

# Cross-Agency Risk Assessment And Planning: Gaps And Implications For UK Resilience

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## Abstract

**Purpose:** This paper looks at the conceptualisation and operationalisation of risk assessment and planning by the Category 1 responders in the United Kingdom, and how the cross-agency gaps impact integration in the United Kingdom before responding to an emergency.

**Design/methodology/approach:** A qualitative design was followed, and semi-structured interviews were conducted with eight senior professionals working in key emergency response organisations. NVivo was used to analyse data on the thematic level and compare cross-agency practices and find patterns of alignment and divergence.

**Findings:** The results demonstrate that, although domain knowledge is strong, risk assessment and planning are influenced by institutional priorities, resulting in a lack of coherent integration and inconsistencies in risk interpretation. While Local Resilience Forums contribute to coordination, the underlying epistemic differences are not adequately addressed, leading to procedural rather than substantive integration.

**Originality:** The paper presents the Cross-Agency Risk Integration Gap Framework (CARIGF) as a framework that has identified perception, translation, and integration gaps as the main causes of misalignment.

**Practical implications:** To improve resilience, one needs to have a common understanding of risks, cohesive knowledge systems, and enhanced cross-agency learning mechanisms.

**Limitations:** Results are derived using a qualitative sample, which was small, but can be generalized to the multi-agency emergency management setting.

**Keywords:** Risk Assessment; Risk Planning; Emergency Management; Cross-agency Collaboration; Integrated Risk Assessment; Information Sharing.

## Introduction

### Background

Risk is a central concept in emergency management and is commonly understood as the combination of the likelihood of a hazardous event and the magnitude of its potential consequences (Cabinet Office, 2020). This conceptualisation is operationalized in the United Kingdom (UK) with the National Risk Register, which is systematic in the evaluation of the broad spectrum of threats, such as terrorism, flooding, pandemics, and cyber-attacks, in terms of their likelihood and the likely effect on society. Although such a construct represents a nationalized pattern of risk identification, it also presupposes some level of coherence and

mutual understanding among agencies that participate in preparedness and response (Campbell, 2016).

The growing complexity, interdependence, and cascading character of modern risks, however, puts such assumptions to the test. Management of these emergencies should be based not only on formal structures but also on the degree to which the agencies are aligned in their perceptions, priorities, and operationalisations of risk. Cross-agency coordination is thus essential as it improves efficiency, lessens redundancy of effort, and aids in prompt and consistent decision-making. In addition, the integrated work involves a clear definition of roles and responsibilities, as well as the ability to mobilise resources (Butler et al., 2024). The necessity to align the risk assessment and planning process has become a more important issue as emergencies are becoming more complex and multi-dimensional (Ryan, 2018).

In the UK Civil protection, Category 1 responders are strategically important. These organisations are defined by the Civil Contingencies Act (CCA) 2004 and are tasked with the local risk assessment, contingency planning, and public safety in emergencies (Civil Contingencies Act, 2004; Cabinet Office, 2013). They involve emergency services (police, fire, and rescue services, and ambulance services), local authorities, health organisations (NHS trusts, integrated care boards), and environmental organisations (Environment Agency), which deal with flood and environmental risks (Murphy et al., 2020).

These actors are coordinated by using Local Resilience Forums (LRFs) as multi-agency platforms, which includes both Category 1 and Category 2 responders, such as utilities and transport providers. One of the LRF's roles is the creation of Community Risk Registers, which highlights the local risks and aid preparedness planning. The most important element of this process is the creation of a Common Recognised Information Picture (CRIP), which will facilitate the development of mutual situational awareness and collective decision-making (Cabinet Office, 2013).

Despite these formal coordination mechanisms, there are still great challenges. There is usually a variation in risk perception and prioritisation due to institutional differences in the roles of organisations. An example is that the police services can be directed to address security risks, health agencies to address clinical risk, and local authorities to address social vulnerability issues and recovery needs (Wiering et al., 2017). On one hand, this diversity may reinforce resilience by adding a variety of perspectives; on the other hand, it may cause a lack of alignment in the context of complex hazard environments, as agencies can have different assumptions and priorities (Davidson et al., 2022).

This implies that the performance of emergency management systems is determined by the legislative frameworks and institutional frameworks, aside from the way risk is perceived, conveyed, and perceived among the responders (Abbas and Miller, 2025). During a pandemic or terrorist attack on critical infrastructure, or during an event with cascading cyber incidents, multiple agencies need to act in concert to address both the immediate risks and their extended consequences to society. In this regard, the lack of consistency in risk conceptualisation may result in disjointed decision-making, difficulties in coordination, and inefficient responses (Hariri-Ardebili et al., 2022).

Pragmatic applications of such misalignments are brought into focus by empirical evidence. In the COVID-19 pandemic, as an example, the social vulnerability of the population, clinical risks of health agencies, and police services were prioritised to ensure enforcement and social order. Such discrepancies in priorities led to strains in resource distribution and communication approaches (Davidson et al., 2022). On the same note, Stolero et al. (2024) reveal that when there is a difference in risk perception between responders and other stakeholders, this may lead to inconsistency between official priorities and the expectations of the people.

