

From Risk to Action

A Systems Diagnostic of Disaster and
Climate Risk Management in Asia-Pacific

NORCAP and iMMAP Scoping Study – **2026**

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Executive summary

This report is a pattern diagnosis of how climate and disaster risk management systems in Asia-Pacific convert risk into action. Drawing on interviews with practitioners across the region and a review of the relevant literature, it does not assess countries one by one but looks at what recurs across national systems that differ greatly in income, hazard profile and institutional maturity. Beneath that diversity appear a small number of consistent, structural weaknesses in the risk-to-action chain, and naming those patterns is more useful, and more honest to the evidence, than a definitive picture a scoping exercise of this size could not credibly provide.

Asia and the Pacific is the most disaster-prone region in the world, since 1970 it has borne close to 60 per cent of global disaster deaths and the riskscape is intensifying. What is emerging is a systemic picture of complex, compound and cascading hazards that cross sectors and borders, with the burden falling hardest on the least developed countries, where the same hazard becomes a development reversal rather than a manageable shock. The near term sharpens the point and as of mid-2026 El Niño has been declared present and is forecast to strengthen through the second half of the year potentially, on a 63 per cent chance, into a 'very strong' or super event by the turn of the year, raising the likelihood of drought, heatwave and rainfall extremes across the region. The diagnosis that follows is therefore not an academic exercise but a description of the handovers a live, strengthening climate stressor is about to test. A riskscape of that shape is precisely the one a chain-integrity diagnosis is intended to read, because in a national system the failures that matter most often fall between the parts.

The report reads the system as a five-stage chain: risk information, decisions, finance, actions, and outcomes, and its central observation is that the failures sit mostly at the joints, not the links themselves. A system can look technically capable, with good data, sound forecasts and clear policies, and still perform poorly, because the components exist but the transfers between them break down. Coordination, on this interpretation, is not a stage of its own but a condition of every handover. One distinction runs throughout: prioritisation happens twice; choosing which risks to address, and choosing what to do about them, and the second appears to be the chain's most consistent weakness.

Walked link by link, the chain shows a clearer shape: upstream is relatively strong, and the binding constraints are downstream. Risk information appearing the strongest link, yet strong mainly by comparison because its real gap is a shortage of decision-grade information and a thin quantification of risk, not a shortage of data. Decisions show the widest gap between having information and acting on it, where the binding constraint is authority, confidence under uncertainty and personal accountability rather than more analysis. Finance is the link that failed most consistently as it's structurally reactive, often allocated but immovable, and leaking on the way to the local level. Actions carry the headline gap as there no shared method appears for choosing among treatment options, because the loss each would avert is not quantified. And outcomes are measured least well, as in avoided loss goes uncounted, which actively drives the under-investment upstream.

The first implication is where to look; invest in the joints, not in more components. The highest-leverage technical investment is a quantification capability; finance must be pre-arranged and made to reach the local level; and the action-prioritisation gap, as a recurrent topic, is better treated as a shared regional problem than a national one. Coordination and the test of how every capital-level reform lands at community level are conditions, not tasks. But the report is equally plain that several of the deepest needs, such as sustained domestic budget lines for unglamorous risk-profiling, the person-power to run systems rather than pilot them, and the political will to fund prevention whose payoff is invisible are sovereign, and no external partner can meet them.

Stating that is what keeps this a diagnosis rather than a prescription.

For NORCAP and iMMAP specifically, the diagnosis implies a deliberately bounded proposition. The most consistent signal across the interviews was a need for a connective, embedded, trusted function to strengthen the joints, not another producer of data or parallel project. The sharpest objection to such a function, that neutrality without leverage moves nothing, is answered not by restating the role but by embedding it within a host's authority; a technical expert (e.g a risk-governance, information-management or DRM specialist) who is also positioned to broker, neutral enough to cross institutional seams and working through a mandate it does not itself hold. In this sense, 'broker' alone describes a behaviour, not a deployable role.

Because the chain's shortfalls concentrate downstream, the larger part of that connective work is human and institutional, which is the ground NORCAP's embedded-adviser model is built for, a model it already runs in the region; iMMAP's information-management capability is the analytical complement where the chain most needs translation into decisions. The choice ahead is whether to take up that role in the disciplined, host-anchored form the diagnosis supports, or the lighter form it warns against; the difference between strengthening the system or contributing to fragmentation.



Abbreviations

AA	Anticipatory Action
ADB	Asian Development Bank
ADPC	Asian Disaster Preparedness Center
ADRRN	Asian Disaster Reduction and Response Network
AHA Centre	ASEAN Coordinating Centre for Humanitarian Assistance on disaster management
APDIM	Asian and Pacific Centre for the Development of Disaster Information Management (ESCAP)
APMCDRR	Asia-Pacific Ministerial Conference on Disaster Risk Reduction
AP-STAG	Asia-Pacific Science, Technology and Academia Advisory Group (UNDRR)
ARDEX	ASEAN Regional Disaster Emergency Response Simulation Exercise
ASEAN	Association of Southeast Asian Nations
BPP	Bangladesh Preparedness Partnership
BUET	Bangladesh University of Engineering and Technology
CCA	Climate Change Adaptation
CDRI	Coalition for Disaster Resilient Infrastructure
CERF	Central Emergency Response Fund (UN)
CFE-DM	Center for Excellence in Disaster Management and Humanitarian Assistance
CLIP	Community-Led Innovation Partnership
CMIL-AP	Climate Mobility Innovation Lab – Asia and the Pacific (IOM)
CRA	Comprehensive Risk Assessment
DG ECHO	European Commission's Directorate-General for European Civil Protection and Humanitarian Aid Operations
DMC	Disaster Management Committee
DREF	Disaster Response Emergency Fund (IFRC)
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRMAP	Disaster Risk Management Action Plan (ADB)
EM-DAT	Emergency Events Database
ESCAP	(UN) Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization
GAR	Global Assessment Report on Disaster Risk Reduction
GDP	Gross Domestic Product
GIRI	Global Infrastructure Resilience Index
GNDR	Global Network of Civil Society Organisations for Disaster Reduction
GPDRR	Global Platform for Disaster Risk Reduction
ICCCAD	International Centre for Climate Change and Development
IFRC	International Federation of Red Cross and Red Crescent Societies
IGO	Intergovernmental Organisation
IOM	International Organization for Migration
M&E	Monitoring and Evaluation
MHEWS	Multi-Hazard Early Warning System(s)
MoDMR	Ministry of Disaster Management and Relief (Bangladesh)
NIRAPAD	Network for Information, Response and Preparedness Activities on Disaster
NOAA	(US) National Oceanic and Atmospheric Administration
NORCAP	Norwegian Refugee Council's global provider of expertise
OCHA	(UN) Office for the Coordination of Humanitarian Affairs
RCO	Resident Coordinator's Office (UN)
REAP	Risk-informed Early Action Partnership
RICD	Risk Index for Climate Displacement
SFERA	Special Fund for Emergency and Rehabilitation Activities (FAO)
SOD	Standing Orders on Disaster (Bangladesh)
UNCT	United Nations Country Team
UNDRR	United Nations Office for Disaster Risk Reduction
UNICEF	United Nations Children's Fund
WFP	World Food Programme
WMO	World Meteorological Organization

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PART 1

THE DIAGNOSIS



NORCAP and iMMAP scoping exercise

Purpose

This report is the product of a scoping exercise by NORCAP and iMMAP, undertaken to understand how disaster and climate risk management systems in Asia-Pacific convert risk knowledge into action, and on the basis of that understanding, identify where an embedded, technical form of support might most usefully strengthen them. The exercise had two distinct purposes held in deliberate sequence: first, to produce a diagnosis of the system's recurrent issues; and second, to ask what that diagnosis implies for NORCAP and iMMAP in the future. The report is structured to keep those two purposes separate.

Audience

The diagnosis in Part 1 is written to be useful to a broad set of readers: national disaster management authorities and the ministries they work with; resident coordinator offices and the wider UN system and NGOs; regional bodies and donors; and the practitioners, including the growing number of humanitarian actors working in various areas linked to disaster risk management. Part 2, which sets out the proposition for NORCAP and iMMAP, is addressed more directly to the two organisations and their partners.

