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Let's spend the money wisely!

Webinar Applicant's Guide for the competitive call dedicated to Priority 2: A green region, Specific Objectives 2.4 and 2.7

22nd of May I Online, Zoom

Climate proofing

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Legal requirement

- in article 22 Interreg Regulation on selection of projects [Art 22(4)(j)]:

In selecting operations, the monitoring committee or, where applicable, the steering committee shall:

- *ensure that, for investments in infrastructure with an expected lifespan of at least five years, an assessment of expected impacts of climate change is carried out.*

This assessment only addresses the climate adaptation (resilience) of infrastructure investments.

Guidance

Commission Notice — Technical guidance on the climate proofing of infrastructure in the period 2021-2027*

- Climate proofing is a process that integrates climate change mitigation and adaptation measures into the development of infrastructure projects.
- Infrastructure is a broad concept encompassing buildings, network infrastructure, and a range of built systems and assets. Infrastructure is a broad concept, which includes**:
  - **buildings**, from private homes to schools or industrial facilities, which are the most common type of infrastructure and the basis for human settlement;
  - nature-based infrastructures such as green roofs, walls, spaces, and drainage systems.
  - network infrastructure crucial for the functioning of today's economy and society, notably energy infrastructure (e.g. grids, power stations, pipelines), transport (fixed assets such as roads, railways, ports, airports or inland waterways transport infrastructure), information and communication technologies (e.g. mobile phone networks, data cables, data centres), and water (e.g. water supply pipelines, reservoirs, waste water treatment facilities);
  - **Etc.**

*Commission Notice — Technical guidance on the climate proofing of infrastructure in the period 2021-2027 C/2021/5430
** Just examples, according to the EC Notice

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Provisions from Applicant' Guide

- **Application form - Section C.4.1 - Work package, Investments** (general information regarding the expected impacts of climate change)
- Project partners for investments in infrastructure must provide the documentation of climate proofing (maximum 30 pages) and the related statement, according to the Commission Notice (including the related requirements set by Annex B.2) – **This should be Annex B7 Assessment of expected impacts of climate change, the partner declaration and the independent verification report if additionally required (open format, partners decision).**
- In case these documents (documentation of climate proofing, statement on climate proofing) are not provided with the application, the project shall be rejected during the eligibility stage.
- Please note that the documents shall be analysed and assessed based on the evaluation criteria.
- The independent verification is not compulsory. However such verification providing assurance that the climate proofing adheres to the applicable guidance and other requirements may be required during the assessment process in case the documentation of climate proofing/statement on climate proofing is unclear or not in line with the Commission Notice.

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https://test-jems-robg.mdlpa.ro/app/project/detail/28/applicationFormWorkPackage/42/investments/28

Interreg Romania – Bulgaria TEST | Jems | Dashboard | bogdan.tudorica@mdlpa.ro (applicant user) | Logout | English

(current) V. 1.0

- A - Project identification
  - A - Project identification
  - A - Project overview tables
- B - Project partners
  - Partners overview
    - LP1 BEES !
    - PP2 Bbb
    - PP3 Albina partener
  - Associated organisations
- C - Project description
  - C.1 Project overall objective
  - C.2 Project relevance and context
  - C.3 Project partnership
  - C.4 Project work plan
    - WP1
  - C.5 Project Results
  - C.6 Project Time Plan
  - C.7 Project management
  - C.8 Long-term plans
- D - Project budget
  - D.1 Project budget per fund
  - D.2 Overview partner / cost category
  - D.3 Overview budget / period
- E - Project lump sums and unit costs
  - E.1 - Project lump sums
- Application annexes

Dashboard / Applications / ROBG00028 – BEES 1 / Project work plan / WP1 / Investment overview / Investment 1.1

Investment documentation

Please list all technical requirements and permissions (e.g. building permits) required for the investment according to the respective national legislation. If these are already available, attach them to this application form, otherwise indicate when you expect them to be available.

Enter text here

For investments in infrastructure with an expected lifespan of at least five years, please indicate whether an assessment of expected impacts of climate change has been carried out. Should it be necessary, you must be ready to submit this documentation to the relevant programme body/ies.

Enter text here

Ownership

Who owns the site where the investment is located?

Enter text here

Who will retain ownership of the investment at the end of the project?

Enter text here

Discard changes | Save changes

Let's translate the climate proofing in our own word!

Climate proofing

- Is a process to prevent infrastructure from being vulnerable to the potential long-term effects of climate change, while ensuring compliance with the 'energy efficiency first'principle and ensuring that the level of greenhouse gas emissions from the project is compatible with the 2050 climate neutrality objective.

- Helps to integrate climate change *mitigation* and *adaptation* measures *into the development of infrastructure projects*.

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Let's translate the climate proofing in our own word!

Climate mitigation

- A human intervention to reduce emissions or enhance the sinks of greenhouse gases. Note that this encompasses carbon dioxide removal (CDR) options.

Adaptation

- In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects.

Resilience to climate change

- is the project's ability to withstand and return to its normal operating conditions after experiencing (extreme) climate hazard.

Climate proofing process

- The climate proofing process is a documentation comprising two pillars (mitigation, adaptation) and each of the two pillars comprises two steps (examination, detailed analysis).

