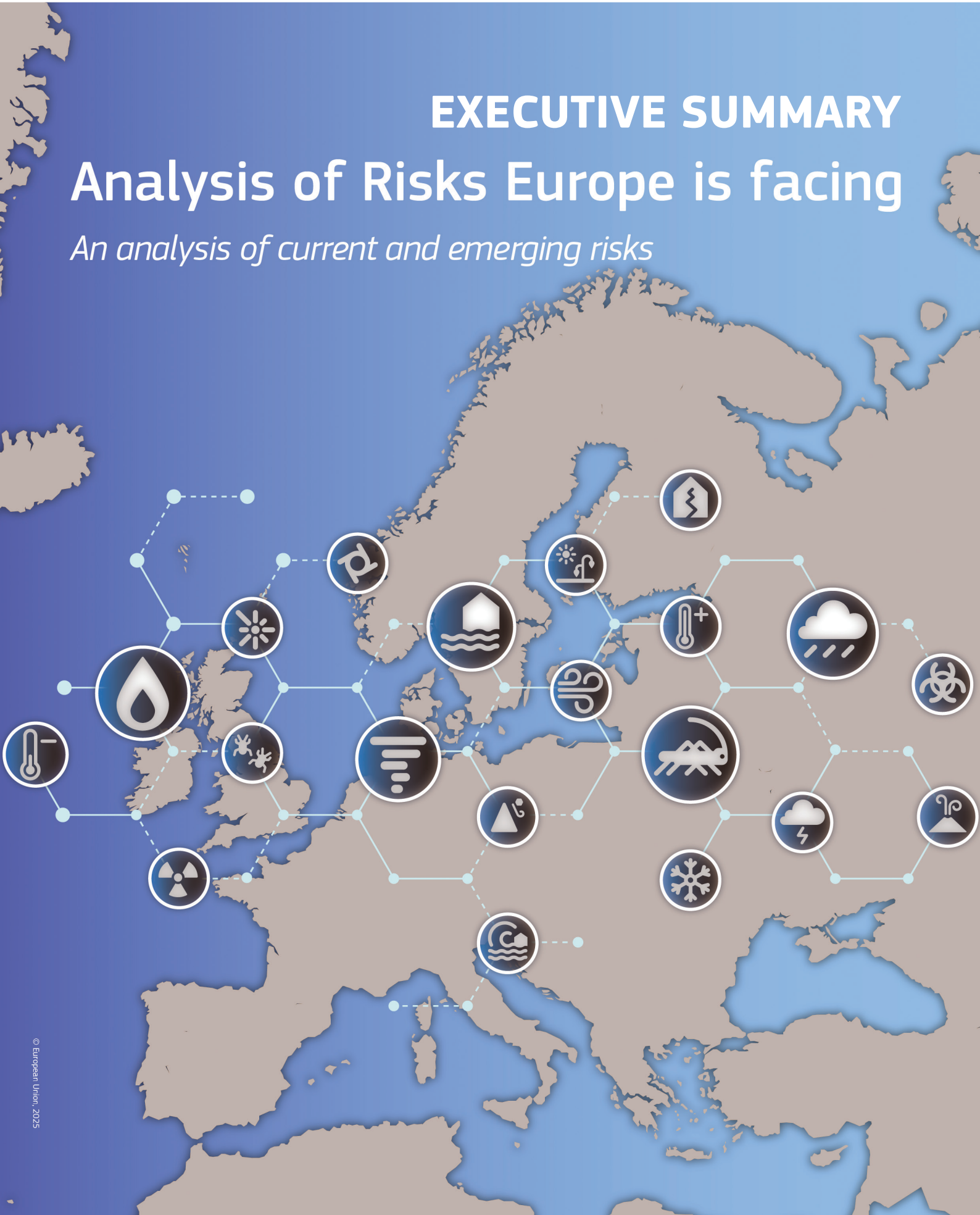
European Commission

Joint Research Centre

EXECUTIVE SUMMARY

Analysis of Risks Europe is facing

An analysis of current and emerging risks



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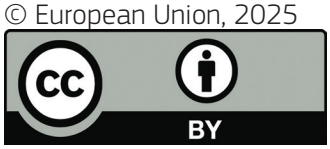

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Executive Summary

Europe faces an evolving and complex risk landscape marked by climate change, geopolitical instability, technological disruption, and risks that are transboundary, emerging and systemically interconnected. The European Commission's 'Analysis of Risks Europe is facing' report provides an analysis of 47 risks, originating from both natural and man-made hazards, that threaten lives, infrastructure, economies, and stability across the EU. To protect the vital societal function in the EU, a systemic, multi-hazard, and whole-of-society anticipatory risk governance is called for.