Even though sharing and collaboration in the Civil Contingencies Act (2004) encourage information sharing, interoperability cannot be effectively achieved only through formal means. It relies on the capabilities of agencies to transform their individual risk assessments into common and usable knowledge. The Common Recognised Information Picture (CRIP) is one of the tools that are aimed at facilitating this process, but its efficacy depends on how far the agencies can go when it comes to sharing common assumptions in terms of risk prioritisation and impact assessment (Cabinet Office, 2013). Without such alignment, there can be some gaps

in the process of risk assessment and planning, which will eventually affect the effectiveness of emergency response (Vemou and Karyda, 2020).

Although there is a body of research, most of the literature has concentrated on the structural and procedural nature of coordination, with little emphasis on the conceptual and interpretative nature of the difference between how the agencies perceive and interpret risk. The proposed research fills this gap by furthering an original viewpoint that conditions cross-agency coordination issues as both institutional and epistemic, due to variations in knowledge, perception, and definitions of risk among organisations. It is important to understand these divergences to enhance the coordination and resiliency of the entire system.

In line with this, the paper will attempt to provide an answer to the following research questions: What is the risk assessment and planning that is carried out by the Category 1 responders and what are the gaps that might negatively affect the successful cross-agency risk assessment and planning?

To answer this question, the study will use a qualitative research design, which will entail semi-structured interviews with Category 1 responders. By doing so, one can explore the perception and operationalisation of risk in practice in depth and identify gaps due to insufficient integration or incompatible views between agencies.

## **2. Risk Impacts and Implications for Category 1 Responders**

### **2.1 Evidence of Risks**

A growing body of literature points to the growing complexity, interdependence, and systemic nature of risks in the United Kingdom (UK), which supports the necessity of the integrated risk assessment and multi-agency planning (Bibri, 2018). Modern risk landscapes are no longer defined by single target risks but rather by interconnected, cascading, and compounding events, which question traditional emergency management models. Notably, these issues are not merely technical or operational, but are also influenced by variations in the perception, interpretation, and prioritisation of risks by different agencies, which amplifies the epistemic aspects of coordination issues, found in this research (Miller et al., 2025).

Flooding is among the most important and fastest-growing threats in the UK. According to recent evaluations, exposure has risen significantly, with now almost a million more properties at risk than it was six years ago, and it is expected that by mid-century, there will be about one in four properties in England at risk of flooding (The Times, 2025; Financial Times, 2025). The combination of climate change, urban growth in susceptible locations, and shortcomings in the current flood defence infrastructure contributes to this escalation. These dynamics demonstrate that the risk of floods is not only an environmental phenomenon but a multi-dimensional problem, which is determined by both natural processes and socio-economic factors and requires multi-agency strategies to assess and manage the risk (Gov.uk, 2024; Lee et al., 2024). Likewise, erosion along the coastline is a long-term hazard that is increasing due to rising sea levels and more frequent and intense storms. The processes have been exerting a lot of pressure on coastal communities, infrastructure, and local economies (Gov.uk, 2025a). Such risks require a long-term balancing of environmental agencies, local governments, and the local communities, especially in developing the adaptive and long-term management strategies (Gov.uk, 2025b). Concurrently, heatwaves caused by climate change are more prevalent and severe, which leads to a rise in morbidity and mortality, particularly among high-risk groups like the elderly and patients with underlying health issues (Brimicombe et al., 2021; LSHTM, 2025). Infrastructural constraints and gaps in the general awareness of the risks also complicate heat-related risks management and increase the burden on the Category 1 responders to overcome the preparedness and communication gaps.

This complexity is further complicated by emerging and changing risks. Historically being viewed as a rather minor threat in the UK, wildfires have become more frequent and frequent due to prolonged dry conditions, with the 2022 incidents in England revealing the critical vulnerabilities of preparedness and response systems (Carvalho and Spataru, 2023; Nature, 2025). These risks will escalate as climatic and land-use changes, hence the need to coordinate emergency services and environmental regulators closer (Lords Library, 2025). Meanwhile, the

long-term risks include legacy environmental risks, including land contamination. There are indications that tens of thousands of locations, especially in Wales, might be polluted with dangerous materials such as heavy metals and radioactive substances (MacDonald, 2024; The Guardian, 2025). Such risks need long-term, multi-agency surveillance, evaluation, and recovery plans (Gov.uk, 2025c).

Combined, these illustrations depict that risks in the UK are not merely growing; they are also becoming increasingly interconnected, multi-scale, and temporally complex. Most importantly, this complexity has a direct implication for the Category 1 responders, both in terms of operational requirements and in the ways, risks are perceived, prioritised, and converted into planning decisions. This strengthens the hypothesis that the issues of risk governance are not only structural but are profoundly affected by the divergent organisational views and knowledge systems.

