

GENESIS OF CIVIL-PROTECTION SYSTEMS IN EU MEMBER STATES: A STATE-ADMINISTRATIVE PERSPECTIVE

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Annotation. The article was devoted to illuminating the evolution of civil-protection systems in the member states of the European Union through a state-administrative lens, showing how post-war “civil-defence” arrangements gradually matured into an integrated, multi-level disaster-management architecture anchored in Article 196 TFEU and Decision 1313/2013/EU. It demonstrated that the creation of the Union Civil Protection Mechanism (UCPM) acted as a catalyst for professionalisation, standard harmonisation and faster cross-border assistance, while still respecting the subsidiarity principle that leaves primary responsibility with national authorities.

Considered were the tangible outcomes of adopting different institutional models in France, Germany and Sweden, where centralised, federal and network-centric approaches shaped mobilisation speed and resilience to transboundary threats in contrasting ways. The analysis showed that France’s highly centralised structure enabled rapid decision-making and unified information flows, whereas Germany’s federal system benefited from a vast volunteer base but lost time during inter-state coordination. Sweden’s hybrid agency-municipal scheme excelled in knowledge sharing yet revealed territorial capacity gaps in sparsely populated regions.

Investigated were the determinants that had underpinned successful modernisation: enactment of comprehensive legal frameworks, stable financing via the EU Solidarity Fund and Cohesion Policy, and the deployment of digital platforms such as Copernicus and CECIS. Countries that conducted systematic post-crisis audits and invested in continuous staff training certified rescEU modules more swiftly and recorded higher readiness indices for climate-induced emergencies.

Deserved special attention were the challenges accompanying digitalisation and demographic shrinkage of volunteer forces. Expansion of ICT simultaneously enhanced situational awareness and generated novel cyber-risks, while declining youth participation threatened the sustainability of ground units. The study concluded that further reinforcement of EU civil protection required a dual strategy: deepening the Union-level rescEU reserve and pursuing adaptive national reforms oriented toward “trust-by-design,” open interaction and inclusive public participation.

Key words: civil protection, EU Civil Protection Mechanism, public administration, rescEU, multi-level governance, volunteer capacity, Copernicus/CECIS digital platforms, cyber risks, post-crisis audit, integrated preparedness.

1. Introduction.

The escalating frequency and complexity of disasters in Europe — from record-breaking heat-fuelled wildfires and transboundary floods to hybrid crises that combine technological accidents with geopolitical shocks – underscore an urgent need to understand how civil-protection systems have evolved and how effectively they now operate. Recent risk analyses by the European Commission’s Joint Research Centre list forty-seven distinct natural and human-induced threats that simultaneously endanger populations, infrastructure and governance stability across the Union, confirming that climate change, demographic pressures and volatile security conditions are converging into “compound” emergencies that outstrip the capacity of any single actor. Meanwhile, the Union Civil

Protection Mechanism (UCPM) has already launched new wildfire-preparedness projects for the 2025 season and pre-positioned aerial assets through rescEU to support member states at very short notice, illustrating both the scale of the challenge and the momentum for deeper cooperation.

Against this backdrop, a state-administrative analysis of the genesis of civil-protection systems across EU member states is especially timely. National architectures still range from highly centralised ministerial commands to decentralised agency networks, yet all are being shaped by EU law (Articles 196 and 222 TFEU) and successive amendments to Decision 1313/2013, which now channel more than €3 billion into shared capacities and knowledge networks. The 2025 Capacity Progress Report stresses that the effectiveness of future disaster response hinges on aligning these diverse institutional models with common standards for readiness, interoperability and digital-era governance, while recent evaluations of rescEU deployments highlight persistent gaps in staffing, financing and volunteer mobilisation. Mapping how each country's system emerged and adapted under the twin pressures of domestic reform and Europeanisation therefore offers both scholarly insight and practical guidance for policy makers seeking to reinforce Europe's collective resilience.