Policy Context

This report supports the first action of the EU Preparedness Union Strategy (JOIN (2025) 130 final), which calls for the development of an EU comprehensive risks and threats assessment. It is the prerequisite for a whole-of-society and, all-hazards approach to preparedness and resilience. It also contributes to broader European policy frameworks, including the Union Civil Protection Mechanism (UCPM) and its Union Disaster Resilience Goals, as well as the European Climate Adaptation Strategy. Together, these policies underscore the importance of foresight, integrated risk assessment, and cross-sector coordination to build a more resilient Union capable of handling cascading, cross-border, and systemic risks.

Key conclusions

A Fragmented but Rich Risk Landscape

The risk landscape in Europe is well documented, with extensive reporting by both EU institutions and the European Union Member States. The report identifies a fragmented landscape across risk definitions and classification, methodologies and standards. These heterogeneities pose challenges but also offer an opportunity. The richness and depth of sector-specific knowledge provide a solid foundation for designing a more comprehensive and coherent EU-wide risk assessment framework. Rather than seeking uniformity, the objective should be to promote interoperability—respecting the diversity of existing approaches while enabling shared analysis and collective action.

Systemic and Cascading Risks

Risks are increasingly interconnected and rarely occur in isolation; most arise from a complex interplay of multiple precipitating factors, including underlying risk drivers, other hazards, and the cascading impacts they generate. Climate change is causing more intense wildfires and longer wildfire seasons, which in turn may cause health hazards such as air pollution. Air pollution can lead to premature deaths, increased hospitalisations, and economic disruption due to reduced activity days. Conflict can disrupt essential services and supply chains and lead to sudden mass displacement of people, which may create overcrowded living conditions and strain healthcare services, increasing vulnerability to disease and resource scarcity. In the space domain, the uncontrolled growth of the satellite population, associated collision risks, and vulnerabilities in situational awareness are being exploited by malicious actors to conduct and conceal adversarial anti-satellite and other harmful activities.

A growing proportion of threats are systemic, meaning they interact across sectors and borders, causing widespread disruption. Scenario modelling and causal loop analysis show that anticipating these interactions can help build resilience and avoid compounding failures.

Different types of risks—natural, technological, or societal—often result in overlapping and cascading impacts. One of the most frequent consequences is economic disruption, which can ripple through sup-

ply chains, damage industries, create geopolitical tensions, and undermine livelihoods. This underscores the importance of boosting financial resilience and ensuring disaster-related risks are factored into economic planning. Similarly, threats like air pollution, pandemics, antimicrobial resistance, substance abuse, and food insecurity place enormous burdens on healthcare systems, highlighting the need for better prepared public health infrastructure and policies.

Climate change has significant implications for human mobility, influencing patterns and volume, and often interacting with other drivers such as conflict and economic conditions. Climate-related events, combined with armed conflict and weak governance, can drive population displacement, typically starting with internal or regional migration before potentially leading to international movement. This underscores the need for coordinated migration and disaster risk reduction policies.

Cyberattacks, extreme weather, and nuclear incidents can also disrupt essential services such as energy and transport, highlighting the need for robust, adaptable infrastructure. Because these disruptions cut across different risk categories, a cross-cutting whole-of-society and whole-of-government approach—focused on resilient economies, health systems, and infrastructure that support vital societal functions—offers the most efficient and scalable path to reducing impacts.

Evolving Impacts: Past and Future trends

The report presents an assessment on the losses associated with each risk over the last 10 years, and on the potential impacts for the next decade. The assessment shows a clear increasing trend, particularly for indirect impacts. Cyber threats, climate-driven weather extremes, hydrological and geophysical events, biological hazards, and technological disruptions all show a marked rise in both direct and indirect consequences. These impacts often stretch across sectors, affecting everything from critical infrastructure and health systems to economic stability and essential services. While some risks, such as environmental degradation, may stabilise in impacts, others—especially those linked to digital systems and geopolitical tensions—are set to escalate.

High-Impact, Low-Probability Events

Risks such as extreme solar storms, nuclear incidents, or pandemic outbreaks are rare but can carry severe consequences. The report calls for improved foresight tools, such as horizon scanning and scenario planning, to bring these events into regular risk planning cycles. Recognising and preparing for these risks is essential to avoid catastrophic failures in critical systems. Earth System Tipping Points pose further significant challenges. At least 5 of the 16 identified tipping points are at risk of crossing irreversible destabilising barriers at global mean temperatures above 1.5°C. Therefore, these tipping points can no longer be considered as low-likelihood event and require targeted risk assessment.

