Diagnostics Study on Recent Disasters in Sri Lanka and Indonesia

Towards Building Future Resilience

SEEDS Technical Services(STS)

on behalf of the ADRRN Localisation Hub

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Strengthening Inclusive Disaster Risk Governance for Climate Resilience in Asia (SIDRRA)

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Executive Summary

The late-2025 disaster season brought two of the most damaging events in recent South and Southeast Asian history: Cyclonic Storm Ditwah in Sri Lanka and the Senyar-linked floods and landslides in Sumatra, Indonesia. Ditwah struck all 25 of Sri Lanka's districts in November 2025, causing at least 635 deaths, displacing over 600,000 families, and inflicting an estimated USD 4.1 billion in direct physical damage, i.e. approximately four per cent of national GDP. The Senyar-linked events in Sumatra resulted in at least 830 deaths, over 500 people missing, and roughly 880,000 displaced, making it one of the deadliest flood-landslide episodes in recent Indonesian history. While the meteorological intensity of both events was significant, their scale of impact was shaped not by the hazards alone but by entrenched structural conditions: settlement in hazard-prone areas, environmental degradation, ageing and inadequate infrastructure, and persistent gaps in governance and preparedness.

This diagnostic study examines these conditions through a Root Cause Analysis (RCA) framework, combining secondary document review with survey-based findings and consultation-informed observations across the two countries. The analytical framework distinguishes between four dimensions: hazard, exposure, vulnerability, and governance, and adopts a macro-micro perspective to connect national systems with community-level experience. The evidence base includes 36 survey responses drawn from Sri Lanka (20 responses) and Indonesia (16 responses), supplemented by regional assessments, disaster situation reports, and institutional briefings. The study's purpose is not to replicate damage or loss assessments but to identify the root causes, recurring patterns, and system-level gaps that must be addressed to build genuine resilience.

Across both countries, hazard patterns are shifting. Extreme rainfall events are becoming more frequent and less predictable, monsoon systems are exhibiting greater variability, and compound or cascading hazard dynamics, such as the simultaneous occurrence of floods and landslides, are increasingly common. Survey respondents in both Sri Lanka and Indonesia consistently described disasters as more intense and less aligned with established seasonal expectations. This shift matters because it exposes a mismatch between emerging hazard behaviour and the historical baselines on which infrastructure design, risk modelling, and preparedness planning continue to rely.

The findings reveal four cross-cutting gaps that shaped outcomes in both countries. First, early warning systems are present but do not reliably translate into protective action at the community level. Warnings were frequently described as arriving too late, being unclear in meaning, or failing to reach the populations most at risk. In many cases, households relied on neighbours, community leaders, and informal networks to interpret risk and decide on evacuation, reflecting a weak connection between institutional warning systems and last-mile action. Second, response behaviour is shaped as much by structural constraints as by information. Even where warnings were received, many households delayed action due to the absence of safe shelter options, mobility limitations, livelihood concerns, or social norms around collective decision-making. Third, economic disruption emerged as the most persistent form of disaster impact. Over 80 per cent of survey respondents identified livelihood loss, including damage to crops, livestock, markets, and income sources, as a central concern, often continuing long after the emergency phase had passed. Fourth, preparedness is uneven and insufficiently institutionalised. Where communities had prior planning arrangements, designated roles, or experience with drills, responses were more effective and recovery more stable. Where preparedness was absent, responses were fragmented and slow.

The study also assesses the institutional and governance environment in both countries. Sri Lanka's relatively centralised disaster management system provides a clear institutional framework but faces implementation gaps, particularly at the district and community levels. Indonesia's decentralised system enables context-specific responses but introduces unevenness in capacity, coordination, and enforcement across jurisdictions. In both settings, regulatory frameworks for land use, floodplain management, and slope protection exist but are not consistently enforced, allowing exposure to accumulate in risk-prone areas over time. Coordination across agencies and levels of government, while functional during acute response, remains a challenge during compound or rapidly evolving events.

Building on these findings, the report proposes the ASRAA framework - Anticipate, Survive, Recover, Adapt, and Aspire, developed by SEEDS, as a practical structure for shifting disaster risk management from reactive relief toward anticipatory, community-centred resilience. The framework places the household as the smallest unit of resilience while recognising that household-level capacity is shaped and enabled by institutional systems. Each ASRAA dimension maps to specific recommendations: strengthening risk-informed early warning and community preparedness (Anticipate);

ensuring timely, dignified, and inclusive emergency response (Survive); prioritising livelihood restoration and service continuity alongside physical reconstruction (Recover); embedding lessons from each disaster into planning, land-use, and behavioural change (Adapt); and investing in the technical, financial, and institutional foundations that allow communities to build toward safer futures (Aspire).

For Sri Lanka, the immediate priorities centre on improving last-mile warning effectiveness, strengthening preparedness in landslide-prone highland and flood-prone urban areas, and integrating recovery support more explicitly around livelihood and economic stability. For Indonesia, the focus should be on reducing implementation variability across districts, deepening community-level planning in high-risk regencies, and improving coordination during compound events that exceed historical experience. Across both countries, the report calls for a shift in orientation from managing disasters as episodic emergencies to governing risk as a continuous, systemic responsibility, supported by sustained investment in local capacity, inclusive planning, and evidence-informed decision-making.

Chapter 1: Introduction

The late-2025 northeast monsoon, intensified by tropical cyclones, produced one of South and Southeast Asia's most disruptive disaster seasons, with Sri Lanka's Cyclonic Storm Ditwah and Indonesia's Senyar-linked floods and landslides among the worst-affected. These disasters exemplify how climate-intensified hazards interact with exposure, vulnerability, and governance gaps to overwhelm systems.

Regional context and rationale

Across the region, an unusually active monsoon combined with multiple storm systems to generate record rainfall and widespread flooding in November - December 2025. Regional analyses describe Ditwah and Senyar as indicators of a shifting "disaster riskscape," in which warmer temperatures and altered circulation patterns are increasing the likelihood and intensity of extreme rainfall events.

In Sri Lanka and Indonesia, the human and economic impacts reflected not only the severity of the storms, but also systemic issues: rapid and often unregulated urbanisation, settlements in floodplains and on unstable slopes, ageing or inadequate infrastructure, and uneven enforcement of land-use and building regulations. These disasters therefore provide critical cases for examining how global frameworks such as the Sendai Framework for Disaster Risk Reduction are being interpreted and applied on the ground, and where they fall short in the face of compound monsoon cyclone events.

This diagnostics study is designed to dissect these root causes and translate lessons from Sri Lanka and Indonesia into a practical resilience framework and prevention-oriented recommendations for the wider region.

Sri Lanka: Cyclonic Storm Ditwah

Cyclonic Storm Ditwah struck Sri Lanka in late November 2025, bringing intense rainfall, flooding and landslides across all 25 districts and becoming one of the most damaging disasters since the 2004 tsunami. A World Bank Global Rapid Post-Disaster Damage Estimation (GRADE) assessment estimated direct physical damage at around

USD 4.1 billion, about 4 per cent of the national GDP, with nearly 2 million people severely affected. Impact included at least 635 deaths, 192 missing, and over 600,000 families displaced.

The GRADE report indicates that infrastructure, including roads, bridges, railways and water supply networks, accounted for about USD 1.7 billion of the losses, while residential buildings suffered close to USD 1.0 billion in damage and agriculture about USD 814 million, severely impacting paddy, tea and other crops. These impacts disrupted livelihoods, schooling, health services and market access, particularly in poorer districts and estate communities.

Ditwah's impacts were shaped by pre-existing vulnerabilities. In the hill country, steep, densely populated slopes experienced deadly landslides where deforestation, informal construction and weak slope management had reduced stability. In low-lying urban and peri-urban areas, long-standing encroachment on wetlands and undersized or poorly maintained drainage systems led to prolonged inundation and contamination of water supplies. Many households in affected areas lived in non-engineered housing, had limited savings or insurance, and depended on climate-sensitive livelihoods, which slowed recovery and widened socio-economic disparities.

