1 + 1 = 3: How Practitioners Can Synergize Resilience Across Health and Beyond

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Abstract

Despite growing recognition of the interdependencies of resilience across systems, sectors, and levels (SSLs), translating this understanding into coordinated action remains a challenge. This study identifies seven systemic gaps that reinforce a persistent know–do gap, creating an unhealthy *milieu intérieur* that reinforces fragmentation across SSLs. In response, seven prerequisites for synergizing resilience are proposed, along with a working definition of Synergistic Resilience.

To operationalize this concept, the Synergistic Resilience Compass (SRC) is introduced—a structured, adaptable, and practitioner-focused framework. A Seven-Step Rollout is proposed to guide implementation across diverse contexts, while illustrating SRC's utility through case vignettes.

Benefits, along with practice and research implications of SRC, are discussed through potential use case examples, balancing constructivism and pragmatism. Limitations and future directions, including iterative refinement, toolkit development, and creating a community of practice, are highlighted. The SRC provides a framework for synergizing resilience across SSLs where 1+1 becomes 3.

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Introduction

From the devastating wildfires in Los Angeles to the Mpox outbreak in Kivu, the conflict in Gaza, and dengue surges in Colombo, one word resonates across headlines, research articles, and policy discussions: resilience—a concept deemed critical to addressing the complex challenges faced by humanity. The United Nations Office for Disaster Risk Reduction (UNDRR) defines resilience as "the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management."[1]

Despite its prominence in both research and practice, resilience is not free from criticism. It has been described as an "umbrella concept," lacking a universally agreed-upon definition, complicating its practical application.[2] Critics also highlight its dominance by positivist and systems-thinking approaches, often neglecting historical injustices and socio-political complexities.[3,4] Yet, resilience has demonstrated its own resilience in the wake of such criticisms, remaining a versatile and enduring concept in addressing complex challenges such as disasters, pandemics, climate change, and crises.

Some frameworks apply resilience, largely focusing on a specific sector or system, such as health, or a particular level, such as the community. For example, many frameworks and tools have been developed to promote resilience of health systems, as well as for promoting climate resilient and zero-carbon health systems.[5–9] Similarly, when it comes to community resilience, at least 56 frameworks and assessments have been researched.[10] Nevertheless, the interconnectedness of resilience across more than one system, sector, or level has been clearly highlighted. For example, the Social Ecological Resilience and SETS resilience support a detailed understanding of cross-border interactions of resilience, highlighting not only the synergies but also the trade-offs.[11–13] From a crisis management point of view, versatile tools have been developed to assess the readiness of an organization or a sector for transboundary crisis management.[14,15] Approaches such as One Health and Planetary Health, calling for cross-sector, cross-system collaboration, also use resilience as a powerful lens to achieve their goals.[16–18]

Despite these advances in understanding resilience interdependencies, resilience-building efforts in practice remain fragmented, often leading to duplication, omissions, and wasted resources.[19–23] Based on experience contributing to resilience-building efforts in Sri Lanka across health systems, communities, and responses to disasters, pandemics, climate change, and conflict—as well as engagement with global discourse—the author affirms the value of synergistic
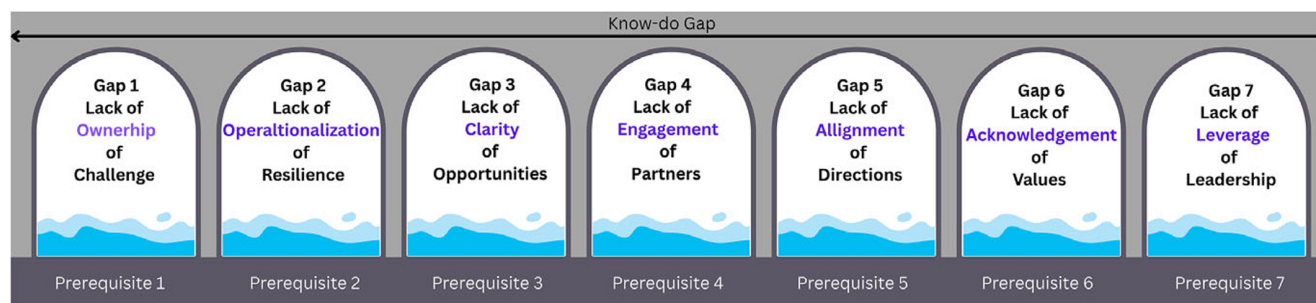
Figure 1. The seven gaps of the know-do gap and the seven prerequisites. This figure illustrates seven interconnected gaps that make up the know-do gap that hinders collaborative resilience across systems, sectors, and levels. Each gap is visualized as a break in the stream of collective action, bridged by a corresponding prerequisite: shared challenges, shared elemental resilience energies, shared synergistic resilience opportunities, shared partner identification, shared directions, shared values, and shared leadership.

approaches. However, even committed actors face significant challenges in translating theory into practice, revealing a persistent know–do gap (Figure 1).

Figure 1 presents seven recurring, interconnected gaps, metaphorically shown as fractures in a stream, that hinder integrated resilience efforts. These emerged from a reflective synthesis of literature and the author's lived experience in disaster and systems response.

