

Response to the European Commission's consultation on the European Climate Resilience and Risk Management – Integrated Framework

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About this submission

This paper is a response to the open public consultation launched by the European Commission in 2025 on the [European Climate Resilience and Risk Management – Integrated Framework](#). The response was submitted to the Commission on 20 February 2026 and specifically addresses areas of the consultation that relate to the authors’ expertise. This version has been edited before publication on the CETEx website.

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Summary

In February 2026 the European Commission closed its consultation on the future of Climate Resilience and Risk Management in the bloc. It is due to publish its Integrated Framework in October 2026. In this publication, we present our responses to this consultation.

The extreme summer of 2026 and the 2026–27 El Niño is bringing climate resilience to the forefront of policymakers' minds. In this consultation response, we highlight three changes the Commission should adopt to move from a patchwork of inconsistent efforts towards a coherent, EU-wide system:

1. The EU should establish common climate scenarios and have an honest conversation about acceptable levels of risk

One challenge in adaptation planning across such a wide range of actors and countries is that there is no shared language about the future climate. Across the EU, public and private actors assessing their risk face conflicting guidance on which climate scenarios to use. Even when the same one is used, they can often be interpreted differently with RCP8.5, for example, variously described as a “4°C world,” a “high emissions” scenario, a “central” projection, or a “plausible worst case”.

The wealth of climate risk information available is often unsuited to informing policy, making it challenging for public and private organisations to conduct their own risk assessments and adaptation planning. This may lead to inconsistent planning or climate risks being ignored entirely in planning and design processes.

We therefore recommend that the EU legislate for common reference scenarios, following the decision already taken by the French Government, to help shift towards more proactive and consistent adaptation planning and investment. The EU should establish a reference scenario that represents the expected trajectory; a higher-warming, extreme but plausible scenario for contingency planning; and clear guidance on how each scenario should be applied across different contexts. The Commission could also provide detailed guidance on the use of these scenarios and the process for updating them as new evidence emerges.

2. Harness the fact that adaptation presents an opportunity to build resilience and innovate in key technologies the EU already leads on

Demand for the technologies and services required to adapt to a changing climate are going to increase in the coming decades, both domestically and internationally. The EU is well placed to build comparative advantage in many of these technologies and services. These include technologies and services that Mario Draghi identified as critical in his 2024 report on the EU's competitiveness (Draghi, 2024), such as engineering-intensive technologies for coasts, river basins and water systems; life-science and agricultural innovations; weather forecasting and climate simulation; and supporting services from insurance to resilient building design. For example, Europe already holds 40% of global water-technology patents and water stress in the EU and elsewhere will only increase demand for these.

The EU should therefore capitalise on this future market by supporting innovation in climate adaptation goods and services, particularly those in sectors where the EU already has technological and competitive advantage. This could involve prioritising and funding early-stage research in areas like climate-resilient agriculture and developing common standards to signal the need for climate resilient technologies through EU innovation funds such as Horizon Europe or the Connectivity Europe Facility (CEF).

3. Embed the 'Resilience by Design' principle into EU funding and scale up adaptation finance

EU funds that finance critical infrastructure such as energy grids, transport networks and water systems, among others, lack systematic, concrete resilience requirements to make these assets future-proof. This is a significant shortcoming: EU funds finance long-lived assets that must withstand a changing climate, yet current regulations do not build in resilience as standard practice. For example, the Recovery and Resilience Facility (RRF), the cornerstone of NextGenerationEU and the largest fiscal expansion in EU history, does not mandate climate resilience considerations. If this lack of resilience requirements is not addressed, vulnerabilities could be locked in for decades to come (Baldursson and von der Fehr, 2025).

Resilience should therefore play a much larger role in EU funding schemes. The upcoming Multiannual Financial Framework (MFF) negotiations should mandate climate risk assessments and resilience performance indicators for all funded critical infrastructure projects, covering sectors such as energy, water, agriculture, transport, health and social care facilities as well as any public infrastructure financed with EU funds.

Adaptation also needs to become a significantly larger share of Common Agricultural Policy (CAP) funding: the adaptation financing gap in agriculture is roughly €11 billion per year by 2100 under a high-emissions scenario (Neumann and Botia, 2025). The EU should also introduce dedicated adaptation financing, by creating a dedicated EU climate adaptation fund.

The sections below include the questions provided by the European Commission in the public consultation and the replies we provided.

Climate resilience by design

Which sectors are most important for integrating the principle of “climate resilience by design”?

The EU's approach to climate resilience should prioritise sectors where exposure and vulnerability to climate-related risks intersects with assets with long lifespans and strong value to society. We discuss these sectors in priority order.

The **energy sector** is vulnerable to extreme temperatures, which reduces the efficiency of thermal power plants and increases electricity demand for cooling (Petrakopoulou et al., 2020); droughts, which threaten hydroelectric generation, and the water needed for cooling thermal plants; flooding, which can damage critical energy infrastructure; and storm damage to energy infrastructure, which can lead to blackouts. With upgrades to energy infrastructure happening now for the transition to net zero and expected to last for 30 to 60-plus years, they will need to be built to function under more extreme climatic conditions than today. They must also balance the expected increase in energy demand from climate extremes and technological demand.

Water sector infrastructure faces the dual challenge of flooding and drought, with more intense rainfall events overwhelming drainage systems, stormwater networks and wastewater treatment plants, leading to urban flooding. Prolonged drought will stress water supply systems. Water infrastructure is often designed to operate for over 100 years, so must be designed with the climate in 2100 in mind. Every critical sector depends on water systems, including agriculture, manufacturing and the energy sector. The economic and social costs of disruption to the sector are high.

The **agricultural sector** is highly exposed to nature- and climate- risks, with crops/arable farming particularly vulnerable to perils including flooding, drought and hail. Shocks to the crop sector can have significant impacts on food price stability, trade, food security, labour and even fiscal space where government plays a role in financing the recovery. With changes in dietary patterns, geopolitical shifts in trade policies, and increasing nature and climate risk, it is important that principles of climate resilience by design are integrated into industrial strategy for the sector and into specific agricultural policy measures.