- The project partners must include in the project preparation team the expertise required for climate proofing and ensure coordination with other works in the project development process, e.g. pre-feasibility, feasibility studies (including option and CBA analyses, if the case), environmental assessments.

- The immunization process should be included at each stage of a project, from strategy/planning, project preparation, strategy to procurement/implementation, operation/maintenance, and decommissioning.

Climate proofing process

- When applying for support under specific instruments, the project promoter prepares, plans and documents the climate-proofing process covering mitigation and adaptation. This includes:
  - assessing and specifying the project context, and project boundaries and interactions;
  - selecting the assessment methodology, including key parameters for the vulnerability and risk assessment;
  - identifying who should be involved and allocating resources, time and budget;
  - compiling key reference documents such as the applicable national energy and climate plan (NECP) and relevant adaptation strategies and plans, including for instance National and local disaster risk reduction strategies;
  - ensuring compliance with applicable legislation, rules and regulations, for example on structural engineering and the environmental impact assessment (EIA), and, where available, the strategic environmental assessment (SEA).

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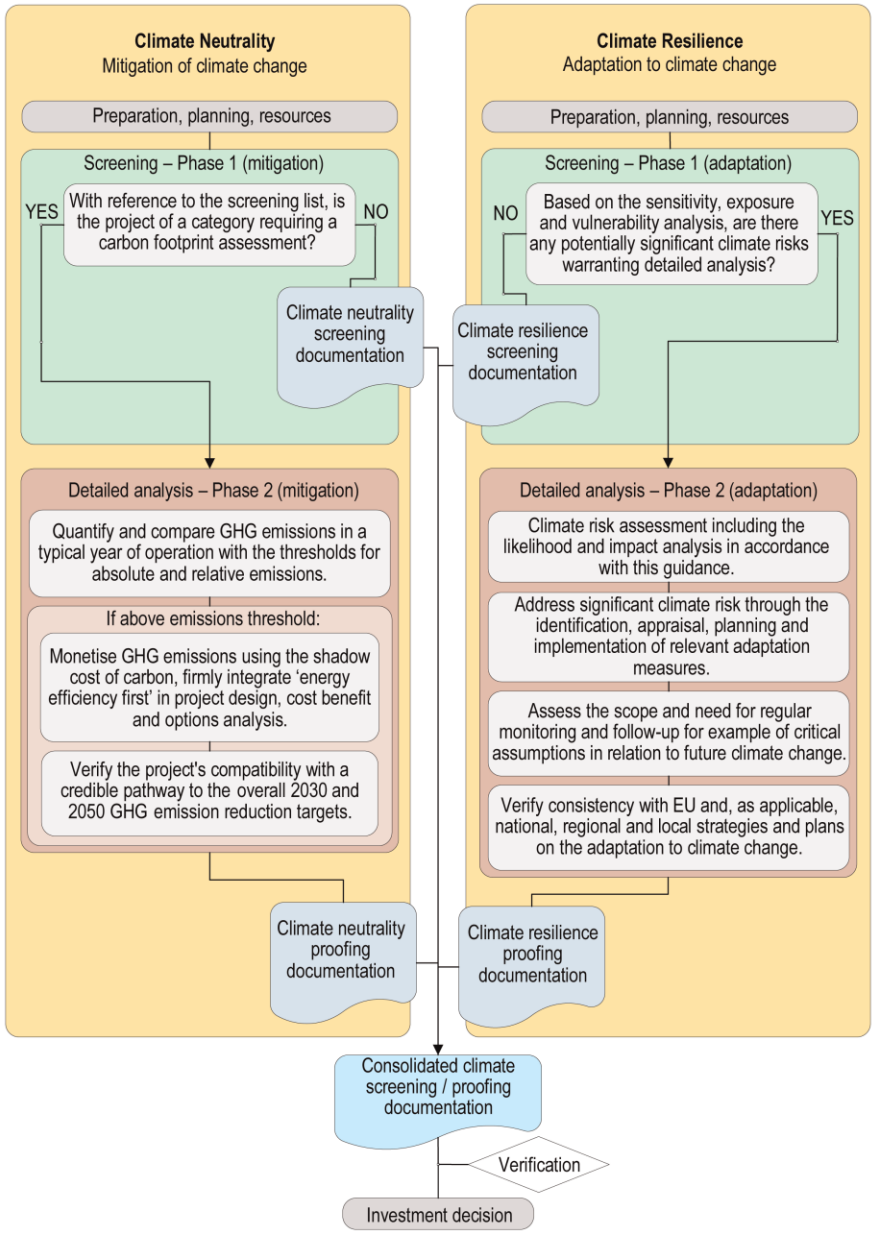
Climate proofing process (Pillars)