Ownership of challenges is often dispersed, leading to fragmented responsibilities. Resilience remains poorly operationalized—either oversimplified or overly complex—making implementation difficult. Opportunities for synergy are often missed due to limited clarity and coordination. Key actors are not consistently engaged, resulting in compartmentalized efforts. Misaligned strategies hinder integrated planning and resource sharing. Without shared values, trust erodes and inequities persist. Lastly, weak leadership undermines collective action and adaptability.

Together, these gaps create a fragmented *milieu intérieur*, reinforcing disconnections and structural barriers across SSLs. Grounded in evidence and lived experience, this study proposes seven prerequisites—illustrated as bridge arches—each addressing one of these gaps. The next sections define Synergistic Resilience, introduce the Synergistic Resilience Compass (SRC) as a structured, adaptable, practitioner-oriented framework, and outline a Seven-Step Rollout for its application across diverse settings.

Discussion

Seven Prerequisites for Synergizing Resilience Across the Borders of SSLs

Prerequisite 1: Shared Challenges

The UNDRR has identified 302 hazards, categorized into eight groups: meteorological and hydrological, extraterrestrial, geohazards, environmental, chemical, biological, technological, and societal.[24] The all-hazard approach advocated by the World Health Organization (WHO) emphasizes that, regardless of their origin—whether natural, technological, or societal—hazards often challenge health systems in similar ways, necessitating a multisectoral response.[25]

While the traditional hazard-based approach provides a structured classification of risks, it often emphasizes the source of disruption rather than the broader systemic challenges that arise from it. Hazards, whether natural, technological, or societal, may manifest differently across contexts, but their cascading impacts frequently converge, affecting multiple systems and requiring coordinated responses.[26] A more integrative and cross-sectoral dialogue, ensuring that resilience efforts address not only the immediate threats but also

their underlying drivers, systemic consequences, and actionable solutions, is pivotal.

This study highlights the big-picture view of systemic risks, proposing shared challenges as the first prerequisite for synergizing resilience across SSLs. Identifying shared challenges fosters cross-border discussions, helping partners pinpoint mutual concerns—ranging from broad issues like climate change impacts to specific risks like urban flooding. This forms a foundation for context assessment, key driver analysis, and actionable solutions.

Each partner typically perceives challenges through the lens of their own priorities. However, it is equally important that they understand how others view the same challenges to explore potential synergies. Thus, identifying shared challenges is crucial for promoting synergies across SSLs through shared ownership.

Prerequisite 2: Shared Elemental Resilience Energies

One of the critiques of resilience is that it serves as an umbrella term without an agreed-upon and actionable definition.[2] Since the aim is to engage practitioners who are often more focused on implementation than on theoretical discourse, it is considered crucial that a practical and inclusive approach be adopted. Irrespective of the level of theoretical understanding of resilience, it is affirmed that the practical wisdom of all diverse partners is essential for efforts to synergize resilience to be realized. Hence, shared meaning of resilience between the partners is the second Prerequisite for synergizing resilience across SSLs.

Inspired by the elemental energies, the concept of Elemental Resilience Energies is introduced in an effort to liberate resilience from abstract theories, allowing it to be transformed into something tangible, intuitive, memorable, and deeply connected to everyday experiences, readily translatable across cultures and levels of education: earth, water, fire, and air.[27,28]

- **Earth** represents *stability*, enabling systems to sustain their structure and function despite external challenges. However, excessive rigidity can lead to a breakdown of the system.
- **Water** symbolizes *fluidity*, allowing systems to adapt and create new forms and functions in response to challenges. Yet, too much fluidity may result in the loss of original structure and function, compromising the system's integrity.
- **Fire** represents *transformability*, aiding systems in recovery and enabling them to return to their pre-challenge status after adversity. However, mismatches between pre- and post-challenge status may create conflicts.
- **Air** signifies *mobility*, helping systems achieve unprecedented positive outcomes and advance to new levels. However, unchecked

mobility may lead to a loss of purpose, focus, and direction, leaving the system scattered and disorganized.

This pragmatic and metaphorical interpretation of resilience is presented as the second prerequisite for enabling efforts to be synergized across borders. This interpretation is designed to be easily understood and operationalized by diverse partners, while remaining responsive to the core principles of resilience as a dynamic and contextual construct.

Prerequisite 3: Shared Synergistic Resilience Opportunities (SROs)

Prerequisite 3 addresses the question of "when," in relation to synergizing resilience. Over time, resilience has become an omnipresent concept, spanning all stages of disaster, crisis, or challenge management cycles. For instance, the UNDRR definition of resilience encompasses actions spanning across the disaster management cycle such as "resist, absorb, accommodate, adapt to, transform, and recover."[1]

To operationalize this, eight windows of opportunity, referred to as SROs, are highlighted. They are anticipation, mitigation, preparation, testing, withstanding, coping, restoration, and thriving. These SROs are inherently tied to the timing of the challenge cycle and are intended to be leveraged to enable the synergizing of resilience.[27,29–33]

Pre-Challenge SROs: Anticipation, mitigation, preparation, and testing, representing proactive risk reduction efforts.

Post-Challenge SROs: Withstanding, coping, restoration, and thriving, representing reactive and risk management efforts.

Viewing resilience through the lens of opportunities emphasizes its time-sensitive nature: seizing these opportunities collectively reduces the impact of subsequent stages of the challenge. Conversely, failing to act on these opportunities increases residual risk, compounding vulnerabilities over time.