Transport networks are also highly exposed. Rail tracks buckle and roads soften and crack in extreme heat; flooding and storms can destroy infrastructure; coastal transport infrastructure also faces accelerating erosion rates as sea levels rise. Transport disruptions cascade through supply chains, affecting food distribution, human capital mobility, manufacturing and healthcare delivery. Infrastructure failure can put lives at risk. Transport infrastructure built today will operate for 50-100 years, meaning decisions made now will determine resilience levels to 2075-2125. As updates continue to be made to transport infrastructure to meet greenhouse gas emissions targets, these investments must also build in climate resilience.

Health and social care facilities are an essential service and must continue to run throughout natural catastrophes, often experiencing higher demand during these periods. These facilities are often most used by the populations most vulnerable to climate impacts, i.e. the elderly, young, mobility-limited and critically ill. These groups may be more vulnerable to heat stress, may have constrained financial resources to avoid or mitigate climate-related risks in their home, and may have limited capacity to respond quickly in natural catastrophes (e.g. flash flooding). Building lifespans also exceed 60 years, meaning investments made today must account for future climate conditions.

Public facilities. In **education**, heightened vulnerability links heat exposure to educational harm. The academic literature has repeatedly found a connection between heat stress and educational harm, and that this can disproportionately harm disadvantaged students (Akesaka and Shigoeka, 2025). Similarly, **prisons** tend to be older buildings with poor insulation and inadequate cooling. This creates both a practical and legal challenge, with EU member states having obligations under the European Convention on Human Rights to protect prisoners from inhuman or degrading treatment. Inadequate protection from extreme heat can constitute violations.

Residential buildings are also vulnerable to natural hazards and should be built in places that are not at high risk of flooding and to withstand increasing temperatures. Exposure to climate hazards, particularly flooding, also has consequences for household access to property insurance, which in turn affects property value and financial stability.

We see these as priority sectors but other sectors that should be considered include:

- Digital infrastructure and telecommunications
- Supply chains and logistics, which are also critical for food security, medical supplies and economic continuity
- Waste management, infrastructure that is frequently situated in areas vulnerable to flooding, which can cause environmental contamination.

Integrating “resilience by design” could involve incorporating climate scenarios in planning and designing, with consistent scenarios across member states to provide clarity and certainty to investors and planners. It should be accompanied with regulations including requirements to conduct climate change risk assessments, maximum safe temperature standards, mandatory passive cooling design, back-up power systems, and restrictions on building locations vulnerable to flooding.

Which policy areas or EU legislative frameworks should prioritise embedding this principle, and how should this be done?

The principle of “climate resilience by design” should be introduced in the following:

1. **EU funds:** a critical entry point for embedding this principle is EU funds which finance long-lived assets, such as transport networks, water systems and energy grids, and which must withstand future climate risks. Currently, major instruments like the Recovery and Resilience Facility (RRF), despite being the cornerstone of NextGenerationEU and the largest fiscal expansion in EU history, do not require climate resilience considerations. This situation risks locking in vulnerabilities for decades. Integrating resilience into EU funds would protect economic activity and livelihoods while ensuring efficient, future-proof investment. The upcoming negotiations of the next Multiannual Financial Framework (MFF) offer a strategic opportunity to mainstream this principle. This could be achieved by:
 - Mandating climate risk assessment for all funded projects related to (critical) infrastructure
 - Including resilience performance indicators in project selection and monitoring
 - Ensuring that disbursements are linked to future-proofed considerations
 - Ensuring innovation programmes like Horizon Europe prioritise projects that advance resilience integration.
2. **Energy regulation and infrastructure:** physical risks pose an enormous threat to energy infrastructure, disrupting generation, transmission and distribution. It has been calculated by Zurich Re (2025) that by 2030, 46% of total renewable generation capacity will be at critical risk in the EU, as well as 82% of total energy storage capacity, which could generate cascading effects across the interconnected EU networks. Yet, energy regulation and infrastructure development lacks systematic and concrete consideration of climate resilience.
3. **The Trans-European Networks for Energy (TEN-E) Regulation,** its associated 10-year network development plan (TYNDPs) and cost-benefit analysis (CBA) guidelines refer to resilience but do not systematically integrate it as “resilience by design”. For instance, its CBA does not allow the monetisation of high-impact, low-probability events associated with climate change, even though these events are expected to increase in frequency and intensity.

To improve the system’s resilience, it is necessary to integrate the principle of “resilience by

design” into EU energy regulation and infrastructure. A first move could be to integrate scenario analysis and stress testing into project selection in the TEN-E Regulation and its associated plans and guidelines. Not only should assessment be made of how projects support decarbonisation goals but there should also be assurance that financing is long-lasting and infrastructure future-proofed against extreme weather. One of the challenges of this solution would be to harmonise climate scenarios, as their quality depend on climate and infrastructure data. The Commission, or other relevant body, could follow the steps made by the Network of Central Banks and Supervisors for Greening the Financial System (NGFS), which has developed harmonised climate scenarios for financial institutions to use in climate stress testing.

4. **CAP (Common Agricultural Policy):** adaptation measures in the agriculture sector are already supported through the CAP, through obligatory and voluntary greening measures, supplemented through training measures. However, action that specifically targets adaptation action and climate-resilient farming practices could be better rewarded, with a larger share of funding to cover climate-resilient farming, including subsidising insurance premia, use of adapted crops, sustainable water practices, efficient irrigation and modification of crop calendars.

Legislative framework for climate resilience

The European Climate Law requires the EU and member states to ensure continuous progress on climate adaptation. However, each member state has a different policy framework for assessing risk, setting strategy and adopting adaptation measures. This limits the ability of the EU to coordinate actions and ensure each member state is acting sufficiently quickly.

Common baseline climate trajectories/scenarios, acceptable risk levels

The Commission considers the following aspects and requirements to be important parts of its legislative proposal to prevent major losses and damage. Table 1 shows our view on each of these aspects. We provide additional comments below.