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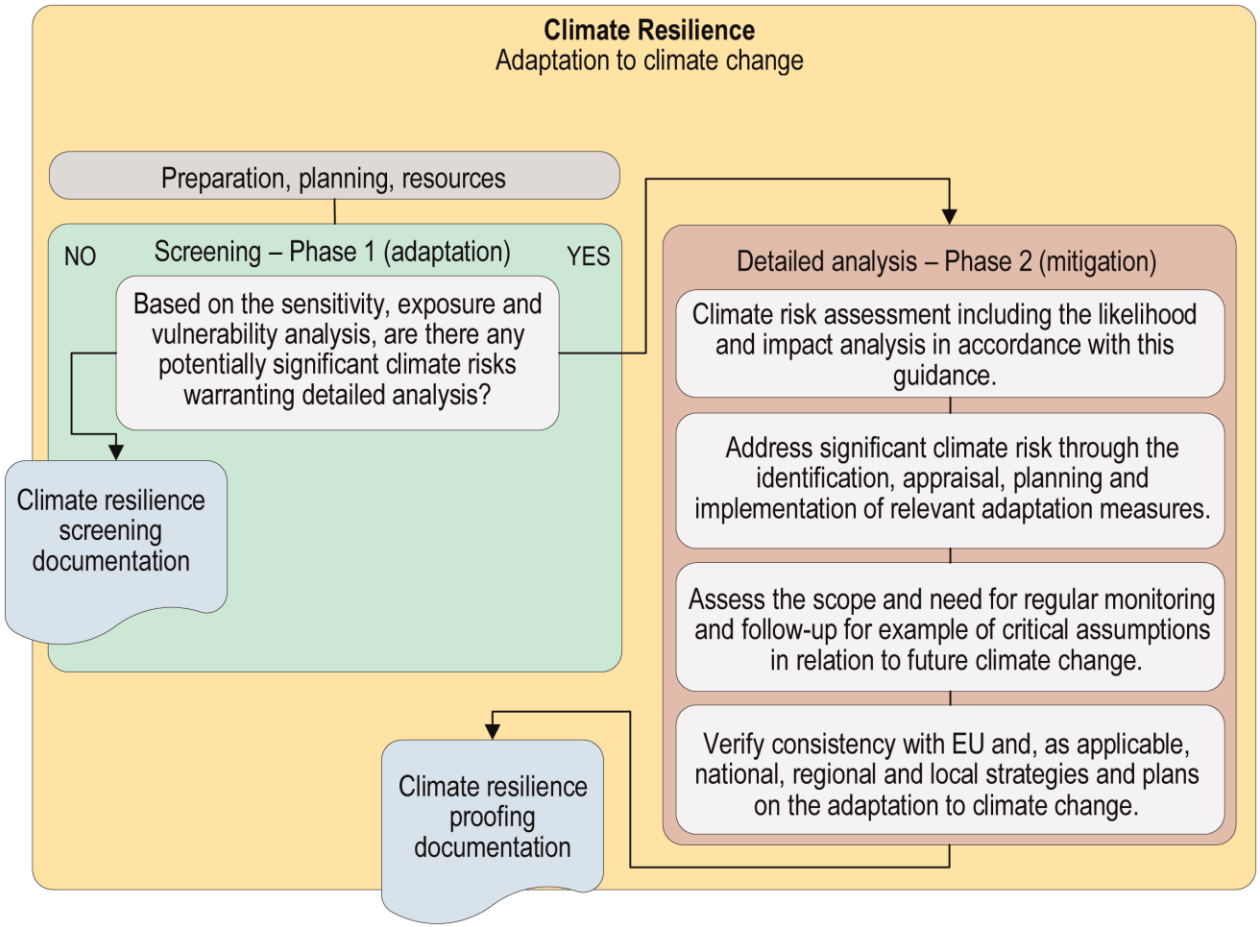
Climate proofing process – Climate resilience



Climate proofing process – Climate resilience

Climate resilience proofing aims to ensure an adequate level of resilience of the infrastructure to the impacts of climate change over its lifetime, which includes acute events such as:

- more intense floods, cloudbursts, droughts, heatwaves, wildfires, storms and landslides and hurricanes,
- chronic events such as projected sea-level rise and changes in average precipitation, soil moisture and air humidity.

In addition to factoring in the climate resilience of the project, there must be measures to ensure that the project does not increase the vulnerability of neighboring economic and social structures.

This could happen, for instance, if a project includes an embankment that could increase flood risk in the vicinity.

Climate proofing process – Climate resilience

The climate resilience proofing assessment will be carried out for various climate hazards arising from climate change (from different dataset):

- average annual/seasonal/monthly temperature; extreme temperature values – frequency and magnitude,
- annual/seasonal/monthly precipitation amount, maximum amounts of precipitation in 24 hours, frequency and intensity of extreme rainfall,
- average and maximum wind speed,
- sea level rise, water/sea temperature increase,
- water availability, frequency and intensity of storms, floods, sandstorms, coastal erosion and soil erosion/land/avalanches, soil salinity, air quality, vegetation fires, urban heating effect, changing seasons.

It is among the initial tasks of the project applicant and expert team to decide on the climate projection dataset(s) to be used for the climate vulnerability and risk assessment – and this should be documented.

Climate proofing process – Climate resilience

- The climate vulnerability and risk assessment helps identifying the **significant climate risks for the project**. It is the basis for identifying, appraising and implementing targeted adaptation measures which will help reduce the residual risk to an acceptable level.
- The timescale for the climate vulnerability and risk assessment should correspond to the intended lifespan of the investment being financed under the project. The lifespan is often (considerably) longer than the reference period used in the cost-benefit analysis, for example.