Approach

The study combined semi-structured interviews with practitioners spanning national authorities, regional organisations, donors, networks, UN agencies, development banks and technical specialists, with a review of relevant policy and technical literature. The interviews were the primary source and the literature was used as supporting evidence, including if contradictory in certain cases. The report flags where the two diverge. The analytical frame is the risk-to-action chain, set out in the next section.

Identifying patterns

This study is a pattern diagnosis across the region, not a country-by-country assessment. Drawing on interviews with practitioners across the region and a review of the relevant literature, it identifies the recurrent ways in which disaster and climate risk management systems in Asia-Pacific struggle to convert risk into action, failure modes that recur across countries that otherwise differ greatly in income, hazard profile and institutional maturity. It does not rank countries, nor score their systems, or attempt a comprehensive regional survey; the country examples it uses are illustrative of patterns, not the object of study. The claim it makes is therefore deliberately specific: that beneath the region's diversity appear to take shape a small number of consistent, structural weaknesses in the risk-to-action chain, and that naming those patterns is more useful than an authoritative picture no scoping exercise of this size could credibly provide. Readers seeking to understand the failure modes their own system is likely to share will find this scoping useful.

As this is a scoping study, it does not arrive at definitive problems or fully specified solutions; it probes a wide field through a single framework, the risk-to-action chain, chosen because it cuts across the various sub-fields of climate and disaster risk management rather than sitting inside any one of them. The value of that approach is breadth of connection, not depth on any single issue.

The variety of interviewees and the richness of the available literature surfaced a wide range of aspects and issues. Rather than diving deeply into any one of them, the report's contribution is to link them in a way that is useful for a scoping exercise, as a map of what to look out for, and of where deeper, context-specific inquiry would repay the effort, especially when working alongside national counterparts who hold the detail the report deliberately does not. Its generalisations are made knowingly, and only where the evidence suggests a genuine pattern rather than an isolated case; they are offered as patterns to test, not verdicts.

For readers who know the region well, few of the individual issues raised here will be a surprise. The report's aim was not to discover unknown problems but to probe the mechanics beneath the familiar terms, DRM, DRR, CCA, anticipatory action, and to trace how risk does or does not convert into action across them, so as to identify where an embedded, connective role for actors such as NORCAP or IMMAP could add genuine value. The originality, if any, lies in the framing and the linkages, not in the individual findings.

| Limitations

The exercise makes no claim to completeness, and three limitations should be read into everything that follows. First, the interviews are a sample and not a census; the patterns they reveal are robust precisely because they recurred, but the study cannot claim to have captured every relevant perspective. Second, the chain was not probed evenly along its length: some links drew far more from the interviews than others, and where a finding rests on a single source or a thin evidence base the report says so rather than presenting it as settled. Third, the study identifies where patterns recur but does not establish their prevalence or magnitude; it can say that a failure mode is common and consistent across the sources, not how widespread or severe it is in any given country. The aim throughout has been to be useful without overclaiming, to say clearly what the evidence supports, and to be equally clear about what it does not.

| Terms and how they relate

Several overlapping terms run through this report, and because they are often used loosely or interchangeably, it is worth setting out at the onset how they are used throughout the following chapters. **Disaster risk management (DRM)** is the broadest term, the whole business of managing disaster risk across the full cycle, before, during and after a hazard event. Within it, **disaster risk reduction (DRR)** is the ex-ante part, the work of preventing new risk and reducing existing risk before a hazard strikes. **Climate change adaptation (CCA)** comes from a different policy lineage, the climate rather than the disaster community, but overlaps heavily with DRR in practice: a flood embankment, an early-warning system or a drought-resistant livelihood is often simultaneously DRR and CCA. The two are institutionally separated in most countries with different ministries, frameworks and funding streams, even though the measures they call for can coincide, and that separation is itself one of the coordination issues this report documents. **Anticipatory action (AA)** is narrower, a time-specific mode of acting in the short window between a forecast and an impact, sitting at the preparedness–response boundary. It is one instrument within DRM, not a peer of DRR or CCA. And **post-event** operations, response, relief, recovery, reconstruction is the back half of the DRM cycle, after impact.

The direction of travel across the field is toward managing these together rather than separately is *comprehensive risk management*¹, which treats disaster and climate risk as one system and reckons with compound, cascading and slow-onset risk rather than individually hazard by hazard. This report reflects that direction without adopting it as a programme, and it does not assess full cross-sectoral integration, but it treats the DRR–CCA seam as a single analytical space. The practical consequence is that the report mostly stops sorting measures by label. Its organising frame is not any of these terms but the **risk-to-action** chain introduced in the next

¹UNDRR and REAP. [Charting a Path towards Resilient Futures. Global Synthesis Report on Comprehensive Risk Management](#). 2025.

part (the sequence by which risk information becomes a decision, finance, action and outcome) which traces the conversion regardless of whether a given measure is filed under DRR, CCA or anticipatory action. The chain, in other words, is agnostic to the labels, and that agnosticism is intentional because it enables the report follow risk through to action without getting caught in the distinctions that divide the institutions managing it.

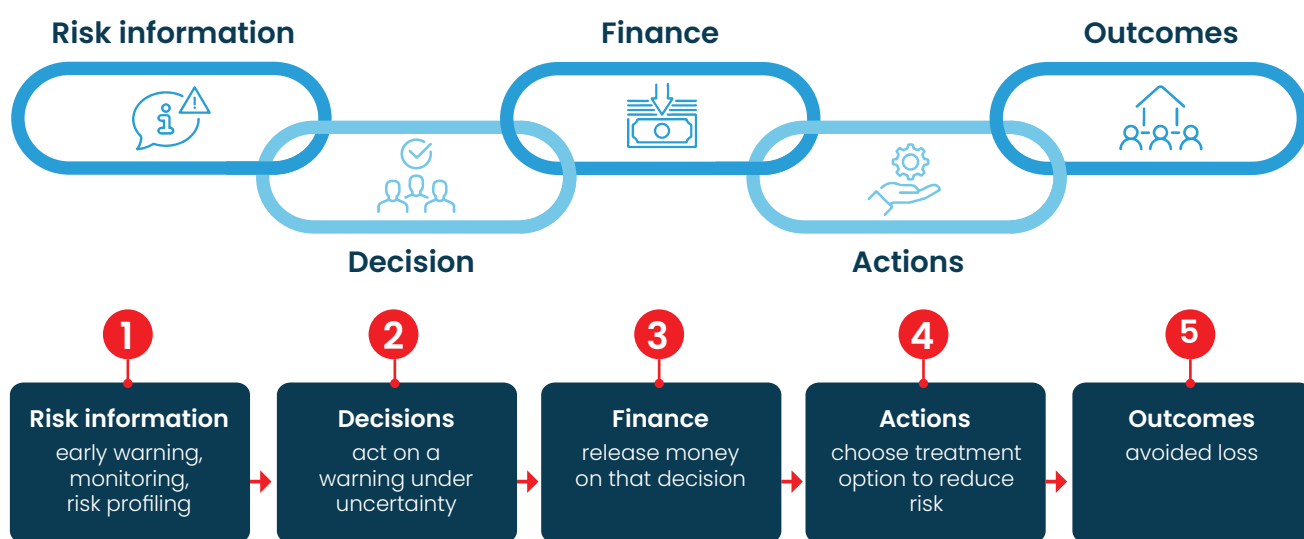


02

Analytical framing: the risk-to-action chain

This report analyses disaster and climate risk management in Asia-Pacific through a risk-to-action chain interpreted as the sequence by which risk information is meant to translate into reduced loss, damage, human and environmental impact. The chain is not a new framework, and it is not presented as a rigid linear model. It reflects how national systems already function in practice and it is used here for a single purpose: to locate where the conversion from knowledge to action repeatedly falls short, and where strengthening those points would produce the greatest system effect.