Table 1

Should the following requirements be included in the legislative proposal?	Response
Determination of the levels of global warming or a similar common baseline* for adaptation decisions that EU and national public policy and investments should consider, for example through common EU climate reference trajectories/ scenario(s)	Fully agree
Duty to consider a common baseline (e.g. reference trajectories/scenarios) of global warming, as described in the preceding bullet point, in climate risk assessments	Fully agree
Duty to apply a precautionary approach by integrating a common baseline into planning decisions by the EU and Member States	Fully agree
Common approach for deciding what level of residual risks society / public authorities choose not to eliminate: a way to determine what are we willing to live with and why	Slightly agree

Further comments

Across the EU there are no consistent guidelines on using and interpreting climate scenarios available to the public or private actors assessing their risk or developing adaptation policy. Conflicting guidance exists on which scenarios should be used, with individual sectors (e.g. water, energy, transport) often providing sector- and location-specific guidance which is not always aligned. Even when the same representative pathway is used, its interpretation varies widely across sectors. Some

refer to RCP8.5, for example, as a “4°C world”, others to a “higher”, “low probability, high-impact”, “high emissions”, “central”, “higher-central” or “(plausible) worst case” scenario. This inconsistency creates confusion and undermines effective adaptation planning.

The wealth of climate risk information available is often unsuited to informing policy, making it challenging for public and private organisations to conduct their own risk assessments and adaptation planning. This may lead to inconsistent planning or climate risks being ignored entirely in planning and design processes, particularly when decision-makers are overwhelmed by conflicting information or uncertainty about which projections to apply.

To address this, the EU could legislate for common reference climate scenarios to help shift towards more proactive and consistent action. For example, the French Government launched a consultation on the definition of a reference warming trajectory for adaptation to climate change. This is progress towards legislating a standardised climate scenario. The EU could do the same, establishing:

1. A reference scenario that represents the expected trajectory for which systematic adaptation measures should be implemented
2. A higher-warming, extreme but plausible scenario that should inform contingency planning and testing of system resilience
3. Clear guidance on how each scenario should be applied across different decision contexts.

The Commission could provide detailed guidance on the use of these scenarios and the process for updating them as new evidence emerges. For example, to avoid locking decision-making into a scenario that is insufficiently or too extreme, the scenarios should be updated every several years to reflect the best scientific evidence on the trajectory of global warming. It could also clarify their application across different sectors, timeframes and decision types. Furthermore, as the Commission develops evidence on the risks faced across the EU, for example through the forthcoming integrated framework for European climate resilience and risk management, this evidence should be structured around these legislated scenarios. This would ensure that organisations conducting their own risk assessments or adaptation plans have a standardised evidence base suited to their needs, rather than having to synthesise disparate and potentially conflicting information sources. Flexibility in adaptation planning is important. Therefore, common baselines in climate risk assessments and planning decisions would create consistency across the EU while maintaining flexibility for member states to adopt more ambitious approaches where appropriate.

Establishing common approaches for determining acceptable levels of residual risk is more challenging. Several approaches can be considered:

1. **Cost-benefit analysis.** This should, under different climate scenarios, show the value of adaptation action relative to no additional action. However, the approach has limitations, including: the risk of maladaptation if inappropriate climate or socioeconomic scenarios are used; the challenge in monetising all costs and benefits (particularly non-market values like ecosystem services, cultural heritage or human wellbeing); and challenges in appropriately capturing and discounting future benefits and costs across populations and generations.
2. **Dynamic adaptation policy pathways.** These are designed to support decision-making under deep uncertainty by acknowledging uncertainty and identifying adaptation tipping points (the conditions where current strategies no longer meet objectives). It is robust, dynamic and adaptive and based on the Assumption-Based Planning (ABP) approach. However, the challenge with this method is that it is highly resource-intensive and often fails to give a clear indication on the best course of action.
3. **Risk-based standards.** This is similar to cost-benefit analysis where the level of protection is set based on the level of risk to which critical infrastructure and essential services are resilient. For example, flood protection standards might specify they are protected against a 1-in-200-year flood event under the reference scenario. Unlike with CBA, the challenge with this approach is

that it requires a public conversation and political decision on the level of cost and frequency of service disruption that is acceptable.

4. **Maintaining today's current level of risk.** This provides an intuitive benchmark but assumes that today's level of risk is acceptable to all populations and that no cost-effective action can be taken to reduce this risk further.

Climate change risk assessments

The Commission considers that it is important to include the requirements in Table 2 in the climate change risk assessment part of its legislative proposal. We outline our view on these requirements. We provide further comments below.

Table 2

Should the following requirements be included in the legislative proposal?	Response
Development of climate risk assessments that would also cover the most affected policy sectors, at European level	Fully agree
Development of climate risk assessments that would also cover the most affected policy sectors, at national level	Fully agree
Common parameters for the scope and content of both EU and national climate risk assessments (e.g. climate scenarios, regularity, sector coverage)	Slightly agree

Further comments

A climate change risk assessment (CCRA) is a vital tool used to support strong adaptation planning by identifying the most acute risks that should be prioritised, particularly when budgets are constrained. They serve multiple functions, including providing an evidence base for policy decisions, enabling comparability across regions and time periods, and offering an opportunity for adaptation plans to be adjusted.

European-level assessments, including the EEA's 2024 Assessment, are valuable because they can provide a common evidence base that national and sub-national authorities can use as a foundation for their own assessments. This can reduce duplication of research and ensure consistency in climate evidence. In the UK, the three national climate change risk assessments carried out to date are frequently used by local authorities and private sector actors as an evidence base for their own risk assessments. Furthermore, CCRA's can be used to identify risks that apply to multiple countries in the EU that individual member states cannot address alone, such as disruption to pan-European energy grids, transport networks, supply chains or financial systems. They can also support comparative analysis of climate vulnerabilities across regions, helping to prioritise EU-level funding towards the most vulnerable regions or sectors.

EU-level assessments alone are insufficient and should be accompanied with national CCRA's, which most European countries have produced. National risk assessments are important to capture the diversity and granularity of risks and detail that European-level assessments would be unable to achieve, including specific vulnerabilities related to location, infrastructure, population vulnerability and the local economy. These can therefore better support national and sub-national adaptation planning, which is especially critical as most adaptation policy action is taken at the local level. National-level CCRA's are also critical for accounting for national policy contexts including existing regulations and political priorities that will shape adaptation action.

National and EU-wide CCRA's should be accompanied by national adaptation plans that translate risk assessment findings into concrete policy commitments, funding assessments and implementation

timelines. Risk assessments without these plans risk becoming an excellent academic summary of risk, without leading to adaptation action being undertaken.