## **2.2 Risk Implications on Response Planning**

The changing risk environment described above has important consequences for how Category 1 emergency responders should approach emergency planning and response. Addressing complex and interconnected risks not only needs a technical understanding of hazards but a holistic approach to social vulnerability, exposure, and systemic dependencies (Depietri, 2020). This, in its turn, will require better situational awareness, which is only provided by combined and cooperative risk evaluation and planning processes.

Operationally, response planning is increasingly becoming reliant on the capacity to identify and prioritize vulnerable populations. As an example, in times of floods or heatwaves, it is crucial to identify vulnerable populations, including the elderly or socially isolated members, to mitigate the negative health effects. This will be achieved through the sharing of data and collective decision-making by emergency services, local authorities, and health organisations, which underscores the value of cross-sector integration in risk assessment and planning (Pescaroli and Alexander, 2018). But as implied in the above section, this integration is usually limited by variations in the ways agencies perceive and rank risks.

Increasing risk environments also put institutional capacity and allocation of resources under a lot of pressure. This highlights the necessity of interoperable communication networks, well-established command and control frameworks, and up-to-date information-sharing solutions among agencies (Krogh and Lo, 2023). Not only should category 1 responders be able to react to individual hazards but also be able to foresee and deal with coordination bottlenecks, especially in situations involving multiple hazards or those that are changing rapidly.

Another layer of complexity is due to cascading risks, in which a primary hazard is followed by secondary or systemic failures. As an example, cyber-attacks can impair vital infrastructure in the case of flooding, or natural disasters can lead to a crisis of the health of the population (Riggs et al., 2023). This kind of situation necessitates contingency planning that includes redundancy, flexibility, and systemwide resilience across agencies. Notably, the success of such planning is pegged on how well agencies have a shared perception of risk interdependencies, which is frequently undermined by the epistemic variance.

Moreover, risk management should be proactive, which means that hazard-specific knowledge needs to be translated into actionable planning measures. As an illustration, the combination of flood risk mapping with demographic vulnerability data can focus on the evacuation response, shelter planning, and resource distribution (Zuccaro et al., 2020). But the capability to operationalise such knowledge is based on the consistency of risk interpretation and prioritisation across agencies. Any misalignments in these interpretations may result in disjointed planning, inefficiencies, and disconnect between risk assessment strategies and response strategies.

In general, all these implications point to the fact that successful emergency planning is not necessarily a matter of technical capacity or institutional architecture but also depends on the congruence in risk perceptions, knowledge systems, and decision-making procedures among the agencies. This supports the overall thesis of this paper that it is the differences between the conceptualisation and operationalisation of risk that underline gaps in cross-agency risk assessment and planning, and not necessarily procedural or structural.

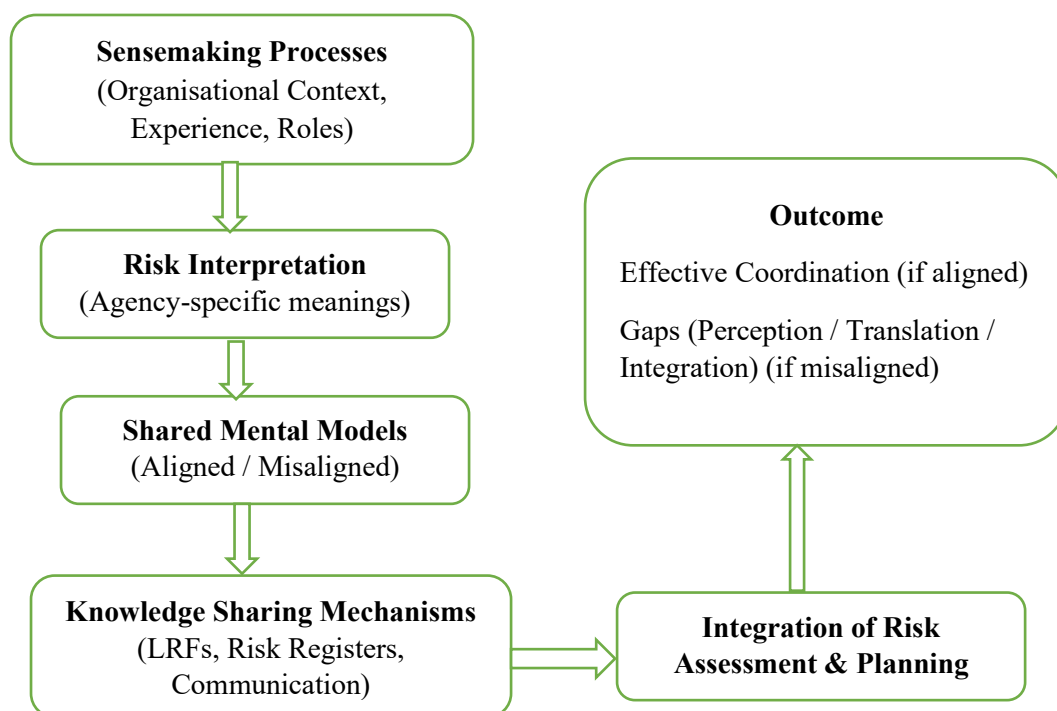
### 2.3 Theoretical Lens: Shared Understanding and Cross-Agency Coordination