Prerequisite 4: Shared Partner Identification

A detailed understanding of partners involved is crucial for synergizing resilience across SSLs. Prerequisite 4 highlights the need for acknowledging and naming the partners across the borders, leading to meaningful engagement under three levels.[34]

- **Reference Level**: Represents "our" system, sector, or level, serving as the framework through which the lead partner drives Synergistic Resilience efforts.
- **Proximal Level**: Consists of immediate systems and relationships, such as families, communities, and local organizations, that are directly influenced by the reference level.
- **Distal Level**: Encompasses those actors who influence the broader societal, environmental, and policy contexts, including national regulations, cultural norms, and global factors, that influence the reference level.

A similar three-pronged approach is used in SETS resilience to explain the interconnectedness of social, ecological, and technological systems in urban settings.[12] While relationships can be far more complex, versatile tools such as systems maps, relationship maps, and causal loop diagrams are encouraged based on practitioners' needs.[35] Restricting synergy levels to three provides a practical approach, especially for busy practitioners. Depending on context, levels may range from smaller entities like individuals or families to broader ones such as countries or regions, as well as systems (e.g., ecological or health) or sectors like animal or human health.

Prerequisite 5: Shared Directions

Under the next prerequisite of shared direction, it is proposed that synergies be aligned across four Synergistic Resilience Directions (SRDs): purpose, information, resources, and action.[36,37] Misalignment across these directions makes it unlikely for synergies to manifest effectively, if at all. This calls for sharing purpose, information, resources, and action across SSLs to synergize cross-border resilience.

Inspired by the Transboundary Crisis Management Capital discourse, each SRD is further subdivided into two Synergistic Resilience Sub-Directions (SRSDs).[14,15]

- **Shared Purpose:** Reflective learning (drawing lessons from the past) and visioning (aspiring for a resilient future).
- **Shared Information:** Sense-making (interpreting information) and meaning-making (contextualizing information for action).
- **Shared Resources:** Resource regeneration (creating new resources) and redistribution (reallocating existing resources).
- **Shared Action:** Decision-making (strategic alignment) and implementation (executing coordinated plans).

A perfectly aligned, utopian approach is not advocated, as it is recognized as unrealistic. Instead, the focus is on achieving partial alignment in one or more SRDs to improve outcomes over siloed efforts, with room for ongoing refinement. The directions remain flexible, allowing practitioners to engage with four SRDs or eight SRSDs based on their needs.

Prerequisite 6: Shared Values

As mentioned earlier, one of the core critiques of resilience is its tendency to overlook historical injustices and socio-political complexities.[3,4] To address this, shared values are proposed as a prerequisite for synergizing resilience across SSLs. Clarifying and aligning the priority values of each SSL is essential for synergies to emerge. Misaligned values often hinder synergy, leading to reluctance in sharing purpose, information, resources, or action. Without value alignment, synergizing resilience remains a challenge.

Based on contemporary discourse on values, eight core values are proposed as essential elements to be acknowledged for synergizing resilience efforts across borders.[38–40] These include:

- **Trust**
- **Diversity**
- **Equity**
- **Inclusivity**
- **Innovation**
- **Accountability**
- **Productivity**
- **Sustainability**

However, this is not an exhaustive list, and practitioners may identify their own set of core values for a specific synergizing exercise. What is non-negotiable, however, is the deliberate integration of values into the process as a foundational element.

Prerequisite 7: Shared Leadership

Leadership is a critical leverage point for synergizing resilience across SSLs. It should be both situational and transboundary, while rooted in the core values outlined in Prerequisite 6. Under Shared Leadership, no single approach is prescribed; instead, practitioners are encouraged to draw on the diverse leadership styles already available to them.

Many leadership theories, styles, and approaches support leadership across boundaries, some of which include:

- **Distributed Leadership**: Leadership responsibilities are shared across different actors and institutions.[41]
- **Collective Leadership:** Multiple stakeholders engage in co-creating solutions.[42]
- **Collaborative Leadership:** Strengthens interdisciplinary and intersectoral partnerships.[43]
- **Boundary-Spanning Leadership**: Connects diverse stakeholders across policy, practice, and governance.[44]

Another key aspect of shared leadership is being sensitive to the Elemental Resilience Energies, discussed in Prerequisite 2, that are prevailing in each situation and contextualizing leadership approach accordingly. For example:

- **Stability (Earth)**: Directive leadership that ensures decisiveness in crises and the ability to withstand challenges.[45]
- **Fluidity (Water)**: Adaptive leadership that enables flexibility and learning in response to uncertainty.[46]
- **Transformability (Fire)**: Transformational leadership that drives long-term recovery, innovation, and systemic change.[47]
- **Mobility (Air)**: Visionary leadership that fosters foresight, anticipation, and strategic resilience-building.[48]

Under the seventh prerequisite, shared leadership is presented as a curated buffet—offering a diverse range of leadership approaches that transcend SSL boundaries while adapting to prevailing Elemental Resilience Energies. Practitioners are encouraged to select the approach best suited to their context, enabling a tailored and effective pathway to synergizing resilience across boundaries.

Enshrining the seven prerequisites outlined above, a working definition is proposed for the term *Synergistic Resilience.*

Working Definition of Synergistic Resilience

Synergistic Resilience is the dynamic, interconnected, and value-based collaborative approach that integrates leadership across multiple systems, sectors, and levels—including individuals, communities, and both human and natural systems—to promote resilience by effectively and efficiently reducing the risk of challenges and managing them when they occur, achieving more collectively than individual systems functioning alone.

