Policy brief

Programming systemic risk management

An exploration of tenets and approaches

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Key messages – Systemic risk management requires:

- collaborative work, breaking down barriers and establishing transdisciplinary and cross-institutional approaches
- managing trade-offs and minimising maladaptation, ensuring that action on risk management in one sphere should not undermine action in another
- flexibility, with programmes that can quickly expand and contract to address changes in the needs of the target population in a dynamic, fragile and volatile environment
- management of the mismatch of timeframes between programme funding and the duration of action needed reduce vulnerability and risk.

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Facing up to complexity

Development, humanitarian and peacebuilding programmes in peaceful and fragile settings are often limited in their abilities to consider the interacting drivers of vulnerability and systemic risks they face (Maskrey et al., 2021; Brooks et al., 2022). Orthodox approaches tend to focus on individual hazards specific to their target populations, time horizons and geographic scales. Such limitations may inadvertently amplify vulnerabilities and risks in other sectoral and geographical areas, undermining the effectiveness of external assistance programmes.

We argue that a systemic risk management approach is required to improve programmes in complex settings and to anticipate trends, challenges and emerging risks for different geographic and time horizons. A number of practices emerging in disaster risk reduction (DRR) and climate change adaptation can help deliver on this ambition through better diagnosis and management of risks, supported by a shift in mindsets and changes in institutional and organisational processes. This brief presents a set of tenets for harnessing such approaches to operationalise systemic risk management (Maskrey et al., 2021; Brooks et al., 2022; Sillmann et al., 2022). If successful, such approaches could help to prevent replication, enhance awareness of trade-offs and the risks of maladaptation. With COP28 aiming to highlight the complexities of climate risks and impacts in fragile settings, getting these foundational understandings of risk right may also help to achieve multiple positive impacts across a diverse range of risks, leading to safer and more peaceful risk trajectories.

The persistence of silos: a caricature

Development, humanitarian and peace approaches have a long and independent history but have been slowly coalescing around the need to think and act more holistically about risk. At its simplest, this is a move to better reflect the complex realities of the individuals whom external assistance interventions seek to support. It can also be understood as a push-back against the limitations of normative sectoral approaches to risk management, which include for example:

- a continued focus on exposure to hazards, despite the rhetoric on the importance of vulnerabilities (Blaikie et al., 2003; UNDRR, 2022: 22; Brooks et al., 2022)
- the persistence of siloed approaches to hazard, shocks and stresses (climate, conflict, disease, etc., and rapid versus slow onset crises), in part owing to the fragmentation of funding streams
- equating conflict and fragility with climate and disaster vulnerability, rather than as 'ambient multipliers' (Peters, 2022), and
- the failure to confront the true root causes of risk and vulnerability, many of which would require explicitly political or diplomatic engagement (Brooks et al., 2022).

Current interpretations of societal challenges and pathways for affecting change all too often reinforce siloed institutional responses that:

- drive fragmented, partial approaches to risk management
- create delivery systems that are not set up for systemic or root cause-targeted responses (Sillmann et al., 2022)
- fail to manage longer-term changes or transboundary risks (Opitz-Stapleton et al., 2019)
- risk maladaptation by having multiple risk management systems that don't consider inter-relationships across hazards and different spatial and time scales (Opitz-Stapleton et al., 2019).

In some respects, the above is a caricature, but it chimes with the experiences of many working in contexts of risk and risk management. Yet, there is insufficient awareness or pursuit of opportunities for designing programmes with the potential for achieving multiple positive impacts across a diverse range of risks – including for example hazard-related risk reduction (including climate-related hazards) and peace (Peters et al., 2019).

Towards systemic risk: progress and principles

A step in the right direction

A number of trends are helping to move towards systemic approaches to risk, as outlined briefly below.

The climate change adaptation community has promoted the concept of Comprehensive Risk Management, encompassing a range of components including: risk assessment, risk reduction, financial risk transfer, risk retention, transformational approaches, and building the enabling environment for these approaches (UNFCCC, n.d.). Some attention has been given to how processes play out in multi-hazard and multi-risk contexts although, perhaps unsurprisingly, the dominant focus is on climate hazards and anthropogenic climate change. This relates in part to the need to demonstrate the explicit relationship to climate hazards in adaptation funding under the UNFCCC, inadvertently creating a barrier to systemic risk management approaches. Country-level policy guidance for national adaptation planning stresses cross-sector policy integration, but further work is required to cover the breadth of multi-hazards or future risk trends (Garschagen et al., 2021).