  For instance, one of the main concepts of the Eurocodes (12) is the **design working life** (DWL), defined as the period for which the structure will be used with anticipated maintenance but without major repair. The DWL of buildings and other common structures designed using Eurocodes is 50 years, and the DWL of monumental buildings and bridges is envisaged as 100 years. In this way, structures designed in 2023 will withstand climatic actions (e.g. snow, wind, thermal) and extreme events expected up to 2073 (as for buildings), and up to 2123 for bridges and monumental buildings.

  During the intended lifespan of the infrastructure project there could be significant changes in the frequency and intensity of extreme weather events due to climate change, which should be taken into account.
- At the same time, it should be ensured that the project is aligned with the EU and, as applicable, the national, regional and local adaptation strategies and plans.

Climate proofing process

Screening Phase1 (adaptation)

- **The partners must carry out a climate vulnerability analysis to identify potential significant climate vulnerabilities in relation to the type of project and the project`s location.**

Includes 3 steeps: sensitivity, exposure (current and future), vulnerability

This analysis should be carried out combining:

  - the sensitivity of the type of infrastructure to climate risks (irrespective of the location); and
  - the exposure of the infrastructure area to these risks (irrespective of the type of project), i.e. if these climate hazards are expected to occur at the location of the infrastructure in the immediate and distant future based on the climate projections.

- If there are no significant climate vulnerabilities justifying further analysis, the documentation shall be compiled and analyses presented in a **declaration on climate resilience examination**, which in principle provides a conclusion on climate resilience.

- If there are significant climate vulnerabilities justifying further analysis, proceed to **Phase 2** of detailed analysis.

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Climate proofing process

Screening Phase1 (adaptation)

Vulnerability analysis

Phase 1 (screening)

SENSITIVITY ANALYSIS

Indicative sensitivity table: *(example)*		Climate variables and hazards: Flood	Heat	...	Drought
Themes	On-site assets, ...	High	Low	...	Low
	Inputs (water, ...)	Medium	Medium	...	Low
	Outputs (products, ...)	High	Low	...	Low
	Transport links	Medium	Low	...	Low
	Highest score 4 themes	High	Medium	...	Low

The output of the sensitivity analysis may be summarised in a table with the sensitivity ranking of the relevant climate variables and hazards for a given project type, irrespective of the location, including critical parameters, and divided in e.g. the four themes.

EXPOSURE ANALYSIS

Indicative exposure table: *(example)*	Climate variables and hazards: Flood	Heat	...	Drought
Current climate	Medium	Low	...	Low
Future climate	High	Medium	...	Low
Highest score, current+future	High	Medium	...	Low

The output of the exposure analysis may be summarised in a table with the exposure ranking of the relevant climate variables and hazards for the selected location, irrespective of the project type, and divided in current and future climate. For both the sensitivity and exposure analysis, the scoring system should be carefully defined and explained, and the given scores should be justified.

VULNERABILITY ANALYSIS

Indicative vulnerability table: *(example)*		Exposure (current + future climate): High	Medium	Low
Sensitivity (highest across the four themes)	High	Flood		
	Medium		Heat	
	Low			Drought

Legend: Vulnerability level

- High
- Medium
- Low

The vulnerability analysis may be summarised in a table for the given specific project type at the selected location. It combines the sensitivity and the exposure analysis. The most relevant climate variables and hazards are those with a high or medium vulnerability level, which are then taken forward to the steps below. The vulnerability levels should be carefully defined and explained, and the given scores justified.

Climate proofing process

Screening Phase1 (adaptation) – Sensitivity analysis

The purpose of the sensitivity analysis is to identify the climate risks (climate hazards) that are relevant to the type of project, regardless of its location.

Eg.: level rise is likely to be a significant hazard for most seaport projects, irrespective of their location.

Sensitivity is defined as: The sensitivity analysis is based on knowledge of all the elements according to which the infrastructure will be built and operated. All project components and interdependencies should be included in the assessments.

Sensitivity analysis should be carried out from the following four perspectives:

- **Sensitivity of assets and processes – Technical/construction part and the processes within the technological flux;**
- **Sensitivity of inputs (water, energy, others) - Elements necessary for the operation of the infrastructure;**
- **Sensitivity outputs (products, market, consumer demand);**
- **Sensitivity transport connections, etc, even if outside the direct control of the project.**

Note that sensitivity does not take into account the location of the construction. It is purely based on the project's specific factors, irrespective of the location, e.g. what the project is and how it works.

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Climate proofing process

Screening Phase1 (adaptation) – Sensitivity analysis

SENSITIVITY ANALYSIS

Indicative sensitivity table: *(example)*		Climate variables and hazards			
		Flood	Heat	…	Drought
Themes	On-site assets, …	High	Low	…	Low
	Inputs (water, …)	Medium	Medium	…	Low
	Outputs (products, …)	High	Low	…	Low
	Transport links	Medium	Low	…	Low
	Highest score 4 themes	High	Medium	…	Low

The output of the sensitivity analysis may be summarised in a table with the sensitivity ranking of the relevant climate variables and hazards for a given project type, irrespective of the location, including critical parameters, and divided in e.g. the four themes.

For each theme and climate hazard, the "high", "medium" or "low" rating must be given:

- **high sensitivity:** the climate threat could have a significant impact on assets and processes, inputs, exits and transport links;
- **average sensitivity:** the climate threat could have a minor impact on assets and processes, inputs, exits and transport links;
- **low sensitivity:** the climate hazard has no impact (or has an insignificant impact).