All levels of CCRA should be undertaken on a regular cycle (e.g. every five years) to integrate new scientific evidence, climate projections and emerging risks. Ideally, timings would be coordinated between EU and national-level assessments so that findings at the EU level could be incorporated into national assessments and avoid research duplication. Consistent parameters for the scope and content of CCRAs can provide valuable consistency to enable comparison across countries and aggregation to understand EU-wide risks. However, flexibility in national-level risk assessments is also essential as member states face different risk profiles. Therefore, the common framework could establish minimum expected standards for member states' risk assessments, while allowing additional types of risk to be included as appropriate and use additional data/evidence where it exists, which member states could integrate. Member states should also have some level of flexibility to integrate CCRAs into their wider policy processes (e.g. budgetary processes). This is a challenge faced in the UK, where the CCRA and NAP cycle is not closely aligned with Treasury Spending Reviews, which makes allocating budget for adaptation action challenging (Hodgkin and Rutter, 2024).

Adaptation planning and determination of risk owners

Table 3 provides our view on what is important in the process of adaptation planning and determining risk owners across the EU and for member states. We provide further comments below.

Table 3

Should the following requirements being included in the legislative proposal?	Response
Definition of climate resilience and adaptation targets (possibly including sectoral / thematic targets) for EU institutions and Member States	Fully agree
Robust obligation on the EU/Commission to prepare and implement an EU adaptation strategy and plan	Fully agree
Climate resilience and adaptation plans should also cover the most affected policy sectors at EU level	Fully agree
Robust obligation on Member States to develop national adaptation strategies and plans	Fully agree
Climate resilience and adaptation plans should also cover the most affected policy sectors at national level	Fully agree
Identification of risk owners responsible for and mandated to address the identified vulnerabilities	Fully agree

Further comments

Defining climate resilience and adaptation targets is valuable for providing targets policymakers can work towards. However, relative to targets in other policy areas, adaptation targets present distinct challenges in their development and implementation. Setting meaningful adaptation targets requires determining an acceptable level of residual risk that society is willing to live with, a fundamentally different proposition from mitigation targets where the goal is clearer (e.g. reducing emissions to net zero). Unlike quantifiable emissions reductions, adaptation involves managing diverse, context-specific risks across multiple sectors, timescales and locations, making standardised target-setting more complex. For example, determining what constitutes an acceptable level of residual risk is inherently subjective and politically sensitive; translating these risk tolerance levels into measurable, actionable targets requires navigating scientific uncertainties and diverse stakeholder priorities; and communicating such targets to the public is complicated by the technical nature of risk assessments and the difficulty of making abstract future vulnerabilities tangible and relatable.

Despite these challenges, targets remain important for driving action and accountability. Consideration should be given to developing flexible, adaptive target frameworks that can accommodate evolving climate science, societal values and levels of risk tolerance, alongside clear communication strategies that help the public understand both the targets themselves and the inherent uncertainties involved.

Member states should have a robust obligation to develop national adaptation plans. However, these plans must be well designed. Poor adaptation plans can potentially raise the risk of maladaptation, which could increase vulnerabilities by creating new risks or shifting the burden to other communities, places or future generations. For example, a poorly designed sea wall may encourage building not only behind the wall but also in adjacent areas of the coastline, as developers might assume them to be similarly safe. If the wall is overtopped or fails, or if these other sections are not protected, the larger concentration of exposed people and assets leads to greater total losses. This is especially true where these areas have historically faced little risk and are therefore less well prepared. In addition, maladaptation can amplify budget constraints and risk fiscal sustainability. Adaptation investments are often costly, and if they do not act to reduce overall risk and thus the costs governments are liable to pay in response to climate-induced natural catastrophes, poorly designed measures can generate higher, often recurring, financial losses.

Climate resilience and adaptation plans (hereafter ‘the plans’) must clearly identify the actor with the legal mandate, capacity and incentive to decrease the likelihood and/or impact of the risk, and who can be held accountable for delivery. For an integrated approach, these plans should specify responsibilities across the entire disaster risk management cycle: ex-ante adaptation, emergency response, and ex-post recovery. This clarity enables timely prevention, rapid crisis response and efficient reconstruction while avoiding political disputes. Ownership structures will depend on national governance models. For example, in decentralised systems such as Spain or Germany, ex-ante measures and emergency response may fall under regional authorities, leveraging local knowledge, while reconstruction may rely on central government for its liquidity of resources and access to capital. When assigning risk ownership, care should be taken to implement this at the appropriate level of seniority. When ownership is assigned to an organisation or role without access to the necessary policy levers, such as budget allocation, cross-departmental/organisational coordination or policy influence, they may be unable to effectively address systemic vulnerabilities. However, when assigned at too senior a level, climate adaptation risks can be deprioritised against competing strategic priorities that demand more immediate attention. Therefore, a clear definition of risk ownership is critical and care should be taken to assign this to the most effective actor.

Plans should also include coordination mechanisms and reporting obligations to ensure accountability and coherence across sectors and levels of government. Ownership should not rely solely on public authorities; private actors, infrastructure operators and civil society also play a critical role in managing vulnerabilities and ensuring continuity, and their responsibilities should be clearly defined in the plans. In addition, private actors should hold responsibility for assessing their own level of risk and developing a plan to adapt to these risks. The ability of firms to do this effectively will depend on their size, therefore meaning greater responsibility should sit with larger companies relative to smaller companies with limited resources that would require adaptation support from the public sector. This reasoning should also be applied to the question below on adopting national legal frameworks on climate resilience and adaptation.

Complementing action at the EU level by member state action, in compliance with the subsidiarity principle

Table 4 shows our view on what actions member states should take in order to comply with the EU's subsidiarity principle. We provide further comments below.

Table 4

Should the following actions be taken to comply with subsidiarity principle?	Response
Member states adopting national legal frameworks on climate resilience and adaptation (covering issues such as administrative set-up and coordination mechanisms, regular climate risk and vulnerability assessments, adaptation planning, early-warning mechanisms, governance at regional and local levels, alignment with subnational strategies and plans, inclusion of stakeholders and vulnerable groups, monitoring and evaluation framework)	Fully agree
Member states carrying out evaluations at appropriate levels to identify regions and groups of people that are particularly vulnerable to climate change, and developing plans for targeted adaptation measures to help these regions and groups	Fully agree
Member states involving all relevant stakeholders, including particularly vulnerable groups, in adaptation policy planning	Fully agree

Further comments

Considering the relevance of regional context and knowledge for successful adaptation as well as the economic, structural and geographical diversity within the EU, each of the 27 member states should have the autonomy and flexibility to develop their own sound national legal framework based on their characteristics and needs. This could be based on EU standards and guidelines. However, member states should be able to decide how to meet these standards. The EU could propose an overarching framework, such as a Directive, which would allow member states to do so.