The DRR community, guided by the Sendai Framework for Disaster Risk Reduction (UNDRR, 2015) have expanded the range of hazards considered under their remit, with greater emphasis on technological and biological risks and, more recently, societal hazards in a hazard definition and classification review (International Science Council and UNDRR, 2021). The latter now incorporates a sub-set of societal hazards, including conflict, violence and explosive remnants of war. Since the adoption of the Sendai Framework, the annual Global Assessment Report has encouraged a focus on complex and cascading risks (UNDRR, 2019) and more recently on systemic risk (UNDRR, 2022).

The humanitarian-development-peace nexus has raised awareness on the intersections of different risk-based approaches within and beyond the UN system (Maskrey et al., 2021). There are examples of progressive action which would not have been conceived of a decade ago. For example, the Red Cross Red Crescent Climate Centre is collaborating with the International Committee of the Red Cross to integrate climate considerations into humanitarian decision-making (ICRC and IFRC, 2022). Multi-actor, multi-year climate resilience programmes are operating in protracted conflict and crisis contexts with the aim of reducing systemic risks for communities – as in the Sahel (UNDP, n.d.). As an outcome of the 2016 World Humanitarian Summit and associated Agenda for Humanity (OCHA, 2015), UN country teams in places such as Cameroon and Somalia have created Nexus Task Forces with a wide range of technical experts to leverage connections across development, peace and humanitarian communities (Development Initiatives, 2022).

Finally, in terms of the overarching multilateral system, concepts such as risk-informed development (Opitz-Stapleton et al., 2019) have sought to encourage greater awareness and action on the intersection of hazards, shocks and stressors. Efforts to use data-led approaches have been made by INFORM, whose products draw on a wide range of hazard data sets to infer the complexity of contexts (European Commission, n.d.), while the World Bank's Fragility, Conflict and Violence (FCV) team is developing a Compound Risk Monitor dashboard – for internal use – exploring various dimensions including macro risks, FCV, climate, health, socio-economic vulnerabilities and others. From a disasters perspective, the GFDRR team has also been delivering a Disaster Risk Management – Fragility, Conflict and Violence Nexus Programme, exploring how to deliver and leverage investments in disaster risk management in different conflict contexts (GFDRR, 2022).