The chain has five stages:



Handover patterns identified



Figure 1. The risk-to-action chain: what each link means, and the handover patterns the report examines at each transfer. (Author's elaboration)

Each stage depends on the one before it, but the stages themselves are rarely where systems break. The recurring failures or bottlenecks occur at the handovers between them, e.g. where risk information should become a decision, where a decision should release finance, where finance should become timely action. This is why a system can look technically capable (e.g. good data, accurate forecasts, sound policies) and still perform poorly, as the components exist but the transfers between them fail or stall.² The same intuition appears in the regional literature as a value chain: a meteorological sequence whose upstream success depends on shared global infrastructure and observation, and whose downstream performance depends on national

²The chain-integrity framing is echoed in recent global monitoring of multi-hazard early-warning systems, which stresses that an MHEWS works only if every pillar (and the interconnections between them) functions, so that weakness in any one pillar puts the effectiveness of the whole chain at risk. UNDRR and WMO, [Global Status of Multi-Hazard Early Warning Systems](#), 2025.

capacity and decision-making, such that the global-to-local link is where transboundary value is won or lost.³

Risk information – hazard, exposure and vulnerability

Throughout this report ‘risk information’ is understood to mean more than hazard data. Risk is the product of hazard, exposure and vulnerability, and a system that monitors hazards well while under-representing who is exposed and how vulnerable they are does not yet work with decision-grade risk information. This distinction matters for what follows, because several of the conversion problems this report documents trace back not to missing hazard data but to a thin understanding of vulnerability.

The chain also runs after impact

The chain is drawn here in its pre-impact form, but it also runs after a hazard strikes, in compressed, reactive form, under far greater time pressure. The same five transfers must happen: post-event information must inform operational decisions, which must release response & recovery finance, which must become delivery. Interviewees were clear that some of the system’s sharpest failures sit on this post-event stretch where, for example, response data struggles to flow back up through line ministries, or where finance defaults to the cheapest option once the moment to act early has passed. The report therefore treats the chain as a continuum from anticipation through to response and recovery, not only as a pre-impact pathway.

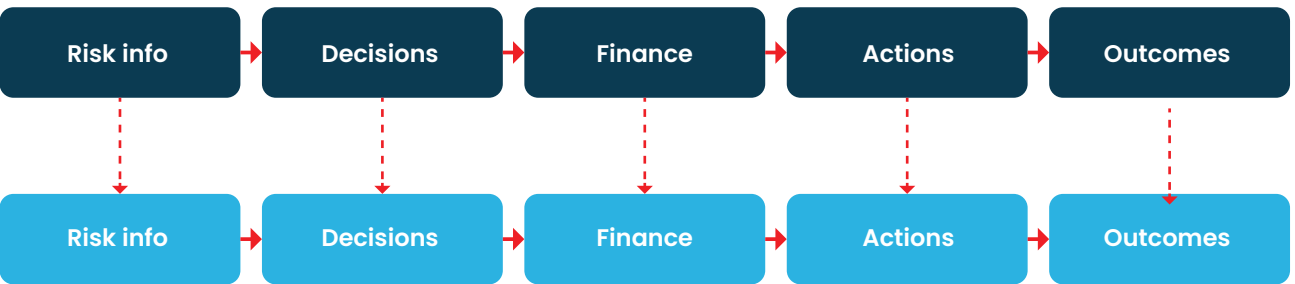
Coordination: a cross-cutting condition of every handover

Because the issues appear to concentrate at the handovers, coordination is treated throughout this report as a cross-cutting component rather than a stage of its own. Every handover is a point where two different institutions (e.g. a hydromet agency and a decision-maker, a disaster authority and a finance ministry, a national body and a local government) must hand something across an organisational boundary. Where that relationship works, the chain holds; where it does not, the chain breaks regardless of how strong the adjacent components are. Rather than isolate coordination in a single section, the report surfaces it at each handover where it is relevant.

Two altitudes: capital level and community level

The report also distinguishes, where applicable, between two ‘altitudes’ (operational level) at which the chain operates: the **capital level** (national ministries, finance, disaster management authorities, etc) and the **community level** (local government and exposed populations). The same conversion failure can look entirely different at each. The report specifies this operational level where a finding highlights the distinction between the two. The report returns to the distinction in Part 2, where it shapes how an embedded function would likely work.

Capital level national ministries, finance, disaster authorities



Community level local government and exposed populations – active managers of their own risk

The dashed vertical arrows are the national-to-local handover, often where the chain leaks. The same failure looks different at each altitude: a financing gap is a budget-instrument problem at capital level, and money that never arrives at community level.

Figure 2. The chain runs at two levels: the same five stages operate at capital and community level, joined by national-to-local transfers. (Author’s elaboration)

³The upstream/downstream meteorological value-chain framing is set out in ESCAP, [Trust Fund for Tsunami, Disaster and Climate Preparedness: Strategy 2025–2030](#). 2025.

| Three lenses on the same chain

The report applies three analytical lenses to this same chain. They are not separate frameworks but three ways of identifying various failure modes within one system:

- **Is risk information decision-grade?** Whether information reaches decision-makers in a form, quality and timeliness that can actually move a decision, such as usable products, defined thresholds, clear authority, and decisions that unlock resources.
- **Can the system act early under uncertainty?** Anticipatory action is used here as a stress test of the chain: acting before impact demands decisions under uncertainty, pre-arranged finance and prepared delivery all at once, so where anticipatory action struggles it exposes weaknesses that also apply to ordinary response. But the report treats anticipatory action as one instrument within disaster risk management, not as a goal in itself and notes a recurring concern from interviewees that its prevailing framing, as a narrow, time-bound humanitarian protocol, is part of why governments have found it difficult to institutionalise. The stress-test lens is diagnostic, not an argument that anticipatory action is the organising purpose of the system.⁴
- **Are arrangements fit for compound and changing risk?** Whether systems reckon with compound, cascading and slow-onset risk, and define outcomes beyond immediate response which requires that disaster risk reduction and climate adaptation be handled as one effort rather than separate.

| Why this framing

The value of the chain is that it shifts attention from whether tools and policies exist to whether they function together as a system. It explains why technically capable systems still can under-perform, and it points to where strengthening the interfaces as opposed to adding more components would be of most relevance. That diagnostic focus is what the rest of Part I applies, stage by stage.

⁴UNDRR's anticipatory-finance guidance reaches the same two conclusions the diagnosis rests on. It warns that anticipatory action 'is often designed in a vacuum, rather than as part of a continuum of support' and should be linked explicitly to the prevention, mitigation, preparedness and response phases around it and the report's own framing of anticipatory action as one instrument within comprehensive risk management rather than a free-standing purpose. UNDRR, *Anticipatory Finance: An Introductory Guide*. 2024.

Asia & the Pacific: risk context

Asia and the Pacific is the most disaster-prone region in the world, and the scale of that exposure is the backdrop against which every link of the chain operates. Since 1970, disasters in the region have caused over two million fatalities, close to 60 per cent of the global disaster death toll. The asymmetry is stark: the average disaster in Asia-Pacific kills 338 people, against 191 in the rest of the world.⁵

The single-year picture is equally pointed. In 2022, more than 140 disasters struck the region, killing over 7,500 people, affecting some 64 million, and causing economic damage estimated at around US\$57 billion. Flooding was the deadliest hazard, responsible for roughly 4,900 of those deaths, with the floods in India and Pakistan alone accounting for almost 80 per cent of the year's disaster mortality, while the Pakistan floods affected some 33 million people, close to a seventh of the country's population.⁶

These are not the symptoms of a settling system but of an intensifying one. The Asia-Pacific Disaster Report 2023's forward-looking finding is that climate change is making natural hazards more frequent and intense, so that a riskscape of complex, compound and cascading disasters is emerging with existing hotspots intensifying and new ones appearing, with floods, drought and heatwaves the hazards most often projected to worsen. Under warming of 1.5°C and 2°C, the share of the region's population exposed to multi-hazard risk is forecast to rise to 85 and 87 per cent respectively.⁷

This is not only a long-run trajectory; and it is felt at the time of this study. As of June 2026 El Niño conditions have been declared present, and forecasters expect the event to strengthen. The World Meteorological Organization reports a rapid development into a strong El Niño through the July–September period, with sea-surface temperature anomalies expected to exceed 2°C and close agreement across forecast models, while the United States National Oceanic and Atmospheric Administration places a 63 per cent chance of a 'very strong' event — a so-called super El Niño in the November 2026–January 2027 window. Both agencies caution that a stronger event makes certain impacts more likely rather than guaranteed, and flag heightened risk of drought, heatwave and rainfall extremes, including suppressed monsoon rainfall across parts of South and South-East Asia.⁸

⁵ESCAP, [Asia-Pacific Disaster Report 2023: Seizing the Moment – Targeting Transformative Disaster Risk Resilience. 2023.](#)

⁶ESCAP, Asia-Pacific Disaster Report 2023.