Coordinated action among agencies during emergencies is not only reliant on institutional arrangements, but also on the degree of shared knowledge about risks, priorities, and approaches to responding to the emergency. This research builds on the notion of Shared Mental Models, which hold that proactive and effective coordination occurs when individuals share a cognitive understanding of tasks, environments, and relationships (Cannon-Bowers et al., 1993; Mohammed et al., 2010). In cross-agency situations, shared mental models facilitate coordinated responses by establishing expectations, resolving uncertainty, and enhancing decision-making processes.

Yet, the formation of such a consensus can be hindered by organisational roles and knowledge structures. This phenomenon can be understood through Sensemaking Theory, which suggests that organisations make sense of their complex and uncertain environments through their own internally developed models, based on experience, knowledge, and organisational structures (Weick and Weick, 2005; Weick et al., 2005). This means that different agencies may interpret the same risk differently and prioritise and respond in different ways.

On the ground, emergency decision-making is often based on intuitive and experiential processes, as outlined in the Recognition-Primed Decision Model (RPD) (Klein, 1998; Klein, 1997). This model is concerned with rapid decision-making by individual responders but does not address decision-making across organisational boundaries where multiple views co-exist. By pulling these perspectives together, this research explains cross-agency coordination issues through misalignment in mental models, influenced by different sensemaking processes and institutionalised through practice. This perspective helps to explain how variations in risk perception and knowledge sharing shape integration of risk assessment and planning. The relationships between these theoretical components are illustrated in Figure 1.

**Figure 1. Theoretical Framework of Cross-Agency Risk Integration**



### **3. Methods**

#### **3.1 Research Design and Data Collection**

This research takes a qualitative research design to understand how risk is conceptualised, interpreted, and operationalised by the Category 1 responders in cross-agency environments. Since the study is aimed at comprehending the divergent perception and knowledge base of risk, a qualitative approach is especially suitable because it would allow understanding the experiences, perception, and decision processes of participants that are rather difficult to understand in the quantitative approach.

The data were gathered as a doctoral project undertaken at the University of Salford, UK. A purposive sampling methodology was used to find out participants who had a lot of knowledge in emergency management and resilience planning. This methodology made sure that the data were based on information-rich cases, which could give detailed information about the cross-agency risk assessment and planning practices.

Overall, eight responders representing five Category 1 responder organisations were recruited voluntarily. These organisations comprise the Environment Agency, Fire and Rescue Service, Police, Local Government, and the Ambulance Service, and these organisations are subject to the Civil Contingencies Act (2004). The semi-structured interviews were conducted to provide flexibility to explore the important topics and to achieve uniformity among the participants. This format allowed the study to identify common patterns as well as differing views regarding the understanding of risk and how it is applied in practice.

#### **3.2 Participants**

All interviewees were in senior or specialist positions, including Director of Emergency Response, Resilience Manager, or Inspector, and had more than 10 years of professional experience in risk assessment and/or resilience planning. Their seniority meant that the data captures the strategic level information on organisational decision-making, inter-agency coordination, and operational issues. Although the sample size is quite small, it is in line with qualitative research that focuses on depth and not breadth. The research is not a case of statistical generalisation but a way of producing analytical and conceptual understanding of the processes of cross-agency coordination. The focus lies then on credibility, relevance, and transferability of findings and not numerical representativeness.

#### **3.3 Data Analysis**

The thematic analysis approach was used to analyse the data with the help of NVivo (version 15) to have a systematic and transparent coding of the qualitative data. The analysis took a bottom-up approach, whereby themes were identified through the data as opposed to being dictated beforehand. This method is especially appropriate to the aim of the study to reveal underlying differences in risk perception and interpretation among agencies.

The analysis was carried out in several steps. To begin with, the transcripts of interviews were imported into NVivo and underwent open coding to reveal similar themes that were associated with risk perception, risk assessment practices, planning, and cross-agency coordination. Those first codes were further refined and clustered into higher-order themes that could be used to describe the main dimensions of the epistemic divergence and coordination issues.

NVivo led to multiple layers of analysis. Case classifications were developed to identify a differentiation between participants based on organisational affiliation to allow a systematic cross-agency comparison. Patterns of convergence and divergence in perspectives were identified through coding queries, with areas of convergence and possible areas of fragmentation within risk assessment and planning identified. The thematic queries also aided in the determination of the relationship among the concepts, and especially in responding to how varying risk interpretations affect the planning outcomes.