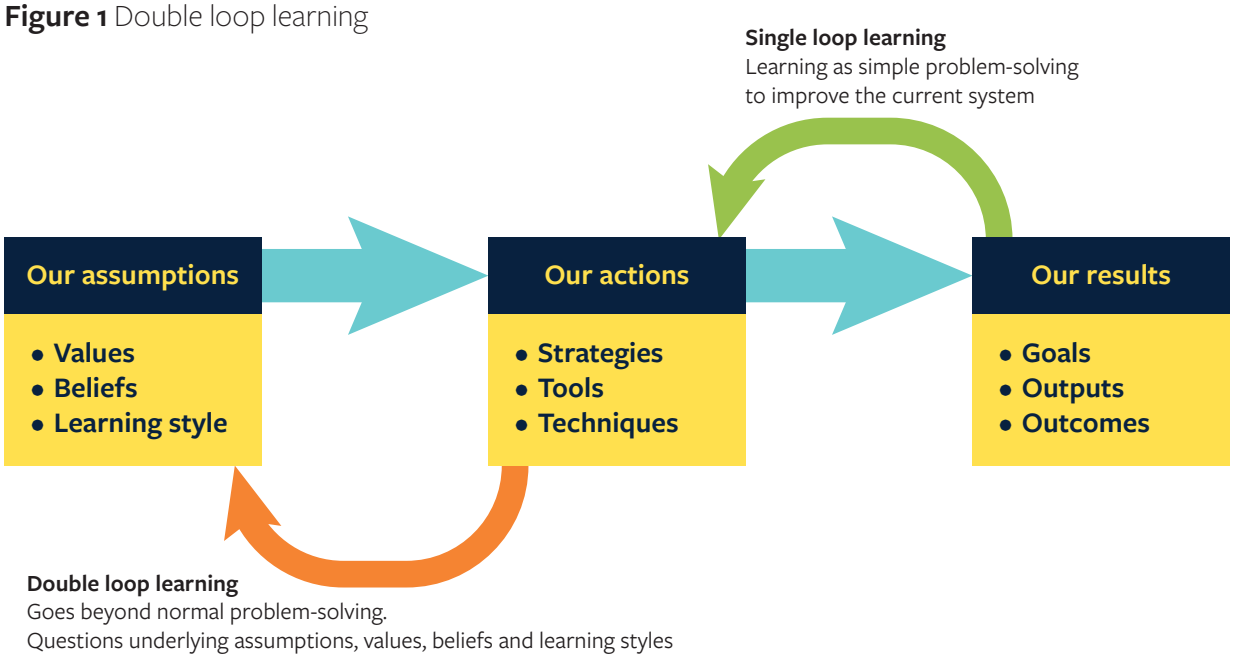
Programming systemic risk management

Moving towards a more systemic approach to risk management requires an evolution in personal and institutional capacities, better tools to diagnose risks, and operational approaches that recognise systemic inter-relationships in risk and vulnerability. The sections below outline some of the emerging approaches that might help to operationalise such risk management in development programming.

Develop institutional and organisational capacities

The United Nations Office for Disaster Risk Reduction (UNDRR) has identified the importance of designing systems to factor in how human minds make decisions about risk (UNDRR, 2022). This has emphasised the importance of differences in risk perception in decision making, but has yet to be extended into the realm of learning. Managing systemic risk requires a move beyond 'single loop learning' that simply focuses on acquiring skills and capacities to improve problem-solving performance. 'Double loop' learning, by contrast, enables actors to question the underlying assumptions in which their skills are employed, including institutional silos, mandates, standard operating procedures and approaches (Figure 1). Crucially, developing a more holistic approach to risk requires attention and understanding among all stakeholders of the nature of compound risk factors and their systemic inter-relationships.

Figure 1 Double loop learning



Source: Tanner et al. (2012) after Argyris (1977)

Multi-hazard systemic contexts further increase the institutional and organisational challenges of risk governance. The growing awareness of the benefits of systemic risk management in protecting development progress needs to be matched by advances in organisational capacities and institutional mandates that can break down siloed approaches to decision making. At present there is a focus on resource allocation and political accountability at the national level, signalling a role for development partners to agree on feasibility appraisals that consider more comprehensive sets of risks, impacts, vulnerabilities and resources (Opitz-Stapleton et al., 2019). Financing conditions can encourage investment decision-making to incorporate the effects of both compound risks and risks that are harder to quantify, including cultural factors (Power, 2004; Tanner et al., 2015). Changes to legislation and policy can also mandate collaboration between government departments and direct resources to systemic risk management and reduction.

Diagnosing systemic risk

Implementing systemic risk management requires a more comprehensive approach to diagnosing the context and identifying appropriate entry points and courses of action. This means improving understanding of the drivers of risk and resilience, including their inter-relationships. At wider spatial scales, mapping and indexing approaches for multi-hazard risk are already starting to inform strategic priorities in DRR, development and humanitarian contexts. Attention to systemic risk can also draw on systems-based approaches and qualitative insights from forensic analysis.

