FI	SV
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Climate Neutrality

*Screening
Phase 1 (mitigation)*

*Detailed analysis
Phase 2 (mitigation)*

The climate proofing process is divided into two pillars (mitigation, adaptation) and two phases (screening, detailed analysis)

Climate Resilience

*Screening
Phase 1 (adaptation)*

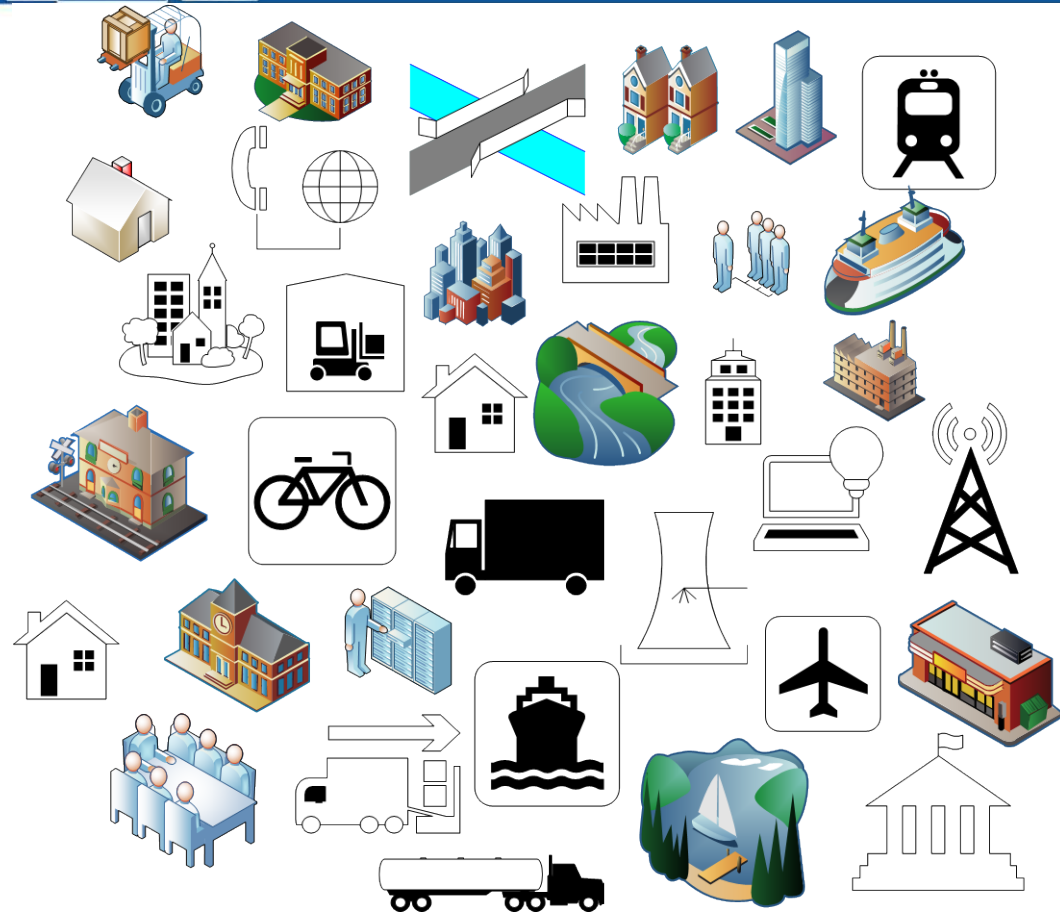
*Detailed analysis
Phase 2 (adaptation)*

Climate proofing 2021-2027



Infrastructure is a broad concept encompassing buildings, network infrastructure, and a range of built systems and assets.

For instance, the InvestEU Regulation includes a comprehensive list of eligible investments under the sustainable infrastructure policy window.



Climate proofing infrastructure (mitigation, climate neutrality)



2021-2027

Climate Neutrality

Mitigation of climate change

Preparation, planning, resources, ...

Screening – Phase 1 (mitigation)

With reference to the screening list, is the project of a category requiring a carbon footprint assessment etc.?

