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Policy Submission

Accounting for systemic climate risks in the Integrated Framework for European Climate Resilience and Risk Management

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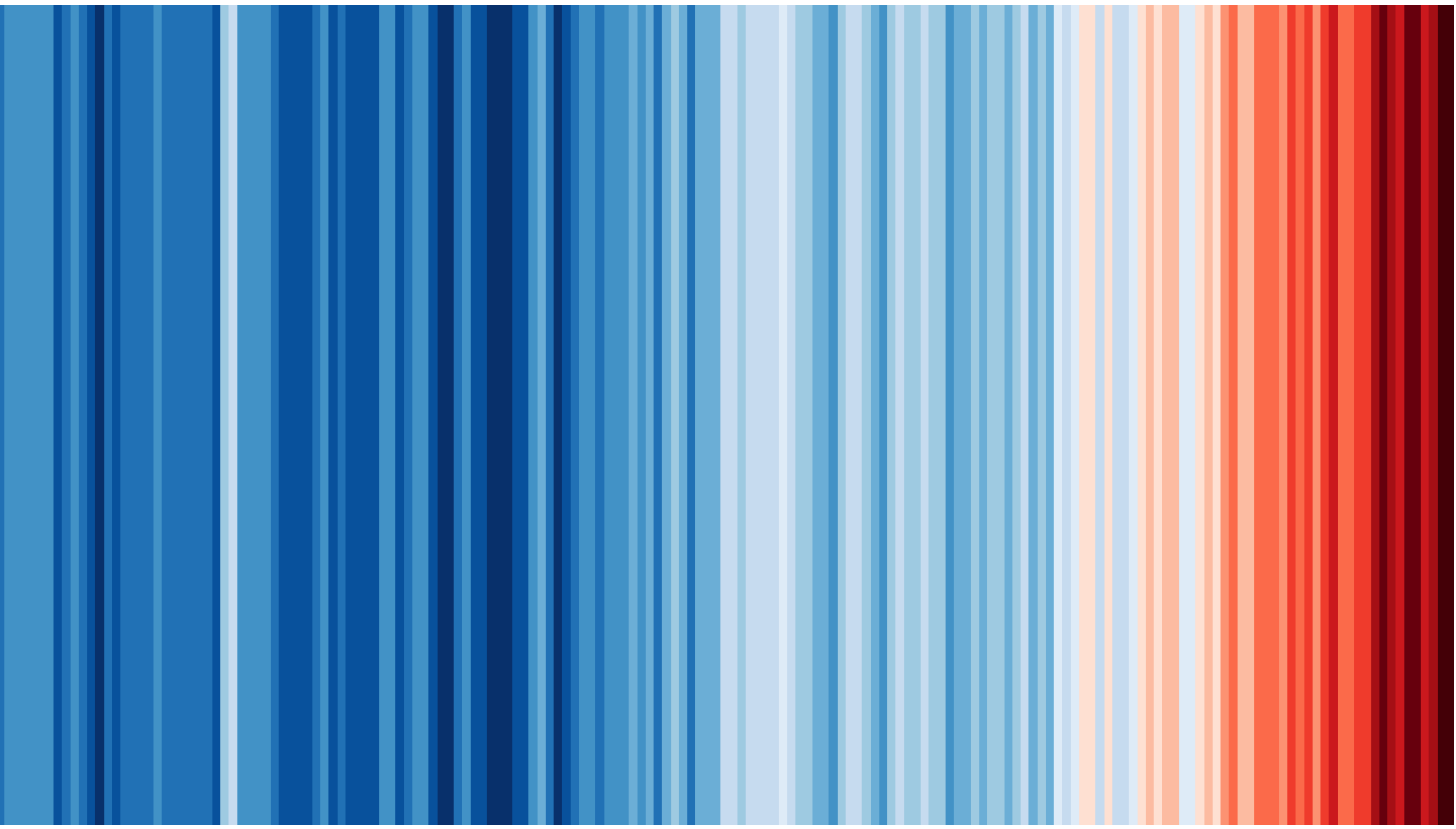

This policy submission

This document is a submission to the European Commission to inform the preparation of the *Integrated Framework for European Climate Resilience and Risk Management*. The submission was developed by the Stockholm Environment Institute (SEI) in collaboration with Demos Helsinki and ECDPM. We thank Theofanis Exadaktylos, Professor in European Politics, Head of Politics and International Relations, University of Surrey, for his invaluable peer review.

The submission contains (1) an introduction; (2) the relevance of systemic climate risks to the EU Adaptation Strategy and the Integrated Framework; (3) the legal context and recommendations for the legislative proposal; (4) the integration of systemic climate risks into climate resilience by design; (5) matters relating to justice, equity and stability; (6) matters relating to business, economics, competitiveness and prosperity; (7) an annex (a scan across EU policy documents for how they feature systemic climate risks); and (8) references.

Executive summary

Climate change is increasingly generating systemic risks for the EU – cascading, compounding and transboundary impacts that propagate through supply chains, shared infrastructure, financial flows and security dynamics. The Integrated Framework for European Climate Resilience and Risk Management is an opportunity to make systemic resilience a design principle across EU risk assessment, governance and investment decisions. This submission proposes practical levers to i) upgrade EU and Member State risk assessment and monitoring; ii) embed systemic climate risk in Better Regulation, budget rules and cross-DG governance; and iii) operationalise just resilience and competitiveness objectives that reduce the likelihood of EU-wide disruptions. This submission further makes the case for the Integrated Framework to position investment in international climate resilience – particularly in ODA-eligible, highly vulnerable contexts – as a core pillar of Europe's own competitiveness, security and prosperity, advancing a systemic "do no significant harm" approach that reduces cascading risks for the Union while delivering measurable resilience gains for partner countries.