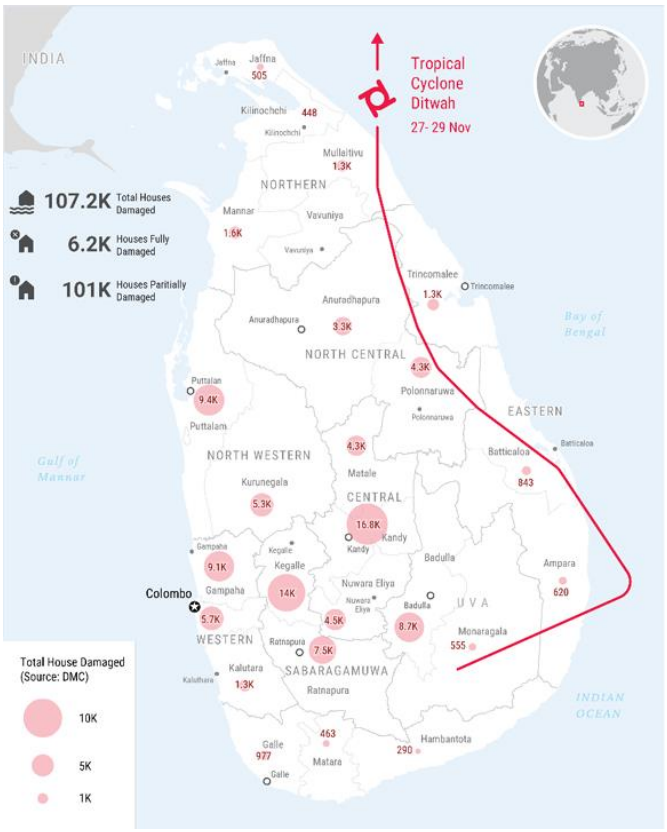

Fig. 1.1: Humanitarian Impact of Tropical Cyclone Ditwah in Sri Lanka (27–29 November 2025)

Source: *Sri Lanka: Cyclone Ditwah Situation Report No. 3 (23 December 2025), UN OCHA*

The Sri Lankan response mobilised national disaster management agencies, security forces, local authorities and community-based volunteers at scale, but early warning dissemination and evacuation planning did not always translate into timely, protective action. Shelter conditions and the integration of health, protection and water and sanitation concerns varied widely, revealing gaps in preparedness for large-scale, multi-hazard displacement.

Fig. 1.2: Key Impacts of Cyclone Ditwah

Fig. 1.3: House Fully Damaged and Collapsed near Peradeniya, Kandy

Photo Credits: MFCD Sri Lanka

Within this study, Ditwah serves as a lens to analyse how risk information was generated and used, how land-use and infrastructure decisions heightened or reduced exposure, and how the Sendai Framework's priorities on risk understanding, governance and 'build back better' are reflected or not in Sri Lanka's practices.

Indonesia: Senyar-linked floods and landslides in Sumatra

In Indonesia, Tropical Cyclone Senyar, an unusually rare system in the Malacca Strait, interacted with the monsoon to unleash severe floods and landslides across Sumatra,

especially in North Sumatra, Aceh and West Sumatra provinces. Meteorological and risk reports indicate that some areas received over 400 mm of rain in 24 hours, triggering flash floods, river overflows and slope failures that destroyed homes, roads, bridges and public facilities.

Fig. 1.4: Flood and landslide-affected areas in Aceh, North Sumatra, and West Sumatra, Indonesia

Source: *IHCP Situation Report #6 (29 December 2025); InaRISK (BNPB)*

Fig. 1.5: Homes in Tarutung, North Sumatra damaged by flash floods and landslides

Photo Credits: YEU Indonesia

Official figures describe at least 830 deaths, more than 500 people missing, about 880,000 displaced and roughly 3 million people affected, making this one of the

deadliest flood-landslide episodes in recent Indonesian history. Indonesian government and civil society assessments also point to thousands of homes damaged or destroyed, extensive disruption to power and communications, and damage to schools, health centres and local markets that constrained both immediate relief and early recovery.

The pattern of impacts reflected underlying development choices. Settlements and informal housing had expanded along riverbanks and foothills where flood and landslide risk was known but poorly managed, while sand and stone extraction, deforestation and inadequate enforcement of spatial plans further destabilised slopes and altered drainage. Many households in affected regencies depend on smallholder agriculture, plantations and informal sector work in hazard-exposed areas, with limited savings, social protection coverage or access to resilient infrastructure.

Indonesia's national disaster management agency (BNPB), provincial governments and humanitarian partners mounted a substantial response, including evacuations, emergency shelter, food and health services. Yet evaluations highlight the challenges of translating national-level frameworks and contingency plans into effective local action when facing rare, high-impact rainfall extremes, especially around last-mile warning, risk-informed land-use enforcement and inclusive evacuation and shelter planning.

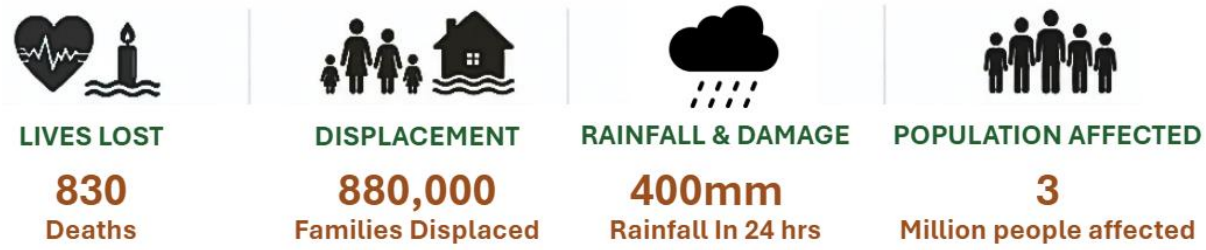

Fig. 1.6: Key Impacts of the Senyar-linked floods and landslides in Sumatra, Indonesia

For this study, the Senyar-linked floods and landslides in Sumatra will be examined as a critical case of how a relatively well-developed disaster management system copes with an event that breaks historical patterns, and what this reveals about governance, planning and community-level resilience.

Foundation for the diagnostic study

Taken together, Ditwah in Sri Lanka and the Senyar-linked floods and landslides in Indonesia exemplify a new risk landscape where climate-intensified extremes intersect with entrenched vulnerabilities, producing disasters that outstrip historical experience

and strain existing systems. While global instruments such as the Sendai Framework stress the importance of understanding risk, strengthening governance, investing in resilience and building back better, the 2025 events reveal persistent gaps in hyper-local diagnostics, cross-border learning and the integration of community knowledge, gender and social inclusion into disaster risk reduction.

This diagnostic study will address these gaps through a rapid, mixed-methods approach combining review of disaster reports and datasets; hazard and exposure analysis; case studies in selected districts; and consultations with government representatives, civil society organisations, community leaders and ADRRN members in both countries. Its objectives are to:

- Identify structural, environmental, and socioeconomic drivers that turned hazards into large-scale disasters in Sri Lanka and Indonesia.
- Assess risk governance performance against Sendai priorities; and
- Synthesize findings into resilience-oriented recommendations for policy, investment, and action, including a framework derived from the root-cause analysis.

By grounding this analysis in the lived experiences of affected communities and the institutional realities of Sri Lanka and Indonesia, the study aims to inform more anticipatory, equitable and climate-aware disaster risk reduction across South and Southeast Asia.

Chapter 2: Study Designand Methodology

This chapter outlines the Root Cause Analysis (RCA) design and methodology for this diagnostics study of the 2025 disasters in Sri Lanka and Indonesia. It examines how climate-intensified hazards interact with exposure, vulnerability, and governance to produce impacts, moving beyond event description to systemic diagnosis.

The study is grounded in the understanding that disasters emerge from the interaction of hazards with exposure, vulnerability, and system capacity. In this respect, the analysis is designed to move beyond an event-based account and toward a diagnostic reading of the multiple drivers that shaped disaster impact in both countries.

Study Design

The study adopts a Root Cause Analysis (RCA) framework as its primary analytical lens. This framework is well suited to the present study because it allows the analysis to distinguish between the immediate hazard trigger and the deeper causes that enabled the hazard to produce severe impacts. In the Sri Lanka and Indonesia cases, the proximate triggers were intense rainfall, flooding, landslides, and cyclonic systems, while the underlying drivers included settlement in hazard-prone areas, environmental degradation, infrastructure deficits, uneven preparedness, and governance limitations.

The RCA approach is also important because the recent disasters reveal a broader shift from hazard-centred risk to systemic risk. The severity of the impacts cannot be explained by the intensity of the events alone. Rather, they must be understood in relation to the extent to which institutions, planning systems, infrastructure, and communities were able to anticipate, absorb, and respond to risk. The study therefore seeks to identify not only what happened, but why the events unfolded in the way they did.

Macro-Micro Perspective

The study further adopts a macro-micro perspective to ensure that the analysis reflects both structural conditions and lived realities. At the macro level, the study examines hazard patterns, historical trends, and the institutional and governance arrangements that shape disaster risk in Sri Lanka and Indonesia. This includes the evolving nature of hydro-meteorological hazards and the broader planning and risk governance context within which these events occurred.