The term and working definition of Synergistic Resilience, used throughout this study, along with the SRC proposed next, are aligned with the seven previously discussed prerequisites. Like mockingbirds that collect fragments of melodies from diverse sources to create new and unexpected harmonies, inspiration was gratefully drawn from theories and frameworks that resonated most strongly (Table 1), with an effort made to weave them into a fresh and cohesive conceptualization of synergistic resilience.[49,50]

Table 1. Theoretical foundations of the synergistic resilience

Category	Theory/Framework	Core concepts	Relevance to SRC
Resilience Theories	Engineering Resilience[31]	Speed and efficiency of returning to a stable state after disturbance.	Informs stability and robustness as core traits of resilience.
	Ecological Resilience[30]	Ability to absorb disturbances and maintain multiple stable states.	Highlights flexibility and adaptability across systems.
	Adaptive Cycle Theory[51]	Dynamic cycles of growth, conservation, release, and reorganization.	Provides a temporal structure for the resilience spiral in pre-challenge, challenge, and post-challenge phases.
	Evolutionary Resilience[32]	Adapting and transforming in response to changing conditions.	Informs the transformational aspects of resilience in the framework.
Risk Management	Sendai Framework for Disaster Risk Reduction[33]	Resilience as the ability to resist, absorb, adapt, and recover efficiently.	Aligns with the cyclical representation of resilience phases in the SRC.
Cross-Border Approaches	Bronfenbrenner's Social-Ecological Model[34]	Emphasizes dynamic interactions across proximal, reference, and distal levels of systems.	Lends its concentric scaffold highlighting the multi-layered nature of resilience and its interactions across various levels in the SRC framework.
	Social-Ecological Systems (SES)[52]	Capacity of human and natural systems to adapt and sustain functionality amidst disturbances.	Provides a foundation for considering interactions across social and ecological dimensions.
	Social-Ecological-Technological Systems (SETS)[12]	Integration of social, ecological, and technological components for resilience.	Expands the framework to incorporate the technological dimension of interconnected systems.
	One Health[53]	Collaborative approach across human, animal, and environmental health sectors.	Promotes cross-sectoral collaboration to address interconnected challenges.
	Planetary Health[54]	Links human well-being with the health of Earth's systems.	Broadens the scope of resilience to include planetary-scale interdependencies.
	Transboundary Crisis Management Capital[14,15]	Examines how organizations could function across domains during crisis.	Supports elaborate how collaboration across the boundaries could be operationalized.

(Continued)

Table 1. (*Continued*)

Category	Theory/Framework	Core concepts	Relevance to SRC
Synergy and Sense of Coherence	Synergy[36,37,55]	The behavior of a whole system exceeds the sum of its parts.	Forms the foundation for integrating multiple components into a cohesive, synergistic approach.
	Sense of Coherence[37,56,57]	Comprehensibility, manageability, and meaningfulness.	Guides the four strategic directions (Purpose, Information, Resources, Action) in the SRC.
Leadership	Distributed Leadership[41]	Leadership is shared across multiple actors and institutions.	Encourages multi-level and multi-sectoral collaboration in resilience efforts.
	Collective Leadership[42]	Leadership emerges from collective engagement and shared decision-making.	Supports shared purpose and collaborative governance.
	Collaborative Leadership[43]	Emphasizes cooperation across boundaries to solve complex challenges.	Aligns with the need for cross-sectoral partnerships in resilience-building.
	Boundary-Spanning Leadership[44]	Leaders connect across organizational, disciplinary, and sectoral divides.	Helps integrate systems, sectors, and levels to synergize resilience.
	Directive Leadership (Earth)[45]	Provides clear guidance and firm decision-making during crises.	Supports stability and withstanding phases in resilience-building.
	Adaptive Leadership (Water)[46]	Enables flexibility and continuous learning in changing environments.	Facilitates coping and adaptation during disruptions.
	Transformational Leadership (Fire)[47]	Inspires innovation, systemic change, and long-term resilience.	Critical for restoration and transformation after crises.
	Visionary Leadership (Air)[48]	Focuses on foresight, strategic direction, and long-term planning.	Strengthens anticipation and preparedness for future challenges.

SRC

The SRC is a practitioner-focused, structured, adaptable, and actionable framework for the promotion of Synergistic Resilience (Figure 2). Table 2 provides a detailed interpretation of the terms used in the SRC.

Seven-Step Rollout of the SRC

Table 3 outlines the proposed Seven-Step Rollout of the SRC.

The Seven-Step Rollout of the SRC provides an iterative guide for operationalizing Synergistic Resilience. It begins by identifying the challenge, ensuring a clear focus on resilience needs. An Elemental Resilience Energy Scan assesses existing resilience dynamics, guiding the selection of relevant SROs. The next steps define use-case levels, engage key partners, and plan synergistic efforts. The final steps integrate core values and adopt an appropriate leadership approach.