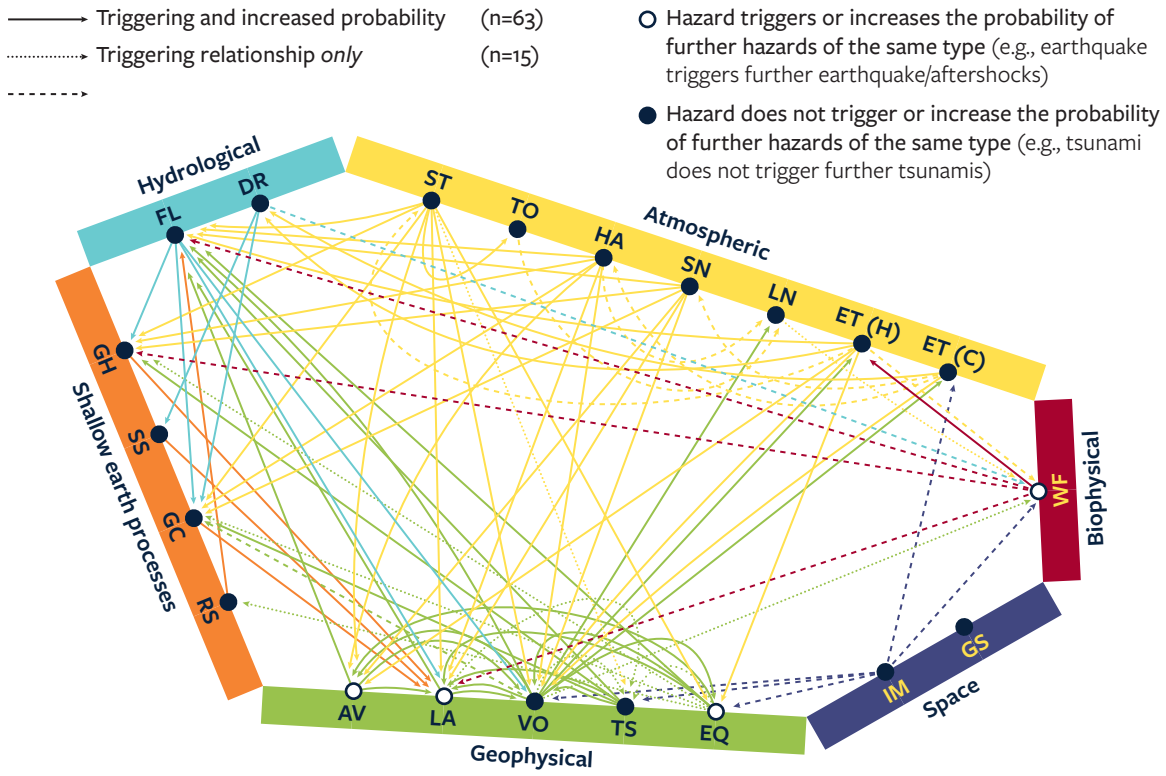
Multi-hazard risk models, maps and indices

The Covid-19 pandemic has increased global awareness of inter-related risk factors, with public health impacts combining with economic contraction and other vulnerabilities. Stochastic, empirical, and mechanistic techniques have been used to model such interrelations between hazard events, while matrices and network diagrams can be used to represent them graphically (Figure 2).

The development of composite, multi-hazard risk indices can combine multiple dimensions of hazard exposure, vulnerability and capacity. Multiple hazards can be weighted by intensity, magnitude and frequency, with results usually visualised in colour scales on a map (Hielkema et al., 2021).

The INFORM index provides a normalised risk index for humanitarian crises based on composite indicators (Figure 3). The Compound Risk Monitor is expanding this to acknowledge inter-relating effects, combining data from INFORM and elsewhere representing aspects of environment, food, conflict, socio-economic aspects such as poverty and inequality, health, macro-economic aspects such as growth and savings, and differences in response levels such as social protection coverage (European Commission, n.d.).

Figure 2 Linkages and relationships between hazard types



EQ = earthquake, **TS** = tsunami, **VO** = volcanic eruption, **LA** = landslide, **AV** = snow avalanche, **RS** = regional subsidence, **GC** = ground collapse, **SS** = soil (local) subsidence, **GH** = ground heave, **FL** = flood, **DR** = drought, **ST** = storm, **TO** = tornado, **HA** = hailstorm, **SN** = snowstorm, **LN** = lightning, **ET (H)** = extreme high temperatures, **ET (C)** = extreme cold temperatures, **WF** = wildfires, **GS** = geomagnetic storms, and **IM** = impact events.