At the micro level, the analysis draws on survey responses and community-level observations to understand how disasters were experienced on the ground. This includes perceptions of warning systems, evacuation behaviour, local response mechanisms, livelihood disruption, and recovery pathways. The macro-micro lens is especially important in this study because it allows the analysis to capture the gap between formal systems and actual experience, particularly in relation to early warning, preparedness, coordination, and response.

Analytical Framework

The study structures analysis around four RCA dimensions: (1) Hazard: nature, intensity, and cascading dynamics of triggers; (2) Exposure: people, assets, and infrastructure in risk-prone areas (e.g., floodplains, unstable slopes); (3) Vulnerability: conditions like non-engineered housing and climate-sensitive livelihoods; (4) Governance: early warning, land-use regulation, and coordination.

Fig. 2.1: RCA Framework

Hazard refers to the nature, intensity, and behaviour of the triggering event, including compound or cascading event dynamics. Exposure refers to the people, assets, livelihoods, ecosystems, and infrastructure located in risk-prone areas such as floodplains, riverbanks, low-lying urban settlements, and unstable slopes.

Vulnerability captures the conditions that increase susceptibility to harm and reduce the ability to cope and recover. These include informal and non-engineered housing,

livelihood dependence on climate-sensitive sectors, limited savings and insurance, poor infrastructure resilience, and environmental degradation such as deforestation and wetland encroachment. Governance refers to the institutional and policy environment through which risk is managed, including early warning systems, land-use regulation, preparedness planning, inter-agency coordination, and operational response. Taken together, these dimensions provide the analytical basis for identifying root causes rather than only recording impacts.

Evidence Base

The study uses a mixed-methods evidence base that combines secondary document review with survey-based findings and consultation-informed observations. Secondary sources include disaster reports, hazard assessments, institutional briefings, and contextual analyses relating to Sri Lanka and Indonesia. These materials were used to reconstruct the sequence of events, establish the hazard context, and assess the institutional and environmental conditions that influenced disaster outcomes.

Primary evidence was drawn from survey responses and related consultations that captured community-level perspectives on warning, preparedness, response, and recovery. These responses are particularly important for understanding how formal systems are experienced at the local level, especially where warnings did not lead to timely action, where community networks filled response gaps, and where recovery remained incomplete long after the event. The use of multiple evidence streams strengthens the study through triangulation and ensures that the analysis remains grounded in both observed patterns and lived experience.

Analytical Process

The analysis was conducted in three stages. First, the study reviewed the disaster context in both countries to identify the principal hazards, affected geographies, and immediate impacts. Second, it examined the environmental, infrastructural, and governance conditions that shaped exposure and vulnerability, with particular attention to existing systems and the gaps that might be present therein. Third, it synthesised survey findings to identify recurring themes across the two geographies, especially in relation to early warning, preparedness, response, livelihoods, and recovery.

This process made it possible to move from description to explanation. It also enabled the study to compare Sri Lanka and Indonesia without collapsing them into a single narrative. The result is an analytical structure that supports both diagnosis and interpretation: diagnosis, by identifying the factors that intensified disaster impact; and interpretation, by revealing the shared and context-specific ways in which risk is produced and managed.

Limitations

As a diagnostics exercise, the study is intentionally rapid and applied in nature. It does not seek to substitute for a full field-based damage and loss assessment, nor does it attempt to provide exhaustive attribution for every observed impact. Its purpose is instead to identify recurring patterns, root causes, and system-level gaps that inform the framework in Chapter 5 for resilience planning.

The depth of evidence also varies between Sri Lanka and Indonesia, particularly with respect to localised impacts and recovery trajectories. To address this limitation, the study relies on convergence across multiple sources rather than isolated findings from any single source. This approach keeps the analysis robust while remaining appropriate to the scope of a diagnostics study.

Relevance to the Report

The methodology outlined in this chapter provides the foundation for the remainder of the report. Chapter 3 builds on it through a deeper analysis of hazard profiles and the evolving disaster management systems of Sri Lanka and Indonesia, including the institutional, governance, and operational factors that shape preparedness and response. Chapter 4 then applies the same macro-micro lens to the survey findings, showing how systemic risk is experienced and interpreted at community level.

These chapters build the evidentiary base for Chapter 5, which synthesizes RCA findings into the resilience framework and actionable recommendations. In that sense, this methodology chapter serves as the bridge between the context, the evidence, and the forward-looking intent of the study.

Chapter 3: Analytical Assessment of Hazards and Disaster Dynamics

Hazard Profiles of Sri Lanka and Indonesia

Sri Lanka and Indonesia are both exposed to intensifying hydro-meteorological hazards, which interact with exposure and vulnerability to produce disasters. Sri Lanka's hazard profile is primarily shaped by hydro-meteorological processes linked to its monsoon systems, whereas Indonesia presents a more complex multi-hazard setting influenced by both climatic variability and tectonic activity. Understanding these differences is important, as it highlights how hazard characteristics interact with geography, settlement patterns, and governance systems to shape risk outcomes.

Sri Lanka

Sri Lanka's hazard landscape is dominated by floods and landslides, both of which are closely linked to seasonal rainfall patterns associated with the southwest and northeast monsoons. River basins such as the Kelani, Kalu, and Mahaweli are particularly prone to flooding, affecting a large part of the population across both urban and rural areas. The nature of flood risk has evolved. Urban flooding has intensified in cities like Colombo due to rapid urbanisation, wetland encroachment, and degraded drainage, turning moderate rainfall into major disruptions.

Landslides are concentrated in the central highlands, where steep terrain and high rainfall create inherently fragile conditions. These risks have intensified due to deforestation, road construction, and agricultural expansion, which have destabilised slopes and increased susceptibility to failure. In many cases, slopes that were once stable are now highly sensitive to rainfall, resulting in more frequent and severe landslides during extreme weather events.

Fig.3.1: Road Damaged by Landslide, Paragala, Sri Lanka

Photo Credits: MFCD Sri Lanka

Cyclones, while less frequent compared to other hazards, still pose risks to coastal regions and can trigger cascading impacts inland. Their significance lies less in direct wind damage and more in the heavy rainfall they bring, which often acts as a trigger for flooding and landslides. This highlights an important characteristic of Sri Lanka's hazard profile, where different hazard types are closely interconnected.

Case Study: Cyclonic Storm Ditwah (Sri Lanka, 2025)

Cyclonic Storm Ditwah in 2025 provides a clear illustration of how hazard dynamics and systemic vulnerabilities interact. The storm brought intense and prolonged rainfall across all districts, triggering widespread flooding and landslides. While the meteorological intensity of the event was significant, the scale of its impact cannot be attributed to rainfall alone.

In several affected regions, unregulated land use, encroachment into floodplains, and pressure on drainage infrastructure significantly amplified the effects of the hazard. Roads and bridges were damaged, access routes were cut off, and essential services such as water supply and sanitation were disrupted. The event also exposed limitations in preparedness systems, particularly in the ability to translate early warning into timely action.

Fig.3.2: Hemmatagama Landslide Area, Sri Lanka

Photo Credits: MFCD Sri Lanka

What stands out from this event is that the hazard acted as a trigger, but the extent of damage was largely determined by pre-existing vulnerabilities. This reinforces the idea that disasters in such contexts are not purely natural events but are shaped by the interaction between hazards and human systems.

Indonesia

Indonesia presents a more complex hazard profile, shaped by its location along the Pacific Ring of Fire and its exposure to climatic variability, it is highly susceptible to earthquakes, tsunamis, and volcanic eruptions, many of which have historically resulted in large-scale disasters. At the same time, hydro-meteorological hazards such as floods and landslides are among the most frequent and widespread, affecting millions of people each year.

Rapid urbanisation and environmental change have significantly altered the country's risk landscape. Deforestation, mining, and agricultural expansion have reduced vegetation cover and disrupted natural hydrological systems. As a result, runoff has increased, river systems have become more unstable, making rural and urban areas more vulnerable to flooding. Landslides are also becoming frequent in hilly regions, often linked to environmental degradation and land-use change.

An important feature of Indonesia's hazard profile is the interaction between different hazard types. For instance, heavy rainfall can coincide with volcanic activity or occur in areas already affected by seismic instability, leading to complex and cascading impacts. This multi-hazard environment requires systems that are capable of managing uncertainty and interlinked risks.

Case Study: Senyar-Linked Floods and Landslides (Indonesia, 2025)

Senyar-linked floods and landslides in Sumatra (2025) illustrate cascading hydro-meteorological risks amplified by riverbank settlements, deforestation, and weak spatial planning, mirroring Ditwah's dynamics but in a multi-hazard context.