This rollout is not a rigid sequence but a flexible outline that aligns with existing project management tools, such as the Theory of Change, Results Framework, and Monitoring & Evaluation Frameworks, ensuring resilience efforts are effectively embedded into routine implementation and assessment.[58]

Illustrative Case Vignettes

To illustrate the utility of the SRC, four case vignettes from Sri Lanka were purposefully selected from published good practices that, in the author's view, exemplify the power of Synergistic Resilience[59–65]. Each practice, addressing diverse challenges, was analyzed using the SRC with health as the reference level, employing SRC terminology to demonstrate its applicability and usefulness (Table 4).

Benefits of Synergistic Resilience

Synergistic Resilience provides several benefits when diverse actors collaborate meaningfully to address complex challenges resulting in 1+1 equals 3 outcomes.

Firstly, the SRC's adaptability allows it to be applied across diverse challenges, from disasters, pandemics, climate change to crises, as well as across SSLs.

- **Disaster Preparedness**: Aligns efforts between government, NGOs, and communities.[10,33]
- **Climate Change Adaptation**: Bridges resilience strategies of health systems and communities during adverse weather events.[9,66]
- **Pandemics**: Coordinates health authority surveillance with community-based surveillance and risk communication.[19,67,68]
- **One Health**: Unifies human, animal, and environmental health efforts, e.g., to address antimicrobial resistance.[69]
- **Planetary Health**: Tackles issues like biodiversity loss by integrating health, environmental, and socio-economic systems.[54]

Under each of the above, SRC can be applied at scales ranging from individual villages or hospitals to entire health systems or regions.

Secondly, the SRC requires minimal inputs yet enables efficient use of available resources, making it especially valuable in resource-constrained settings such as pandemics, disasters, or austerity periods by optimizing financial, human, and material resources.

Thirdly, rather than being another abstract framework that remains unused in academic literature, the SRC is paired with a Seven-Step Rollout process, making it a practical, ready-to-use tool for practitioners. This addresses a common critique of resilience as an "umbrella concept" lacking clear definitions and complicating implementation.[2]

Fourthly, the SRC explicitly centers values within Synergistic Resilience efforts. This helps counter criticisms of resilience approaches that overlook historical injustices and socio-political complexity.[3,4] Its multi-level engagement also enhances the ability to reach and serve vulnerable groups.

Practice and Research Implications

Though SRC is a primarily practitioner-focused tool, it has both practice and research implications (Table 5).
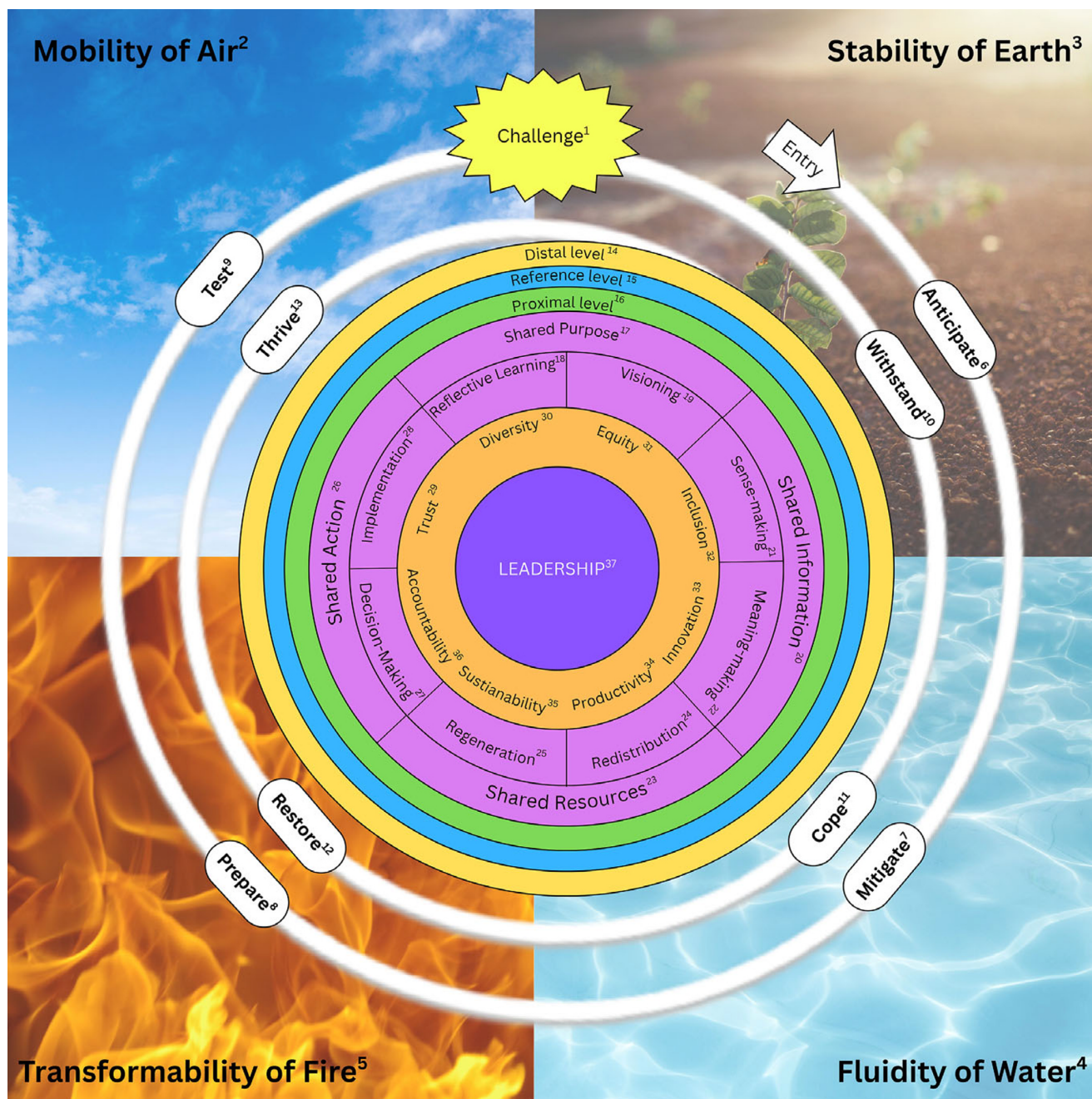
Figure 2. The synergistic resilience compass.