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1. Introduction

The need for an integrated approach to climate resilience is well established. The Sixth Assessment Report of the Intergovernmental Panel on Climate Change concluded in 2022:

> Climate change impacts and risks are becoming increasingly complex and more difficult to manage. Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions. Some responses to climate change result in new impacts and risks.

European societies and economies are deeply interconnected across sectors and borders. Even a single climate hazard can disrupt supply chains, infrastructure networks, financial systems or ecosystems, generating cascading impacts beyond the initial event. The simultaneous occurrence of multiple hazards further increases risk by reducing the capacity of interdependent systems to absorb shocks.

The interaction between climate hazards and structural interconnectedness gives rise to systemic climate risks, which threaten the functioning of entire systems rather than isolated components. **The Integrated Framework must therefore explicitly address the complex, systemic and transboundary nature of climate risk.**

Our definition of systemic climate risk includes [1][2][3][4]:

- **Transboundary climate risks**[1]: the potential for climate-related impacts in one country or region to affect other countries or regions through trade, finance, human mobility, ecosystems, infrastructure or other interdependencies.
- **Cascading climate risks**: the potential for climate-related impacts affecting one sector or critical node to propagate through interdependencies and disrupt other sectors (e.g., electricity outages affecting transport, health services and industrial production).
- **Compounding climate risks**: the potential for two or more climate-related hazards or impacts occurring simultaneously or sequentially to interact in ways that increase overall disruption and losses.

While systemic climate risks must have a climate driver, their magnitude and distribution are often shaped by the interaction between climate triggers and non-climatic drivers of exposure, vulnerability and interconnectedness.

[1] Transboundary climate risks are sometimes also described as cross-border climate risks. However, the latter term has acquired specific meaning in the context of UNFCCC negotiations, which can lead to conceptual and political ambiguity. For a detailed discussion, see: https://www.sei.org/perspectives/why-language-matters-in-climate-negotiations/ [5].

Systemic climate risks have the potential to derail key EU priorities:

- **Competitiveness:** The EU's competitiveness agenda depends on stable access to critical raw materials, agricultural inputs and global value chains. Systemic climate risks threaten these foundations by disrupting production and transport in supplier countries and amplifying climate-driven price volatility, compressing margins in trade-exposed sectors. Sustained supply disruptions could weaken Europe's industrial base and reduce investment certainty.
- **Security:** Climate change acts as a threat multiplier, constraining the EU's capacity to maintain regional stability. Resource scarcity, drought and extreme weather can exacerbate fragility in neighbouring regions and weaken international cooperation. Extreme conditions also undermine military infrastructure, operational readiness and secure supply lines. Rising temperatures and environmental degradation are expected to increase displacement pressures [6].
- **Prosperity:** Systemic climate risks threaten long-term economic growth and fiscal stability. Supply-chain disruptions, productivity losses and heat-related stresses could generate substantial macroeconomic costs over the coming decades. A recent study published in *Nature* projected global losses of USD 3.75–24.7 trillion by 2060 across low- to high-emission scenarios [7].

An integrated framework that strengthens resilience to systemic climate risks would represent a transformational shift in Europe's preparedness for future shocks and reinforce the EU's long-term competitiveness and international partnerships.

Systemic climate risks affect the economies, societies and ecosystems of EU Member States as well as those of the EU's development and trading partners. Addressing these risks requires a systemic approach to European adaptation planning, investment and implementation. Such an approach reduces risk across the whole system rather than shifting it to other sectors, regions or population groups, and helps prevent EU action from causing unintended harm to other Member States, the EU neighbourhood or partner countries.

The remainder of this submission sets out how the European Commission can operationalise such an approach by strengthening EU-level and Member State risk assessment and monitoring, embedding systemic climate risk in better regulation and cross-DG governance processes, advancing just resilience and competitiveness objectives, and positioning international climate resilience investment as a core component of Europe's own stability and prosperity.

2. Systemic risks in the EU Adaptation Strategy and the Integrated Framework

Systemic climate risks strongly feature in the EU Adaptation Strategy (2021), which recognises that “the impacts of climate change have knock-on effects across borders and continents. Even local climate impacts have regional or global repercussions, and such transboundary climate risk can reach Europe.” [p.21]

It commits to strengthening cooperation and dialogue on adaptation in the EU’s trade agreements “to address the shared challenges of interconnected societies (e.g. migration, conflict, displacement), ecosystems (e.g. shared river basins, the ocean, and Polar Regions), and economies (e.g. global value chains)”. [p.21]

It further notes that “the EU already is, and will increasingly be, affected by climate impacts outside Europe through cascading and spillover effects on trade or migration. This makes international climate resilience not only a matter of solidarity, but also of open strategic autonomy and self-interest for the EU and its Member States.” [1]

Systemic climate risks are, moreover, relevant for each objective in the proposed framework:

- **Protecting people’s health, well-being and livelihoods**: systemic climate risks pose grave threats to people’s health, well-being and livelihoods [1]. For example, one systematic review finds climatic hazards have aggravated 58% of human infectious diseases assessed through more than 1,000 documented transmission pathways [2]. At the same time, those same hazards threaten access to essential medicines by disrupting climate-exposed manufacturing and logistics and by undermining medicine quality (through increased heat and humidity), creating a compounding risk where health needs rise just as supply becomes constrained [3][4].
- **Anticipating and significantly reducing exposure to high-impact risks and losses when conceiving policies, investments and other measures**: accounting for the principle of subsidiarity, systemic climate risks are exactly the type of high-impact risks and losses that require national and regional management (as opposed to locally-led approaches); resilience-building strategies for many systemic climate risks often exist exactly within the realm of policy, investment and diplomacy at the national, regional or global scale [5].
- **Ensuring robust and regular science-based risk assessments as a basis for action**: risk assessments will fail to be robust if they fail to account for systemic climate risks – they represent a major blind spot in many current risk assessments and adaptation plans [6].
- **Promoting a shared understanding of future climate conditions among decision-makers in Europe**: awareness and knowledge of systemic climate risks is patchy across Europe, with some Member States surging ahead of others in their assessments and preparedness plans [authors’ observations]; there is a strong need to promote a shared understanding of how these risks are likely to evolve and share best practices both between countries and between constituencies.