YES

NO

Climate neutrality screening documentation

Detailed analysis – Phase 2 (mitigation)

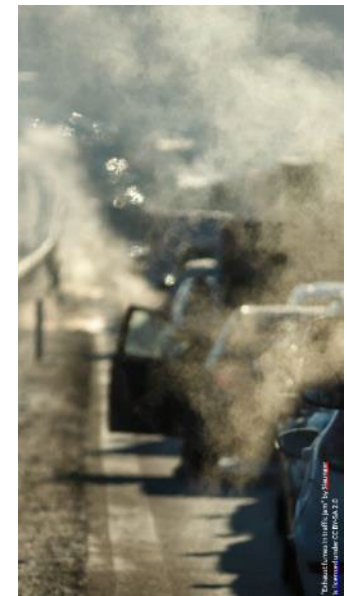
Quantify and compare GHG emissions in a typical year of operation with the thresholds for absolute and relative emissions.

If above emissions threshold:

Monetise GHG emissions using the shadow cost of carbon, firmly integrate “energy efficiency first” in project design, cost benefit and options analysis.

Verify the project's compatibility with a credible pathway to the overall 2030 and 2050 GHG emission reduction targets.

Climate neutrality proofing documentation



Climate proofing infrastructure (adaptation, climate resilience)



2021-2027

Climate Resilience

Adaptation to climate change

Preparation, planning, resources, ...

Screening – Phase 1 (adaptation)

Based on the sensitivity, exposure and vulnerability analysis, are there any potentially significant climate risks warranting detailed analysis?

NO

YES

Climate resilience screening documentation

Detailed analysis – Phase 2 (adaptation)

Climate risk assessment including the likelihood and impact analysis in accordance with this guidance.

Address significant climate risk through the identification, appraisal, planning and implementation of relevant adaptation measures.

Assess the need for regular monitoring and follow-up for example of critical assumptions in relation to future climate change.

Verify consistency with Union and, as applicable, national, regional and local strategies and plans on the adaptation to climate change

Climate resilience proofing documentation

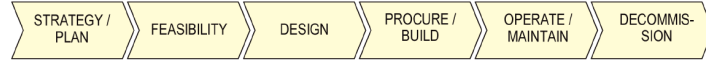


Climate proofing & environmental assessments



2021-2027

Common phases in the project development cycle:



Common project development activities:

<ul style="list-style-type: none"> — Programming — Sector strategies — Policies — Spatial planning — Pre-feasibility — Business model — SEA 	<ul style="list-style-type: none"> — Conceptual design — Feasibility studies* — Site selection — Technology selection — Risk assessment — Legal analysis — EIA Screening & Scoping 	<ul style="list-style-type: none"> — Main / final design — EIA permitting, development consent — Documentation of climate proofing 	<ul style="list-style-type: none"> — Contracting — Construction 	<ul style="list-style-type: none"> — Operation and maintenance strategy — Asset management — Operation and maintenance — Monitoring and control 	<ul style="list-style-type: none"> — Decommissioning — End of asset life
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Where feasibility studies* may include various types of analysis e.g. demand, financial, economic, options and cost benefit analysis.

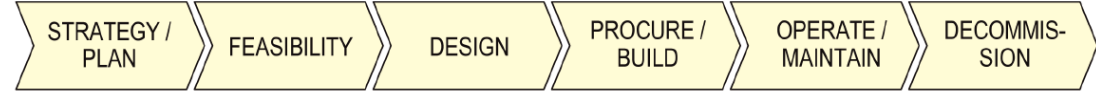
Climate resilience – adaptation to climate change – enhancing the resilience to adverse climate change impacts

<ul style="list-style-type: none"> — Strategic climate vulnerability screening to identify potential risks from climate change impacts 	<ul style="list-style-type: none"> — Nominate a climate-proofing manager and plan the climate proofing process — Screening: exposure, sensitivity, vulnerability — Climate vulnerability and risk assessment — Options analysis, climate risk and adaptation — Measures ensuring resilience to current and future climate — Technical aspects e.g. location and design — Risk assessment and sensitivity analysis — Environment and climate change aspects — Coordination with EIA process 	<ul style="list-style-type: none"> — Implementation of adaptation measures in construction and operation — Monitoring of critical climate hazards — Regular review of the climate hazards, which may change over time, updating of the risk assessment, review of the structural and non-structural adaptation measures, and reporting to the project owner and others as required — Decommissioning plan and its implementation to give due regard to the future climate change impacts and risks
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Climate neutrality – mitigation of climate change – reducing the emission of greenhouse gas