Challenge at 12 o'clock—Represents the starting point (Prerequisite 1: Shared Challenges)[1]

Four outer quadrants—Arranged clockwise, stability of earth, fluidity of water, transformability of fire, mobility of air (Prerequisite 2: Shared Elemental Resilience Energies)[2–5]

Two swirls of the spiral—Pre-challenge (anticipation, mitigation, preparation, testing) and post-challenge (withstanding, coping, restoration, thriving) (Prerequisite 3: Synergistic Resilience Opportunities)[6–13]

Three concentric layers—Representing distal, reference, and proximal levels (Prerequisite 4: Shared Partner Identification)[14–16]

Four main directions with sub-directions—Shared purpose (reflective learning and visioning), shared information (sense-making and meaning-making), shared resources (regeneration and redistribution), shared action (decision-making and implementation) (Prerequisite 5: Shared Directions)[17–25]

Eight sectors—Represent the eight core values (trust, diversity, equity, inclusivity, innovation, accountability, productivity, sustainability) (Prerequisite 6: Shared Values)[29–36]

Central fulcrum—Leadership serves as the guiding, adaptive force that enables balance and coordination across all elements (Prerequisite 7: Shared Leadership)[37]

Above implications need to be grounded in a blended constructivist–pragmatist epistemology, supporting both rigorous inquiry and practical utility by respecting subjective, contextual perspectives while promoting structured, actionable insights.

Limitations

As with any framework or approach, SRC is not without limitations. Firstly, SRC is still a framework on paper. The theoretical and experience-based, though ambitious, claim that the SRC could

Table 2. Prerequisites, terms, interpretations in relation to SRC and reference

Prerequisite	Term, superscript notation	Interpretation in relation to the SRC	Reference
PR 1: Shared Challenges	Challenge[1]	Any complex issue that threatens humanity, their environment, or the systems they depend on, requiring resilience efforts that demand cross-system, cross-sector, and cross-level coordination to address its impacts effectively.	24,25
PR 2: Shared Elemental Resilience Energies	Earth[2]	Aspects of resilience that resonate with the stability of earth.	
	Water[3]	Aspects of resilience that resonate with the fluidity of water.	
	Fire[4]	Aspects of resilience that resonate with the transformability by fire.	
	Air[5]	Aspects of resilience that resonate with the mobility of air.	
PR 3: Synergistic Resilience Opportunity	Anticipate[6]	Efforts focused on foreseeing potential challenges.	27,29–33
	Mitigate[7]	Actions taken to reduce the severity or likelihood of challenges and limit their potential impact.	
	Prepare[8]	Ensures readiness by developing and organizing response plans, resources, and capacities to act effectively.	
	Test[9]	Involves evaluating, practicing, and refining response strategies and plans to improve their effectiveness.	
	Withstand[10]	Focuses on maintaining stability and managing the situation during the occurrence of a challenge.	
	Cope[11]	Engages in enduring and dealing with the immediate and ongoing impacts of the challenge.	
	Restore[12]	Emphasizes recovery efforts aimed at rebuilding and returning to normalcy.	
	Thrive[13]	Advancing systems to a better situation than the pre-challenge or to "build back better."	
PR 4: Shared Partner Identification	Reference level[15]	The primary system through which the lead partner frames and coordinates Synergistic Resilience efforts.	
	Proximal level[16]	Consists of immediate systems, such as families, communities, and local organizations, directly influenced by the reference level.	
	Distal level[14]	Encompasses broader societal, environmental, and policy contexts, including national regulations, cultural norms, and global factors that influence the reference level.	
PR 5: Synergistic Resilience Directions	Shared purpose[17]	Aligns partners toward common goals through a shared understanding, vision, and continuous learning.	36,37
	Shared information[20]	Involves interpreting data and events to create a coherent narrative that guides collaborative decision-making.	
	Shared resources[23]	Ensures the efficient and equitable allocation, redistribution, and generation of resources across systems.	
	Shared action[26]	Focuses on coordinated decision-making and implementation of strategies to drive joint actions and outcomes.	
PR 5: Synergistic Resilience Sub-Directions	Reflective learning[18]	Ongoing learning from past experiences to improve strategies and systems for greater resilience.	14,15
	Visioning[19]	The process of imagining and planning the future collectively, aligning with shared goals and aspirations.	
	Sense-making[21]	Interpreting data and events collectively to form an understanding of the situation and guide decisions.	
	Meaning-making[22]	Deriving significance and shared understanding from information, guiding purpose-driven action.	
	Resource redistribution[24]	The process of reallocating existing resources to ensure equitable access and usage among partners.	
	Resource generation[25]	Creating new resources or opportunities to strengthen resilience and meet emerging challenges.	
	Decision-making[27]	The process of selecting actions collaboratively, based on shared understanding and purpose.	
	Implementation[28]	Coordinating and executing plans, ensuring actions are aligned and synergized across systems.	
PR 6: Core Values	Trust[29]	Builds mutual confidence and reliability among partners, enabling coordinated and effective action.	38–40