- **Supporting EU Member States, EU candidate countries and the EU neighbourhood – including the regional and local levels – while empowering their societies**: systemic climate risks are a neglected area of support [7]; without actionable guidance and resourcing, actors – from countries to communities – cannot implement actions that build resilience to their effects.
- **Promoting coordinated and effective action across all levels of government and the private sector**: systemic climate risks – by their very nature – span sectors and scales; risk ownership between public and private actors lacks clarity and may lead to contestation [8]; there is an urgent need to define risk ownership for systemic climate risks and strengthen accountability for systemic climate risk management.
- **Reducing losses, destruction and costs from climate-related impacts by increasing (re)insurance cover**: systemic, correlated climate shocks are already undermining insurability and widening the protection gap. Increasing cover requires first assessing (re)insurers' exposure to systemic climate risk and then using that evidence to structure risk-layering/backstops and risk-reduction incentives that sustain affordable coverage long-term [9].

3. Legal context and recommendations for the legislative proposal

This submission's recommendations for strengthening the integration of systemic climate risks in the Integrated Framework take full account of the existing legislative environment.

Existing legal obligations: national climate adaptation policy frameworks

This submission takes due account of the existing legal obligations imposed on Member States with regard to the adoption of national adaptation plans and strategies. These include obligations under Regulation (EU) 2021/1999 establishing the framework for achieving climate neutrality (Climate Law) [1], and Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action (Governance Regulation) [2]. Article 5(4) of the Climate Law sets out that Member States must adopt and implement national adaptation strategies and plans that are based on robust climate change and vulnerability analyses, progress assessments and indicators, and be guided by the best available and most recent scientific evidence. Moreover, these plans and strategies shall be regularly updated and related information is to be submitted in accordance with Article 19(1) of the Governance Regulation. Part 1 of Annex VIII of the Governance Regulation sets out more detailed reporting requirements, namely the submission of "climate change projections, including weather extremes, climate-change impacts, assessment of climate vulnerability and risks and key climate hazards" (Part 1 (b) of Annex XIII).

In the Commission's report on the review of the Regulation on the Governance of the Energy Union and Climate Action [3], certain shortcomings of the Governance Regulation are remarked upon. Importantly, the report's conclusion calls for a strengthening of the EU's energy and climate governance by, among other measures, putting greater emphasis on climate adaptation based on the European Climate Risk Assessment (EUCRA) [4], with the aim of addressing remaining fragmentation and uncoordinated national approaches.

Other than the mentioned Regulations, the EU's legal acquis provides for further legislation that requests Member States to draw up risk assessments, most notably (1) Decision No 1313/2013/EU on a Union Civil Protection Mechanism [5], (2) Directive 2007/60/EC on the assessment and management of flood risks [6] and (3) Directive 2022/2557/EU on the resilience of critical entities [7]. While these policies only cover sectoral risk assessments, learnings from their implementation could prove valuable to establishing a comprehensive (cross-sectoral) risk assessment as recommended below.

Existing legal obligations: integrating and ensuring consistency with climate objectives and principles in other policy areas

This submission also takes due account of a legal obligation imposed upon the European Commission. Article 6(4) of the Climate Law introduces a specific requirement for the Commission to conduct climate-consistency checks as part of the impact assessment preceding legislative proposals [8]. Specifically, "the consistency of any draft [EU] measure or legislative proposal, including budgetary proposals" must be assessed in light of the EU's climate objectives (as laid down in the Climate Law), including climate neutrality and progress to climate adaptation [9]. Additionally, the Commission shall 'endeavour to align' any draft measures and legislative proposals with these objectives.

These requirements were also integrated in the Commission's Better Regulation Guidelines [10], which sets out to follow the "do no significant harm" (DNSH) principle, among other safeguards, in EU policymaking and abide by the obligations set out in the Climate Law. The Better Regulation Toolbox provides for a non-exhaustive list of questions to assess the consistency (and coherence) of legislative proposals with overarching environmental goals or other policies targeting the environment [11].

Importantly, in case of inconsistency of the legislative proposal with the EU's climate objectives, the Commission shall provide reasons as part of the consistency assessment (Article 6(4), Climate Law). However, there are no clear consequences determining what will happen to proposals that fall short of ensuring consistency and alignment with the overarching climate objectives [12].

While this requirement only applies to new legislative proposals and draft measures, the Climate Law also imposes obligations on the Commission regarding the review of existing legislation and its consistency with its objectives. Article 6(2), for EU measures, and Article 7(1), for national measures, of the Climate Law stipulate that the Commission shall review EU or national measures' consistency with the EU's climate objectives every five years. The Commission shall submit a report on the measures' consistency to the European Parliament and to the Council. Nevertheless, there are no details for this process, nor consequences for when EU or national measures are held to be inconsistent, specified in the Climate Law [12].