To promote transparency and analytical precision, the results were presented in the form of anonymised quotes based on coded data. All the participants were given a case identifier which was associated with their organisational role: Case A (Environment Agency), Case B (Fire and Rescue Service), Cases C-E (Police), Case F (Local Government), and Case G (Ambulance

Service). This method facilitated systematic comparison, as well as preserving the confidentiality of participants. Even though qualitative analysis requires an interpretive judgement, various steps were made to improve rigour. These were having a clear audit trail of coding choices, using coding schemes consistently and continuing to refine themes to make them coherent and analytical. The emphasis of the analysis was on the patterns, relations and mechanisms, not on the statistically generalisable results.

### 3.4 Ethical Considerations

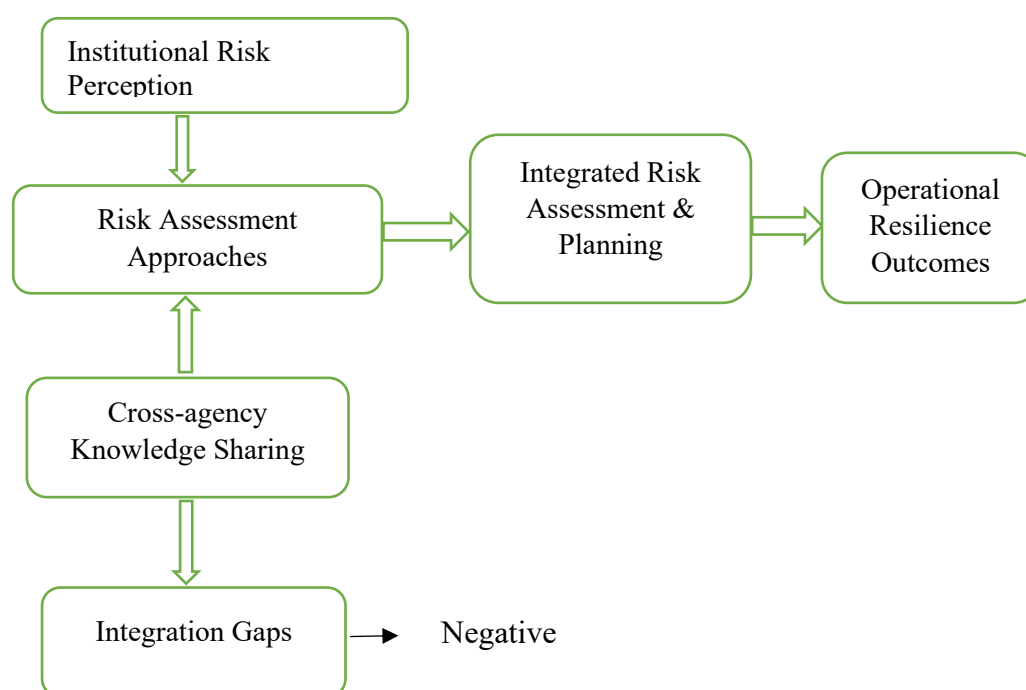
The research was ethically approved according to the research governance processes of the University of Salford. Prior to the collection of the data, informed consent was obtained from all the participants. Confidentiality and anonymity were put in place through application of anonymised identifiers and handling of interview data in a safe way.

### 4. Results

This part offers the empirical results of the qualitative analysis of the interviews with Category 1 responders. The discussion is organized into two mutually dependent dimensions: (1) cross-agency differences in risk assessment and planning practices and (2) systemic gaps that limit effective integration. Instead of providing the findings descriptively, the analysis explains them with the conceptual framework of epistemic divergence, emphasising how variations in the knowledge structures, priorities, and perception of risk of organisations influence the results of coordination.

The findings are plotted on a conceptual framework that connects risk perception with knowledge sharing and integration into planning processes, into outcomes of operational resilience, to direct interpretation (see Figure 2). In this context, the difference in institutional risk perception will affect the risk assessment and prioritisation process, and the extent of cross-agency knowledge sharing will determine whether the evaluation can be converted into integrated planning. It is the misalignment on these dimensions that is seen as a major cause of coordination gaps.

**Figure 2. Conceptual framework showing how institutional risk perception and knowledge sharing affect integrated risk assessment, planning, and operational resilience outcomes.**



#### 4.1 Cross-Agency Comparison

The cross-agency analysis indicates a general agreement on the categories of risks that can be viewed as the most critical ones- especially flooding, power crashes, and health-related crises. Nevertheless, this superficial convergence in the risk identification level masks a great deal of variance in the risk interpretation, assessment, and operationalisation of the risk by the agencies. Indicatively, Case A (Environment Agency) is hazard-focused and quantitative, placing emphasis on quantifiable effects like economic loss and probability measures. This is indicative of a technocratic approach to risk-framing in which there are quantifiable indicators that drive decision-making. Case B (Fire and Rescue Service), on the other hand, focuses on a contextual and holistic approach, warning against the isolation of individual risks and the need to consider more situational awareness. The differences demonstrate the operation of agencies that have different epistemic orientations, one of which is more quantification and modelling, and the other is more contextual judgments and operational experience.