(Continued)

Table 2. (*Continued*)

Prerequisite	Term, superscript notation	Interpretation in relation to the SRC	Reference
	Diversity[30]	Embraces multiple perspectives and sectors to enrich resilience strategies and solutions.	
	Equity[31]	Ensures fair access to resources and opportunities, addressing disparities in resilience efforts.	
	Inclusion[32]	Actively involves all partners, especially marginalized voices, in decision-making processes.	
	Innovation[33]	Encourages creative, adaptive approaches to emerging challenges, driving resilience improvements.	
	Productivity[34]	Maximizes efficiency in utilizing resources and efforts to produce tangible resilience outcomes.	
	Sustainability[35]	Focuses on long-term, adaptive systems that maintain ecological and social balance.	
	Accountability[36]	Ensures responsibility and transparency among partners to track and meet resilience goals.	
PR 7: Leadership	Leading across borders[37]	Guides and coordinates efforts, fostering alignment and collaboration toward shared resilience objectives.	41–44
	Sensitivity to elemental resilience energy[37]	Ensure that the leadership responds to the Elemental Resilience Energy of the situation.	45–48

Table 3. Seven steps in the rollout of the SRC

Prerequisite	Steps in using the SRC	Superscript notation in SRC	Guidance	Key questions answered
PR 1	1. Identify the shared challenge.	1	Define the common challenge that affects multiple partners, ensuring it is framed inclusively to encourage Synergistic Resilience.	What is the challenge that we are focusing on?
PR 2	2. Perform Elemental Resilience Energy Scan	2–5	Assess the current key resilience energy (stability of earth, fluidity of water, transformability of fire, mobility of air) and determine the desired and undesired outcomes of it on the system.	What resilience energy are we working with right now? What are the desired and undesired outcomes of the energy?
PR 3	3. Identify the relevant Shared Synergistic Resilience Opportunity	6–13	Determine the most suitable Synergistic Resilience Opportunity based on the timing of the challenge, aligning proactive and reactive strategies for optimal impact.	Which Synergistic Resilience Opportunity fits our current situation?
PR 4	4. Identify Shared Partners for the Use-Case	14–16	Determine the specific levels (proximal, reference, distal) relevant to the challenge and identify key partners across systems, sectors, and levels for collaboration.	Where and with whom are we focusing our resilience efforts? Who are the key partners influencing or influenced by our actions?
PR 5	5. Plan Synergistic Resilience Efforts Across the Shared Directions.	17–28	Design and implement approaches within selected Synergistic Resilience. Directions and Sub-Directions.	How do we share information, resources, and actions with partners to synergize resilience efforts?
PR 6	6. Uphold appropriate Core Values	29–36	Integrate the SRC's Core Values into Synergistic Resilience efforts.	How do we ensure core values are respected in implementation of Synergistic Resilience?
PR 7	7. Adopt suitable Leadership approach	37	Use the most appropriate leadership approaches for the Synergistic Resilience Opportunity that the partners are at.	What is the best way to lead across the borders and appropriate to the context?

serve as a useful framework still needs to be tested in real-life settings. To assess its usefulness and acceptability, the SRC is proposed for application in diverse project and program settings, with both its benefits and limitations to be documented. An iterative process could be used to improve the SRC framework based on such feedback.

Secondly, it is assumed that the partners possess sufficient levels of readiness to change. However, if this assumption is incorrect, certain settings may face challenges in achieving the anticipated impacts due to a lack of change commitment or change efficacy, demanding preparatory work prior to the implementation of Synergistic Resilience efforts.[70]

Table 4. Application of the synergistic resilience compass across the four Case Vignettes