Legislative proposal

Accounting for the existing legislative context, and to better prepare our economies and societies for systemic climate risks, and reduce major disruptions, losses and damages, we propose the following additions and revisions to the legislative proposal. They expand on the 2026 European Scientific Advisory Board on Climate Change report *Strengthening Resilience to Climate Change Recommendations for an effective EU adaptation policy framework* [13] and collectively aim to ensure that climate risk governance moves beyond sector-by-sector assessments and accounts for cascading pathways, compounding events, and internationally transmitted shocks.

Common baseline climate trajectories/scenarios and acceptable risk levels:

- **EU climate reference trajectories/scenarios should capture systemic climate risk triggers.** Common EU climate reference trajectories/scenarios should explicitly include high-impact, high-uncertainty events and other triggers relevant to the generation of systemic and tail-end climate risks, rather than relying only on 'central' hazard projections.
- **We should define our levels of risk tolerance for systemic climate risks.** Any common approach for defining acceptable levels of residual risk should explicitly account for systemic climate risks within the overall risk spectrum.
- **Adaptation plans should be based on precautionary trajectories/scenarios.** Adaptation planning should adopt a common reference point based on SSP2-4.5 and should use more adverse emissions pathways for stress testing robustness (SSP3-7.0), based on the precautionary principle.

Climate-risk assessments:

- **Scope must include cross-sectoral and cross-jurisdictional interdependencies.** European and national climate-risk assessments should not only cover the "most affected policy sectors" but systematically map how disruptions transmit *across* jurisdictions and sectors as a result of critical dependencies (e.g., energy–telecoms–transport–health).
- **Climate-risk assessments should be decision-relevant across policy domains.** The findings of climate risk assessments should meaningfully inform strategies beyond 'adaptation silos' – including preparedness planning, national and civic security and climate diplomacy – where many levers of systemic risk management sit.
- **A shared baseline: assess systemic climate risks explicitly.** A common parameter for both the scope and content of European and national climate risk assessments should be that systemic climate risks are explicitly assessed, rather than implicitly assumed within generic "all-hazards" language.
- **Assess data availability.** Risk assessments are only as robust as the data they draw upon. The European Commission and Member States should identify data needs for systemic climate risk assessment and work with public and private actors to address gaps in access, overcome barriers to disclosure, and address blind-spots in ways that are non-burdening.

Adaptation planning and determination of risk owners:

- **Adaptation plans and targets should include actions to address systemic climate risks.** European and national adaptation and resilience plans and strategies should include actions and targets to reduce, prepare for and manage systemic climate risks, not only domestic risks.
- **Alignment requirements should be explicit.** The EU adaptation strategy/plan should demonstrate alignment with the European Climate Risk Assessment process, and the Commission should establish a regular update of EURCA in legislation, to strengthen the European policy cycle and enable iterative adjustments to systemic climate risks in the EU policy architecture.
- **Adaptation plans should explicitly consider externalities and maladaptation risks.** European and national adaptation planning processes should consider how adaptation actions (or inactions) can generate risk for others (other sectors, systems

and countries), and the Commission should support application of the "do no significant harm" (DNSH) principle to adaptation planning to manage maladaptation and risk redistribution within and beyond the Union.

Complementing action at EU level by Member State action, in compliance with the subsidiarity principle:

- **Subsidiarity with practical EU support.** In line with the subsidiarity principle, Member State evaluations should consider groups and regions vulnerable to systemic (not only domestic) climate risks, and the EU/Commission together with Member States should pilot measures that reduce systemic risks, strengthen response capacity and build resilience to them long term.

Monitoring, reporting, evaluation and learning:

- **Indicators should measure the effectiveness of systemic risk management.** Performance indicators should assess whether adaptation and resilience measures reduce and manage systemic climate risks specifically (accounting for varying adaptive capacity). The compilation of indicators related to shared risks – for uptake by Member States – is also recommended.
- **Reporting should recognise internationally transmitted impacts.** Targeted reporting on climate impacts should capture globally originating impacts that generate risk for the EU and Member States through critical dependencies. This could be implemented through upcoming revisions to the Governance Regulation (EU) 2018/1999, article 19(1).
- **Use existing reporting channels to strengthen learning.** Existing reporting requirements – provided, for instance, by Article 19(1) of the Governance Regulation (EU) 2018/1999 – should be leveraged to monitor systemic climate risks and evaluate/learn from measures intended to address them.
- **Establish guidance on existing adaptation reporting requirements with regard to systemic climate risks** (Part 1(b), Annex VIII, Governance Regulation (EU) 2018/1999). To ensure that systemic climate risks are considered and reported on by Member States, guidance should be adopted that supports Member States to identify and assess all relevant types.

Additional considerations:

- To make the above operational, the legislative proposal should include a robust obligation on the Commission to support **research, training and education** on systemic climate risks across the Commission and with Member States, to support their integration in scenario development, common approaches, risk assessment, adaptation planning and the identification of risk owners.

4. Climate resilience by design

The EU has rightly recognised that preparedness and resilience must be made a whole-of-society issue, integrated by design across sectors, policy domains and levels of government [1]. Yet, at this stage, current approaches to preparedness and adaptation are insufficient to address systemic climate risks. Prominent EU research institutions – the Joint Research Centre (JRC), the European Environmental Agency and the European Scientific Advisory Board on Climate Change – feature systemic climate risks extensively [2][3][4][5]. However, this intelligence remains siloed within disaster and climate adaptation communities. This impedes the coherent management of systemic climate risks across EU and Member State policies.