As explained above, these legal frameworks should specify responsibilities across the entire disaster risk management cycle: ex-ante adaptation, emergency response and ex-post recovery. This clarity enables timely prevention, rapid crisis response and efficient reconstruction while avoiding political disputes. In addition, the frameworks should spread risk across different agents to avoid it being concentrated on one balance sheet, particularly the public balance sheet which could result in substantial fiscal pressure.

Monitoring, reporting, evaluation and learning

Table 5 shows our view on what should be included in the process of monitoring and evaluating adaptation action for the EU/member states.

Table 5

Should the following aspects be included in the monitoring and evaluation process?	Response
Development of a limited number of performance indicators for both the EU and Member States, for measuring the effectiveness of climate adaptation and resilience measures	Fully agree
In line with the simplification agenda, improvement and streamlining of monitoring, reporting, evaluation and learning practices at EU and national levels, through more targeted reporting on climate impacts	Fully agree

Protecting people and supporting regional and local action

What policy measures should the EU and member states take to ensure that the most vulnerable groups and geographical areas receive adequate support and are protected from the disproportionate impacts of climate change?

EU

The EU could protect the most vulnerable groups and geographical areas by:

- **Providing dedicated adaptation financing.** It could allocate a fixed share of EU climate finance specifically to adaptation for vulnerable regions and populations. This could mirror the 37% green allocation under the Recovery and Resilience Facility but be focused on resilience. Cohesion Funds should include mandatory adaptation components, and adaptation should be mainstreamed into funds currently centred exclusively on decarbonisation, such as the Just Transition Fund.
- **Updating the EU Solidarity Fund (EUSF).** The current EUSF does not incentivise the adoption of risk reduction measures (promoting the free rider problem and moral hazard), it is too limited in scale to have impact, and it is time-consuming to access capital (taking, on average, 56 weeks [World Bank, 2024]). The EUSF therefore needs to be updated and amended, for example providing access to additional funds if adaptation strategies and conditions outlined in the integrated framework are met. This would support vulnerable populations in vulnerable territories to recover faster, while incentivising governments to adopt adaptation measures.
- **Addressing market gaps and risk pooling.** Member states should be able to prioritise adaptation measures where the private sector does not want to intervene, such as regions lacking insurance coverage for climate risks. In addition, risk pooling instruments could contribute to reducing insurance premia in those areas more exposed to climate change impacts, enabling an increase in insurance coverage for vulnerable groups and locations.
- **Increasing regional adaptation planning.** Regional adaptation strategies should be mandatory to include in national adaptation plans, which in turn should be aligned with national strategies and the EU Climate Adaptation Strategy. This would contribute to increasing regional and local ownership of the plans while easing implementation.
- **Ensuring monitoring and accountability.** Adaptation indicators should be implemented to track progress at regional and social levels (aligned with COP30's Global Goal on Adaptation). These indicators could feed into the updated EUSF to show progress for disbursements in case of a natural catastrophe, as well as into other EU funds.
- **Integrating social protection.** Social protection instruments, such as the European Social Fund+, do not explicitly acknowledge that extreme weather events exacerbated by climate change will overburden social protection systems. To solve this, social protection instruments should expand its scope and acknowledge this challenge, for example by promoting, designing and financing adaptation measures for vulnerable populations and territories. This will contribute to protecting the most vulnerable population and region against extreme weather events.

Member states

To identify policy measures to ensure that the most vulnerable groups and geographical areas receive adequate support, first, member states should clearly identify which areas will suffer most from extreme weather events under different climate scenarios. This could be done using analytical tools such as CLIMADA technologies.

For the most vulnerable populations across Europe, additional institutional research will have to be carried out, especially considering the difficult and extensive discussions around identifying the target groups under the EU Climate Social Fund. The following measures can then be put in place:

- **Public insurance and reinsurance schemes.** Create public reinsurance schemes, following the Spanish and French case, and update existing ones to adapt them to new climate conditions, including by integrating parametric insurance.
- **Adaptation measures.** Prioritise adaptation measures in vulnerable areas where private capital will not be catalysed.
- **Urban planning.** Improve urban planning and align it with national adaptation plans. For example, disincentivise or forbid construction in flood-prone areas. Improved urban planning should also be implemented in reconstruction efforts to 'build back better'. Better land use planning in rural and peri-urban areas, with special focus on agriculture, should also be prioritised.
- **Insurance regulation.** Enact legislation mandating insurance companies to lower the cost of premia for policy holders if they adopt specific adaptation actions.
- **Subsidies.** Provide direct public support to vulnerable households to adapt to climate change (or to reallocate away from highly exposed areas, if needed).
- **Schools.** In the EU 24% of children are at risk of poverty or social exclusion. Targeting this group should be a priority for member states. For example, in Mediterranean countries, which are more exposed to intense heatwaves, lack of adaptation measures in schools can negatively impact children's development (as referenced above).

What measures should the EU and member states take to provide greater support to regional and local stakeholders?

EU

- **Technical Support Instrument (TSI).** Strengthen the role that the TSI has in this specific topic. Regional and local authorities often face barriers to implementing EU funding. To improve this in the context of adaptation, the Commission should strengthen and expand the role of the TSI on adaptation. This could also contribute to improving peer learning, cross-border cooperation and sharing good practice among regions.
- **Committee of the Regions (CoR).** Use already existing institutional set-ups such as the Committee of the Regions to design the framework and increase capacity and knowledge-sharing on this topic.
- **Stakeholders' participation.** Local and regional knowledge and capabilities are key to good adaptation. Yet, evidence shows local stakeholders are not sufficiently involved in EU policy design or implementation. EU funds should strengthen the role of local and regional stakeholders in the design of investment lines. This should be discussed in the negotiations regarding the new MFF. As explained above, the mandatory development of regional adaptation plans could increase local and regional participation, including ownership and easing implementation.
- **Improve access to EU funds and simplify procedures.** Regional and local authorities often face administrative barriers to accessing EU funding. This, combined with the lack of private capital in adaptation measures, restricts the amount of adaptation finance. EU funds should ensure not only that funding is available for adaptation, but also that funding is accessible. National adaptation plans could ease disbursement processes and access to capital.