Common Risk Drivers

This study highlights several common key risk drivers closely linked to the 47 examined risks selected and prioritised by contributors as the most significant factors. Geopolitical instability is the most frequently associated factor, connected to nearly half of the hazards. Other major drivers include weak governance (19 hazards), climate change and urbanisation (each tied to 17), environmental degradation (14), and technological development (10). Climate change, in particular, is a consistent underlying factor across numerous risks, significantly influencing weather-related disasters such as droughts, wildfires, floods, and convective storms, as well as broader issues like food insecurity. Its effects are often compounded by environmental degradation. Societal vulnerabilities, such as poverty and inequality, or demographic developments were also highlighted by several contributors. Urban development, especially when poorly planned, also contributes to increased exposure to risks. Expanding infrastructure in hazard-prone zones increases the susceptibility of urban areas to threats such as earthquakes, air pollution, and Natech events (natural hazard-triggered technological incidents). The concentration of people and reliance on interconnected systems in cities make them particularly vulnerable to cascading crises—where one hazard may trigger multiple failures across several sectors.

Shared drivers like weak governance and geopolitical tension can amplify risks ranging from natural hazards to emerging digital threats, including cyberattacks, and disinformation. Strengthening institutional resilience, governance structures, technical standards, and cross-border cooperation can help contain or prevent several types of risks at once.

These above mentioned six risk drivers align with broader trends developed through foresight methodologies, particularly megatrends analysis. The JRC's Megatrends Hub monitors 14 megatrends, each with both short- and long-term shifts. Of these climate change and environmental decline, rapid technological advancement and connectivity, and the geopolitical rise of the East and South identified were identified as dominant themes. Megatrends include a set of sub-trends some linking with the risk drivers. Integrating these megatrends into planning enables better anticipation, management and sometime using sub-trends not yet developed helping to better understand complex and interconnected threats.

Gaps and needs identified

This report identifies gaps for each risk analysed, highlighting common gaps such as methodology limitations, data availability and accuracy, and insufficient scientific literature in research. Policy gaps include a lack of standardised guidelines where applicable, inadequate funding and resources, and insufficient international cooperation. Additionally, operational gaps exist, including inadequate data collection and monitoring, and challenges in implementing practices. Recommendations are provided for each risk, highlighting the need for infrastructure planning, policymakers' guidance and support, and clear plans to address gaps and secure investment, as seen in hydrogen fuel projects.

Related and future JRC work

This report builds on a series of precursor studies led by the JRC, particularly the recent Cross-Border and Emerging Risks in Europe report (Corbane et al., 2024), which provided a scientific analysis transboundary and emerging risks across the EU. That report, developed with contributions from over 60 experts across JRC Directorates, highlighted the growing interconnectedness and complexity of disaster risks in Europe, underscoring the need for coordinated approaches, open data, and cross-sectoral collaboration. It also served as a call to move from fragmented assessments to an integrated, anticipatory risk governance framework.

Looking ahead, the Joint Research Centre's 2025–2027 work programme will continue to advance the EU's capacity to anticipate and respond to systemic risks through the portfolio on Anticipation, Risks, and Resilience. This portfolio integrates research and innovation across societal resilience and systemic disruptive events, addressing both known and emerging threats as well as long-term future risks. It draws on past JRC efforts related to situational awareness, future risk foresight, and health crisis preparedness, while expanding them into a unified and transdisciplinary strategy.
In alignment with the European Commission's priorities the portfolio will support resilience-building across sectors—health, climate, energy, technology, finance, and more. It will use integrated foresight, behavioural insights, and knowledge management to inform policy and anticipate compound and cascading risks. The focus will be on developing tools and insights that bridge prevention, preparedness, response, and recovery, supporting coordinated EU-level action.

Building a Prepared Union

Given the interconnected and cascading nature of risks, the EU must adopt an all-hazards approach to preparedness. This means anticipating how different threats can interact and escalate across sectors. A whole-of-society approach is also essential—bringing together EU institutions, national and local authorities, industry, communities, and citizens. Effective risk mitigation depends on sharing data, resources, and expertise. Multi-hazard strategies, coordinated preparedness plans, and joint response mechanisms are key to building collective resilience, as recent crises have shown.

This report provides an initial step towards developing an EU comprehensive risks and threats assessment leveraging the findings of the JRC precursor studies on cross-border and emerging risks (Corbane et al. 2024), the Risks on the Horizon report of the JRC for foresight (Muench et al. 2024), and the Annual Strategic Foresight Report 2025 "Resilience 2.0" (EU 27). The JRC's contribution to the analysis of risks Europe is facing is part of an ongoing political process, aligning with the new Commission priorities on prevention and preparedness, particularly the Preparedness Union. The findings of this report have also informed the development of DG ECHO's Capacity Progress Report on the Response Capacities of the Union Civil Protection Mechanism. Regular updates to evidence-based risk analyses highlight the critical role of the JRC in shaping policy, reinforcing the link between scientific insights and policy initiatives.

Science for policy

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