In the Police (C, D, E1, and E2), the risk assessment is more closely correlated with scenario-driven thinking and intelligence-driven mapping, especially of such complex risks as floods and civil unrest. Nevertheless, the respondents also admitted that, even though these approaches have been developed to maturity, collaborative risk assessment is not as extensive as possible, and there is still a mismatch between the ability to integrate methods and the ability to integrate across agencies. Likewise, though Case G (Ambulance Service) indicated the use of shared frameworks like the National Risk Register in group discussions, this seems to be institutionalised inconsistently across agencies and hinders its effectiveness in influencing collective planning.

The other aspect of epistemic divergence was the geographical setting, where it is quite clear. In Case A, the importance of spatial aspects like floodplains and reservoirs as the basis of risk priorities was emphasized, which demonstrates a great dependency on environmental and spatial data. Conversely, some respondents (Cases B, C, D, and E2) claimed that geography has little influence on their assessment procedures, which is an indication of an operational or incident orientation. There are other cases (E1, F, and G) that illustrated some partial integration of geographical considerations, especially in the Local Resilience Forum (LRF) planning or evacuation plans. Such differences demonstrate that despite the presence of common data sources, their use and applicability to operations vary greatly across agencies.

In a broader sense, the results imply that risk assessment is mostly an organisation-specific process, and there is scant evidence of systematic cross-agency alignment. The risk planning activities, on the other hand, seem to be more standardised, usually relying on previous records, modelling, and standard planning models. But this seeming fit in planning is not always a measure of fit in risk understanding, implying there may be a disconnection between the stages of assessment and planning.

Table 1 summarises that historical event use is common in all the agencies, but the kinds of events that are given focus are based on institutional requirements (e.g., floods to environmental agencies, riots to police, pandemics to health services). The use of modelling and simulation is diverse, and more formalised methods are found in the police and the ambulance services. Likewise, action planning and resource allocation plans vary, with some agencies basing their coordination on the LRF and some basing their planning on their internal or functional priorities.

**Table 1: Cross-Agency Risk Planning Practices**

Case	Historic Events	Modelling & Simulation	Action Planning	Resource Planning
Case A	Uses flood events as evidence	Advocates external challenge to models	Links economic valuation with planning	Highlights infrastructure/resource sensitivities

Case B	Draws lessons from major fires	Notes about the difficulty of exercising all hazards	Limited emphasis	Focus on mutual aid and salvage
Cases C, D, E1, E2	Police cite riots/terrorism	Uses scenario modelling in annual reviews	Joint plans through LRF	Focus on LRF coordination
Case F	Uses past incidents for risk review	Explores supply-chain modelling	Embedded in civil contingency planning	Resource allocation across councils
Case G	Learning from pandemic waves	Uses simulation for evacuation timelines	Links plans to operational surge	Focus on staffing and hospital surge

Local Resilience Forums (LRFs) are an important coordination tool that enables joint planning and sharing of information. Their effectiveness in their complete integration, however, is different in different cases. Whereas a few of the respondents pointed out the fact that LRFs facilitate collaborative planning, others pointed out that coordination is usually a partial or procedural process, and not an integrated process that encompasses shared risk understanding. Ongoing learning and adaptation were also a focus at the interagency level, as exercises, reviews, and lessons learned through the course of previous events were also noted to be important by the respondents. Such learning is, however, seen to be more internalised in organisations with little evidence of systematic cross-agent transfer of knowledge. Also, the ability to plan to all possible hazards that might occur is limited by capacity issues, which further limit the scope of integrated planning, cementing the selective and fragmented character of preparedness actions.

#### 4.2 Loopholes in Risk Assessment and Planning

The analysis shows that there are some critical gaps that limit the effectiveness of cross-agency risk assessment and planning. These gaps are not just the procedural ones but rather are based on the differences in the epistemic approaches, leading to inconsistencies in the definitions of risks, prioritisation, and conversion of risks into planning actions.

One of the biggest gaps, as summarised in Table 2, is the absence of a standardised method of risk assessment. The various approaches and methodologies that can be used by agencies include economic valuation and quantitative modelling, contextual judgement and operational pragmatism, contributing to inconsistencies in risk prioritisation. Although this diversity is indicative of the specialisation of agencies, it also restricts the possibility of building up of a unified and consistent risk framework.

**Table 2: Cross-Agency Gaps in Risk Assessment and Planning**

Theme	Identified Gap
Risk Assessment	Divergent approaches with no standardised framework (e.g., economic valuation, contextual scoring, operational pragmatism)
Floods / Infrastructure Dependencies	Limited integration of cascading impacts across sectors

Resource Planning	Allocation is largely conducted in organisational silos (e.g., mutual aid, council-level allocation, healthcare surge planning)
Historic Events	Learning is primarily sector-specific; limited cross-agency knowledge sharing

The second key gap area is the low level of integration of cascading and interdependent risks. Primary risks, like flooding and power outages, are also well understood, but their secondary and systemic consequences, especially in the infrastructure sectors, are not always considered in the planning processes. This is a sign that there is a gap between the identification of complex risk environments and the operationalisation of such complexity in the process of planning.