⁷ESCAP, Asia-Pacific Disaster Report 2023.

⁸World Meteorological Organization, [‘El Niño forecast to intensify, increasing likelihood of extreme weather’](#) (June 2026), and [Global Seasonal Climate Update](#), June 2026; United States National Oceanic and Atmospheric Administration, [El Niño Advisory, June 2026.](#)

The economic stakes scale with the warming. Average annual losses across the region are projected to rise from around US\$924 billion toward almost US\$1 trillion — from roughly 2.9 to 3 per cent of regional GDP — as temperatures climb, with losses concentrated in the agriculture and energy sectors that the region's food and power security depend on. The report frames this as a cost of inaction: prevention and risk-informed adaptation are far cheaper than the post-disaster response and recovery they displace, yet the financing is not flowing at the level required.⁹

Crucially for a pattern diagnosis, the burden is unevenly distributed. Disaster fatalities and economic losses fall hardest on the region's least developed countries and landlocked developing countries, whose pre-existing vulnerabilities make it harder to prepare for and absorb shocks. The report documents a strong intersection between disaster risk, income inequality and poverty, with more exposed populations are also poorer and less able to cope, and in the least developed countries disaster losses can become a driver of persistent inequality. The same event is a manageable shock in one setting and a development reversal in another.¹⁰

The transboundary dimension compounds the unevenness. Areas already exposed to transboundary hazards such as shared river basins, regional drought, cross-border heat, are among those projected to see the sharpest intensification, and the report makes regional and subregional cooperation, not national action alone, the precondition for managing them effectively.¹¹

Against that expanding riskscape, the report identifies multi-hazard early-warning systems as among the most cost-effective protections available, estimating that they can reduce disaster losses by up to 60 per cent and return roughly tenfold on investment, while countries with only limited-to-moderate coverage carry nearly eight times the mortality rate of those with substantial-to-comprehensive coverage. That finding matters for what follows in two ways: it locates much of the region's recent progress at the upstream, (the warning end of the chain), and it makes the downstream question, of whether a warning actually converts into protective action, the one on which those returns depend.¹²

⁹ESCAP, Asia-Pacific Disaster Report 2023, 2023.

¹⁰ESCAP, Asia-Pacific Disaster Report 2023.

¹¹ESCAP, Asia-Pacific Disaster Report 2023.

¹²ESCAP, Asia-Pacific Disaster Report 2023.

04

Findings along the risk-to-action chain

4.1 Risk Information

Of the five chain links, risk information is the one most often described in the interviews as the usually the system's strength, and across Asia-Pacific there is real substance to that view. Monitoring, hazard detection and forecasting have advanced significantly over the past decade, early-warning capacity is expanding, and in several countries impact-based forecasting is beginning to connect national analysis to local action.¹³

Interviewees broadly agreed that, compared with what happens downstream, the upstream end of the chain is where systems look most capable.

Yet that consensus comes with two important qualifications, and the report holds both. The first is widely shared; that availability of risk information is not the same as its use. The second is less settled, namely that what passes for risk information is often not quantified to the standard the rest of the chain actually needs. Together these mean that focusing on just the availability of risk information can obscure essential aspects where important upstream work still lies.

| From availability to decision-grade information

The most consistently reported gap is not a shortage of data but a shortage of decision-grade risk information, understood as the products designed for the specific decisions institutions must take (where, when, for whom, at what cost, with what trade-offs, etc). The regional evidence underlines this point, that having no data, or having data that cannot be used, amounts to the same limitation.¹⁴ Probabilistic hazard profiles, climate projections and forecast products do not automatically become decision-support tools; they have to be translated into thresholds, options, protocols or fiscal metrics that an institution can act on, and without that translation risk analysis remains a technical output rather than a governance instrument.^{15, 16}

It is worth being explicit about what *decision-grade* means here, since it carries weight throughout this report and means different things to different people. This report uses it to describe information that reaches a decision-maker in a form, quality and timeliness that can actually move a decision, namely usable products with defined thresholds, reaching an actor with the authority to act and able to unlock the resources that follow. Three features matter more than technical sophistication: it is *designed for a specific decision* (where to act, when, for whom, at what cost, with what trade-offs); it is translated out of technical language into thresholds, options, protocols or fiscal metrics an institution can act on; and it is *relative to the decision-maker*.

¹³The most recent global monitoring confirms broad, uneven gains across the upstream pillars: detection, observation, monitoring, analysis and forecasting now score on average as comprehensive, and the vast majority of national meteorological and hydrological services issue early-warning services, even as fewer countries report the underpinning risk-knowledge pillar. In the Asia-Pacific region specifically this report records the highest regional MHEWS coverage (close to three-quarters of countries). UNDRR and WMO, [Global Status of Multi-Hazard Early Warning Systems 2025](#). 2025.

¹⁴APDIM/ESCAP and UNDRR, [Disaster Risk Data Governance and Policy Design in the Asia-Pacific Region](#). 2025.

¹⁵Asian Development Bank, [Disaster Risk Management Action Plan 2024–2030](#). 2024.

¹⁶UNDRR's updated national disaster risk assessment guidelines state that they were developed, through extensive consultation with both policy institutions and technical experts, specifically to bridge the gap between the production of risk information and its actual use in decision-making for disaster risk management, and devote a dedicated fit-for-purpose stage to translating policy questions into technical requirements and back into decisions. UNDRR, [Words into Action: National Disaster Risk Assessment – A Guide for National Practitioners](#). 2025.

The same flood forecast may be decision-grade for a disaster management authority sizing an evacuation and less usable to a finance ministry sizing a contingency budget, the relevance is evaluated against the specific decision and the actor responsible for it. That relativity is the point, and it is precisely why the gap this report describes sits at translation and handover rather than in data quality as such, and why more or better data does not, on its own, close it. The report does not offer this as a formal standard, it just states what it means by the term so the analysis that follows is read as intended.

Interviewees returned to this point repeatedly and from different angles. Several observed that risk products are frequently produced by data scientists or academics without a well-defined operational use case in mind, so the output answers a research question rather than a decision. This is a pattern the regional literature echoes, noting that risk assessments should be only as complicated as the decisions they seek to inform, and that scientifically impeccable products often go unused because of how they are presented.¹⁷ One interviewee described the recurring disconnect between those who *produce* risk data and those who must use it as one of the simplest and most persistent problems in the system. A further, structural, version of the same problem is that risk data is poorly shared even within a single government: hazard, exposure, vulnerability and loss data are generated by different institutions, stored in separate systems, and exchanged only reluctantly or sporadically. The literature documents ministries collecting almost identical data from the same areas in databases that are not interlinked, with no mandate to share.¹⁸ Interviewees pushed this further still, describing cases where even departments inside the same ministry withhold data from one another. The constraint, on this reading, is accessibility and translation, not the existence of data.¹⁹

A related nuance from the regional perspective reinforces this point, that no minimum benchmark for risk-data adequacy has been set, so countries with thin data still make policy on it, often aware of the gaps but with no standard against which to judge whether their information is fit to decide on.²⁰

Vulnerability is consistently under-weighted

A recurring quality problem sits underneath this. Risk governance systems across the region tend to handle hazard and exposure reasonably well but appear to under-represent vulnerability; the sensitivity and adaptive capacity that determine who actually suffers when a hazard strikes. This is not only an interview impression, a review of risk assessments across the region found that most place strong focus on hazard and exposure data, with the components of vulnerability and capacity often omitted or overlooked, and that a vulnerability model covering the national territory is yet to be developed in most countries.²¹ Interviewees added the institutional mechanism aspect; an agency tends to see the slice of risk its mandate covers, so a livelihoods body sees livelihoods risk and an infrastructure body sees asset risk, and no one holds the comprehensive, vulnerability-inclusive picture. The consequence is that two communities in the same hazard footprint can be treated as equally at risk when their capacity to cope is very different, and likely the people who most need protection are precisely those a hazard-centric system renders least visible.