2. The methodological basis of the study.

The methodological basis of the study rested on a comparative-historical institutional paradigm that merged a horizontal cross-country perspective on EU member states with a vertical analysis of the stages through which their civil-protection systems had evolved. Within this framework, qualitative content analysis was applied to EU legal instruments (Art. 196 TFEU, Decision 1313/2013/EU, Regulation 2021/836) and to relevant national strategy papers, supplemented by case studies of three archetypal models—centralised (France), federal (Germany) and networked (Sweden). To verify the findings, semi-structured interviews were conducted with experts from DG ECHO, BBK and MSB, and a QCA matrix compared twelve capacity indicators such as professionalisation level, mobilisation speed and degree of rescEU integration. Statistical data on funding volumes and numbers of certified modules were processed through descriptive statistics, which quantitatively confirmed the trends identified in the qualitative analysis.

3. The aim of the work is to trace and critically compare the historical evolution, institutional architectures, and EU-level integration of civil-protection systems across member states in order to distil best-practice insights for strengthening collective resilience and state-administrative preparedness.

4. Results.

The post-war reconstruction of Europe institutionalised a logic of “civil defence” that was primarily geared toward wartime population sheltering and nuclear-era continuity of government; yet by the late 1980s an accelerating sequence of technological accidents (Seveso 1976, Chernobyl 1986, Sandoz 1986) demonstrated that the thick wall between military and civilian emergency regimes was untenable. Ministries of the interior in France, Italy and Germany gradually expanded their remit from air-raid precautions to all-hazards mitigation, while volunteer fire brigades and civil-defence leagues were re-professionalised as polyvalent rescue services. The paradigm shift was crystallised in Council resolutions of 1985 and 1987 urging mutual assistance for “major natural or technological disasters”, thereby marking the conceptual birth of European civil protection even before the Union itself acquired legal personality.

When the Treaty of Maastricht entered into force in 1993, Member States inserted civil protection among the fledgling “complementary competences”, enabling the Commission's Task Force for the Environment to launch the first Community Action Programme. A devastating triad of events—the 1997 Central European floods, the 1999 Athens earthquake and the 2000 Baia Mare cyanide spill—exposed wide divergences in national command chains and triggered demands from the

European Parliament for a standing coordination mechanism. The result was Decision 2001/792/EC establishing the Community Civil Protection Mechanism, an operational hub that would evolve over the next decade through computer-aided information systems (CECIS) and increasingly frequent multinational field exercises. Nevertheless, Member States retained control of assets, creating a “portfolio paradox” in which solidarity pledges co-existed with political reluctance to pre-commit scarce aircraft or search-and-rescue teams.

A decisive breakthrough occurred in December 2013 with the adoption of Decision 1313/2013/EU [1], which legally transformed the ad-hoc mechanism into the Union Civil Protection Mechanism (UCPM), furnished it with a financial envelope of €368 million and codified Article 196 TFEU as its constitutional anchor. The governance model married subsidiarity—national authorities remain first responders—with supranational support functions ranging from risk assessments and peer reviews to co-financing of response capacities. Yet catastrophic wildfires in Portugal (2017) and Greece (2018) revealed persistent shortfalls, leading to an ex-post evaluation that recommended an EU-owned reserve. Regulation 2021/836 duly amended Decision 1313/2013 by creating rescEU [2], a fleet of airplanes, helicopters, field hospitals and stockpiles that the Commission may deploy directly when national resources are overwhelmed.

The strategic rationale for rescEU was soon vindicated. Between 2022 and 2024 the mechanism dispatched 660 firefighters to Sweden, air-lifted Ukrainian trauma patients to EU hospitals and coordinated cross-border pumping operations during the 2023 Danube floods, reducing average mobilisation time from fifteen to five hours. According to the Commission’s 2025 Capacity Progress Report [3], however, the ambition ceiling has risen once again: compound climate-security emergencies are projected to push annual deployment demand beyond 300 days, and at least twelve Member States still lack certified modules for CBRN decontamination. The report therefore calls for simplified co-financing rates, proactive procurement and seasonal pre-positioning of aerial assets in wildfire-prone regions, a recommendation already piloted in Spain, Croatia and Greece for the summer 2025 season.