Case Vignette	Best Practices	Challenge	Elemental Resilience Energies	Synergistic Resilience Opportunity	Partner Identification	Synergistic Resilience Directions	Core Values	Leadership Approach
Case Vignette 1 Program Enhancement for Emergency Response (PEER) Program.[59,60]	The PEER in Sri Lanka was launched in 2021, aimed to reduce disaster impacts through institutionalized and sustainable capacity-building efforts. The program, supported by the U.S. Agency for International Development's Bureau for Humanitarian Assistance (USAID BHA), was implemented by the Asian Disaster Preparedness Center (ADPC) in collaboration with the Government of Sri Lanka. It included four components: Hospital Preparedness in Emergencies (HOPE), Community Action for Disaster Response (CADRE), Medical First Responder (MFR), and Collapsed Structure Search and Rescue (CSSR), targeting healthcare professionals, community leaders, and emergency response agencies.[59,60]	Disaster-related deaths, injuries, and disabilities	Stability of Earth grounded on existing systems and organizations.	Anticipation	Reference: Hospital Proximal: Communities Distal: Emergency response agencies	Shared purpose *(Reflective learning and visioning)*	Trust Productivity Accountability	Directive leadership Collaborative leadership
Case Vignette 2 Faith Leaders Disseminating COVID–19 Awareness in Sri Lanka.[61]	During the COVID–19 pandemic, disinformation and public resistance to health guidelines posed significant challenges to health promotion efforts in Sri Lanka. Health authorities collaborated with faith leaders from diverse religious backgrounds to address these challenges by disseminating accurate, evidence-based health messages and encouraging adherence to public health measures.[61]	Misinformation	Fluidity of water with openness for on-boarding of non-traditional health educators.	Coping	Reference: Health Promotion Bureau Proximal: Communities Distal: faith leaders	Shared information *(Sense-making and meaning-making)*	Trust Diversity Equity Inclusion	Adaptive leadership Collective leadership
Case Vignette 3 Community Engagement for Strengthening Laboratory Capacity During the COVID–19 Pandemic. [62-64]	During critical stages of the COVID–19 pandemic, Sri Lanka faced a shortage of laboratory testing capacity, necessitating the establishment of local PCR testing facilities to meet increasing demand. Addressing this challenge required substantial resources, prompting collaboration between the health sector, community-based organizations, civil society, and the corporate sector.[62-64]	Limited COVID–19 testing capacity	Fluidity of water with flexibility of creative partnerships.	Coping	Reference: Health System Proximal: Communities Distal: Funding organizations	Shared resources *(Redistribution and regeneration)*	Trust Transparency Accountability	Adaptive leadership Boundary-spanning leadership
Case Vignette 4 Civil-Military Coordination for Dengue Control in Sri Lanka.[65]	Dengue is an endemic disease in Sri Lanka, imposing a significant burden in terms of morbidity and mortality. During dengue outbreaks in the Western Province of Sri Lanka in 2014, civil-military coordination played a crucial role in enhancing vector control efforts to address the rapidly escalating risk of the disease.[65]	Dengue outbreak	Fluidity of water with strategic use of civil-military coordination.	Adaptation	Reference: Health Sector Proximal: Communities Distal: Military and security forces	Shared action *(Decision-making and implementation)*	Trust Productivity Sustainability	Adaptive leadership Distributed leadership

Table 5. Research and practice implication of the synergistic resilience compass

Focus	Implication	Potential use case example
Practice	Serves as a powerful advocacy tool	SRC integrates community, health, and meteorology sectors in developing and implementing a heat-health action plan.
	Promotes a 360-degree approach to synergizing resilience	SRC supports planning a district-wide Tsunami evacuation drill involving community, health facilities, and emergency managers.
	Guides all stages of the program management cycle	SRC unites engineers, health staff, and communities in designing a climate-resilient health facility.
Research	Provides a structured yet flexible framework to explore how systems interact across levels	SRC helps analyze cross-sector collaboration in response to drought-related malnutrition.
	Supports development of tools to measure and improve synergy	SRC guides interview tool design for studying the interaction of climate resilience at household, community, and system levels.
	Offers a context-sensitive codebook for qualitative analysis	SRC's 44 constituents used to analyze qualitative data from a project to address anti-microbial resistance among the community, human health, and animal health partners.

Thirdly, there is a risk that practitioners still find comprehension of SRC to be too complex, though attempts have been taken to summarize and simplify multiple concepts within it.

Conclusion

The interdependencies of resilience across systems are well recognized, yet a significant know–do gap remains in translating this understanding into coordinated, cross-boundary action. This study identifies seven systemic gaps that hinder Synergistic Resilience across SSLs, outlines seven corresponding prerequisites, proposes a working definition of Synergistic Resilience, and introduces the SRC as a practitioner-focused, structured, adaptable, and actionable framework with a Seven-Step Rollout process.

Looking ahead, converting the SRC into a practical toolkit is proposed—comprising knowledge products such as a policy brief, advocacy package, and training module. This toolkit could support cross-border advocacy and capacity building to foster Synergistic Resilience. Establishing a community of practice among SRC users is also proposed to cultivate a supportive network of practitioners across sectors.

The SRC serves as a practical, adaptable tool to advocate for, plan, and manage resilience initiatives across sectors and system levels. It supports 360-degree stakeholder engagement and guides all stages of program implementation. The SRC provides a structured yet flexible framework for analyzing system-level interactions, developing assessment tools, and applying its 44 constituents as a coding scheme

in qualitative research. Grounded in a blended constructivist–pragmatist epistemology, it enables both context-sensitive inquiry and real-world application. These applications of SRC are expected to synergize resilience in response to today's demanding challenges in a 1+1=3 way.

"Alone we can do so little. Together we can do so much."—Hellen Keller[71]

Abbreviations

ADPC	Asian Disaster Preparedness Center
CADRE	Community Action for Disaster Response
CSSR	Collapse Structure Search and Rescue
HOPE	Hospital Preparedness in Emergencies
MFR	Medical First Responder
PEER	Programme Enhancement for Emergency Response
SETS	Social, Ecological, Technological Systems Resilience
SRC	Synergistic Resilience Compass
SRD	Synergistic Resilience Direction
SRO	Synergistic Resilience Opportunity
SRSD	Synergistic Resilience Sub-direction
SSLs	Systems, Sectors, and Levels
UNDRR	United Nations Office for Disaster Risk Reduction
USAID	U.S. Agency for International Development's
BHA	Bureau for Humanitarian Assistance
WHO	World Health Organization

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