Independent regional reporting converges on the same conclusion from the early-warning side. A 2024 status review of science and technology in disaster risk reduction across the region found that, of the four internationally recognised pillars of early warning (risk knowledge, observation and forecasting, dissemination and communication, and preparedness to respond)

¹⁷APDIM/ESCAP and UNDRR (2025).

¹⁸APDIM/ESCAP and UNDRR (2025).

¹⁹UNDRR and WMO, [Global Status of Multi-Hazard Early Warning Systems 2025](#), 2025.

²⁰APDIM/ESCAP and UNDRR (2025).

²¹APDIM/ESCAP and UNDRR (2025).

it is risk knowledge that is consistently the weakest.²² A second body of evidence, assembled by a different community and on a different instrument, lands on the same diagnosis strengthens the interview findings. The most recent global monitoring puts the same point on current data; risk knowledge remains the lowest-scoring of the four pillars.²³

This also surfaces an apparent contradiction worth holding open, and one that runs to the core of this report's framing. The status review treats risk knowledge as the weakest component (the lowest-scoring of four pillars measured in isolation). The interviews, by contrast, locate the system's sharpest problems not in any single component but at the handovers between them, such as the warning that never becomes a decision, the decision that never releases finance. Both can be true at once, and the distinction matters, because a weakest-component reading differs from a weakest-joint reading which points toward the transfers between capabilities, and this scoping study identifies where a system with adequate components can still fail.

| The quantification challenge

A smaller number of interviewees pushed the diagnosis further, and in a direction that complicates the comfortable 'strong link' verdict. On this view, the deeper problem is not translation but quantification, as most countries rely on qualitative risk assessment, with no standardised, comparable way to quantify disaster risk. The proprietary catastrophe models that do quantify it are built by insurers to price premiums rather than to measure societal risk, are weak on the vulnerability side, and are largely opaque. And the historical loss-and-damage data the sector encourages countries to collect, while useful for validation, cannot by itself describe forward risk in a changing climate, because the past is no longer a reliable guide to the future.^{24, 25}

The regional literature supports this as well, by showing that the techniques to quantify risk do exist and are applied in places, e.g. average annual loss is computed for Turkish provinces, modelled in Pakistan, and used in budget-tracking reviews in Pakistan and the Philippines, so the picture is not that quantification is impossible, but that its use is rare and unstandardised.²⁶ It supports the interview point by confirming the consequence; the same review finds that the absence of integrated, quantified assessment makes it hard for decision-makers to prioritise and to decide the level of investment needed. The apparent synthesis is therefore that the methods exist but are seldom applied to a common standard, so in practice most systems still cannot compute the return on prevention. Whether that is best described as a missing method or a missing application is where opinions among those interviewed genuinely differ, and the scoping report highlights both perspectives.

The point matters because of what it implies downstream; without quantified risk, and without a quantified estimate of how much loss each possible response would avert, a system cannot compute the return on prevention, the optimal level of investment, or the size of its own funding gap. That consequence is looked at also in the Actions and Outcomes sections.



²²UNDRR and AP-STAG, *Status of Science and Technology in Disaster Risk Reduction in Asia Pacific*. 2024.

²³UNDRR and WMO, (2025).

²⁴UNDRR, *Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change*. 2022.

²⁵UNDRR, *Technical Guidance on Application of Climate Information for Comprehensive Risk Management*. 2023.

²⁶APDIM/ESCAP and UNDRR (2025).

The unfunded foundation: risk profiling

Beneath both the translation and quantification debates, the findings in this study point to a more basic gap that several interviewees identified as the true binding constraint; namely the country-wide risk profiling on which any risk governance system depends. Data availability varies enormously across the region; from contexts with high-resolution, localised forecasting to others where the only functioning early warning is a community upstream watching a river and sending word downstream, but the foundational assessment work is apparently thin almost everywhere. Mapping which communities sit above which landslide, establishing what rainfall will trigger it, completing multi-hazard vulnerability assessments; this is large volume, expensive and expertise-heavy work, requiring geologists, satellite imagery and sustained technical staff, and it is the precondition for knowing where even to place scarce monitoring equipment.^{27, 28}

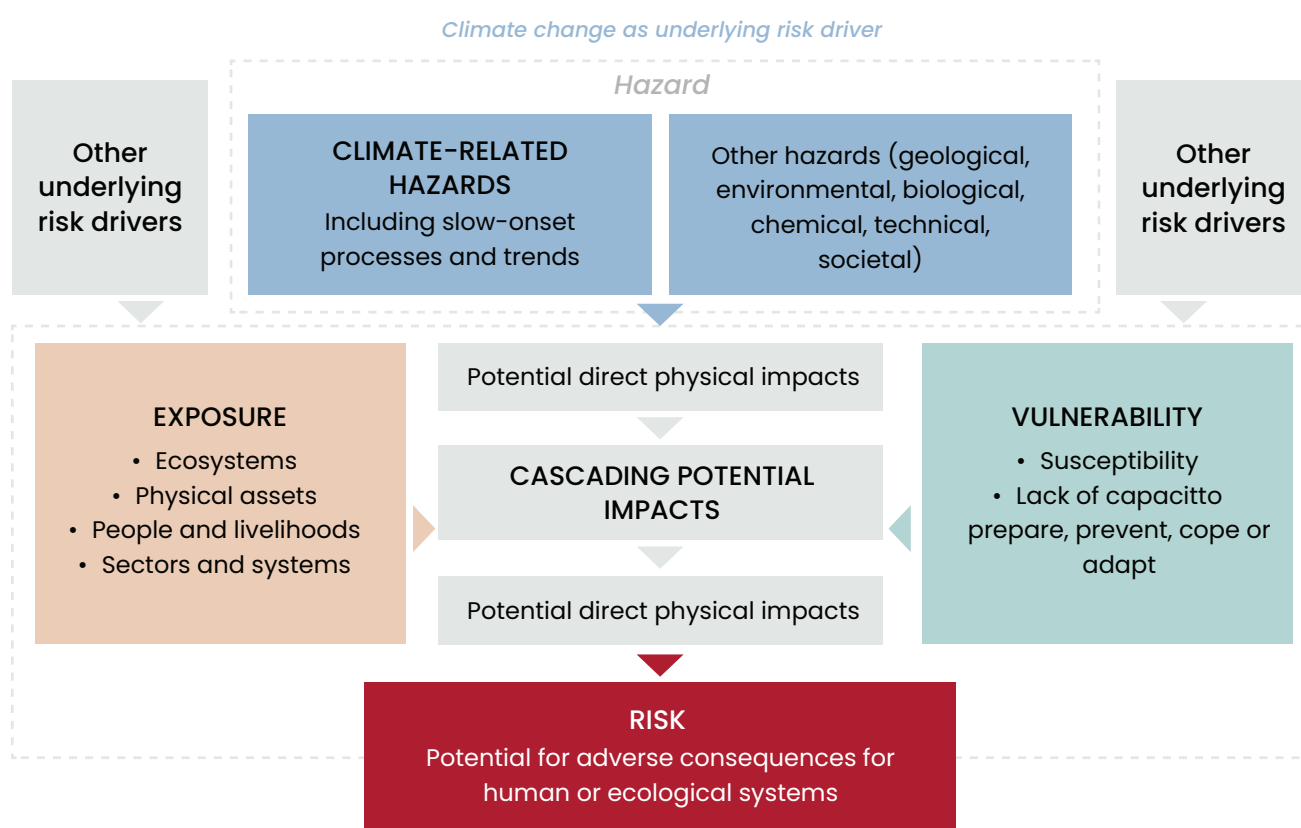


Figure 3. The general structure of an impact chain, the causal decomposition of risk into hazard, exposure and vulnerability, through which cascading impacts combine to produce risk. This is the conceptual method underlying the country-wide risk profiling discussed above; the foundational work of establishing what is exposed, and how vulnerable it is, to which hazards. An impact chain is a causal-decomposition device for conceptualising a single risk and it is distinct from this report's five-stage risk-to-action chain (Figure 1) and should not be read as a variant of it. Adapted from UNDRR, *Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change*. 2022.