The impacts were widespread and multi-dimensional. Infrastructure systems were disrupted, access routes were cut off, and large populations were displaced. Recovery was further complicated by the scale of damage and the cascading nature of impacts across sectors.

Fig.3.3: Floodwaters and thick mud-covered roads and buildings in Aceh, following the Flash floods

Photo Credits: YEU Indonesia

What makes this event particularly notable is its atypical nature. Rainfall patterns did not align with historical expectations, and the intensity of the event suggests that existing models may not fully capture emerging risks. This raises important questions about how hazard patterns are changing and how systems need to adapt.

While the dominant hazards differ across the two countries, there are clear overlaps in how risks are evolving. In both contexts, hydro-meteorological hazards are becoming more prominent and increasingly interact with environmental degradation and expanding settlements. Indonesia's longer experience with multi-hazard environments has contributed to stronger risk awareness in certain regions, particularly with context to preparedness and evacuation. Sri Lanka, on the other hand, highlights the challenges of integrating rapidly intensifying climate risks into planning and governance systems. These differences point to opportunities for shared learning, particularly in anticipating compound hazards and managing cascading impacts.

Trends in Hazard Frequency and Intensity

Across South and Southeast Asia, hazard patterns are undergoing significant transformation. Extreme rainfall events are becoming more frequent, and monsoon systems are exhibiting greater variability. These changes are linked to broader climatic processes, including rising sea surface temperatures and shifts in atmospheric circulation.

In Sri Lanka, these changes are reflected in the increasing occurrence of short-duration, high-intensity rainfall events. Such events are more difficult to predict and often exceed the design capacity of infrastructure systems. At the same time, land-use changes have expanded the spatial footprint of risk, bringing new areas into hazard-prone zones.

Indonesia shows a similar trend, influenced by its environmental context. While geophysical hazards remain significant, there is a clear increase in hydro-meteorological disasters. Environmental degradation has amplified these risks, making floods and landslides more frequent and severe. An important aspect of these trends is the growing unpredictability of hazard behaviour. Events such as the Senyar-linked disaster demonstrate that rainfall patterns are no longer confined to expected seasonal norms. This creates challenges for systems that rely on historical data and established risk models.

At a broader level, these trends point to a shift from isolated hazard events to more complex and interconnected risk scenarios. Hazards are increasingly interacting with each other and with human systems, resulting in cascading impacts. This requires a rethinking of how risk is assessed and managed.

Disaster Management Systems and Governance

While hazard trends provide context, they do not fully explain the scale or unevenness of disaster impacts observed across Sri Lanka and Indonesia.

Similar hazard events often lead to very different outcomes depending on how effectively systems can anticipate risk, regulate development, and coordinate response. In this sense, disaster impacts are shaped as much by institutional performance and governance structures as by the hazards themselves. Understanding how these systems function in practice is therefore critical to explaining why certain events escalate into large-scale disasters.

National Systems: Sri Lanka and Indonesia

Sri Lanka's disaster management system is relatively centralised, with the Disaster Management Centre playing a key role in coordinating preparedness, early warning, and response efforts. This structure provides a clear institutional framework, with defined responsibilities across national and sub-national levels. In principle, such centralisation can support consistency in policy direction and enable coordinated decision-making, particularly during large-scale events.

The effectiveness of this system mainly depends on how policies are implemented at a local level. In practice, there are variations in capacity, awareness, and coordination across districts. For example, early warning systems are technically established, but their impact is uneven. In some areas, warnings are effectively communicated and acted upon, while in others, delays or lack of clarity limit their usefulness. This suggests that the challenge is not only in system design, but also in last-mile delivery and local-level engagement.

Indonesia's disaster management system, in contrast, is decentralised. The National Disaster Management Agency (BNPB) provides overall guidance and coordination, while provincial and district-level agencies are responsible for implementation. This structure allows for more context-specific responses, which can be important in a country characterised by geographic diversity and varied risk profiles.

At the same time, decentralisation introduces unevenness. Regions with stronger institutional capacity are often better equipped to manage disasters, while others face constraints in terms of resources, technical expertise, and coordination. This variability becomes more pronounced during large-scale or compound events, where coordination

across multiple jurisdictions is required. As a result, while the system offers flexibility, it also creates challenges in ensuring consistency and reliability across regions.

Systemic and Governance Challenges

Looking across both countries, several systemic challenges begin to emerge, particularly in how disaster management frameworks are translated into practice. One of the most evident patterns is the continued reliance on reactive approaches. Systems are generally effective in mobilising response and relief after disasters occur, but there is comparatively less emphasis on prevention, risk reduction, and long-term resilience planning. This limits the ability to address underlying vulnerabilities before they are exposed by hazard events.

Regulatory enforcement remains another critical issue. Although hazard maps and planning guidelines are available, they are not consistently applied, allowing development to continue in flood-prone and landslide-prone areas. This reflects broader governance challenges, including competing land-use pressures, limited monitoring, and gaps in accountability.

Coordination across institutions also presents difficulties. Disaster management involves multiple agencies operating across sectors and administrative levels. While this is necessary, it can lead to overlaps in responsibility, delays in decision-making, and gaps in communication, particularly during rapidly evolving situations.

A further challenge lies in the integration of climate risk into planning processes. Infrastructure systems, urban development, and land-use planning often continue to rely on historical data, which may no longer reflect current or future risk conditions. This creates a mismatch between emerging hazard patterns and the systems designed to manage them.

In addition, early warning systems, while improving in technical terms, do not always translate into effective action at the community level. Information may be available, but its clarity, accessibility, and relevance vary. At the same time, community-based knowledge and informal response mechanisms, which often play a critical role during disasters, are not systematically incorporated into formal governance structures. This results in a disconnect between institutional systems and ground realities.

Shared Challenges and Cross-Learning

Despite differences in institutional design, Sri Lanka and Indonesia face similar challenges in bridging the gap between policy frameworks and on-ground implementation. In both contexts, the existence of formal systems does not always guarantee effective outcomes, particularly when local capacities and coordination mechanisms are uneven.

At the same time, there are elements within each system that offer useful insights for the other. Sri Lanka's centralised structure provides clearer institutional direction, which can support more coordinated action if implementation gaps are addressed. Indonesia's decentralised approach, on the other hand, enables more localised adaptation and can be particularly effective in contexts where community engagement and local capacity are strong.

Indonesia's longer experience with managing multi-hazard environments has also contributed to greater awareness of complex and overlapping risks in certain regions. This is reflected in more adaptive approaches to preparedness and response in some areas. Sri Lanka's experience, by contrast, highlights the importance of strengthening regulatory enforcement and integrating risk considerations into rapidly evolving urban and rural development processes.

These differences suggest that cross-learning between the two countries could be valuable. Strengthening the link between national frameworks and local action, while also recognising and integrating community-level capacities, could help address some of the shared challenges identified.

From Hazard to Systemic Risk

Looking across the analysis, a broader shift becomes evident. Hazards are becoming more intense, less predictable, and often more interconnected. At the same time, exposure is increasing as settlements expand, and environmental systems are altered. However, what emerges most clearly is the role of systems in shaping how these risks translate into impacts.

In both Sri Lanka and Indonesia, disaster outcomes are not determined solely by the magnitude of the hazard. They are influenced by how effectively systems can anticipate risk,

regulate development, and coordinate response. In this sense, disaster risk is increasingly shaped by systemic factors rather than hazard characteristics alone.

This systemic-risk shift, evident in both Ditwah and Senyar, sets the stage for Chapter 4's survey findings and Chapter 5's recommendations to address anticipation, adaptation, and governance gaps.

As hazard dynamics continue to evolve, systems that remain largely reactive are likely to face increasing pressure. Addressing this will require not only technical improvements, but also changes in how risk is understood, prioritised, and managed across sectors.

Chapter 4: Root Causes from Survey Findings on the 2025 Disasters in Sri Lanka and Indonesia

Overview of the Dataset and Hazard Exposure

The analysis is based on 36 responses collected across Sri Lanka and Indonesia, comprising 20 responses from Sri Lanka and 16 from Indonesia. The dataset reflects a combination of lived experiences and institutional perspectives, which allows the analysis to move beyond surface-level observations and examine how disaster risks are understood and managed in practice. The inclusion of both community and practitioner voices makes it possible to identify not only hazard exposure, but also systemic gaps in interpretation, response, and recovery.

