



Climate adaptation in TEN-E

ENTSOE/RGI workshop on climate adaptation

19 October 2023

Climate adaptation

- ‘The process of **adjustment to actual or expected climate and its effects**’ (IPCC definition)
- ‘a process that ensures that resilience to the potential **adverse impacts of climate change of energy infrastructure** is achieved through a climate **vulnerability and risk assessment**, including through relevant adaptation measures’ (TEN-E definition)
- Strengthening the efforts on climate adaptation and mitigation, **resilience building, disaster prevention and preparedness** is crucial

Climate adaptation of energy infrastructure

- The impacts of climate change are already visible, and these impacts are set to intensify in the future. Potential risks for energy infrastructure:
 - Sea level rise; rising heat levels; disruptions with cooling for power plants; damage to infrastructure; changing tree and leaf coverage resulting in hazards for overhead transmission lines
- Investing in resilient, climate-proof infrastructure pays off. Infrastructure often lasts for many decades but much of the existing stock is not coping well with the changing climate. To minimize the risk of disasters and be cost-effective over its lifetime, infrastructure should be **climate resilient**.

TEN-E provisions relevant for project promoters

Article 5 – implementation and monitoring:

- Project promoters to create **implementation plan**, including a timetable for: feasibility and design studies including, as regards, climate adaptation and compliance with environmental legislation and with the principle of “do no significant harm”
- Project promoters to submit an **annual report**, including details on climate adaptation measures taken

Article 10 – permit granting process:

- **Climate adaptation documentation** necessary for pre-application procedure as part of the environmental reports

Annex V - on the Cost-Benefit Analysis (CBA):

- It shall ensure that the **climate adaptation measures** taken for each project are assessed

Documentation on adaptation required for PCIs

- Conduct a **vulnerability and risk assessment** to evaluate whether there are any potentially significant climate risks, how they can be addressed in the design of the project and what are the residual risks:
 - ✓ Necessary for pre-application to permit granting
 - ✓ Information from this assessment and its implementation will feed into the implementation plan of the project and the annual reporting, **reflecting on adaptation measures to address identified risks** and progress on the implementation of these measures, as well as in the CBA.

Commission guidance on climate proofing

- Technical guidance on climate proofing of infrastructure ([2021/C 373/01](#) - July 2021): **Climate proofing** is a process that integrates climate change **mitigation and adaptation** measures into the development of infrastructure projects.
- Guidance sets out common principles and practices for the identification, classification and management of physical climate risks when planning, developing, executing and monitoring infrastructure projects and programs

Vulnerability and risk assessment

The **vulnerability and risk assessment** aims to identify the relevant climate hazards for the project at the planned location, explain how they are addressed in the design and identify any residual risks. The vulnerability of a project is a combination of two aspects:

1. How sensitive the project's components are to climate hazards in general (**sensitivity**)
2. The probability of these hazards occurring at the project location now and in the future (**exposure**).

Examples of key questions (see guidance):

- Can the materials used during construction withstand higher temperatures (or will they experience, for example, material fatigue or surface degradation)?
- Can the materials used during construction withstand higher/lower temperatures and fire?
- Will the proposed project be at risk because of storms and strong winds? Can the project and its operation be affected by falling objects (e.g., trees) close to its location?

TEN-E provisions relevant for EC

Article 21 – reporting and evaluation:

- By 30 June 2027, the Commission will publish a report on the implementation of PCIs and PMIs, among which:
 - Best and innovative practices with regard to mitigation of environmental impacts, including climate adaptation, during permit granting processes and project implementation

Additional/backup slides

Examples of adaptation measures

- Systematic monitoring
- Design of temperature-resilient transmission lines
- Placement of lines and conductors
- Creating an emergency plan