While the Preparedness Union Strategy represents a vital shift toward systemic resilience, it risks operational failure if it relies solely on a generic 'all-hazards' framework that does not adequately capture systemic climate risk [1]. Generic 'all-hazards' language obscures the complex transmission pathways of systemic climate risks, preventing them from being fully accounted for in broader preparedness planning and risk governance frameworks. The EU thus faces significant gaps in awareness and (coordinated) governance of systemic climate risks across policy domains critical for a resilient Europe (see Annex).

Sections 4.1-4.3 therefore set out recommendations to (i) upgrade EU and national risk assessment and monitoring, (ii) embed systemic climate risk into EU legislation, funding and executive governance, and (iii) operationalise resilience-by-design across key horizontal policy domains. The Integrated Framework for European Climate Resilience and Risk Management can strengthen the Preparedness Union Strategy by making systemic climate risk explicit, clarifying responsibilities, and ensuring that assessments, policies and investments are stress-tested against shared EU-wide risk evidence and metrics. The recommendations mirror and extend those in the 2026 European Scientific Advisory Board on Climate Change report: *Strengthening Resilience to Climate Change Recommendations for an effective EU adaptation policy framework* [5].

4.1 EU risk assessment and monitoring

Currently, the EU lacks the frameworks and tools required for a granular and cohesive approach to the management of systemic climate risks. Building climate resilience by design requires adequate risk assessments, monitoring tools and some levels of harmonisation. This supports both general situational awareness and anticipatory capabilities required for preparedness and response. Embedding climate risk assessments in the EU policy cycle can also help evaluate legislation, policy coherence, and identify important systemic vulnerabilities across policy domains [5].

Recommendations for the Integrated Framework:

- **Embed systemic climate risks in the EU Comprehensive Risks and Threat Assessment.**

  EU instrument options: ensure the upcoming Assessment explicitly analyses cascading, compounding and transboundary climate-risk pathways (including through supply-chain, infrastructure and financial channels), using EUCRA-aligned terminology so that results are actionable across preparedness, adaptation and security agendas.

- **Establish a comprehensive climate risk assessment template based on the results of the EUCRA and relevant JRC reports.**

  EU Instrument options: create a template with a methodology and indicator list (of shared risks) that Member States shall use in their national climate risk assessments during updates to their national adaptation plans and strategies [2][3][4]. In principle, these should be guided by a common reference point for EU adaptation planning and a harmonized approach to risk assessment that explicitly accounts for systemic climate risks [5] (see below). The methodology should also integrate the EUCRA risk assessment methods where possible and appropriate, building on the ongoing exchange with national agencies organized by EEA and EIONET [6].

- **Establish an EU-wide methodology for assessing systemic climate risks to complement the template.**

  EU Instrument options: establish a methodology for assessing systemic climate risks that draws on existing best practices and sets minimum standards for comparability while enabling context-appropriate and innovative approaches.[2]

- **Establish an EU systemic climate risk and resilience dashboard.**

  EU instrument options: build on the JRC Resilience Dashboard by establishing a systemic climate risks and resilience dashboard that tracks common indicators – aligned with the EURCA – to monitor EU-wide and Member State progress on addressing systemic climate risks and their effects [8]. This can set the foundation for a meaningful MEL system for systemic climate risks at the EU level [5].

[2] For example, Spain's ERICC-2025 provides a useful model for using network/graph-based analysis to map interdependencies among key risks and identify systemically important nodes (via centrality metrics) that can propagate cascading effects, including potential transboundary channels where relevant [7].

4.2 Integrating across EU legislation, finance and governance

Resilience to systemic climate risks does not sufficiently shape EU policymaking or funding decisions, nor is oversight and accountability for this resilience captured adequately under existing executive governance structures and functions.

Recommendations for the Integrated Framework:

- **Strengthen climate-consistency checks to assess systemic resilience and coherence with EU climate objectives.**

  EU instrument options: operationalise climate-consistency checks, provided for in the Climate Law [9], and extend these checks to ensure adequate benchmarking against the proposed metrics outlined above. **Impose an explicit obligation** that each impact assessment for any relevant sectoral policy and framework vulnerable to OR impacting climate change must include a consistency (and coherence) analysis with the overarching climate objectives, including progress to climate adaptation [10]. Article 6(4) assessments should be anchored to rigorous analyses of systemic climate risks outlined in the Comprehensive Risk and Threat Assessment and associated methodology, ensuring that climate consistency checks imply genuine systemic resilience [1].

- **Update the Better Regulation guidelines and toolbox to screen for systemic climate risks, maladaptation and cross-border risk transfer.**

  EU instrument options: integrate explicit questions and analytic steps on cascading and compounding pathways, cross-border spillovers, potential maladaptation and the creation of critical dependencies into the Better Regulation guidance/toolbox and related sectoral guidance, so that coherence checks become decision-relevant for systemic risk management.

- **Define clear procedural consequences for proposals that fail systemic climate-consistency checks.**

  EU instrument options: clarify what legal consequences apply if a proposed law or EU/ national measures are found to be inconsistent with the EU's climate objectives (referring to climate-neutrality and ensuring progress to climate adaptation) [11]. Inconsistent legislative proposals should not pass the impact assessment stage, meaning that they cannot enter the EU's legislative cycle.

- **Amend Article 33(2) of Regulation (EU) 2024/2509 on the financial rules applicable to the general budget of the Union (Financial regulation) to introduce a strict 'Negative Duty' on all financial actors [12].**

  EU instrument options: amend Article 33(2) of the Financial Regulation to prohibit expenditure (direct, shared or indirect management) that creates, maintains or exacerbates critical systemic dependencies, maladaptation risks or cross-border

vulnerabilities identified in the risk assessments and methodology outlined in Section 4.1. For shared management, clarify that the absence of systemic stress-testing at programme level constitutes a material deficiency in the management and control system [13]. Systemic resilience should be treated as a **fundamental fiduciary duty** to minimise contingent liabilities stemming from maladaptation [14][15].