Climate proofing process

Screening Phase1 (adaptation) – Exposure analysis

The purpose of the exposure analysis is to identify the risks that are relevant to the location of the project/site (regardless of the type of investment).

Eg.: flooding could be a significant climate hazard for a location next to a river in a floodplain.

The exposure includes 2 parts:

- **Current climate: historical risk and current data; e.g.: flood risk maps, extreme temperatures or heatwave maps, storm risk maps, etc.**
- **Future climate: evolution projection models for the risks analyzed over the lifetime of the project**

EXPOSURE ANALYSIS

Indicative exposure table: *(example)*	Climate variables and hazards Flood	Heat	…	Drought
Current climate	Medium	Low	…	Low
Future climate	High	Medium	…	Low
Highest score, current+future	High	Medium	…	Low

The output of the exposure analysis may be summarised in a table with the exposure ranking of the relevant climate variables and hazards for the selected location, irrespective of the project type, and divided in current and future climate. For both the sensitivity and exposure analysis, the scoring system should be carefully defined and explained, and the given scores should be justified.

Climate proofing process

Screening Phase1 (adaptation) – Exposure analysis

- The location of the project, which is often decided at an early stage, can be decisive for assessing vulnerability to climate change and risks.
- Different geographical locations can be exposed to different climate hazards. It is useful to understand how the exposure of different geographic areas in Europe will change as a result of changing climate hazards, as illustrated in the list below.
- In some cases of infrastructure projects, it would be useful to use higher resolution climate data and forecasts than available, which take into account local characteristics (e.g. topography) and highlight any significant local climatic variations.

The more local and specific the data is, the more accurate and relevant it'll be evaluation. Relevant information sources at National level include, among others:

- National Meteorological Agency data and studies
- Flood Risk Management plans (and maps)
- River Basin Management Plans
- Disaster Risk Management Plan
- Latest communications to the UNFCCC
- Latest Climate Change Adaptation Strategy
- Etc.

Climate proofing process

Screening Phase1 (adaptation) - Vulnerability analysis

- The purpose of the vulnerability analysis is to identify potential significant risks climate vulnerabilities and is achieved by combining sensitivity (S) and exposure (E) degree, which determines the level of vulnerability (low, medium or high).

VULNERABILITY ANALYSIS

Indicative vulnerability table: *(example)*		Exposure (current + future climate) High	Medium	Low
Sensitivity (highest across the four themes)	High	Flood		
	Medium		Heat	
	Low			Drought

Legend: Vulnerability level
- High
- Medium
- Low

The vulnerability analysis may be summarised in a table for the given specific project type at the selected location. It combines the sensitivity and the exposure analysis. The most relevant climate variables and hazards are those with a high or medium vulnerability level, which are then taken forward to the steps below. The vulnerability levels should be carefully defined and explained, and the given scores justified.

Eg. V = SxE, where:

V - The degree of vulnerability,

S - The degree of sensitivity,

E – The degree of exposure

Climate proofing process

Screening Phase1 (adaptation) – Vulnerability analysis

The vulnerability assessment aims at identifying potential significant hazards and related risks and forms the basis for the decision **to proceed with the detailed analysis phase (Phase 2)**.

Typically it unveils the most relevant hazards for the risk assessment (these can be considered as the vulnerabilities ranked as 'high' and possibly 'medium', depending on the scale).

- If the vulnerability assessment concludes that all vulnerabilities are classified as low or insignificant on a justified basis, no further (climatic) risk assessment is required (with this end screening and step 1).
- If the vulnerability assessment concludes that the vulnerabilities are classified medium or high (depending on the scale), the detailed analysis (Phase 2) must be carried out.

However, the decision on vulnerabilities to proceed to a detailed risk analysis will depend on the justified assessment of the project beneficiary.

Climate proofing process

Screening Phase 2 Detailed analysis of adaptation to climate change

- Carrying out analyses of **probability** (likelihood), **impact, risk assessment** and proposing **adaptation measures**.
- Addressing significant climate risks by identifying, assessing, planning and implementing relevant and appropriate adaptation measures.
- Assessing the scope and the need for regular monitoring and follow-up, e.g. critical assumptions regarding future climate change.
- Verification of consistency with EU strategies and plans (Paris Agreement, EU principles on climate objectives) and, where appropriate, national, regional and local climate adaptation, as well as other relevant strategic and planning documents.
- Risk assessment allows deepening the “causes and effects” relationship between climate hazards and project components (technical, social, environmental, financial, etc.). High-level risk analysis involves qualitative risk analysis and detailed risk analysis, i.e. a quantitative, modelling analysis.

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Climate proofing process

Screening Phase 2 Detailed analysis of adaptation to climate change

LIKELIHOOD ANALYSIS

Indicative scale for assessing the likelihood of a climate hazard (example):

Term	Qualitative	Quantitative (*)
Rare	Highly unlikely to occur	5 %
Unlikely	Unlikely to occur	20 %
Moderate	As likely to occur as not	50 %
Likely	Likely to occur	80 %
Almost certain	Very likely to occur	95 %

The output of the likelihood analysis may be summarised in a qualitative or quantitative estimation of the likelihood for each of the essential climate variables and hazards. (*) Defining the scales requires careful analysis for various reasons including e.g. that the likelihood and impacts of the essential climate hazards may change significantly during the lifespan of the infrastructure project among other due to climate change. Various scales are referred to in the literature.