Floods emerge as the most dominant hazard across the dataset, frequently occurring alongside landslides. In Sri Lanka, this overlap is particularly pronounced, suggesting a pattern of compound hazard events driven by intense rainfall interacting with topography and land-use conditions. The repeated co-occurrence of floods and landslides indicates that risk is not isolated to single hazards, but is instead shaped by cascading processes. In Indonesia, although the hazard profile is more diverse due to its geophysical setting, floods remain the most recurrent hazard reported in the survey. This indicates a shift in risk perception, where hydro-meteorological hazards are becoming more prominent even in regions historically associated with geophysical risks.

Perceptions of change over time reinforce this convergence. A large share of responses across both countries describe disasters as becoming more frequent, more intense, and less predictable. Survey comments from both Sri Lanka and Indonesia reflect a similar concern, where events are no longer perceived as seasonal or cyclical, but as increasingly erratic. This shift in perception is important, as it suggests that communities are not only experiencing more disasters, but are also recognising a change in their underlying patterns. The alignment of these perceptions across two different geographies indicates that these are

not isolated observations, but part of a broader regional transformation in climate-related risks.

Early Warning Systems: Gaps in Effectiveness

Early warning systems are present across both countries, yet their effectiveness remains limited at the community level. Surveys confirm RCA governance gaps: warnings exist but fail last-mile delivery, clarity, and actionability, with communities relying on informal networks, echoing Chapter 3 findings. This imbalance is not merely incidental but reflects a consistent pattern across both datasets, where warning systems exist but fail to function effectively at the point where they are most needed.

This gap is not only technical but also communicative. In several cases, warnings were issued but failed to translate into action due to lack of clarity or trust. Survey responses from Indonesia illustrate this breakdown in dissemination, with respondents noting that “no warning reached us before the flooding began,” pointing to clear gaps in last-mile connectivity. Similarly, responses from Sri Lanka highlight challenges related to timing and usability, with respondents indicating that warnings “came too late to act,” suggesting that delays significantly reduce the practical value of alerts even when systems are in place.

This indicates that early warning systems are not consistently functioning as decision-support tools, but rather as fragmented information systems that do not adequately support timely action. The challenge therefore lies not only in generating warnings, but in ensuring that they are delivered in a form that is understandable, trusted, and actionable at the community level.

At the same time, informal communication channels appear to compensate for these gaps. A significant portion of responses across both Sri Lanka and Indonesia indicate reliance on neighbours, community leaders, or social media for information, indicating that formal early warning systems are not fully embedded at the last mile. In many instances, these informal networks act as the primary medium through which warnings are interpreted and acted upon, highlighting both the strength of community systems and the limitations of formal mechanisms.

Viewing these findings collectively suggests that early warning systems are not failing due to absence, but due to disconnection between system outputs and community-level needs. The effectiveness of warnings is therefore determined less by their technical generation and more by their accessibility, clarity, timing, and integration within local communication structures.

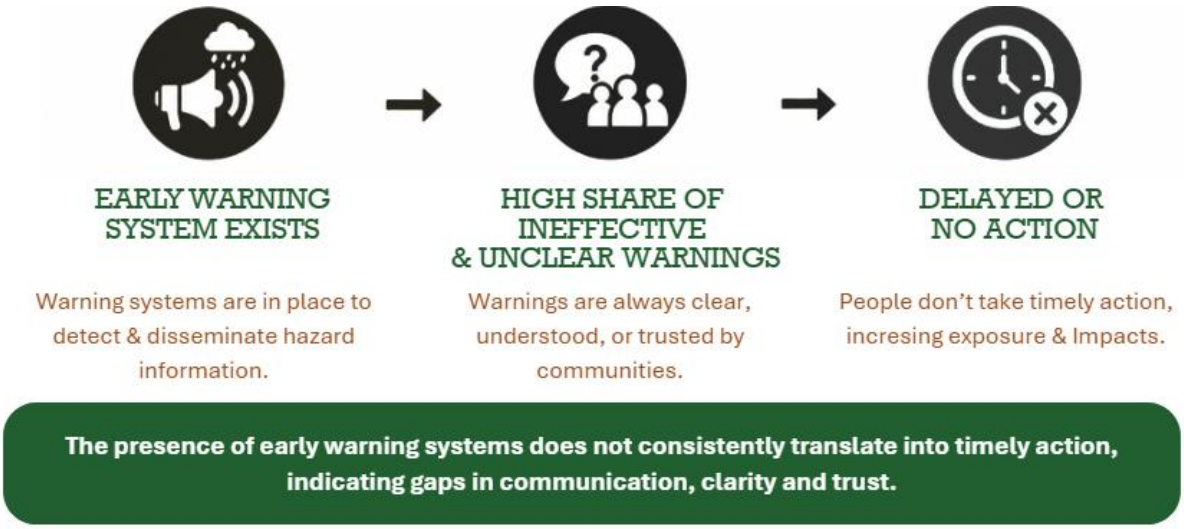

Fig 4.1: Early Warning-Response Gap (RCA Governance Dimension): Formal systems disconnect fromhousehold action

Response Behaviour and Decision-Making Patterns

The findings indicate that the presence of information does not directly translate into immediate or effective action. While some respondents report prompt responses such as evacuation or securing assets, a substantial proportion describe delays, including waiting, observing others, or remaining in place. This reflects a gap between awareness and action that is influenced by a combination of behavioural and contextual factors, rather than information availability alone.

One of the most prominent patterns is the role of social dynamics in decision-making. Survey responses from both Sri Lanka and Indonesia indicate that individuals often look to other before acting, particularly in situations of uncertainty. A respondent from Indonesia described how "people waited to see what others were doing before leaving," while similar observations from Sri Lanka suggest that individuals tend to rely on collective judgement rather than acting independently. This reliance on shared cues reflects a lack of confidence in available information, as well as a tendency to seek validation through community behaviour before making decisions.

At the same time, structural constraints significantly influence response behaviour. Several responses from both Sri Lanka and Indonesia indicate that individuals remain in place not due to lack of awareness, but due to limited options. Constraints such as lack of access to safe shelters, mobility limitations, and uncertainty about relocation affect the ability to act even when risks are recognised. In some cases, respondents from Sri Lanka noted that evacuation was not feasible due to lack of safe alternatives, while responses from Indonesia similarly pointed to practical barriers that delayed action.

These findings suggest that delayed response is not an isolated occurrence, but a recurring pattern shaped by both behavioural tendencies and structural limitations. The gap between knowing and acting therefore cannot be addressed through information alone. Improving response outcomes requires not only strengthening early warning systems, but also addressing trust, clarity, and the availability of viable response options at the community level.

Nature of Impacts: Economic Disruption as a Central Theme

The impacts reported across the dataset reveal a clear and consistent pattern, with economic disruption emerging as the most significant and persistent outcome. This is supported by the data, where over 80% of responses indicate loss of livelihoods, including income, crops, livestock, and access to economic activities. This concentration is not incidental, but points to a structural characteristic of disaster impact in both countries, where economic systems are highly sensitive to environmental disruptions.

This finding shifts the focus of analysis from physical damage to economic vulnerability. While housing and infrastructure damage are widely reported across both Sri Lanka and Indonesia, they do not appear to be the primary determinants of long-term impact. Instead, it is the disruption of livelihoods that shapes recovery trajectories, influencing the ability of households and communities to regain stability. Survey responses from both countries reinforce this distinction. A respondent from Sri Lanka noted that “losing income was harder than losing the house,” while a similar sentiment from Indonesia highlights how the loss of productive assets has more enduring consequences than visible physical damage.

The nature of these impacts also reflects the structure of local economies. In both Sri Lanka and Indonesia, a significant proportion of livelihoods are closely tied to climate-sensitive sectors such as agriculture, fisheries, and informal labour. As a result, disaster impacts extend beyond immediate damage to assets and infrastructure, affecting income flows,

food security, and access to basic resources. Survey responses from Indonesia highlight how floods disrupted not only housing but also access to work and markets, while responses from Sri Lanka similarly point to the cascading effects of livelihood loss on daily survival.