Member states

- **Multilevel governance framework.** Member states should create a governance framework for adaptation, clearly delineating the risk ownership as well as layering down risk. This will contribute to supporting regional and local stakeholders to prepare for extreme weather events and develop the necessary capabilities to do so.
- **Financing.** Ensure constant and long-term financing to regional and local stakeholders to implement adaptation measures by allocating national climate lines for adaptation and resilience.
- **Strengthen local capacity.** Offer training, technical support and advisory services to municipalities. This could be done through the TSI.
- **Improve emergency preparedness and response.** Strengthen national civil protection systems, ensure coordination with local authorities, and invest in early warning systems and local disaster response capacity.

Competitiveness – harnessing innovating opportunities

In your sector/industry/area, what are the climate resilience technologies/innovations that you need to develop or scale up to make your sector/industry more competitive?

The UNEP *Adaptation Gap Report 2025* estimates the cost of adaptation finance needed in developing countries at US\$310 billion per year by 2035, 12–14 times the current amounts of US\$26 billion (UNEP, 2025). Including developed countries, this increases the requirement to US\$0.5–1.3 trillion per year by 2030. This amount will likely grow thereafter. The public sector is expected to account for a large proportion of this required investment (OECD, 2025). However, the private sector will also be required to invest to enhance the resilience of their assets, operations and supply chains. The public sector will also play a critical role in developing the market conditions and incentives necessary to mobilise private capital at this scale, through regulatory frameworks, risk-sharing mechanisms and standards that make climate resilience investments economically viable.

In addition to goods and services that are required to make sectors more resilient, there are goods and services that will be in increased demand as the climate changes. These goods and services have been categorised into grey infrastructure and nature-based solutions. They include engineering-intensive technologies (e.g. in coastal zones and river basins; for water conservation and efficient water use and supply; adapting or protecting infrastructure and operations), life science technologies (e.g. in agriculture, forestry, livestock and agro-food; in human health protection (e.g. against extreme weather) and technologies supporting adaptation (e.g. weather forecasting and climate simulation) (PATSTAT, 2018). In addition to these technologies, services including insurance, resilient building design and architecture, advisory and consulting services and financial services will also be critical for adapting to climate change. As demand for these goods and services increases, there will be an opportunity for the EU to build a competitive advantage in their production and trade. This will be particularly relevant for the sectors that Mario Draghi identified as critical in his 2024 report on EU competitiveness, including:

- **Digital infrastructure.** This will play a key role in monitoring extreme weather and other activities such as supporting the water sector through emerging technologies that improve water use efficiency.
- **Engineering-intensive technologies.** Europe already holds 40% of global water technology patents, and the demand for these technologies will increase as climate change increases water stress in Europe and internationally.

- **Energy infrastructure.** This sector is a top priority, which will require updates to make it resilient to climate change.
- **Life science technologies.** Investment in digital technologies can increase farm performance and resilience. Biotechnology, mentioned by Draghi as a key sector for Transatlantic cooperation and EU competitiveness, can support the health sector in developing treatments for diseases that will increase in prevalence under a changing climate.

The EU should therefore capitalise on this future market by supporting innovation in climate adaptation goods and services, particularly those in sectors where the EU already has technological and competitive advantage. This could involve prioritising and funding early-stage research in areas like climate-resilient agriculture and developing common standards to signal the need for climate-resilient technologies through innovation EU funds such as Horizon Europe or the Connectivity Europe Facility (CEF).

What measures could improve the competitiveness and innovation of climate resilience products/services in your sector/industry the most?

Table 6 shows our view on what is important for improving the competitiveness and innovation of climate resilient products/services in the EU.

Table 6

Measures we see as important for improving the competitiveness of climate resilience products/services	Response
Increased public spending and investment	Very relevant
Increased private funding and venture capital	Very relevant
Improved access to specialised expertise/workforce	Very relevant
Improved market certainty and regulatory support	Very relevant
Access to technologies/modernisation of equipment	Very relevant
Increased consumer awareness and demand	Very relevant
Innovative climate risk management and insurance tools (e.g. parametric coverage)	Very relevant

Finance and insurance

Climate change is already resulting in major costs on consumers, businesses and member state economies. Therefore, integrating climate change resilience in investment and financial decisions is critical. These climate risks also need to be complemented by insurance to help spread the risk across economic agents. The new framework will provide measures to scale up adaptation finance and address the insurance protection gap.

Table 7 shows our responses to questions set out by the commission on the most effective way of addressing these policy challenges. We provide further comments below.

Table 7

	Question	Response
Public sector role in funding climate resilience	Is it necessary to integrate climate resilience considerations in fiscal planning and financial decisions at all levels of the public sector as well as in the private sector?	Yes
	Would incorporating climate resilience considerations in investments, including public spending and procurement limit economic losses from climate events?	Yes
Private sector role in funding resilience	To what extent do you agree that national adaptation plans should be designed to serve as resilience and adaptation investment plans, unlocking the full potential of private-sector funding?	Slightly agree
	To what extent do you agree that the private sector needs more guidance on how to incorporate climate resilience into investment and business decisions?	Fully agree
	To what extent do you agree that effective public-private risk sharing mechanisms for climate adaptation investments (such as public-private partnerships, blended finance, disaster bonds, etc.) would increase resources invested in climate resilience and adaptation?	Fully agree

Further comments

Incorporating climate resilience considerations in investments such as public spending and procurement will limit economic losses from extreme weather events. For example, when procurement or investments include considerations such as climate-resilient materials, designs and engineering standards, the asset will be better prepared to withstand extreme weather events, reducing reconstruction costs too. Current public procurement standards and investments tend to focus on cost minimisation and overlook these characteristics, leading to assets that are not future-proof and higher economic costs in the medium and longer term. Moreover, current infrastructure that has been designed without considering resilience tends to face disruption when extreme weather events occur. Closed or disrupted roads, ports, schools or emergency services not only raise costs but also negatively impact productivity and competitiveness.

Identifying adaptation needs should be the first step to catalyse finance towards these actions. However, to unblock private capital, NAPs have to be concrete and include investment-ready projects. NAPs should not be used as a panacea to unblock adaptation finance as the participation of the public sector is essential.

