

European Climate Resilience and Risk Management Framework

Comments from the European Federation of Geologists (EFG)

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1. Introduction: The Geoscientist as a Strategic Economic Asset

The European Federation of Geologists (EFG), representing thousands of geoscience professionals across Europe, welcomes the European Commission's initiative to establish an integrated framework for climate resilience. As the Commission prepares this framework for adoption in Q4-2026, we emphasise that true resilience is impossible without a deep understanding of the Earth's subsurface.

Geologists are not merely technical experts; they are essential enablers of economic stability. By addressing many of the 36 risks identified in the [European Climate Risk Assessment](#) (EUCRA), geological expertise transforms "climate-proofing" from a reactive cost into a proactive wealth-preservation strategy.

2. Monetising Resilience: The Cost of Inaction vs. The Value of Expertise

A central objective of this consultation is to "reduce losses, destruction and costs from climate-related impacts". We must distinguish between unavoidable weather extremes and the avoidable economic losses caused by inadequate spatial planning.

The European Commission notes that without urgent action, economic losses from coastal floods alone could exceed €1 trillion per year by the end of the century (Source: [European Climate Risk Assessment](#)). Process-based geoscientific modelling of coastal erosion, shoreline dynamics, and sediment transport is widely recognised as essential for coastal risk assessment and the design of effective adaptation measures (Sources: [IPCC AR6 WGII](#), 2022; [Vousdoukas et al.](#), 2020).

Climate change intensifies weather events and the billions of euros lost annually to floods and landslides are frequently the result of spatial planning that ignores geological realities such as soil instability and infiltration capacity. For example, the 2013 Central European floods resulted in approximately €12 billion in economic losses (Source: [Jongman et al., Increasing stress on disaster-risk finance due to large floods, Nature Clim Change 4, 264–268](#), 2014). Much of this damage can be prevented by making geological assessments mandatory in the "resilience-by-design" phase of urban development.

Chronic risks like ground subsidence and the shrinkage-swelling of clay soils are now "mainstream financial concerns". Clay shrink–swell subsidence has caused over €20 billion in insured losses in France since 1989, with annual damages approaching €1 billion in recent decades (Source: [Caisse Centrale de Réassurance](#), 2024). Geological and geotechnical modelling provide the predictive data required to stabilise the insurance market and reduce the "protection gap".

3. Resilience-by-Design: Securing Europe's Prosperity

The consultation highlights that how we adapt now will determine Europe's competitiveness, security, and prosperity and the work of geologists plays a fundamental role.

Climate change exacerbates geological hazards such as floods, slope instabilities, subsidence, shrinkage-swelling of clay soils, ground collapse, and coastal erosion. Geological mapping, geotechnical modelling, and ground stability analysis provide reliable predictions of risk zones and mitigation measures. Evidence demonstrates that proper integration of geological knowledge into land-use planning and infrastructure design could prevent billions of euros in flood and landslide damages annually.

Sustainable management of groundwater and surface water is central to climate resilience. Hydrogeologists assess aquifer recharge, water quality, and vulnerability to overexploitation or contamination. Geological expertise is fundamental to comply with the Water Framework Directive (2000/60/EC), the Groundwater Directive (2006/118/EC), and the Soil Monitoring Law (2025/2360/EU), ensuring safe, sustainable water supplies across Europe.

The safety and longevity of transport networks, energy facilities, and buildings rely on accurate subsoil characterisation. Geotechnical studies inform foundation design, hazard prevention, and the climate-proofing of critical infrastructure. Integration of geological data directly mitigates construction and operational risks, translating into measurable cost savings for public and private stakeholders.

Achieving a low-carbon, climate-resilient economy depends on the sustainable supply of raw materials, safe energy storage, and carbon capture and storage (CCS). Geologists support the implementation of the CCS Directive (2009/31/EC) and contribute to geothermal energy projects, while enabling responsible exploitation of critical raw materials under the Critical Raw Materials Act (2024/1252/EU). These activities generate economic value, support industrial competitiveness, and safeguard quality of life, democracy, and societal well-being.

4. Specific Comments on the Consultation Themes

4.1. Addressing Knowledge Gaps and Barriers

The identified "knowledge gaps" are often the result of failing to integrate geological data into climate risk models. Risk assessments must move beyond surface-level meteorology to include:

- Ground stability and liquefaction potential.
- Hydrogeological models to prevent the overexploitation of groundwater, ensuring compliance with the Water Framework and Groundwater Directives.

4.2. Legislative Coherence and "Climate-Proofing"

"Climate-proofing" is, in essence, a discipline of geological engineering. To ensure the new framework is "fit for purpose," we recommend to:

- Integrate mandatory geological and geotechnical studies into all stages of public spending and procurement.
- Ensure coherence with existing laws such as the Floods Directive (2007/60/EC) and the Seveso III Directive (2012/18/EU), where geological site characterisation is a prerequisite for safety.

4.3. Finance, Insurance, and Transparency

Currently, only 25% of climate-related losses are insured. EFG agrees that location-specific information on climate hazards can improve insurance uptake. By providing "authoritative" and "interoperable" geological data via platforms like the European Geological Data Infrastructure (EGDI), geoscientists enable insurers to accurately price risk, thereby reducing premiums and protecting macroeconomic stability.

5. Strategic Recommendations: Professional Accountability

To maximise the impact of the new Integrated Framework while supporting the Commission's simplification agenda, we propose:

1. Recognition of professional competence
2. Expert inclusion

The [European Geologist \(EurGeol\) professional title](#) should be recognised as a mandatory mark of competence and accountability. This acts as a simplification measure, ensuring a consistent, high-level standard across all 27 Member States without redundant administrative burdens. Geologists must be embedded within the expert committees and working groups that will define the "common climate trajectories" and "acceptable risk levels" mentioned in the consultation.

6. Conclusion

Integrating geoscientific expertise into the European Climate Resilience Framework is not merely a technical choice; it is a strategic economic necessity. By grounding our policies in Earth science, the EU can shift public expenditure from reactive disaster response toward proactive, cost-effective resilience that safeguards our infrastructure, our economy, and our values.

About EFG:

The European Federation of Geologists (EFG) is the largest and most influential network of geoscience professionals across the Council of Europe countries, with 28 national associations representing a direct membership of approximately 50,000 individuals. EFG collaborates extensively with leading geoscience organisations worldwide, including in Australia, the USA, Canada and South Africa, indirectly reaching over 150,000 experts.