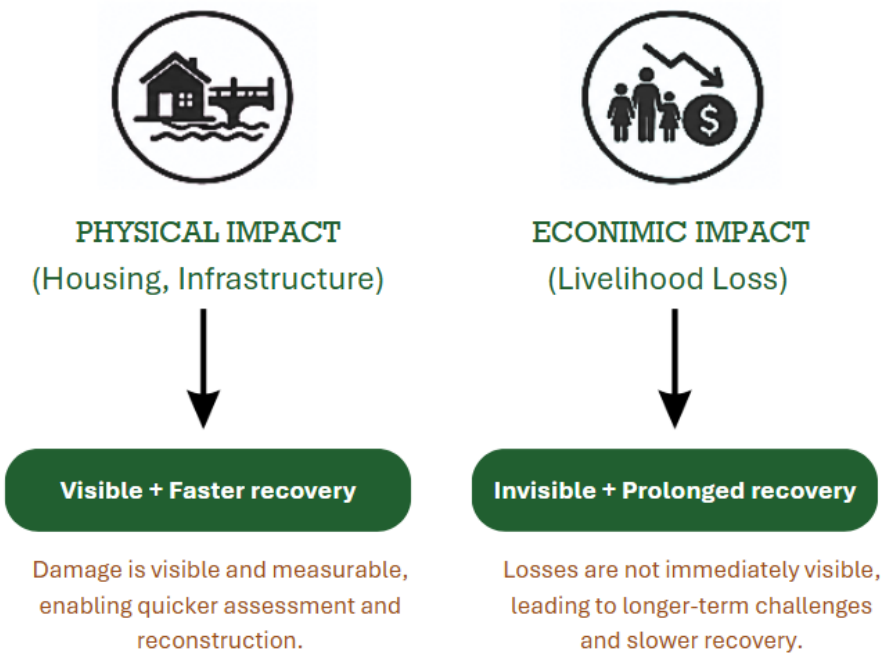

Fig. 4.2: Economic vs Physical Impact: While physical damage is visible and often addressed first, economic disruption drives prolonged vulnerability and slower recovery.

The implications of this pattern are significant for recovery processes. While physical reconstruction may begin within a defined timeframe, economic recovery is often slower and more uncertain. In several responses from both Sri Lanka and Indonesia, respondents describe ongoing financial instability even after visible recovery has taken place, indicating that economic impacts persist long after physical damage has been addressed. This creates a disconnect between visible recovery and actual resilience, where communities may appear to have recovered but remain economically vulnerable.

Taken together, these findings suggest that disasters are experienced not only as physical events, but as economic shocks with long-term consequences. Addressing disaster impacts therefore requires a shift in focus from infrastructure-centric recovery to livelihood resilience, ensuring that economic systems are strengthened alongside physical reconstruction.

Preparedness, Response Systems, and Recovery Dynamics

Preparedness emerges as a critical factor shaping disaster outcomes, despite its limited presence across both countries. The responses indicate that in many cases, structured preparedness at the community level is inadequate, resulting in reactive and uncoordinated responses when disasters occur. This inadequacy of preparedness manifests in delays in decision-making, confusion regarding roles, and reliance on improvised actions during critical moments. Survey responses from Sri Lanka reflect this gap clearly, with respondents describing situations where “there was no plan, and people did not know what to do,” highlighting the absence of adequate preparedness mechanisms at the local level. However, there have been successful pilots in this regard in the past. e.g., Anticipatory action drills were conducted in Hatton in the Nuwara Eliya district of Sri Lanka to help communities better prepare for floods and landslides. This series of drills conducted in 2023 was facilitated by the International Water Management Institute (IWMI), World Vision Sri Lanka, relevant government agencies at the district and national level, and local estate communities.

In contrast, even minimal levels of preparedness appear to significantly improve response coordination. Survey inputs from Indonesia indicate that communities with some degree of planning or defined roles were able to respond more effectively, with one respondent noting that “communities that had some planning responded faster.” This suggests that preparedness does not necessarily require complex systems to be effective; even basic awareness, role clarity, and prior planning can reduce confusion and enable more timely action.

Fig. 4.3: Relationship Between Preparedness and Disaster Outcomes

Formal disaster response systems operate alongside these dynamics, but their effectiveness remains uneven. While institutional frameworks exist in both Sri Lanka and Indonesia, responses consistently point to delays, coordination challenges, and logistical inefficiencies. Survey responses from both countries indicate that formal systems often take time to mobilise, particularly in the immediate aftermath of disasters when response is most critical. As a result, communities frequently rely on their own networks during the initial phase of response.

A consistent pattern across both countries is the central role of community-based systems in disaster response. Survey responses from Sri Lanka and Indonesia indicate that neighbours, local leaders, and community groups often act as the first responders, providing immediate assistance before formal systems are activated. In several cases, respondents describe how rescue efforts and initial support were organised within the community itself, highlighting both the strength of local networks and the limitations of institutional reach during early stages.

This creates a layered response structure, where community action precedes institutional intervention. However, the lack of integration between these layers limits overall effectiveness, particularly during critical response windows. Even though pockets of experience and knowledge exist within these countries to learn from and adopt. E.g., in Peraliya, a community on Sri Lanka's southwest coast that was devastated by the December

2004 tsunami, the Community Tsunami Early Warning Centre (CTEC), which has since been established by the local community, disseminates general tsunami and storm warnings received from official sources through public address systems set up around the villages it caters to, and a network of hundreds of youth volunteers, as well as more targeted messages to fishermen via mobile messages.

The transition from community-led response to institutional support, though, is often marked by delays or coordination gaps, reducing the efficiency of the overall system. Recovery patterns further reflect these dynamics. Communities with some level of preparedness or coordination tend to show more stable recovery trajectories, while those without such systems experience prolonged disruption. Survey responses from both Sri Lanka and Indonesia indicate that recovery is particularly challenging where livelihoods have been affected, reinforcing the link between preparedness, response effectiveness, and long-term outcomes. In several cases, respondents describe ongoing difficulties even after initial recovery efforts, suggesting that the absence of preparedness has lasting effects beyond the immediate disaster phase.

Fig. 4.4: Household Items Damaged by Floods in Gampola, Sri Lanka
Photo Credits: MFCD Sri Lanka

These findings indicate that preparedness, response, and recovery are not separate stages, but interconnected processes. The effectiveness of response and the stability of recovery are shaped significantly by the presence or absence of preparedness, as well as by how well community and institutional systems interact. Strengthening these linkages therefore becomes critical to improving overall disaster outcomes.

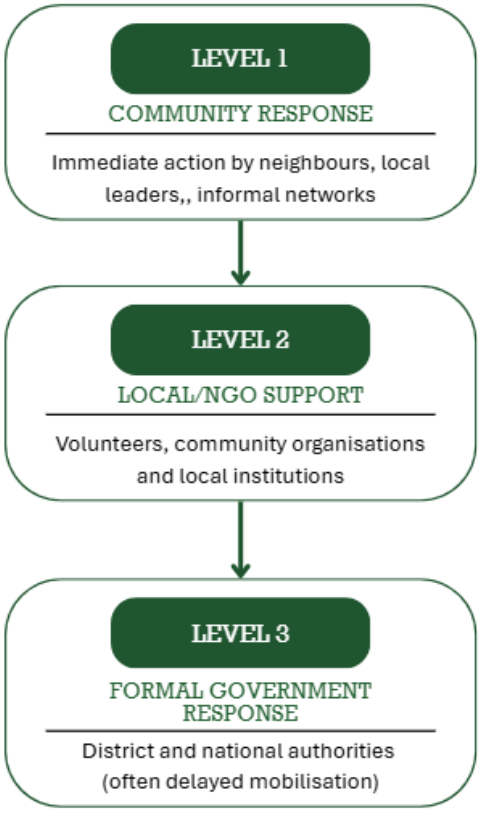

Fig4.5: Multi-Layered Structure of Disaster Response Systems
Disaster response operates in layers, with community networks acting as the first responders, followed by local and institutional systems.

Interpreting the Findings Through a Systems Lens

When considered together, the findings point to a broader understanding of disaster risk as a systemic phenomenon rather than a series of isolated hazard events. The impacts observed across both Sri Lanka and Indonesia are not determined solely by the intensity of hazards, but by the interaction between exposure, vulnerability, and system-level gaps. This layered interaction becomes evident when examining how similar hazards produce different outcomes depending on local conditions and system effectiveness.

Survey responses from both Sri Lanka and Indonesia indicate that communities are often exposed to risk due to settlement patterns, including habitation in flood-prone areas or unstable slopes. At the same time, livelihoods remain closely tied to climate-sensitive sectors, increasing vulnerability to environmental disruptions. These structural conditions amplify the effects of hazards, transforming them into disasters. In several responses, particularly from Sri Lanka, respondents pointed to recurring exposure to flooding without significant changes in settlement patterns, while responses from Indonesia similarly highlight how environmental and livelihood dependencies intensify impacts.

Fig. 4.6: Systemic Drivers of Disaster Impact

System-level gaps further shape these outcomes. Limitations in early warning, preparedness, and coordination reduce the ability of communities to respond effectively, even when risks are known. Survey inputs from both countries reflect this disconnect, where awareness of risk does not necessarily translate into reduced impact due to gaps in system functionality. This reinforces the idea that disaster risk is embedded within systems, rather than being external to them.