Overall, the private sector needs more guidance on how to incorporate climate resilience into investment and business decisions. However, this should be done with a sectoral approach, considering the sector's characteristics. For example, the insurance sector tends to have more information and advanced capabilities to deal with these risks, while the financial sector has strong financing capabilities to deal with them. All real economy sectors, not only financial or insurance entities, would benefit from further guidance on how to minimise the impacts of climate change.

What are the key obstacles to scaling up investments in strengthening climate resilience and adaptation?

- **Weak investment case and perceived low returns.** Adaptation investments often generate public goods, such as flood protection or early warning systems, which create large societal benefits but limited direct cash flows. In addition, they are not structured as bankable investments. Therefore, private investors consider that these investments provide low or

uncertain returns. Moreover, the benefits obtained by these investments are not captured by mainstream financial appraisals, also limiting private capital mobilisation.

- **Limited adaptation finance markets.** Instruments for adaptation are less mature than for mitigation, as shown in Resendiz et al. (2025) writing about sustainability-linked finance (SLF).
- **Data gaps, uncertainty and valuation challenges.** A lack of high-quality, location-specific climate risk data poses challenges to quantifying risk, avoided damages and resilience benefits. Uncertainty and lack of understanding about future climate scenarios undermine investment planning.
- **Institutional capacity and constraints.** Many governments, especially those that have not been exposed to primary perils (e.g. earthquakes and cyclones) due to their geography, lack the administrative capacity to identify, design and structure adaptation and risk management instruments such as catastrophe bonds.
- **Lack of mainstreaming of adaptation in the Commission's and member states' regulatory and budget frameworks (e.g. where decisions are made nationally and across the EU on investment flows, planning decisions and industrial policies).** Neither adaptation nor resilience is integrated into regulatory and budget frameworks, therefore resulting in infrastructure, land use or financial decision making which are not resilient by design nor future proof, limiting capital mobilisation towards adaptation and resilience.
- **Limited pipeline of bankable adaptation projects.** Regional and local authorities struggle to create administrative tasks for these projects such as feasibility studies, cost-benefit analyses and risk assessments. In addition, many NAPs tend to have a strategic focus, rather than investment-ready projects.
- **Insufficient and unpredictable public funding:** public adaptation finance remains far below needs, and in comparison, to mitigation finance. Without strong and predictable public intervention, private capital is not catalysed.

What policy measures would help overcome these obstacles and boost climate resilience finance?

- **Create national adaptation plans.** The European Commission should make it mandatory under the EU Climate Law for member states to develop NAPs to map, prioritise and cost key adaptation projects, in collaboration with local and regional entities. NAPs should also delineate risk ownership and layer down the risk among economic and social agents. The plans should include investment-ready projects.
- **Mandatory adaptation actions.** In delineating ownership of risk and being explicit where the public sector will not provide protection or insurance, private companies will be forced to acknowledge their responsibility in investing in resilience and adaptation measures to protect their own operations. This will minimise moral hazard and mobilise private capital.
- **Increase public finance and blended finance.** Consistent and long-term finance is key for adaptation and should be ensured through public sector entities, such as Ministries of Finance, National and Multilateral Development Banks as well as the European Commission through EU funds. In addition, they should expand the use of concessional finance, guarantees and first-loss capital, among other sources, to catalyse private capital towards adaptation and de-risk investments in early stages of R&D. This has been effective in the Netherlands, where the Government raised finance for its water management and flood protection programme. The Government issues green bonds for private investors to purchase; the projects generate economic value through protecting high-value assets and repayment is facilitated through general taxation and water levies.
- **Improve data.** Harmonised climate scenarios and data will contribute to identifying, financing and implementing adaptation projects, catalysing private capital. The European Commission

can play a key role in this, following, for example, the leadership of the Network for Greening the Financial System (NGFS).

- **Mainstream climate resilience into regulation and planning.** The European Commission should ensure that climate risk is integrated and mainstreamed among regulations for different economic and financial agents to systematically consider physical risks and resilience in their operations and portfolios. Beyond the financial sector, climate resilience should also be embedded in urban and land use planning, infrastructure standards and public procurement.
- **Increase institutional and technical capacity.** Capacity-building for project identification, preparation and implementation is key to attracting private capital to adaptation projects, as this will offer certainty to private investors. The European Commission could support this initiative by expanding the Technical Support Instrument (TSI) to this area and working closely with national, regional and local entities.
- **Scale up risk-transfer and insurance solutions linked to resilience.** This could be done by establishing an EU-level Public-Private Reinsurance Scheme to pool climate risks across member states, as recommended by the European Central Bank (ECB) and European Insurance and Occupational Pensions Authority, providing diversification and stability. In addition, an EU disaster fund could be created with resilience and adaptation conditionalities, requirements that could be integrated into the EUSF. The UK FloodRe's 'Build Back Better' scheme is an example of this; it enabled households to install property flood resilience measures up to the value of £10,000 (FloodRe, 2023) when repairing their properties after a flood. The scheme included resistance measures to keep flooding out and resilience measures to minimise damage when water enters. It also included risk assessment surveys. (See further below.)
- **Fiscal and financial tools.** Create a system to incentivise adaptation investments through credit and tax benefits.
- **Apply the Triple Dividend of Resilience.** This will allow avoided losses, development co-benefits, innovation and spillovers to be captured, making returns tangible to Ministries of Finance and investors. Moreover, the mandates of different institutions, such as national development banks, should be amended to integrate resilience.

Climate risk insurance

What policy/regulatory measures – based on market-based mechanisms – do you propose to address the increasing insurance gap and improve access to affordable insurance?

The increasing insurance protection gap in Europe, driven by the climate and nature crises, is a complex policy challenge that must be addressed at the levels of the European Commission, national governments and domestic private insurance market. This applies to all forms of insurance: home and commercial property insurance, business continuity insurance and agricultural insurance.

European Commission responsibility

The EU could adopt the ECB-EIOPA 'ladder approach' to increase insurance coverage for natural catastrophe risks by pooling private risks across the EU and across perils, thereby diversifying coverage at a European level. This coordinated approach would help address the growing protection gap while spreading risks more effectively across member states and clarify the responsibilities between the public and private sectors in responding to these risks. However, the EU should go further than the recommendations made in the ECB-EIOPA discussion paper to include nature-related financial risks in the scope, especially given the threat that these can pose to the agricultural sector, and potentially significant impacts they may have on food security across the EU.