- **Establish a Systemic Resilience Task Force within the Secretariat-General with a strong climate mandate**.

  EU instrument options: the Task Force, alongside overall oversight and coordination, should be mandated to conduct internal capacity-building across other DGs regarding the relevance and management of systemic (climate) risks. This process should include an expert supported audit of existing DG briefs to identify critical risk and resilience issues to be addressed, as well as relevant overlaps between remits requiring coordinated response.

4.3 Integration into other policy areas

Systemic climate risks cut across the horizontal policy domains that shape Europe's competitiveness, security and prosperity. Table 1 provides illustrative options for EU instruments to embed systemic resilience-by-design across selected policy areas. These options are intended as practical entry points for the Integrated Framework and should be tailored to Member State contexts, while maintaining coherence with the common risk assessment baseline outlined in Sections 4.1–4.2.

Key policy areas covered include competition, trade, foreign policy and security, development and cooperation, critical infrastructure and energy, crisis management and civil-military cooperation, and agriculture and food security.

Table 1 – Recommendations based on policy areas for the Integrated Framework

Competition	• Consider a new GBER Article exempting investment aid (CAPEX) for climate adaptation and physical hardening measures, strictly tying eligibility to entities designated under the Critical Entities Resilience (CER) Directive [16]. • Clarify that maintaining strategic spare capacity and redundancy in critical services and supply chains can qualify as a Service of General Economic Interest (SGEI) where it demonstrably reduces the risk of systemic disruption. • Expand IPCEI criteria to enable the onshoring of critical supply chains which are identified as high-risk, even if doing so does not entail new "innovation".

Trade	• Conduct an audit of EU trade agreements which cover goods and sectors critical to the EU's security of supply to identify systemic climate risks. • Mandate "climate-trade coherence checks" for all new and updated trade agreements [10]. These checks should explicitly assess whether proposed trade liberalisation schemes/agreements increase exposure to systemic climate risks (such as the creation of critical dependencies in drought-prone agricultural regions or flood-exposed manufacturing hubs) and ensure that trade instruments do not undermine the Open Strategic Autonomy goals of the EU Adaptation Strategy. • Establish a permanent "public-private climate-resilient trade dialogue": Given that systemic climate risks are largely transmitted through private-sector value chains – while only 22% of firms currently report strategies to manage physical climate risks – the Commission should establish a structured dialogue involving EU institutions, Member State trade departments and private-sector leaders from critical sectors (e.g. medical, energy and agri-food). This platform would move beyond disclosure by providing decision-useful, location-specific risk intelligence to SMEs and industrial actors, facilitating co-investment in resilience measures and reducing supply-chain exposure through collaborative adaptation rather than potentially maladaptive relocation.
Foreign Policy & Security	• Integrate impact assessments of systemic climate risks in national security strategies and define comprehensive and integrated resilience measures. Regional climate security cooperation is to be encouraged and supported by the Commission, where national assessments identify need. • Consider second-order impacts from national adaptation and resilience plans on preparedness and security, especially potential maladaptation risks. • Embed climate resilience by design principles in the MFF that synergistically link climate risk management and climate security considerations with future EU defence spending and loans to reduce fragmentation and conflict between policy objectives. • Consider systemic climate risks in international diplomacy, engagement, cooperation and coordination with EU international partners – NATO, OSCE, UN, AU, ASEAN, etc. – to bolster strategic intelligence and management of internationally transmitted risks.
Development & Cooperation	• Assure the integration of the DNSH principle in the forthcoming Global Europe instrument (MFF, 2028-2034) and consider allocating a fixed percentage of the climate

	finance goal to adaptation that builds resilience to systemic climate risks. • Establish regional risk observatories for Europe's Southern and Eastern 'Neighbourhoods', enabling regional coordination across Member States, partners and sectors. • Encourage the development of jointly endorsed "Integrated Resilience and Adaptation Roadmaps" in EU programming under NDICI–Global Europe to provide strategic direction for the use of EFSD+ guarantees and blending instruments to support adaptation and resilience investments in partner countries. • Operationalise the Global Gateway "360-degree approach" by systematically integrating climate adaptation and fragility screening into project identification, Investment Hub review processes and Team Europe Initiatives design. This includes requiring structured use of existing tools (e.g. Conflict Analysis Screenings, EU Early Warning System, climate risk markers under NDICI–Global Europe) at early stages of project preparation and clarifying accountability for follow-up actions.
Critical Infrastructure & Energy	• Enhance the EU Critical Entities Resilience (CER) Directive by mandating that risk assessments are conducted against the metrics outlined in Section 4.1 [16]. • Feature systemic climate risks in the Commission Guidelines and voluntary reporting template for Member States pursuant to Articles 5(5), 6(6) and 7(3) of Directive (EU) 2022/2557 on the resilience of critical entities [17]. • Ensure the stress tests undertaken as part of the Risk Preparedness Regulation similarly capture systemic climate risks revealed through the recommendations proposed in Section 4.1.
Crisis Management and Civil-Military Cooperation	• Ensure that the EU Military Schengen for military mobility (2027) is resilient-by-design by mandating that civil-military dual-use investments in the Trans-European Transportation Network (T-NET), designated hotspot projects, and the four priority military mobility corridors account for and address systemic climate risks [18]. • Integrate systemic climate risk awareness into public-private emergency protocols, civil-military cooperation arrangements and Union Crisis Management protocols [1]. • Expand the EU Solidarity Fund in the next MFF to cover proactive adaptation, preparedness and recovery funding that is guided by climate resilience by design objectives.