Interviewees were specific that this foundation is almost never funded by governments at any level, and by one estimate, the overwhelming majority of it is project-based, and that it requires long-term development finance rather than short humanitarian grants. One pointed to a country that had triaged its territory into priority tiers and then completed detailed profiling for only a small fraction of even its highest-priority areas. The implication, which is also picked up in the Finance section, is that part of what looks like a financing problem is really a missing, sustained investment in the data foundation itself; a gap no single project can close and

²⁷UNDRR, *Words into Action: National Disaster Risk Assessment — A Guide for National Practitioners*. 2025.

²⁸UNDRR, *Technical Guidance on Application of Climate Information for Comprehensive Risk Management*. 2023.

that incoming agencies often duplicate or overwrite rather than build on.^{29, 30}

A community-level evaluation strengthens the same point from the demand side; giving an example of one flood-prone village where the binding gap was not data but that residents had ‘never been systematically consulted about how they monitor risks, receive warnings, or organise evacuation’ and a locally designed early-warning system, built on Indigenous knowledge of the river’s behaviour and then aligned with national hazard-mapping and alert-threshold standards, closed it.³¹

Credibility: the transparency issue

A distinct finding, raised most sharply by one interviewee and worth stating in its own right, reframes what makes risk information usable at all. On this account the decisive quality is not data accuracy but credibility, and credibility is a matter of transparency. Stating plainly and openly what the data can and cannot say, with its error margins, and recommending action on that basis, is what earns the trust of users that lets a system act; data that is distrusted makes every subsequent link of the chain weaker. Risk information need not be flawless to be actionable, a system can act on openly imperfect information, with a correction mechanism for false signals, provided everyone understands its limits. This matters for the embedded-function discussion in Part 2, because it locates the value of an honest broker of information, rather than simply a producer of more of it.

Risk prioritisation

Finally, risk information is where the first of the chain’s two prioritisation steps takes place. Risk prioritisation; identifying which hazards, locations and populations to focus on seems to be comparatively well handled, and national adaptation plans and risk assessments do identify priority areas and hotspots³², and interviewees generally treated this as within reach of existing analysis. This is worth stating clearly, because it sets up a contrast that the Actions section makes central: deciding which risks to address is not the weak point; deciding what to do about them seems to be the more challenging task.

Box: Transboundary risk — the chain that runs in a different order

Most of this report follows a chain that begins with risk information. For transboundary risk, such as shared river basins, regional drought, or cross-border cyclone tracks, the findings point to the sequence running differently. No single country can politically own a shared risk analysis, so the starting point is not data but governance: a coalition of willing states must assemble first, and only then can jointly owned risk information follow. Where that governance is absent, the chain stalls before it begins; data is not shared across borders without a table at which countries are willing to sit.

The regional experience bears this out. Joint hazard assessments carry lasting value precisely because the risk information is generated collectively rather than asserted by one country to its neighbours; that being a shared assessment adopted by consensus builds trust that a unilateral warning never could, and that trust is what makes the subsequent decisions, e.g. shared standard operating procedures, joint evacuation planning, possible. Seasonal climate outlook forums follow the same logic, producing a consensus forecast first and national decisions second. Risk is regional, but impacts are local, so treatment must ultimately be localised. High-cost infrastructure, by contrast, lends itself to regional sharing, and in this sense where one better-resourced country hosts capability (e.g. the computing behind a multi-country hazard model, or an ocean-basin warning system) its neighbours can draw on it, on the recognition that no single country could sustain it alone.

²⁹ESCAP and others, [Early Warnings for All in Asia and the Pacific: Opportunities for Action](#) (G20 Disaster Risk Reduction Working Group input paper). 2023.

³⁰ASEAN, [ASEAN Framework on Anticipatory Action in Disaster Management](#). 2022.

³¹ADRRN, Evaluation of the Community-Led Innovation Partnership. 2026.

³²UNDRR’s guidance treats risk evaluation and prioritisation as a structured, well-established stage, setting prioritisation criteria during parameter-setting, then ranking priority hazards, exposed elements, vulnerabilities and capabilities for treatment. UNDRR, [Words into Action: National Disaster Risk Assessment — A Guide for National Practitioners](#). 2025.

Two conditions appear to limit how far this goes. The first is political, and for issues such as river-basin water management, though inherently transboundary, this is often the least-shared domain, because data becomes leverage where hydropower or agriculture is at stake. The second is institutional, and many transboundary risks are also multi-sectoral, and stall not because no entity owns them regionally but because no ministry owns them nationally; a drought plan endorsed at regional level founders when the disaster management focal point cannot compel the ministries who actually hold the levers.

Transboundary risk is therefore not a special case of the same chain but a reminder that, where risk crosses borders, trust precedes information, and the willing partners must assemble before shared risk information can follow. Yet standing channels exist, such as the ASEAN Committee on Disaster Management and its sectoral plans of action, sub-regional climate outlook forums, specialised meteorological and warning centres, but the transboundary risk-assessment function has not yet been robustly institutionalised into them.

At the regional level, the ESCAP Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness illustrates how this coordination function is institutionalised. Established after the 2004 Indian Ocean tsunami and administered by ESCAP, it is the regional funding mechanism for multi-hazard early warning in Asia and the Pacific, pooling donor contributions around transboundary and shared-risk hotspots. Its programming priorities reflect the convergence this report highlights; and while originally focused on tsunami preparedness, the Fund has widened to a multi-hazard frame treating geophysical and hydrometeorological hazards, intensified by climate change, as interconnected risks that require coordinated rather than isolated responses (figure 4). The underlying logic is a value chain; upstream forecasting depending on shared regional infrastructure, and downstream performance on national capacity, making high-cost regional modelling accessible to lower-capacity countries rather than leaving each to build it alone.³³

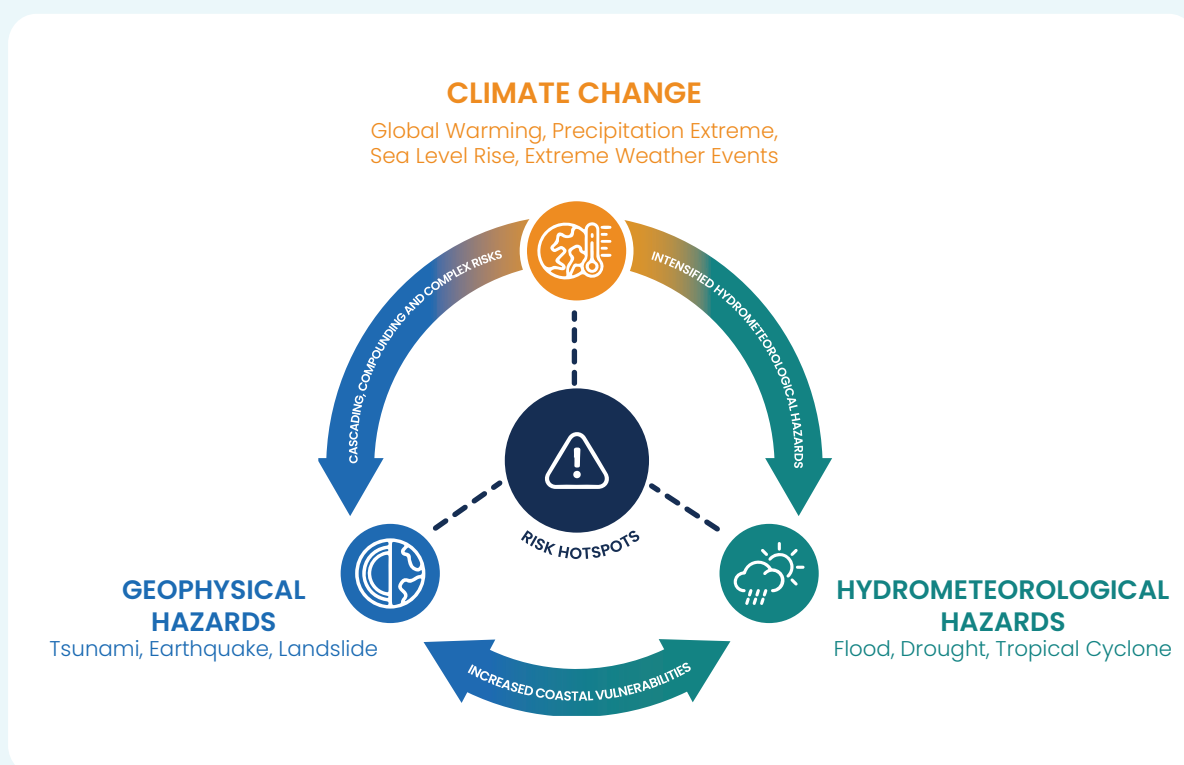


Figure 4. Programming priorities for the Trust Fund for Tsunami, Disaster and Climate Preparedness (Source: ESCAP, 2025)