Source: Gill and Malamud (2014)

Figure 3 INFORM Multi-hazard risk index framework

INFORM																		
Dimensions	**Hazard and exposure**								**Vulnerability**					**Lack of coping capacity**				
Categories	**Natural**						**Human**		**Socio-economic**			**Vulnerable groups**		**Institutional**		**Infrastructure**		
Components	Earthquake	Flood	Tsunami	Tropical cyclone	Drought	Epidemic	Current conflict intensity	Projected conflict risk	Development and deprivation (50%)	Inequality (25%)	Aid dependency (25%)	Uprooted people	Other vulnerable groups	DRR	Governance	Communication	Physical infrastructures	Access to health system

Source: De Groeve et al. (2015)

There are also a number of ongoing efforts to transform the way we manage data, including calls for enhanced interoperability of data, closing data gaps, and enhancing the use of predictive models. This is the intention of the new multilateral financing instrument: the Complex Risk Analytics Fund (CRAF'd). The financing facility aims to foster an open data ecosystem for complex risks in fragile and crisis settings (UNDRR, n.d.a).

Systemic risk data can provide a starting point for understanding overlaying risk factors and their inter-relations across space and time. Crucially, indices do not usually provide indications of the interactions between different types of hazards and vulnerabilities. However, they can provide insights for programming that can trigger deeper examinations of potentially compounding risks.

Systems-based approaches and forensic analysis

Systems and forensic approaches can provide more depth to improve diagnosis of risks and appropriate risk management responses. Drawing on tenets of resilience thinking, systems-based analysis examines the inter-action of multiple systems operating at different spatial and temporal scales to influence risk factors. Understanding the nested relationships and feedback loops between systems components is central to understanding system-wide disruptions or changes. The OECD's *Resilience Systems Analysis* (*RSA*) framework employed these concepts to develop a more comprehensive approach to risk management, mapping the wide range of 'natural', geopolitical, social and economic risks and their inter-relationships to strengthen development and programming strategies for country programming (OECD, 2014).

Forensic investigation of disasters (FORIN) approaches can further deepen understanding of compound effects and causality within complex systems (Oliver-Smith et al., 2016). Case studies from past events can help unpack the inter-relationships between risk factors and highlight the root causes of risk and the underlying social drivers of vulnerability. This helps situate the causes of risk and the prescriptions for systemic risk management approaches firmly in the domain of governance and social interaction rather than only hazard-based sciences (McDermott et al., 2022).

Understanding political economy

Understanding these underlying drivers of risk and resilience in contexts of conflict and fragility therefore requires greater attention to the political economy of such drivers. While programming in humanitarian contexts must be careful to operate within the principles of impartiality and neutrality, working with an understanding this prevailing political economy can help better determine appropriate entry points and actions, as well as balance trade-offs in systemic risk management (Tanner and Allouche, 2011).

Political economy analysis can improve understanding on how political behaviour shapes risks, vulnerabilities and capacities for different places and groups through a focus on: the *interests and incentives* of different groups in society; the role that *formal institutions and informal social, political and cultural norms* play; and the impact of *values and ideas*, including political ideologies, religion and cultural beliefs, on political behaviour and public policy (Booth et al., 2009). These factors can help to understand how politics plays out across scales, within knowledge claims and their production, and in processes through which individuals are subjected by power (Garcia et al., 2022).

Operational approaches for systemic risk management

Developing capacities and diagnosing risk are central to delivering systemic disaster risk management, which can draw on a wide range of existing approaches. However, there are also emerging approaches to risk-informed decision making that can inform implementation efforts.

Systems-based risk layering

Greater coherence in risk governance and financing across different risks and contexts can draw on the use of risk layering approaches originally developed in the context of allocating insurance coverage and products (Ghesquiere and Mahul, 2010). This extends layering beyond low vs high impact/probability to focus on connectedness and determine which system components and connections, probabilities and loss types can be best tackled by which risk management mechanisms.

Low-risk layers may be small and managed by assistance to particularly vulnerable individuals, households or businesses. Medium risk-layers can target the most influential connections between the system elements, while very high loss and connectedness levels can either be managed as residual or requiring transformation of risk conditions (Hochrainer-Stigler and Reiter, 2021). Crucially, for contexts of fragility and conflict, a risk layering could be employed to consider ex ante development financing measures to tackle structural drivers of vulnerability rather than ex post humanitarian measures.

Adaptive management and decision-making

Managing systemic risk requires acknowledging complexity and uncertainty within systems. Rather than giving primacy to benefit-cost ratios, decision-making can therefore be guided by criteria that include: proactivity to anticipate uncertainties and changes; responsiveness to contend with surprises; flexibility to adapt to new information and conditions; durability to respond to the longer term; and robustness to withstand uncertainty and serve multiple scenarios (WRI, 2011).