IMPACT ANALYSIS

Indicative scale for assessing the potential impact of a climate hazard (example) *Risk areas:* / *Impacts:*	Insignificant	Minor	Moderate	Major	Catastrophic
Asset damage, engineering, operational					
Safety and health					
Environment, cultural heritage					
Social					
Financial					
Reputation					
Any other relevant risk area(s)					
Overall for the above-listed risk areas					

The impact analysis provides an expert assessment of the potential impact for each of the essential climate variables and hazards.

RISK ASSESSMENT

Indicative risk table: *(example)*

Likelihood \ Overall impact of the essential climate variables and hazards (example)	Insignificant	Minor	Moderate	Major	Catastrophic
Rare					
Unlikely		Drought			
Moderate		Heat	Flood		
Likely					
Almost certain					

Legend: Risk level
- Low
- Medium
- High
- Extreme

The output of the risk analysis may be summarised in a table combining likelihood and impact of the essential climate variables and hazards. Detailed explanations are required to qualify and substantiate the assessment conclusions. The risk levels should be explained and justified.

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Climate proofing process

Screening Phase 2 - Probability (likelihood) analysis

- The purpose of this phase of analysis **is to assess the likelihood** that the identified climate hazards will occur during the lifetime of the project – based on existing statistical data, and expert experience.

- This will be done for the **climate hazards for which the project has a high or medium level of vulnerability, as identified at the screening stage.**

There are various approaches for describing the probability of a hazard to occur. It is important in the beginning of the assessment to set out what sort of scale will be used to assess probability and clearly explain what it means in terms of probability of a hazard to occur. The scale that will be chosen should be relevant to the specificities of the project and the same scale should be used throughout the assessment. The EC Guidance suggests that the likelihood of any particular risk event may be described in qualitative or quantitative terms. In all cases, the scale needs to be explained and each category needs to have a description about what that means (for example what is understood by "likely")

LIKELIHOOD ANALYSIS

Indicative scale for assessing the likelihood of a climate hazard (example):

Term	Qualitative	Quantitative (*)
Rare	Highly unlikely to occur	5 %
Unlikely	Unlikely to occur	20 %
Moderate	As likely to occur as not	50 %
Likely	Likely to occur	80 %
Almost certain	Very likely to occur	95 %

The output of the likelihood analysis may be summarised in a qualitative or quantitative estimation of the likelihood for each of the essential climate variables and hazards. (*) Defining the scales requires careful analysis for various reasons including that the likelihood and impacts of the essential climate hazards may change significantly during the lifespan of the infrastructure project among other due to climate change. Various scales are referred to in the literature.

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Climate proofing process

Screening Phase 2 - Impact analysis

- Analyses the ***consequences*** if the identified climate hazard occurs.
- The potential impact of a climate variable or climatic risk phenomenon should be assessed according to a scale/bare, whichever is the severity or magnitude. The consequences generally relate to physical assets and operations, health and safety, environmental impact, social impact, accessibility impact for persons with disabilities, financial implications and reputational risk.

IMPACT ANALYSIS

Indicative scale for assessing the potential impact of a climate hazard (example) *Risk areas:* — *Impacts:*	Insignificant	Minor	Moderate	Major	Catastrophic
Asset damage, engineering, operational				■	
Safety and health					
Environment, cultural heritage		■			
Social		■			
Financial		■			
Reputation				■	
Any other relevant risk area(s)	■				
Overall for the above-listed risk areas				■	

The impact analysis provides an expert assessment of the potential impact for each of the essential climate variables and hazards.

Climate proofing process

Screening Phase 2 - Impact analysis

- The assessment may be necessary to cover the adaptive capacity of the system in which the project operates.
- Adaptive capacity is the ability of systems, institutions, humans and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences.
- Impacts should be assessed on a scale of impact per hazard. Again, it is important that the methodology sets out the scale for assessing severity and that this is explained clearly in relation to the project. Each category needs to have a description about what that means for the project (for example: what “Catastrophic” means).
- For a range of climate hazards it can be expected that the likelihood and impacts will change during the lifespan of the project, as global warming and climate change unfolds.
- The projected changes in likelihood and impacts should be integrated in the risk assessment. For this purpose, it can be useful to divide the lifespan into a sequence of shorter periods (e.g. 10-20 years). Particular attention should be given to weather extremes and cascade effects.

Climate proofing process

Screening Phase 2 - Risk analysis

- After assessing the probability of each hazard to occur and the expected impacts, the level of importance of each potential risk can be estimated by combining the two factors.
- Risks can be traced to a **risk matrix** to identify the most important potential risks and those for which adaptation measures need to be taken
- The assessment of the level of risk or relevance shall be the responsibility of the project beneficiary and the team of experts carrying out the evaluation, taking into account the circumstances of the project.
- If the risk assessment concludes that there are no significant risks to the project from climate change, and that conclusion has been duly justified, there may be no need to undertake further assessment or additional adaptation measures.