Another fragmentation area is resource planning. Although there are coordination mechanisms in place (including mutual aid agreements and LRFs), there is little organisationally siloed resource allocation, as agencies are focused on their own operational needs. This hinders the creation of a fully integrated resource policy and can curtail the effectiveness in the response of multiple agencies.

Lastly, although all agencies were keen on the need to learn in the past, the learning is largely sector-based, and there are not many means of sharing knowledge across agencies. This strengthens the already existing epistemic and limits the establishment of common ground, which ultimately influences the combination of risk assessment and planning.

## Discussion

This paper shows that the presence of a solid legislative framework, including the Civil Contingencies Act (2004), does not per se imply the successful integration of risk assessment and planning among the Category 1 responders across the borders of agencies. The results indicate that the ongoing coordination problems encountered in practice cannot be just attributed to the inefficiency of the procedures or resource limitations but have deeper foundations in the epistemic and organisational differences in the understanding of risk, its priorities, and the implementation of risk into planning decisions.

The findings can be further explained using the concepts of shared mental models and sensemaking. The variation in risk assessment and prioritisation suggests that shared mental models do not fully evolve across agencies, leading to different levels of risk understanding. From a sensemaking view, each agency defines risk in its institutional context, which accounts for the persistence of different approaches to assessing risk, despite common schemes, such as the National Risk Register. As a result, the observed perception, translation and integration gaps can be seen as a symptom of different cognitive frameworks, rather than procedural inefficiencies.

One of the lessons learned in the results is that one of the main causes of the difference in assessment practices is institutional risk perception. Although the similarity of high-impact risks is widely accepted, including across agencies, the meaning of high-impact risks and the prioritisation of these risks differ greatly between organisational contexts. As an example, certain agencies focus on measurable and economically quantifiable effects, whereas others focus on contextual, situational, or operational aspects of risk. This proves that risk is not a neutral and universally determined concept but rather is informed by institutional logic, professional knowledge, and organisational requirements. This divergence is not necessarily bad on the contrary, it may lead to resilience as it may bring various visions of complex risk environments (Ostrom, 2012). But when these views are not well congruent or resolved, they generate structural miscongruence in later planning processes.

One of the main conclusions is the fact that there is a disconnection between risk assessment and planning processes. Risk assessment is largely done at the individual agency level, but planning is more apparent as coordinated by mechanisms like Local Resilience Forums (LRFs). This puts one in a position where planning is constructed based on partially consistent or even implicitly inconsistent risk assumptions. This effect can be theorised in the form of a translation

gap, where risk assessments, constructed independently, are not completely incorporated into the communal planning (Tavares and Santos, 2014). Consequently, coordination is more likely to be at the procedural level, as opposed to the level of shared understanding of risk. That is, agencies can coordinate their actions without necessarily having a common interpretation as to what the risks are and how to prioritize them. This is a vital difference. Although LRFs facilitate the ability to coordinate, exchange information, and align operations, they do not always guarantee the integration of embedded risk logics. The real integration must be not only in the actions but also in the cognitive framing of the risk and interdependencies between the agencies (Milward and Srensen, 2017).

The results also suggest that knowledge sharing practices are still unbalanced and institutionalised to some extent. Despite the formal structures of most risk registers used by the national agencies, including joint discussions, their use is uneven across agencies. More crucially, the learning of the past, based on experience, is normally organisationally constrained, and hence, it can hardly be converted into system-wide knowledge. This implies that knowledge as a resource is not performing well as a multi-agency system resource. Rather, it is disjointed, supporting already established epistemic boundaries amongst organisations (Albright and Crow, 2021). As a result, possibilities of group learning and adaptive betterment are limited, limiting the overall ability of the system to change about complex and emerging risks.

Another implication of these epistemic and organisational rifts is how they affect cascading and interdependent risk management. The results indicate that the interdependence between the infrastructural system and cross-sector hazards are not invariably included in the planning. Individual risks are known to be well studied inside the agencies, but their interactions with other systems are not as systematically dealt with. It is indicative of a more fundamental challenge in moving towards a siloed risk assessment to integrated risk knowledge. In the absence of common interpretive schemas, agencies are more likely to concentrate on the risks in their respective areas of operations, instead of the interdependencies in the system. This supports the argument that the issues related to cross-agency coordination are not only technical but also cognitive and interpretive (Kirsch et al., 2015).

Resource planning also depicts the continuance of gaps in integration. Although the coordination mechanisms are well coordinated through mutual aid arrangements and LRF structures, there is still a high level of decentralisation and organisational interest in the distribution of resources. This leads to a disjointed resource environment, where there is little optimisation amongst agencies. Systemically, this is a lack of strategic-level integration in which the trade-offs and interdependencies ideally ought to be handled as a unit. Rather, resource planning is kept in line with organisational requirements, resulting in possible inefficiencies, duplication, and capacity discrepancies when responding to multiple agencies (Diokno-Sicat et al., 2020).