These findings imply that addressing disaster risk requires a shift from event-based approaches to system-level interventions. Reducing impact is therefore not only about mitigating hazards, but about strengthening the systems that influence how those hazards are experienced and managed.

Comparative Observations Across Geographies

Despite differences in hazard profiles and governance structures, both Sri Lanka and Indonesia reflect a convergence of systemic challenges. Early warning effectiveness, preparedness levels, and coordination across institutions emerge as common areas of concern in both contexts. This similarity suggests that the challenges identified are not

location-specific, but indicative of broader patterns in disaster risk management across the region.

Survey responses from Indonesia indicate relatively stronger examples of community-based systems in certain areas, where local preparedness and collective action contribute to more coordinated responses. In contrast, responses from Sri Lanka reflect more formal institutional structures, but also highlight gaps in implementation at the community level. These differences suggest that while system design varies, the effectiveness of these systems ultimately depends on how well they function in practice.

At the same time, both countries demonstrate a strong reliance on community networks, particularly during the initial stages of response. Survey inputs from both Sri Lanka and Indonesia consistently highlight the role of neighbours, local leaders, and community groups in providing immediate support. This shared pattern reinforces the importance of community systems as a foundational layer of disaster response.

However, in both contexts, the gap between system design and ground-level implementation remains evident. Survey responses indicate that even where policies, frameworks, and institutional mechanisms exist, their impact is limited if they are not effectively translated into action at the local level. This suggests that improving disaster outcomes requires not only strengthening systems, but ensuring that they are accessible, functional, and responsive where they are most needed.

Implications for Disaster Risk Management

The findings from this analysis point toward the need for a shift from response-oriented approaches toward more integrated and anticipatory systems. Across both Sri Lanka and Indonesia, the limitations observed in early warning, preparedness, and coordination indicate that current systems are more reactive than proactive, addressing impacts after they occur rather than reducing risk in advance.

Survey responses from both countries reinforce this pattern, highlighting how communities often rely on reactive measures in the absence of effective preparedness and planning. At the same time, examples of more coordinated response, particularly in contexts where preparedness exists, suggest that improvements in system design and implementation can significantly influence outcomes.

Strengthening early warning systems in terms of clarity, timing, and usability emerges as a key priority. Similarly, expanding preparedness at the community level, including awareness, role definition, and planning, can improve both response effectiveness and recovery stability. Integrating livelihood considerations into recovery planning is also critical, given the central role of economic disruption in shaping long-term outcomes.

Improving coordination across institutions and strengthening linkages between formal systems and community networks will be essential to addressing the systemic gaps identified in this analysis. This includes not only aligning policies and frameworks but ensuring that they are implemented in ways that are responsive to local contexts.

Overall, the findings suggest that disaster risk management must move toward a more holistic resilience-building approach, where systems are designed not only to respond to disasters but to anticipate, adapt, and reduce risk over time.

Chapter 5: Conclusion – Relooking Through the Lens of Resilience

The evidence presented in this report points to a clear conclusion: the recent disasters in Sri Lanka and Indonesia were not simply the result of extreme weather, but the outcome of climate-intensified hazards interacting with accumulated exposure, vulnerability, and weaknesses in risk governance. Cyclonic Storm Ditwah in Sri Lanka and the Senyar-linked floods and landslides in Indonesia showed how rapidly changing hazard conditions can overwhelm systems that remain aligned to older risk assumptions.

Across both contexts, risk had been building over time through settlement in hazard-prone areas, environmental degradation, weak enforcement of land-use controls, inadequate infrastructure, and limited translation of warnings into timely action. The consequences extended beyond damaged homes and roads to include prolonged livelihood loss, disruption to services, and slow recovery at household and community levels.

Building on Chapters 3 & 4's RCA evidence of hazard-exposure-vulnerability-governance interactions, this chapter synthesises findings into a framework, developed by SEEDS, derived directly from recurring gaps in warnings, livelihoods, and systems. It aligns the report's recommendations with that framework as the report's forward-looking contribution.

Broader Trends and Throughline

Three broad trends emerge from the analysis. First, the disasters examined in this study were not isolated hazard events but compound and cascading crises in which intense rainfall interacted with flooding, slope failure, drainage overload, service disruption, and displacement across multiple sectors and locations. Second, both Sri Lanka and Indonesia are experiencing hydro-meteorological risks that are becoming more frequent, less predictable, and harder to manage through systems still designed around historical patterns. Third, the burden of disaster is experienced not only through

physical loss, but through interruptions to income, mobility, care, education, and social stability, making livelihoods central to any serious understanding of resilience.

Taken together, these patterns suggest that disaster risk in Sri Lanka and Indonesia is increasingly system-driven. Hazards may trigger crises, but the scale of harm is determined by how risk is produced, communicated, managed, and absorbed across households, communities, infrastructure systems, and institutions.

This throughline is important because it shifts the emphasis of disaster management away from relief alone and toward resilience as a continuum. The findings from Chapters 3 and 4 show repeatedly that the root causes of disaster impact lie in the interaction between hazards and systems, and that reducing future losses requires attention to both.

What the Recent Disasters in Sri Lanka and Indonesia Reveal

The first major lesson from the two country cases is that early warning is necessary but not sufficient. Survey findings show that warnings were not always timely, clear, trusted, or actionable, and that communities often relied on informal networks to interpret risk and decide whether to act. In several cases, households hesitated because they were uncertain about the severity of the threat or lacked safe and practical options for evacuation.

The second lesson is that environmental degradation and unsafe development continue to magnify disaster impacts. Wetland encroachment, deforestation, unstable slope development, extraction activities, and settlement expansion in flood-prone areas were repeatedly identified as conditions that intensified loss and slowed recovery. These are not secondary concerns; they are core drivers of disaster risk.

The third lesson is that community capacity is indispensable but under-supported. Neighbours, local leaders, religious institutions, and informal networks often formed the first line of response, especially where formal systems were delayed or uneven. This indicates that resilience already exists at community level, but it often remains informal, under-resourced, and insufficiently linked to wider systems of preparedness and recovery.

The fourth lesson is that recovery is not a short-term phase but a long and uneven process. Restoring housing and infrastructure matters, but recovery also depends on the restoration of livelihoods, services, mobility, social confidence, and everyday

routines. Without this broader view, recovery remains partial and future vulnerability remains high.

Need for a New Framework

The findings in this report point to the need for a lens that moves beyond top-down relief and beyond a narrow understanding of disaster management as response. The evidence suggests that resilience is built or eroded in everyday life: in where people settle, how they earn, how warnings are understood, how neighbours support one another, and how quickly households are able to regain stability after a shock.

Civil society actors are not external to disaster management. They help shape preparedness, warning dissemination, evacuation support, shelter functionality, livelihood recovery, and community learning. A useful framework therefore, needs to speak to a broader ecosystem of action in which households, communities, civil society organisations, and public systems all have a role.

It is in this context that the ASRAA (short for Anticipate, Survive, Recover, Adapt, Aspire) framework becomes relevant. By locating the household as the smallest unit of resilience and shifting the narrative from top-down relief to shared responsibility, the framework offers a practical way to connect system-level analysis with lived experience and action at multiple levels.

The ASRAA Framework

Considering the climate crisis and the resulting frequent and unprecedented disasters, SEEDS developed the ASRAA framework as a resilience-oriented approach that shifts the narrative from top-down relief to shared responsibility and places the household at the centre of analysis and action. Within this approach, a household is more resilient when it is better able to anticipate shocks, survive them with dignity, recover toward stable functioning, adapt behaviour and systems to changing risk, and aspire toward longer-term transformation.

- The first element, **Anticipate**, refers to the shift from a reactive posture to a proactive stance of preparedness. In the context of this study, anticipation involves acting before the shock to reduce vulnerability through trusted warning systems, preparedness practice, local risk understanding, and timely protective action.

- The second element, **Survive**, refers to ensuring life and dignity in the immediate aftermath through rapid, targeted, and dignified support. The survey findings show that immediate survival is shaped not only by formal rescue and relief, but also by whether households receive clear information, safe evacuation options, inclusive shelter, and accessible first-response support.
- The third element, **Recover**, refers to the movement from temporary aid to permanent stability through restoration of social, physical, and economic systems better than before. This aligns closely with the report's finding that livelihoods, services, and household stability must be treated as central components of recovery rather than secondary concerns.
- The fourth element, **Adapt**, recognizes that resilience depends on incorporating hard-won lessons into the everyday fabric of life. In practical terms, this means changing behaviours, local planning practices, housing choices, preparedness habits, and institutional routines in response to changing climate conditions and evolving hazard patterns.
- The fifth element, **Aspire**, looks beyond crisis management toward the technical, financial, and institutional foundations needed for communities to lead their own long-term transformation. This moves the resilience conversation from coping alone toward agency, investment, and the strengthening of local capability over time.