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Climate proofing process

Screening Phase 2 - Risk analysis

R = P x I, where:

R — the risk; P- the probability that the risk will occur; I — the impact of the risk

RISK ASSESSMENT

Indicative risk table: *(example)*

Overall impact of the essential climate variables and hazards (example)

Likelihood	Insignificant	Minor	Moderate	Major	Catastrophic
Rare					
Unlikely		Drought			
Moderate		Heat	Flood		
Likely					
Almost certain					

Legend:

Risk level
Low
Medium
High
Extreme

The output of the risk analysis may be summarised in a table combining likelihood and impact of the essential climate variables and hazards. Detailed explanations are required to qualify and substantiate the assessment conclusions. The risk levels should be explained and justified.

Climate proofing process

Screening Phase 2 - Adaptation measures

- If the risk assessment concludes that there are significant climate risks for the project, **the risks must be managed and reduced to an acceptable level.**
- Settling on the '**acceptable level**' of risk depends on the expert team carrying out the assessment and the risk that the project promoter is prepared to accept. For example, there may be aspects of the project considered to be non-essential infrastructure where the costs of adaptation measures outweigh the benefits of avoiding the risks and the best option could be to allow the non-essential infrastructure to fail under certain circumstances.
- For each significant risk identified, **specific adaptation measures** should be assessed.
- The preferred measures should then be integrated into the design and/or operation of the project in order to improve resilience to climate change.

Climate proofing process

Screening Phase 2 - Adaptation measures

- Adaptation will often involve the adoption of a combination of **structural and non-structural measures:**
  - **Structural measures** include changing the design or specifications of physical assets and infrastructure or adopting alternative or improved solutions.
  - **Non-structural measures** include spatial planning, improved monitoring or emergency response programmes, staff training and skills transfer activities, the development of strategic or corporate climate risk assessment frameworks, financial solutions such as ensuring against supply chain failure or alternative services.
- Flexible/adaptive measures can also be considered, such as **monitoring the situation**
- Assessing the adaptation options can be quantitative or qualitative, depending on the availability of information and other factors.
- The next step is to integrate the appraised adaptation options into the project, at the right development stage, including investment and finance planning, monitoring and response planning, defining roles and responsibilities, organisational arrangements, training, engineering design and to ensure that the options comply with the applicable law.

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Climate proofing process

Screening Phase 2 - Adaptation measures

IDENTIFYING ADAPTATION OPTIONS	APPRAISING ADAPTATION OPTIONS	ADAPTATION PLANNING
Option identification process: — Identify options responding to the risks (use e.g. expert workshops, meetings, and evaluations) Adaptation may involve a mix of responses, e.g.: — training, capacity building, monitoring — use of best practices, standards — nature-based solutions — engineering solutions, technical design — risk management, insurance	The appraisal of adaptation options should give due regard to the specific circumstances and availability of data. In some cases a quick expert judgement may suffice whereas other cases may warrant a detailed cost-benefit analysis. It may be relevant to consider the robustness of various adaptation options vis-à-vis climate change uncertainties.	Integrate relevant climate resilience measures into the technical project design and management options. Develop implementation plan, finance plan, plan for monitoring and response, plan for regular review of the assumptions and the climate vulnerability and risk assessment, and so on. The vulnerability and risk assessment and adaptation planning is aiming to reduce the remaining climate risks to an acceptable level.

Climate proofing process

Screening Phase 2 - Monitoring

- Monitoring should be integrated into management processes.
- Ongoing monitoring should be carried out throughout the operational lifetime of the project in order to:
  - check the accuracy of the assessment and feed into future assessments and projects;
  - identify whether specific trigger points or thresholds are likely to be reached, indicating the need for additional adaptation measures.