<ul style="list-style-type: none"> — Consistent with climate neutrality by 2050 — Link to climate policy and GHG emission targets — Planning including operation and maintenance to consider further GHG reductions 	<ul style="list-style-type: none"> — Nominate a climate-proofing manager and plan the climate proofing process — Quantification of GHG emissions using carbon footprint methodology — Monetisation of GHG emissions using shadow cost of carbon — Contribution to EU and national climate targets — Consideration of less carbon intensive options — Economic analysis — Coordination with EIA process 	<ul style="list-style-type: none"> — Implementation of mitigation measures in construction and operation — Monitor and implement plans to further reduce GHG emissions — Verification of actual GHG emissions — Decommissioning plan and its implementation to give due regard to climate change as well as net zero GHG emissions and climate neutrality by 2050
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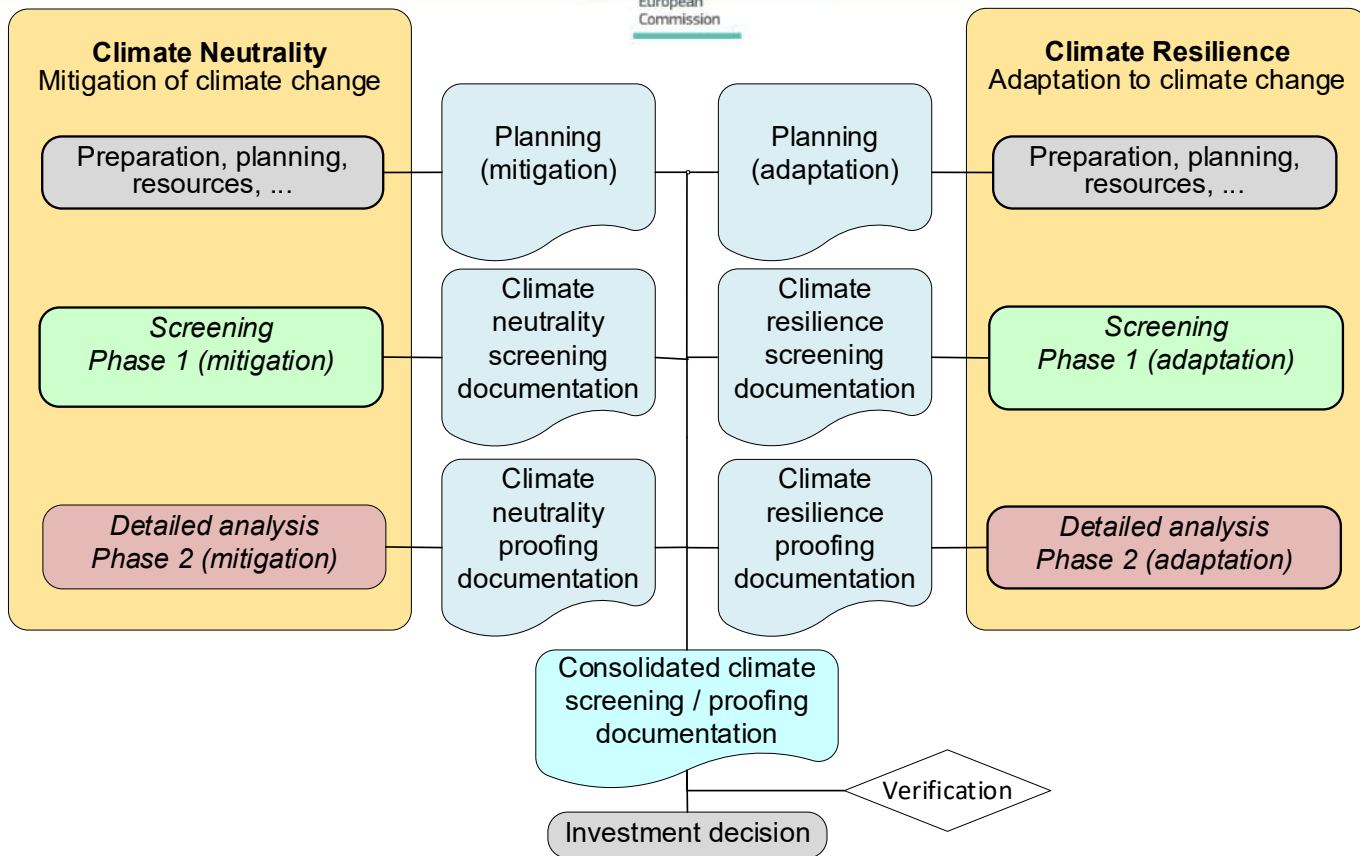
Common phases in the project development cycle:



Environmental assessments and climate proofing (not limited to SEA and EIA, e.g. Natura 2000)