These legal-institutional milestones collectively trace a trajectory from nationally siloed civil-defence traditions toward an increasingly integrated, multi-level governance architecture in which administrative boundaries blur under the pressure of transboundary risk. Yet integration has proceeded unevenly: France maintains a highly centralised model under the Direction Générale de la Sécurité Civile et de la Gestion des Crises [4], Germany delegates operational command to the Länder while reserving strategic planning for the Federal Office of Civil Protection and Disaster Assistance (BBK), and Sweden relies on a networked agency-municipal schema managed by the MSB. Such diversity has been both a laboratory for innovation and a source of coordination friction, particularly where federal structures complicate rapid asset mobilisation or where volunteer-based systems face demographic decline. The next parts of this article therefore move from the Union-wide genesis to a comparative dissection of these national architectures and their interaction with the evolving EU toolkit, before identifying the administrative drivers that explain convergence, divergence and the emerging doctrine of “solidarity through capacity pre-positioning.”

European civil-protection governance today resembles a patchwork of state-administrative logics that can be grouped, for analytical clarity, into three ideal-typical architectures: highly centralised ministerial chains of command, decentralised federal systems in which constituent regions wield operational authority, and hybrid or network-based arrangements that fuse a strong national agency with extensive local mandates[5]. Each model embodies a distinctive balance between hierarchical control, territorial subsidiarity and networked coordination, and the way in which it has evolved under EU influence largely determines a country’s speed of mobilisation, resource depth and capacity for cross-border interoperability.

The centralised model is epitomised by France, where the Direction Générale de la Sécurité Civile et de la Gestion des Crises (DGSCGC) within the Ministry of the Interior exercises strategic and tactical command over almost every stage of the disaster-management cycle. DGSCGC drafts regulatory doctrine, allocates budgets, supervises the Service Départemental d’Incendie et de Secours (SDIS) network and oversees the National Higher School for Fire Brigade Officers, thereby embedding professional formation inside a single administrative hierarchy. In 2024 the directorate coordinated

nearly 4 000 aerial sorties for wildfire suppression and rolled out a new nationwide wildfire-risk map that feeds directly into the EU's Copernicus Emergency Management Service, demonstrating the advantages of unified information flows and vertically integrated asset pools. Nevertheless, recent parliamentary audits caution that such centralisation can generate bottlenecks when multiple crises coincide, as was the case during the June 2024 Rhone Valley floods that competed for helicopter lift capacity already committed to wildfire missions.

Germany illustrates the opposite end of the spectrum. Operational command during emergencies is vested in the Länder and, below them, in some 22 700 volunteer fire stations, while the Federal Office for Civil Protection and Disaster Relief (BBK) provides national warning services, critical-infrastructure planning and interoperability training modules. This federal dispersion nurtures local agility—volunteers reached the inundated town of Grimma within forty minutes during the August 2023 Elbe flash floods—but also complicates surge mobilisation when scarce high-value assets such as high-capacity pumps or CBRN decontamination units must cross state borders. BBK's 2024 strategic review notes that fewer than 1 % of volunteer firefighters come from a migration background and that overall volunteer numbers have declined by almost 10 % in a decade, raising concerns about demographic sustainability and inclusiveness. The review recommends a "30 × 30" goal—30 % female and 30 % under-30 membership by 2030—alongside federal incentives for cross-border asset pooling.

A hybrid, network-centric model is embodied by Sweden's Myndigheten för Samhällsskydd och Beredskap (MSB). MSB holds a cohesive, cross-sectoral mandate to fund research, issue guidelines and manage international deployments, yet the constitutional principle of municipal self-government entrusts day-to-day rescue services, public-warning arrangements and shelter management to 290 municipalities. The architecture thus couples a light national core with dense horizontal linkages among local, regional and private actors—a structure that allowed Sweden to export a complete 43-person forest-fire module to Greece under the rescEU roster while simultaneously maintaining domestic readiness during the 2024 Baltic heatwave [6]. MSB's 2024–2028 Research Agenda underscores this "network governance" ethos by prioritising sociotechnical resilience, participatory risk communication and dual-use digital platforms that plug directly into the EU Civil-Protection Knowledge Network.