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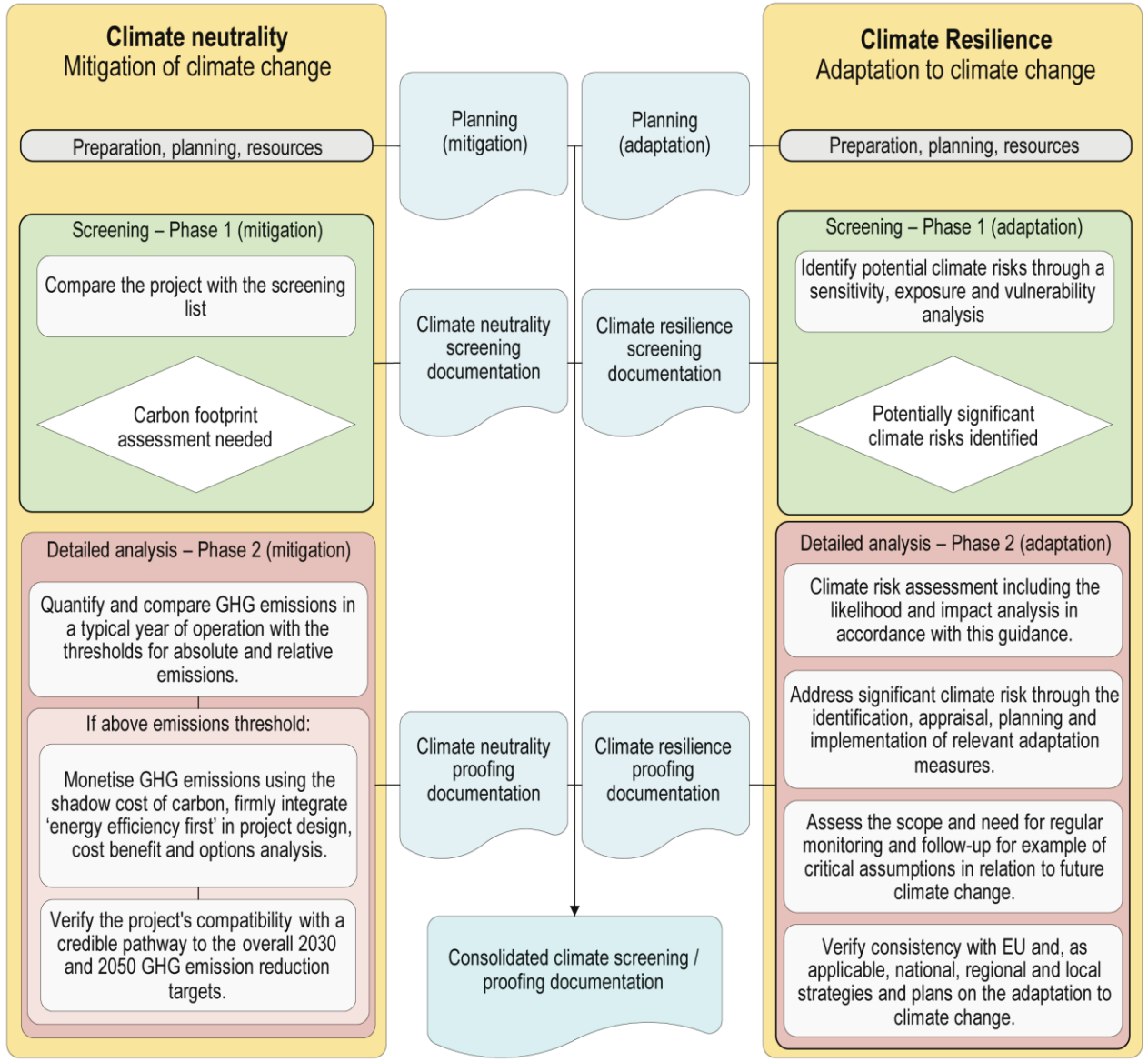
Climate proofing process

Climate proofing documentation

Documentation on climate proofing is the compilation of analyses of the steps into consolidated documentation (see Annex B, section B.2. Documentation of Climate Proofing – Adaptation to climate change).



Climate proofing process

Climate proofing documentation

Indicatively, the documentation should include:

- Introduction:
- Describe the infrastructure project and outline how it addresses climate change, including financial information (total investment costs, EU contribution).
- Contact details (e.g. the organization of the project promoter)

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Climate proofing process

- **Climate proofing documentation**
- **Step 1**

- Description of the screening and its outcome, including adequate details of the sensitivity, exposure and vulnerability analysis:
- Describe the data sources and climate projections that were used for the assessment.
- Describe the project components included in the analysis (i.e. assets and processes, inputs, outputs, interdependencies).
- List the climate hazards taken into account for sensitivity analysis (e.g. EU Taxonomy list of hazards) and the scale used in the assessment.
- Present the sensitivity analysis.
- Present the exposure analysis for current and future climate with the scale used in the assessment.
- Present the vulnerability analysis and summarise the climate hazards that will require detailed analysis.

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- **Climate proofing documentation**
- **Step 2 -** If step 2 is carried out (detailed analysis):

- Description of the climate risk assessment, including probability and impact analysis, and identified climate risks.
- Description of how climate risks identified by relevant adaptation measures are addressed, including how to identify, assess, plan and implement those measures. For example provide information on how these hazards have been taken into account in technical studies and if they adequately address the identified risks to an acceptable level.
- Description of the assessment and outcome in relation to periodic monitoring and follow-up adaptation measure plan that are envisaged for the project, for example, of critical assumptions in relation to future climate change.
- Description of the project's consistency with EU and, where appropriate, national, regional and local climate adaptation strategies and plans, as well as national or regional disaster risk management plans.

Climate proofing process

Climate proofing documentation

- **Verification information (if applicable)**
  - Description of how the verification was carried out.
  - Description of the main findings.
- **Any additional relevant information**
  - Any other relevant aspects of compliance with environmental requirements.
  - Description of any tasks related to climate proofing that are postponed to a later stage of project development, e.g. to be carried out by the contractor during construction or by the asset manager for the duration of the operation.
  - List of published documents (e.g. environmental impact assessment and other environmental assessments).
  - List of key documents available at the project promoter.

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General information

- An independent expert verification of the concerned documentation may be required to provide assurance that the climate proofing adheres to the applicable guidance and other requirements.

- The cost of the independent verification is part of the project development and covered by the project applicant (can requested as real costs, preparation costs, under the Interreg VI-A Romania-Bulgaria)

Climate proofing process

References

Intergovernmental Panel on Climate Change (IPCC)

https://interactive-atlas.ipcc.ch/

Climate - ADAPT (partnership between European Commission and the European Agency for Environment)

https://climate-adapt.eea.europa.eu/en/metadata/publications/sixth-assessment-report