Agriculture and Food Security	• Operationalise the negative duty recommended in Section 4.2 by making relevant financial subsidies under the CAP (for example towards insurance) contingent on verified, farm-level climate adaptation, coupling this conditionality with guaranteed upfront capital grants to finance the transition to security enhancing farming methods and technologies. • Classify relevant "Agri-Tech" and domestic bio-based inputs – which can improve food sovereignty and security – as strategic industrial priorities within the European Competitiveness Fund, driving the structural onshoring of critical agricultural supply chains, based on the systemic risk assessments outlined in Section 4.1.

5. Justice, equity and stability

The 2021 EU Adaptation Strategy introduced the concept of 'just resilience' as a guiding vision for climate adaptation in Europe. It signals that adaptation should not *just* reduce climate risk, but do so *justly*, in ways that recognise and address underlying inequalities in exposure, capacity and opportunity. In practice, this means paying attention to who benefits from adaptation investments, who bears residual risk, and whose livelihoods or assets may be affected by adaptation action taken by others. If these distributional effects are overlooked, adaptation can reinforce existing inequalities or shift risks to those least able to manage it.

The 2023 report *Just Resilience for Europe: Towards Measuring Justice in Climate Change Adaptation* [1], prepared for the European Environment Agency, contributes to operationalising just resilience. It structures relevant knowledge on justice in adaptation and provides guidance on measuring progress towards just resilience in the European context, including the identification of potential indicators.

However, just resilience extends beyond prioritising adaptation for the most vulnerable. Adaptation can generate unequal and unjust outcomes, or in other words, winners and losers. Research showed that adaptation actions can redistribute climate risk to others rather than reduce it outright [2]. Such unintended consequences often affect people and places with limited resources and adaptive capacity, who are least able to manage additional burdens created by the redistribution of climate risk.

The aspiration for just resilience also extends beyond Europe. As the EU Adaptation Strategy recognises, the EU and the rest of the world are deeply interconnected. Ensuring that adaptation in the EU is just and equitable therefore requires attention not only to the distribution of benefits and burdens within Europe, but also to its cross-border impacts [3]. In this context, justice requires understanding how adaptation measures within the EU influence exposure, livelihoods and stability in neighbouring regions and trading partners [4].

A cornerstone of justice and equity is that adaptation in one place or by one actor should not come at the expense of vulnerable people and communities elsewhere. This logic is closely aligned with the principles of a just transition in decarbonization [4][5]. For the Integrated Framework, this has three implications:

- Adaptation measures should avoid redistributing climate risk or vulnerability to people in other Member States, neighbouring regions or trading partners.
- Consistent with the "do no significant harm" principle, where European adaptation measures negatively affect people outside Europe, complementary policies should strengthen resilience in partner countries rather than undermine it.
- Destabilisation elsewhere feeds back into the EU through trade disruption, migration pressures, financial exposure and security risks. Managing systemic climate risks beyond Europe is therefore integral to Europe's own resilience.

Recommendations for the Integrated Framework:

To ensure that vulnerable groups and geographical areas receive adequate protection, the Integrated Framework should require that systemic climate risk assessments explicitly identify distributional effects across people, regions and sectors, including cross-border impacts. This should be accompanied by:

- Targeted allocation of adaptation funding to regions and communities facing disproportionate exposure and limited adaptive capacity;
- Mandatory assessment of distributional and cross-border impacts in major adaptation investments and infrastructure planning;
- Mechanisms for stakeholder participation that ensure affected communities have meaningful input into adaptation decisions;
- Monitoring and reporting requirements that track not only overall risk reduction but also who benefits and who bears residual risk.

6. Business, economics, competitiveness and prosperity

Europe's competitiveness and prosperity depend on tightly interconnected systems: trade and logistics corridors, energy and water services, digital infrastructure, labour productivity and internationally networked supply chains for essential goods and industrial input [1]. Climate hazards increasingly trigger systemic disruptions as impacts propagate through these interdependencies, driving business interruption, input shortages, price volatility and correlated losses across regions and sectors.

Recent modelling indicates that indirect impacts transmitted through global supply chains can become a major driver of economic loss: by 2060, projected net losses linked to supply-chain propagation range from $3.75 trillion to $24.7 trillion depending on the emissions pathway [2]. In WBCSD's executive business survey, 61% of leaders expect higher costs from physical climate impacts in the next 12 months, and 92% say the cost of inaction will outweigh the cost of the transition [3]. Yet according to the EIB, only 22% of firms report having an adaptation strategy for physical risks [4].

Insurance and reinsurance can buffer shocks and support recovery, but climate change is eroding diversification as losses become more correlated and overlapping, increasing the likelihood of premium rises, coverage withdrawal and widening protection gaps [5]. In Europe, only 19.5% of losses from weather- and climate-related extremes (1980–2022) were insured, heightening spillovers into public budgets, credit conditions and asset valuations [6]. Agriculture already faces average losses of >€28bn/year with only ~20–30% insured, and catastrophe years are expected to become materially more severe as climate risks intensify [7].

Taken together, the evidence indicates a systemic risk profile where local climate shocks can escalate into EU-wide disruption through interconnected supply chains, critical infrastructure dependencies and correlated financial exposures, while adaptation and insurance capacity fail to keep pace. The recommendations below therefore focus on EU levers to reduce disruption at critical nodes, accelerate implementation in firms and value chains, strengthen risk pricing and supervision to avoid disorderly repricing, and sustain insurability through risk reduction plus targeted risk-sharing where diversification is eroding.