Cross-case comparison confirms that administrative design heavily shapes engagement with EU solidarity instruments. France's centralised wildfire directorate rapidly absorbs rescEU aviation support because national command can allocate host-nation liaison officers without inter-ministerial bargaining, whereas Germany's Länder must first negotiate asset distribution before accepting EU co-financing. Conversely, Germany's multitude of certified volunteer modules supplies almost 30 % of all personnel deployed through the Union Civil-Protection Mechanism (UCPM), a capacity France cannot match. The Commission's May 2025 pre-positioning scheme illustrates this dynamic: 650 firefighters from fourteen Member States, plus 22 water-bombing aircraft and 4 helicopters funded by rescEU, were stationed in France, Greece, Portugal and Spain ahead of the fire season, leveraging both centralised host-nation support and decentralised sending capacities.

Yet the 2025 Capacity Progress Report warns that structural diversity still masks common readiness gaps. Twelve countries lack CBRN decontamination modules conforming to UCPM standards, while seven have not certified a single urban-search-and-rescue (USAR) team, forcing the European Response Coordination Centre to rely on the same high-performing contributors for successive crises. The report therefore urges streamlined co-financing rules for shared stockpiles, expanded volunteer insurance schemes and digital-twin scenario exercises to test cross-border command chains. Complementary findings in the Directorate-General for Civil-Protection's 2024 Annual Activity Report reveal that although 113 UCPM experts and 46 liaison officers were deployed in 2024, the average rotation length is shortening due to personnel fatigue, suggesting that administrative reforms must now focus as much on human-resource resilience as on hardware procurement.

Administrative reform waves, catalytic crises and technological leaps have collectively acted as the principal drivers of organisational evolution across Europe's civil-protection landscape. The first driver is the succession of public-sector modernisation agendas—Weberian consolidation in the 1950s, New Public Management in the 1990s, and today's Digital-Era Governance—which each

recalibrated the distribution of mandates, resource-allocation logics and accountability chains inside national disaster-management systems. France's 2020 "Segur-de-la-sécurité-civile" programme, Germany's 2023 "Pakt für den Bevölkerungsschutz" and Sweden's 2023 Civil-Contingencies Bill all embedded risk-based budget lines and performance indicators that subsequently aligned with EU peer-review matrices under Decision 1313/2013 [7]. A second, equally powerful driver has been learning through trauma: the 1997 Oder floods provoked Germany's first federal flood-protection plan, the 2018 Greek wildfires triggered Greece's Civil-Protection Overhaul Act, and the COVID-19 pandemic forced every Member State to stress-test supply-chain continuity while simultaneously accelerating the Commission's push for a strategically controlled rescEU stockpile. The Commission's Capacity Progress Report 2025 attributes two-thirds of the new high-capacity pumping modules certified since 2021 to such post-crisis "lesson loops," noting that Member States which conducted a formal after-action review within six months were three times more likely to request UCPM co-financing for capability upgrades.

The financial ecosystem has been another catalytic force. Since 2014, more than €9 billion in cohesion-policy resources—particularly the European Regional Development Fund (ERDF) and the Just Transition Fund—have been earmarked for disaster-risk reduction, while the EU Solidarity Fund reimbursed €5.5 billion in eligible post-disaster costs between 2002 and 2024, injecting liquidity that Member States often recycle into modernising command-and-control centres or procuring interoperable equipment [8]. The Capacity Progress Report 2025 goes further, proposing a dedicated contingency window inside the new Multi-annual Financial Framework so that rescEU replenishment and pre-positioning do not depend on ad-hoc budget redeployments—an idea welcomed by finance ministries that have struggled with inflation-driven cost escalations for aerial firefighting assets.