The results also pose significant questions on whether current governance arrangements, especially LRFs, are effective in ensuring a meaningful integration. Although LRFs are central in ensuring the process of coordination, they do not seem to be able to harmonise the risk assessment practices and planning assumptions. This can be due to structural constraints but also indicates more fundamental problems with mandate fragmentation and absence of standardised interpretative frameworks. This supports the idea that it is essential to shift towards a more structural approach to solutions and to pay more attention to the cognitive and epistemic aspects of coordination (Oomen et al., 2018).

## **5.1 Implications**

These findings have important implications for policy and practice. In practice, the absence of unified risk knowledge between agencies may compromise the efficiency of the emergency response through the establishment of inconsistencies in communication, mobilisation of resources, and decision-making (Christensen et al., 2016). Such fragmentation can cause delay or competing actions that decrease the responsiveness of a system in high-pressure situations. Planning-wise, divergent risk assumptions undermine preparedness strategy coherence. Working with varying interpretations of risk, agencies will have a disjointed process of

planning, resulting in inefficiencies, overlaps, and possible coverage gaps (Rivera et al., 2015). Despite existing organisational learning mechanisms, they are not sufficiently integrated across agencies, thus limiting their ability to provide resilience on a system-wide level. On the policy-making level, these results would imply that the law and governance frameworks like the Civil Contingencies Act (2004) can be inadequate unless complemented with the mechanisms that consider epistemic alignment and knowledge integration. In the absence of this, there is a danger that coordination will become procedural, but not substantive and therefore a loss of accountability and the effectiveness of resilience governance in the long run.

## **5.2 Recommendations**

To cope with such challenges, Category 1 responders need to institutionalise collaborative risk assessment at earlier phases of the planning process, so that, before operational planning starts, a common understanding of risk is established. Local Resilience Forums need to be enhanced to become more active in not only the coordination process but in the process of standardisation of risk interpretation frameworks across agencies. Moreover, the shared situational understanding would be developed through investment in interoperable data systems and structured multi-agency simulations. These mechanisms can be used to overcome both technical and epistemic gaps by harmonizing the process of identifying, prioritising, and operationalising risks in practice.

## **5.3 Cross-Agency Risk Integration Gap Framework (CARIGF)**

This paper suggests one conceptual contribution the Cross-Agency Risk Integration Gap Framework (CARIGF) to describe the ongoing coordination issues in cross-agency risk assessment and risk planning. The framework recognizes three dimensions (interconnected) of failure to integrate:

**Perception Gap:** Inequality in the perception of and priority of risks by agencies according to roles, knowledge, and mandate of the organisations.

**Translation Gap:** The gap between risk assessments made independently and their integration into communal planning processes.

**Gap in Integration:** Lack of mechanisms that can effectively integrate data, knowledge, and resources into a consistent cross-agency risk approach.

The power of CARIGF is that it goes beyond structural reasons of why coordination fails and emphasizes the cognitive, procedural, and systemic aspects of integration failure. It gives a diagnostic instrument for finding the points of misalignment as well as a basis of developing specific interventions to enhance cross-agency coherence in risk governance.

## **5.4 Contribution to knowledge**

This research contributes to knowledge in a unique way by providing a novel theoretical explanation of cross-agency coordination in emergency management as explained by the Cross-Agency Risk Integration Gap Framework (CARIGF). Existing studies tend to focus primarily on structural and procedural aspects of coordination, whereas this study introduces an emphasis on epistemic and cognitive alignment and shows that integration gaps stem from the way agencies perceive, prioritise and translate risk into action.

The study expands on existing notions of shared mental models and sensemaking to a multi-agency risk governance context, demonstrating how misalignment between perception, translation and integration processes restricts coordination. In the process, it provides a new diagnostic lens that connects institutional risk perception, knowledge exchange and integration of planning activities within a holistic framework. Additionally, the study contributes by linking theory with practice, by translating these gaps into practical insights for enhancing cooperation. This makes CARIGF both a theoretical explanation and potential guide for future research and practice to improve resilience in a multi-hazard, complex environment.

## 6. Conclusion

This paper explored cross-agency risk assessment and planning between the category 1 responders in the United Kingdom under the Civil Contingencies Act (2004). The results demonstrate that, even with well-developed coordination mechanisms, integration is still low because of institutional dissimilarity in risk interpretation. Structures like Local Resilience Forums provide procedural synergies but fail to provide the similarity in the conceptualisation and ranking of risks, and lead to disaggregated linkage of assessment with planning in complex, multi-hazard environments. The article is significant because it proposes a new concept, the Cross-Agency Risk Integration Gap Framework (CARIGF), that highlights perception, translation, and integration gaps as the principal sources of misalignment. These results indicate that enhancing resilience involves enhancing both better coordination mechanisms as well as collective risk awareness and combined knowledge exercises among agencies.

### 6.1 Limitations

The research has been carried out on a small and expert sample and qualitative data, and this restricts generalisation. The results, hence, are not representative but reflective, though an excellent insight into cross-agency risk assessment and cross-agency risk planning.

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