There is growing use of adaptive approaches that explicitly acknowledge the challenges of systemic risk and uncertainty. These can be described as using a compass rather than a map, where context

is informed by real-time political economy analysis, and where monitoring and learning in relation to intervention are used in combination and in shorter-than-usual planning cycles to maintain and adapt strategic direction (Christie and Green, 2019). Toolboxes provide an important way to operationalise such approaches, linking methods, models and approaches in ways that highlight the complex nature of systemic-risk analyses, thus emphasising the existence of multiple entry points to the measuring, modelling, and managing of systemic risks (Hochrainer-Stigler et al., 2020).

As an example, the guidelines for the governance of systemic risks by the International Risk Governance Center (IRGC) suggest seven interlinked steps to guide organisations in understanding complex system dynamics, prevent undesirable system shifts and improve system resilience (Figure 4). Although presented sequentially, the process may be non-linear, with starting points within the cycle such as when they face an impending systemic disruption or if they have time and resources to elaborate long-term strategies (IRGC, 2018).

Figure 4 Elements of IRGC's Systemic Risks Governance Guidelines

Source: IRGC (2018)

Recommendations: adopting tenets of systemic risk management

External assistance donors and operational counterparts will need to consider which aspects of the various approaches to risk – as explored above – are relevant and appropriate. Sustained and intensive work will be required to reflect on current practices, and crucially, engagement with the communities that programmes seek to support in determining the complex risk contexts they face.

The theory and practice of systemic risk management point to a number of key tenets upon which to base future programme designs:

- **Identify, acknowledge and address structural causes of vulnerability**. There needs to be an ambition to identify and address the structural causes of vulnerability, moving beyond technocratic approaches to understanding risk. This will require stronger engagement with formal and informal institutions and the distribution of power and wealth. Hazard-led approaches to understanding disaster risk fall short and require dedicated attention to societal and political processes. Given that the humanitarian imperative can create tensions over engaging in 'politics', certain aspects of governance functioning, and/or planning for engagement in longer-term action, collaborations across the 'triple nexus' may need to be harnessed.
- **Understand the systemic nature of risk**. There are various moves in this direction, albeit with many diagnostic efforts focused on compiling multiple hazards rather than risks. Examples include the suite of INFORM products (European Commission, n.d.), and dedicated assessments by the UN Climate Security Mechanism (UNEP, UNDP and DPPA, 2021) and UNDRR's Global Risk Assessment Framework (UNDRR, n.d.b). The concentration of effort has been on regional, national and, to some extent, sub-national level assessment. Gaps to be addressed include tools to understand risk from household and community perspectives, and marrying this with sub-national and national level insights.
- **Work across temporal and spatial scales**. Work on cross-scalar risks – including transboundary risks – remains an outlier, despite the breadth of evidence on the challenges of cross-border movement, conflict dynamics and climate change impacts, which all impede effective risk management (Nadin and Roberts, 2018; Opitz-Stapleton et al., 2019). The inter-relationships between slow and rapid onset hazards require further understanding, and there is a need to acknowledge and manage the mismatch of timeframes between programme funding and the duration of action needed reduce vulnerability and risk.
- Systemic risk management requires **collaborative work across disciplines and institutions**. This means breaking down barriers and establishing transdisciplinary and cross-institutional approaches. This is one of the promising opportunities of the resilience agenda, yet many departments, sectors and disciplines continue to work in parallel despite the need for greater coherence (such as DRR and conflict and peace cadres, see Peters, 2019).

- A strong driver for systemic approaches is to avoid inadvertently creating or exacerbating risks by **managing trade-offs and minimising maladaptation**. In its simplest form, this means ensuring that action on risk management in one sphere should not undermine action in another (e.g. humanitarian short-term interventions should not undermine long-term adaptation or system resilience).
- **Flexibility** is needed to achieve more systemic risk management, creating programmes which can quickly expand and contract to address changes in the needs of the target population in a dynamic, fragile and volatile environment. This acknowledges the need for households to have the capacity to adapt or transform their livelihoods (and in some cases locations) in response to multiple risks. This dynamism can be a challenge for traditional development programmes operating orthodox programming models in fragile and conflict-affected settings.

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