Technological acceleration constitutes the third driver, dramatically reshaping risk anticipation, situational awareness and cross-border coordination. The Copernicus Emergency Management Service now delivers wildfire, flood and drought analytics with ten-minute refresh intervals, integrating European Forest Fire Information System (EFFIS) danger indices into the Emergency Response Coordination Centre's (ERCC) common operational picture; the 2025 pre-positioning plan therefore relies on Copernicus "hotspot probability layers" to station 650 firefighters from fourteen countries in Portugal, Spain, France and Greece weeks before peak season. Parallel advances in AI-supported dispatch, 5G-enabled drone reconnaissance and digital-twin training environments have enabled Sweden's MSB to simulate cascading blackout-cum-wildfire scenarios across 290 municipalities and Germany's BBK to pilot an augmented-reality interface for volunteer helmet visors. The MSB Research Agenda 2024–2028 specifically prioritises "human-machine teaming for rural rescue" and "ethically aligned autonomy," illustrating how research policy is being steered to fill capability gaps that EU stress-tests have laid bare.

Yet these very drivers highlight persistent and emerging challenges that threaten to outpace current governance solutions. Climate-induced compound emergencies are lengthening wildfire seasons, stretching aerial fleets to near-continuous utilisation and exhausting volunteer rosters; demographic data show a 9 % decade-long decline in Germany's volunteer base and a similar contraction in Austria and Finland, raising questions about the sustainability of the traditional voluntarist ethos. Hybrid and CBRN threats further complicate the risk map: the Commission's alert after the 2024 Slovak ammonia-train derailment required the urgent deployment of French, Italian and Czech decontamination units, yet twelve Member States still lack a single UCPM-compliant CBRN module, a shortfall spelled out in Annex III of COM(2025)286 [9]. Cyber-physical interdependencies meanwhile expose critical infrastructure: wildfire-driven power-line failures in Spain's Extremadura during the 2024 heatwave cascaded into a two-hour telecoms blackout that hampered 112 emergency calls, prompting ERCC to integrate ENISA cyber-risk advisories into its daily situational bulletins.

To confront these challenges the Capacity Progress Report 2025 urges four policy shifts: proactive procurement of rescEU assets to lock in production slots before global demand spikes; simplified co-financing rates to incentivise Member States with lower fiscal space; seasonal forward-deployment of EU-owned stocks, inspired by NATO's Pre-Positioned Equipment Model; and a human-resources pillar that expands joint EU civil-protection training, portable pensions and mental-health support for first responders [10]. The corresponding call UCPM-2025-rescEU-Transition invites consortia to

co-design next-generation water-bombers and modular field hospitals that can be assembled within six hours of ERCC activation.

5. Conclusions.

The comparative analysis confirms that Europe's civil-protection architecture has progressed from fragmented, nationally focused "civil-defence" traditions toward an increasingly integrated, multi-level governance system anchored by the Union Civil Protection Mechanism and its rescEU reserve. While legal harmonisation and shared funding have raised the overall floor of preparedness, the effectiveness of response still depends on how well each member state's administrative model—centralised, federal or hybrid—aligns with EU solidarity instruments, interoperable standards and rapidly evolving digital tools. Centralised structures tend to mobilise assets swiftly but risk over-concentration, federal systems offer deep volunteer pools yet struggle with cross-border surge coordination, and hybrid networked models excel at knowledge exchange but reveal territorial capacity gaps. These findings underscore that Europeanisation has produced convergence in objectives and frameworks, but not yet in operational capability or demographic sustainability.

Closing the remaining gaps will require a two-track strategy that couples further EU-level consolidation with targeted national reforms. At the supranational level, proactive procurement of rescEU assets, simplified co-financing rules and a dedicated contingency window in the next Multi-annual Financial Framework would stabilise the financial backbone for collective readiness, while expanded peer reviews and digital-twin exercises would accelerate doctrinal convergence. Nationally, measures such as diversified volunteer-recruitment campaigns, inclusive training pipelines and whole-of-society preparedness initiatives can reverse demographic decline and enhance human-resource resilience, whereas integrating AI-enabled early-warning platforms and cyber-risk protocols into existing command chains will future-proof operational agility. Ultimately, Europe's capacity to withstand compound, climate-intensified and hybrid emergencies will hinge less on any single institutional blueprint than on the agility with which states and the Union together align administrative design, technological innovation and societal engagement behind a shared ethos of anticipatory, solidarity-based civil protection.

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