- Integrate and address climate change mitigation and adaptation effectively in SEA and other environmental assessments, ref. e.g. Directive 2001/42/EC (SEA Directive)
- Distinguish between projects following Directive 2014/52/EU (2014 EIA Directive) and Directive 2011/92/EU (2011 EIA Directive), and plan accordingly
- Ensure close coordination with the climate proofing process for mitigation and adaptation
- Take into account how the environment will change in the future among other due to climate change (evolving baseline)
- EIA screening, scoping (as appropriate)
- EIA and other relevant environmental assessments e.g. Natura 2000
- Final Development Consent decision
- Assess the projects climate vulnerability
- No-regret, low-regret, win-win options
- During the construction and operation phases of the project, monitor the significant adverse effects on the environment identified as well as measures taken to mitigate them

Climate proofing and EIA (Annex D), and SEA (Annex E)



Examples of guidance on adaptation planning for ports and inland waterways



Home ▶ Database ▶ Guidances ▶ **Climate Change Adaptation Planning for Ports and Inland Waterways**

Guidance Document

Climate Change Adaptation Planning for Ports and Inland Waterways

Description:

The objective of this document is to provide guidance on how to ensure resilience of waterborne transport to climate change and to give examples and recommendation of good practice. Ports and waterways are already facing various risks associated with a range of meteorological, hydrological and oceanographic parameters and processes. Climate change will have an impact on these parameters and processes, exacerbating existing risks and introducing new ones. Without timely and effective preparation, climate change will result in increasing incidences of damage or structural failures, operational disruptions and delays, and impact on the safety of personnel, equipment, and the environment.

The guidance prepared by the PIANC's technical working group introduces a four-stage methodological framework to help port and waterway operators prepare strategies and select measures aimed at adapting assets and operation to climate change.

[Climate Change Adaptation Planning for Ports and Inland Waterways](https://www.pianc.org/publications/envicom/wg178)



MENU

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EnviCom WG 178: Climate Change Adaptation Planning for Ports and Inland Waterways (2020)

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[Press Release](#)

! Version 3 with minor changes published June 2022!

Ports and waterways around the world are experiencing air and water temperature increases, rising sea levels, and changes in parameters such as seasonal precipitation, wind and wave conditions. Many are also seeing more frequent and severe extreme events including storms, heatwaves and droughts.

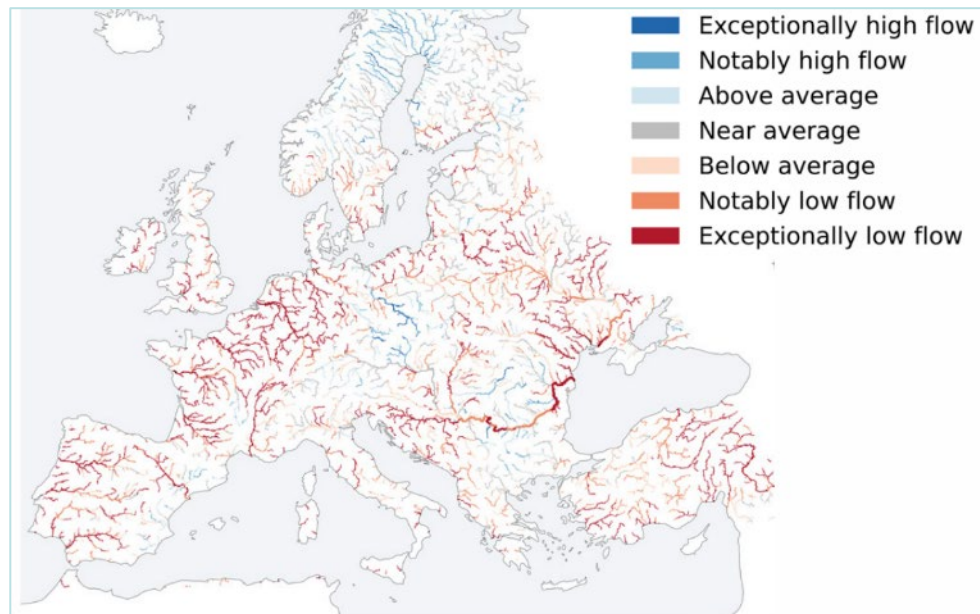
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Drought

High temperatures and a lack of precipitation resulted in a widespread and prolonged drought that affected much of Europe and impacted sectors such as agriculture, energy and river transport.

A precipitation deficit at the start of the year continued through spring, with most of Europe affected. One of the worst-affected areas was



Monthly average river discharge anomalies for August 2022, relative to the 1991–2020 reference period. Rivers with drainage areas greater than 1000 km² are shown. *Data source: EFAS. Credit: Copernicus EMS/ECMWF.*



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