A key priority for the Commission should be to encourage proactive investment in adaptation measures against the perils faced across the EU to mitigate the exposure and vulnerability of assets facing natural catastrophe risks. Further, greater focus should be put on regulating insurance companies to acknowledge these risk mitigation actions when setting premia prices. In part, this could

be supported by standardising the implementation of climate-related adaptation measures into insurance policies and underwriting practices, for example through dedicated risk-based certificates and programmes and the development of a taxonomy for adaptation investments. By acting to reduce the vulnerability and exposure of assets to natural catastrophes and ensuring that insurers recognise actions taken to mitigate risk, premia prices should be lowered relative to no adaptation action, despite increasing climate risk.

The Commission should also prioritise helping both public and private insurers increase awareness among policyholders of the risks they face from natural catastrophes. As EIOPA has previously identified (2023), insurance policyholders often underestimate the likelihood and impact of catastrophes and believe governments will step in as insurers of last resort to compensate their losses. Households and other market participants also may not have access to timely information about local climate risks, or the costs and benefits of adaptation actions they could take to reduce their risk. Information should be provided to policyholders to increase their awareness of the risks they face and encourage them to adopt measures to reduce damage from hazards, such as laying tiles instead of carpets, moving electrical sockets higher on walls, fitting flood doors, or removing vegetation growing close to properties to reduce wildfire risk.

National government responsibility

The Commission could encourage national governments to adapt to an increasingly uncertain environment by exploring the development of comprehensive insurance schemes similar to France's Catastrophes Naturelles ('CATNAT') scheme, which covers a range of natural catastrophes and aims to ensure universal access to affordable cover for perils that are expected to worsen with climate change. Policyholders pay the same rate whether they are exposed to natural disaster risks or not. Areas repeatedly hit by disasters are subsidised by areas that rarely or never experience them. National governments could also integrate specific climate- and nature-related risks as mandatory inclusions in the underwriting of property, crop and business-continuity insurance policies.

Public-private partnerships (PPPs) offer another promising avenue through which to redistribute risk, whereby the public sector explicitly creates a reinsurance backstop for the private market, to avoid the withdrawal of insurers from the market when the risks exceed the 'golden' risk/return ratio of the market. As mentioned above, the UK's FloodRe scheme is an example of a public-private partnership that aims to maintain the provision of affordable insurance to homeowners living in areas with high flood risk, through a national pool designed to manage flood exposure. The costs of the scheme are covered by the home insurance industry through a special annual levy and insurance premia, allowing public and private actors to share the risk. Interestingly, the recently introduced voluntary Build Back Better scheme enables insurers to invest up to £10,000 per property to build property flood resilience (FloodRe, 2023). This shows how a public mandate can direct the private insurance sector to deliver adaptation outcomes.

There are some drawbacks associated with PPPs, however. For example, they can create a moral hazard so private insurers may have less incentive to properly assess and price risks. Similarly, they may incentivise building in high-risk areas (unless this risk is specifically reflected in the mandate of the model) or disincentivise policyholders from adopting measures that reduce their risk. They can also result in high fiscal exposure to contingent liabilities as the state is guaranteeing potentially high payouts, thus risking future fiscal sustainability. However, relative to the cost of the state stepping in as 'insurer of last resort', this contingent liability may still be relatively lower.

What kind of risk pooling and transfer mechanisms would be most suitable to increase insurance cover for secondary perils in the European Union?

The Commission should adopt the recommendations presented by the ECB/EIOPA in their December 2024 joint paper. For all types of relevant insurance, including property, crop and business continuity, the Commission could develop an EU-wide dedicated risk pool specifically for secondary perils. Secondary perils are defined by Swiss Re (2019) as those that generate small to mid-sized losses, such as hail, floods, storms or bushfires. Pooling risk across member states and different perils would help to spread the costs of potential payouts across regions and time, as different regions are vulnerable to specific perils. Spreading risk across the EU can also help to support and protect national insurance schemes by reducing the potential of localised risk events overwhelming a member state's insurance

system in the face of a hazard (e.g. wildfires are often experienced in different locations and at different times to heavy rainfall). This risk sharing can make premia lower for higher-risk areas, thus increasing insurance protection against these perils.

Another complementary solution could be parametric insurance (a non-traditional insurance product that, unlike a traditional insurance product, pays out after an event that leads to a loss, based on a trigger event). This suits secondary perils well as they tend to be smaller scale and more frequent. Having pre-defined conditions built into the parametric insurance policy reduces the expense of lengthy damage assessments and leads to more rapid payouts and lower administrative costs when these conditions are met, thus potentially reducing premia. The EU could support the development of parametric products for common secondary perils by pre-defining the conditions within which a payout can be expected.

In the absence of an EU-wide risk pooling mechanism, the Commission could also encourage the development of new national or local, community-based insurance schemes where properties or businesses can pool risks locally. Pooling risk, even at a local level, could help reduce the cost of premia for the most vulnerable, increase uptake to reduce the large number of people uninsured across the EU, and provide insurance products where they may not otherwise be provided.

Finally, none of these will be effective without sufficient public and private funding for adaptation measures to reduce the risk that member states face from secondary perils to reduce insurance premia and increase uptake of insurance. The challenges of the insurance protection gap and adaptation gap should not be considered in silos: they are inextricably linked.

How can insurers in the Union access new capital to back climate-related policies?

Insurers and other institutions could access new capital by transferring climate risks to global investors by issuing catastrophe bonds or other insurance-linked securities. In addition, further strengthening the framework and use of sustainability-linked finance (SLF) could provide additional capital for adaptation and resilience purposes (Resendiz et al., 2025). SLF is an innovative financial instrument which links the cost of capital with key performance indicators (KPIs) on a specific topic such as climate change mitigation, where it has been used successfully. Good performance on the selected KPIs would trigger a step-down mechanism on interest rates, reducing the cost of capital. Further exploring the role SLF can play in adaptation would be useful.

An EU public-private reinsurance scheme, as proposed by the ECB/EIOPA, could boost insurers' financial resilience and expand available capital, while incentivising adaptation action. This could be piloted under Article 20 of the Treaty of the European Union (TEU) detailing the enhanced cooperation mechanism or under a coalition of the willing, should not all member states wish to take part.

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