³³ESCAP, Multi-Donor Trust Fund for Tsunami, Disaster and Climate Preparedness: Strategy 2025–2030. 2025.

| The information-management function

Underneath the availability of data and the interoperable repository just described sits a distinct institutional function, and its weakness is part of why produced information often fails to reach, or move, a decision. Information management, the governance, standards, interoperability and analytical synthesis that turn scattered datasets into coherent, decision-ready products, is easy to overlook, because it is neither the science that generates data nor the authority that acts on it, but without it, even technically sophisticated analysis struggles to influence a decision. Where hazard information, exposure data, climate projections and operational reporting are generated by separate institutions on different standards, formats and update cycles, it is the information-management function that makes them speak to one another; where it is absent, good data stays fragmented and unusable.

Its value is clearest in what decision-makers actually ask for. They rarely need more technical data; what is required are synthesised answers to operational questions; which districts should activate contingency plans first, which hospitals are likely to lose access, which vulnerable households fall within the estimated impact zone, which transport corridors remain open, which communities should receive assistance before a forecast event arrives, etc. Turning diverse datasets into answers of that kind is analytical, integrative work, and geospatial analysis is central to it, because geography is the common frame in which hazard, exposure, vulnerability, infrastructure and population need intersect. This is the same decision-grade gap this section began with, seen from the supply side, that the constraint is not the data but the function that converts it into something a decision can be built on, and that function is frequently under- resourced, treated as map-production or a data repository rather than as the connective analytical capability it needs to be.

Strengthening it is therefore best understood as an institutional task, not a technological one: the objective is not to produce more data but to establish a durable national capacity to turn information into decisions, coordinate stakeholders through shared operational intelligence, and support risk-informed governance across the whole disaster-management cycle.



4.2 Decisions

If risk information is the link most often called strong, decisions is the link where the gap between having information and acting on it is apparently widest. This is the stage at which risk knowledge should become an institutional choice; to act or not, at what threshold, on whose authority, and committing what resources. Across the interviews it was also the stage where the recurring pattern was that often missing is the authority, the confidence, and the problem of incentives to act on the information already in hand.

| Authority paper vs practice

On paper, most countries in the region have the decision architecture they need; disaster management acts, designated lead agencies, standing committees, standard operating procedures. Interviewees consistently observed that the problem is not the absence of this architecture but its weakness in practice; mandates that are formally assigned but not exercised, committees or working groups that exist but do not convene with authority, and procedures that specify who should decide without resolving who actually can. A plan that names a coordinating body does not, by itself, give that body the standing authority to make other ministries act. The recurring pattern seems to be a gap between the assigned decision-maker and the de facto one, and when a hazard is predicted, that ambiguity can hinder risk reduction or mitigation efforts.^{34, 35}

| Confidence and individual accountability

Underneath the authority gap sits a human factor that interviewees returned to repeatedly. The confidence under uncertainty issue was mentioned, that acting on a forecast means acting on a probability. In this case a decision-maker who acts on a 70%-likely event that then does not materialise can be perceived by the national system as having ‘wasted’ resources, while one who fails to act on an event that does not materialise is rarely held to the same account. The asymmetry seems to reward waiting. Closely related, is the personal accountability aspect; the individual official who authorises early action carries the personal and career risk if it proves unnecessary, with no corresponding protection for having acted prudently on the best available information. Together these produce a rational bias toward inaction, not because the information was inaccurate, but because the incentives around acting on it are often inadequate.^{36, 37} This is why interviewees framed the binding constraint here as decision-making capacity and will, not data.

A country case sharpens the same aspect at the decision link; in the Bangladesh anticipatory-action pilot the flood trigger carries a discretionary stop mechanism which enables the Resident Coordinator override a met threshold, and most stakeholders argued that reaching scale needs more such discretion and less reliance on hard, technically rigorous thresholds, precisely because acting under uncertainty is a judgement a human must own, not only a calculation a model can settle.³⁸

³⁴Asian Development Bank, [Disaster Risk Management Action Plan 2024–2030](#). 2024.

³⁵UNDRR, *Words into Action: National Disaster Risk Assessment — A Guide for National Practitioners* (Geneva, 2025).

³⁶The global monitoring also highlights these findings, that warnings do not automatically convert into action, while framing the remedy differently. It records that early warnings alone do not always lead to timely and effective action, that many of the most devastating and costly disasters of the century were in fact predicted yet did not trigger adequate response, and that effective action depends on pre-agreed plans, triggers, pre-arranged finance and ‘the mindset and resources needed to act.’ UNDRR and WMO, [Global Status of Multi-Hazard Early Warning Systems](#) 2025. 2025.

³⁷Technical guidance locates a structural source of the authority gap in the separation of assessment from planning: it observes a ‘disconnect between the assessment... and planning steps’ in practice, reinforced by climate scientists and planners using different approaches and terminology, and by risk assessments and planning processes that ‘happen in isolation, and with different timings’, so that even sound risk information can arrive detached from the decision it was meant to inform. UNDRR, [Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change](#). 2022.

³⁸Scott, [How Can Anticipatory Action Reach Scale and Sustainability? Learning from CERF in Bangladesh](#) (Centre for Disaster Protection). 2023.

Coordination and the handover of information

The decision stage is also where one of the chain's sharpest coordination issues was noted; the handover of information between the body that holds the risk information and the body with the authority to act on it. Where these are different institutions, such as a hydromet agency producing the forecast, a disaster management authority or line ministry empowered to respond, the handover often depends on a relationship that is informal, personal, and untested until the moment it is needed. Interviewees described decisions stalling not because anyone disagreed about the risk, but because no one was unambiguously positioned to convert the warning into an order.³⁹ To this end, pre-arranged, rehearsed linkages between these institutions via simulation exercises and standing protocols that assign the decision in advance, were the most commonly proposed solution.

Within the region, the ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre)⁴⁰ illustrates the pattern in practice. Established as the primary ASEAN regional coordinating agency for disaster management and emergency response, it works through the mandate of its eleven member states, coordinating primarily with their national disaster management organisations. Its coordination relationships are standing, and together with the ASEAN Committee on Disaster Management it organises the biennial ASEAN Regional Disaster Emergency Response Simulation Exercise (ARDEX), through which member states rehearse and review the region's joint response arrangements before an emergency arrives. It is a working instance of the report's wider point, that coordination holds where the relationships a crisis depends on are built and tested in advance.

The regional literature also has begun to a shift in emphasis, and what was once called the 'last mile' of an early-warning system (the final technical leg of getting a warning out) is increasingly reframed as the 'first mile', the point of departure for whether a community is actually ready and able to act on the warning it receives.⁴¹ A peer-reviewed analysis of the four components of early-warning systems for the deadliest and costliest meteorological disasters of this century reaches the same conclusion independently: the failure to protect was generally not a lack of forecasts or warnings but a lack of adequate communication and response capability.⁴² The reframing makes the same point the some of the interviews did, that the decisive question is not whether the warning is issued but whether it converts into action at the receiving end.