Recommendations for the Integrated Framework:

- **Make "systemic disruption reduction" a competitiveness objective across EU programmes** (reduce cascading supply-chain and infrastructure shocks).

  EU instrument options: integrate resilience/systemic-risk criteria into EU funding regulations and programme guidance (e.g., Cohesion policy programmes, InvestEU windows, CEF/TEN-T where relevant) and into public procurement requirements for critical services and strategic supply chains. This directly addresses evidence that

current resilience efforts do not sufficiently account for climatic risks and cascading effects in supply chains.

- **Turn National Adaptation Plans into investable "Resilience Investment Plans"** (crowd in private capital; reduce business interruption).

  EU instrument options: a Commission Recommendation / guidance package under the Integrated Framework that sets minimum features for "investment-ready" plans (pipeline, risk owners, avoided-loss metrics, delivery arrangements), paired with conditionalities and technical assistance through EU funds and the EIB ecosystem.

- **Move from disclosure to decision-useful adaptation in firms and value chains** (close the assessment–action gap; avoid maladaptive relocation).

  EU instrument options: use implementation guidance under existing corporate reporting and due-diligence frameworks to require decision-useful information on physical risk, business interruption and adaptation plans for critical suppliers and nodes, and to strengthen expectations on value-chain collaboration (not just site-level assessments).

- **Embed physical climate risk in prudential supervision and valuation** (prevent disorderly repricing, credit tightening and macro-instability).

  EU instrument options: supervisory guidance and stress testing expectations via EBA/ECB-SSM (banks) and EIOPA (insurers) and, where needed, targeted updates to prudential rulebooks to ensure physical risk (including supply-chain and business-interruption channels) is reflected in governance, risk appetite and concentration management. This aligns with evidence on financial transmission channels from physical shocks into balance sheets and public finance.

- **Address the insurance protection gap while preserving the diversification function** (maintain insurability; limit fiscal risk transfer).

  EU instrument options: an EU-level policy framework / recommendation for Member State insurance schemes using risk-layering and public-private risk sharing, plus enabling rules for risk pooling and (re)insurance / capital-market capacity (e.g., risk-transfer vehicles) where risks are increasingly correlated. Couple any support to measurable risk-reduction actions to avoid moral hazard and to keep premiums affordable without suppressing risk signals.

- **Support SME climate resilience capacity and investment** (avoid "weak-link" disruptions cascading through value chains).

  EU instrument options: an EU-level support package under the Integrated Framework that expands SME access to decision-useful, location-specific physical

risk data and simple screening tools; funds technical assistance to translate risk information into operational and investment decisions; and provides targeted incentives (e.g., vouchers, guarantees, blended-finance windows) to co-finance adaptation measures in SME operations and critical supplier relationships.

- **Empower the ECB to support the "resilience by design" agenda** *(strengthen systemic resilience without prejudicing price stability or ECB independence).*

  EU instrument options: Provide high-level political guidance, consistent with ECB independence and the primacy of price stability. Clarify that the ECB's secondary mandate should treat systemic (climate) resilience as a key EU policy objective. The ECB should support this objective where it also strengthens its risk management and monetary-policy transmission. This would reinforce existing measures, including the announced climate factor in the collateral framework. It would also encourage complementary action to curb the build-up of systemic financial risk. This could include stronger supervisory expectations and, where warranted, Pillar 2 capital measures for material climate-risk concentrations. It could also include exploring conditional longer-term refinancing operations that support verified resilience investment while preserving risk-based pricing.

Annex

This is a scan across EU policy documents for how they feature systemic climate risks based on a keyword search of related terms: (cascading [climate] risk, cascading effects [of climate change] and systemic risk [from climate change]). When in doubt, a close read of the policy document was conducted to determine coverage. General references to climate change and non-specific terms (such as cross-border risks) were excluded.

Three categories demonstrate the coverage of systemic climate risks: strong (well covered), minimal (some coverage), none (no mention).

EU Policy Documents	Strong	Minimal	None
Forging a climate-resilient Europe - the new EU Strategy on Adaptation to Climate Change (2021)	x		
Managing climate risks - protecting people and prosperity (2024)	x		
EU stockpiling strategy: Boosting the EU's material preparedness for crises (2025)		x	
Joint communication on the European Preparedness Union Strategy (2025)		x	
A new outlook on the climate and security nexus (2023)		x	
Directive (EU) 2022/2557 of the European Parliament and of the Council of 14 December 2022 on the resilience of critical entities and repealing Council Directive 2008/114/EC		x	
Commission Guidelines and reporting template developed pursuant to Articles 5(5), 6(6) and 7(3) od Directive (EU) 2022/2557 on the resilience of critical entities (2025)		x	
Council Recommendation on a Blueprint to coordinate a response at Union Level to disruptions of Critical Infrastructure with significant cross-border relevance (2024)			x
Proposal for a regulation of the European Parliament and of the Council on a framework of measures for		x	

the establishment of the Union Civil Protection Mechanism (2025)		
Report from the Commission to the European Parliament and the Council: Advancing risk management and resilience-building in Europe: First report on the implementation of the union disaster resilience goals Second update on preventing and managing disaster risk in Europe	x	
A Strategic Compass: For Security and Defence (EEAS) (2022)	x	
Preserving Peace - Defence Readiness Roadmap 2030 (2025)		x
ProtectEU: a European Internal Security Strategy (2025)		x
Joint Communication to the European Parliament and the Council on Military Mobility (2025)		x

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