Fig. 5.1: ASRAA Framework

Taken together, ASRAA provides a coherent structure for linking the root-cause analysis in this report to a practical agenda for action. It is useful precisely because it bridges scales: it begins with the household, but it also implies roles for community organisations, civil society actors, local institutions, and wider systems of support.

Recommendations mapped to ASRAA

The recommendations below are organised broadly in line with the ASRAA framework. Several actions cut across more than one category, but the structure helps clarify how the framework can guide practical decision-making for governments, civil society organisations, networks, and communities alike.

Anticipate

A first priority under Anticipate is to convert early warning from a message into a household-level decision system. In practical terms, this means that alerts should trigger pre-agreed actions: who contacts whom, which households require assistance to evacuate, what supplies need to be moved, and where people should go. Sri Lanka offers an instructive example here. In Hatton, as mentioned previously, anticipatory action drills conducted by IWMI et al linked early warning to concrete early actions such as canal cleaning, sandbagging, local vendor-based dry ration access, and coordination between district authorities, technical agencies, and estate communities, showing that anticipation becomes meaningful when warning is tied to visible tasks, local roles, and small lead-time actions rather than generic advisories alone.

A second priority is to institutionalise community-based preparedness in hazard-prone localities. Indonesia's disaster resilient village approach provides a useful reference, particularly because it links village-level planning, local task forces, preparedness roles for women and youth, and the integration of disaster concerns into village-level rules and development processes. For CSOs, this suggests a practical role in facilitating household preparedness plans, helping communities identify priority households, and supporting local committees that can maintain readiness between disasters instead of rebuilding preparedness from scratch each season.

A third priority is to make risk communication more specific to place and people. In Sri Lanka's landslide-prone districts, existing technical capacity around mapping and warning can be made more effective when paired with pre-practised evacuation behaviour and community interpretation of colour-coded warnings. The implication is that preparedness investments should not stop at forecasting technology; they should also fund repeated practice, trusted intermediaries, and simple household checklists that make warning actionable at the smallest unit of resilience.

Survive

Under Survive, the central task is to ensure that households can protect life and dignity in the first hours and days after impact. This requires immediate support systems that are fast, targeted, and understandable. One lesson from the survey findings is that communities often rely first on neighbours, local leaders, and informal networks. Rather than treating this as an informal fallback, preparedness systems should deliberately strengthen it by identifying local response focal points, mapping persons with limited mobility, and ensuring that communication chains remain functional when power, transport, or telecommunications are disrupted.

Sri Lanka's community-based tsunami warning experience at Peraliya is relevant here because it demonstrates how a local warning centre and focal point network can extend protection beyond a single settlement into a wider district. The broader lesson is that locally rooted communication systems, when sustained and linked to trusted focal points, can improve survival outcomes far more effectively than one-way message dissemination alone.

A second priority is to pair evacuation and shelter with dignity-centred support. The Hatton anticipatory action exercise is again relevant because it linked warnings to dry ration access through local vendors and to immediate flood-mitigation actions, rather than waiting for external relief after impact. This suggests a practical model for CSOs and local partners: pre-identify vendors, essential household needs, and temporary support arrangements in advance, so that households do not enter the survival phase with no practical means of acting on a warning.

Recover

Under Recover, the report points to the need to move beyond temporary assistance and toward restoration of stable household functioning. The evidence from both countries shows that what lingers after disaster is often not the emergency itself but the inability to restore income, services, mobility, and confidence. Recovery therefore needs to include livelihood restoration, not simply repairs to damaged structures.

A more specific way to operationalise this is to build recovery around household recovery pathways. For farming households, this may mean restoring agricultural inputs, tools, and market access quickly enough to prevent a lost season. For informal workers, it may mean cash support, asset replacement, and access to transport or work sites. For communities facing repeated losses, it may also mean supporting safer

rebuilding choices rather than recreating the same conditions of exposure. The case for this is strengthened by the Sri Lanka findings, where livelihood disruption in agriculture and estate communities was a major consequence of Ditwah, and by the Indonesian case, where damage to roads, markets, power, and communications constrained early recovery.

CSOs are particularly well placed to support this stage because they can bridge relief and longer-term accompaniment. They can help identify livelihood losses early, support community-led recovery planning, and advocate for recovery assistance that restores social and economic systems together. In ASRAA terms, recovery should be measured not only by whether a roof is repaired, but by whether the household has regained a viable pathway to stability.

Adapt

Adapt under ASRAA requires that each disaster generate concrete changes in behaviour, local planning, and risk management practice. One practical entry point is land and settlement risk. Both case studies show that wetland encroachment, unstable slope occupation, and poorly managed development continue to increase exposure. Adaptation therefore requires more than awareness campaigns; it requires sustained public engagement, documentation of risk accumulation, and community-backed advocacy for safer planning choices.

Indonesia's village-based disaster resilience approach offers a useful example because it embeds disaster risk reduction into village planning and local regulation rather than treating it as a standalone emergency activity. For CSOs, this offers a replicable model: support communities to link hazard experience to local development choices, so that risk reduction becomes part of everyday decision-making around housing, infrastructure, and natural resource use.

A second entry point is post-event learning. The report's survey findings suggest that communities already possess practical knowledge of what works and what fails, but that this knowledge is not always systematically captured. CSOs, networks, and local institutions can play a more active role by documenting lessons after each event, converting them into public learning tools, and supporting behaviour change over time. Adaptation becomes more likely when learning is treated as an organised process rather than an informal memory of crisis.

Aspire

Aspire is the most forward-looking pillar of the framework because it asks what it would take for households and communities not only to withstand shocks, but to shape safer futures. In practical terms, this means building technical and financial infrastructure that communities can access before and after shocks, and creating pathways for local organisations to lead resilience-building rather than participate only at the point of delivery.

Anticipatory action and cash-transfer experience from the wider region helps make the case here. Broader anticipatory action practice in Asia shows the value of pre-arranged finance and early-action triggers that allow support to move before losses escalate. For CSOs, this suggests a concrete area of work: designing household-centred preparedness and financing models that allow communities to act before impact, not just appeal for relief afterwards.

Aspiration also requires investing in local leadership. Indonesia's village-level forums and task-force arrangements show that when communities are given standing roles in planning and response, resilience becomes more durable because it is embedded in local institutions rather than activated only by outside actors. The wider implication is that long-term transformation depends on strengthening community agency, technical literacy, and financial flexibility so that households are better positioned not only to cope with shocks, but to pursue safer housing, stronger livelihoods, and greater influence over how resilience is defined and built.

Country-specific Direction

For Sri Lanka, the immediate implication is the need to improve how warnings are translated into local action, especially in the hill country, flood-prone urban areas, and settlements close to unstable slopes. Community-based preparedness, stronger local communication chains, pre-practised evacuation behaviour, and anticipatory actions tied to warning thresholds are particularly important within an ASRAA approach because they strengthen both anticipation and survival at the household level.

For Indonesia, the priority is to reduce unevenness in local implementation while strengthening community capacity in hazard-prone districts. Village-level planning, local task forces, preparedness roles for community groups, and stronger links

between local organisations and formal systems would support anticipation, adaptation, and longer-term aspiration within the framework.

For both countries, the broader implication is the need to move from response-oriented practice toward resilience-building systems. This means combining better forecasting with better communication, stronger regulation with stronger local ownership, and infrastructure repair with livelihood recovery. It also means recognising that civil society is not an adjunct to disaster management, but part of the architecture through which resilience is built.

Conclusion

The central conclusion of this study is that disaster risk in Sri Lanka and Indonesia is increasingly shaped by the interaction of climate stress and system weakness. When hazards intensify, the decisive factor is often not the hazard alone, but the degree to which households, communities, institutions, and infrastructure are prepared to absorb and manage it.

The ASRAA framework offers a useful way of translating this conclusion into practice. By grounding resilience in the household while emphasising shared responsibility across communities, civil society, and public systems, it provides a coherent bridge between root-cause analysis and action. In that sense, the framework does not replace existing disaster management efforts; it reorients them toward anticipation, dignity, recovery, adaptation, and long-term transformation from the climate resilience perspective.

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