³⁹ADB also highlights the institutional weakness in this regard; 'midstream risk governance and downstream technical and sector-specific subnational and local DRM capacity are often restricted,' and local governments 'may find it difficult to coordinate sectors around a shared agenda, such as DRM.' [Asian Development Bank, Disaster Risk Management Action Plan 2024–2030](#). 2024

⁴⁰For more information on the AHA Centre, see the website at <https://ahacentre.org/>

⁴¹UNDRR and AP-STAG, [Status of Science and Technology in Disaster Risk Reduction in Asia Pacific](#). 2024.

⁴²Coughlan de Perez and others, '[Learning from the past in moving to the future: invest in communication and response to weather early warnings to reduce death and damage](#)', Climate Risk Management Volume 38, 2022, 100461.

The coordination aspect has a second, conceptual edge that the region is beginning to name. Practitioners report country-level confusion about how the Early Warnings for All initiative and Anticipatory Action relate, with the two often conflated even though they operate at different scales; early warning is, by design, for everyone, while anticipatory action is highly targeted.⁴³ The constructive interpretation the region seems to be converging on is that the two are complementary layers; the warning system supplies the trigger and the reach, anticipatory action supplies the targeted response, so that naming them distinctly, rather than merging or divorcing them, is itself part of fixing the warning-to-action conversion.⁴⁴

Post-event decisions

The decision link runs after impact as well, in compressed form. Once an event has occurred, the choice shifts to response and recovery spending, and this is where interviewees located a recurring breakdown, a finance ministry or central authority often defaulting to the cheapest, most visible response, because there is no quantified basis for choosing otherwise and no prepared decision to fall back on. The post-event environment compresses the time available to decide while raising the stakes, so the same authority and confidence gaps that slow pre-impact decisions can become acute. Decisions that were never made in advance have to be improvised under pressure. ADB partially also identifies the post-event issue, noting that disaster response 'is often ad hoc,' that response and recovery costs are not systematically tracked, and is recommending pre-designed 'staged triggers' for slow-onset events.⁴⁵

Sizing the commitment

There is one further decision-stage question that this scoping could not resolve but is worth noting. Sizing a commitment, that deciding how much to invest in prevention or to hold in reserve, logically depends on a quantified estimate of the risk being bought down and the loss being averted. The quantification gap diagnosed in the Risk Information section would therefore be expected to have relevance here too, leaving budget decisions without a defensible number to anchor on. The interviews did not probe option-level cost-benefit or investment-sizing specifically enough to support this as a finding. The report therefore notes it as a question worth further investigation; whether the absence of quantified, option-level avoided-loss estimates is itself a driver of under-investment at the budgeting stage, distinct from the better-evidenced failure (looked at in the Actions section), of being unable to choose between risk treatment options.

Where it works

Where the decision link functions well, interviewees consistently traced it to the same condition, that one institution is unambiguously in the lead, with the standing authority to make the rest of the system move, and the decision pre-arranged rather than improvised. The contrast with the authority-gap cases is illustrative, it is not that the well-functioning systems had better information, but that they had resolved, in advance, who decides. That points the diagnosis toward the interfaces and incentives around decision-making, rather than toward the production of more risk analysis.

⁴³Anticipation Hub and Asia-Pacific Technical Working Group on Anticipatory Action, [Report from the 8th Asia-Pacific Dialogue Platform on Anticipatory Humanitarian Action](#). 2025.

⁴⁴ASEAN, [ASEAN Framework on Anticipatory Action in Disaster Management](#). 2022.

⁴⁵ADB, [Disaster Risk Management Action Plan 2024–2030](#).

4.3 Finance

The issue of financing actions is the link where most of interviewees converged. The money to act on risk is structurally often in the wrong place, arrives in the wrong form, and moves at the wrong speed. Risk information can be strong and decisions can be clear, but if finance is reactive, slow, or stuck, the chain still breaks, and the accounts gathered for this study, highlight this recurrent problem.

Structurally reactive, not pre-arranged

It seems to be the most pressing problem, that disaster financing is overwhelmingly reactive. Money is mobilised after impact, through emergency appropriations, reallocations and humanitarian appeals, rather than arranged in advance to release the moment a threshold is crossed. Interviewees described systems that can find substantial sums after a disaster but almost nothing before one, so institutional readiness, preparedness and anticipatory measures compete for scarce, uncertain, and often donor-driven funds, while response spending is comparatively easier to secure. This inverts the logic the rest of the chain is trying to outline; the earlier and 'cheaper' the action, the harder it is to finance.^{46, 47}

A single national budget line puts concrete figures on this reactive bias. In the Philippines, the national disaster-risk-reduction fund stood at US\$514 million in 2024, yet anticipatory action and other pre-disaster projects received just US\$220,000 of it, most of the fund went on post-disaster rehabilitation. The recently enacted State of Imminent Disaster Law (Republic Act 12287, September 2025) gives a legal basis to release funds ahead of a disaster, but sets no minimum spending level, so officials warned that allocations could remain 'just enough for token compliance'. The figures highlight the structural aspect; even where the legal route to pre-arranged spending exists, the money still pools behind impact unless something forces it forward.⁴⁸

The public financial management gap

A distinct bottleneck sits one step in; even where funds are allocated, the public financial management systems meant to disburse them often cannot move money out in time. Interviewees pointed to budget rules, procurement procedures and authorisation chains designed for routine spending, not for the speed a developing or imminent hazard requires. So money that exists on paper cannot reach the field within the window where it would be most relevant. This is a different problem from under-funding; it is a sort of plumbing problem, where the constraint is the machinery of disbursement rather than the size of the pot. It also means that simply allocating more does not fix the link if the disbursement system stays the same.⁴⁹

⁴⁶The prevention-versus-recovery bias is also highlighted as a general pattern in the methodological literature, which notes the difficulty of 'investing in preventive measures to reduce potential damage that may or may not happen, best exemplified by most funding being directed to post-disaster recovery rather than prevention.' UNDRR, [Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change](#). 2022.

⁴⁷UNDRR, [Anticipatory Finance: An Introductory Guide](#). 2024.

⁴⁸Anticipation Hub and Asia-Pacific Technical Working Group on Anticipatory Action, [Report from the 8th Asia-Pacific Dialogue Platform on Anticipatory Humanitarian Action](#). 2025.

⁴⁹ADB names the same plumbing problem; public financial management of national contingency funds or emergency reserves 'can be inconsistent, especially in relation to allocating and disbursing funds to address priority needs and areas in an effective, timely, and accountable manner.' Asian Development Bank, [Disaster Risk Management Action Plan 2024–2030](#). 2024.

Budgets that aren't risk-informed

Upstream of both previous issues, interviewees noted that national and sub-national budgets are frequently not risk-informed at all; allocations follow historical patterns, political priorities and last year's line items rather than where risk analysis says exposure and vulnerability are greatest. The result is a disconnect between the risk picture the first link of the chain produces and the budget the system actually sets, in this sense investment that is not steered by risk, and risk that is not costed into investment. Where good practice exists, it takes the form of explicitly tying budget lines to risk data, but some of the interviewees treated this as the exception rather than the norm. At the regional political level this direction is now explicitly endorsed; ministers across Asia-Pacific have called for a shift in the financing balance toward disaster risk reduction and prevention through predictable, annual national-budget allocations, budget stress-testing and tracking, and for increased access from the local level to finance and the capacity to spend it.⁵⁰

The national-to-local leak

The most consistently reported financing issue, raised independently from several distinct vantage points, is that money allocated at national level frequently does not reach the local level where risk is actually felt. Some of the interviewees attributed this to a cluster of causes that recur across countries, that of bureaucratic layers that slow disbursement, weak local capacity to access and absorb funds, and a pervasive caution about compliance risk and corruption that makes central authorities often reluctant to release money down. The effect is that the community bearing the risk is the last to be financed and the least reliably, and that financing routed through local government, with communities as co-owners, tends to work better than financing that stops at the capital. This is also where the capital-versus-community altitude distinction is distinctly relevant; a financing gap at capital level is a budget-instrument problem, while at community level it is money that often doesn't arrive. ADB documents the same issue; even 'where funds are available for DRM, access may be difficult if local governments have limited technical and public financial management capacity to fulfill the assessment, programming, and reporting requirements,' and 'these capacity constraints are typically more severe in the poorest and most vulnerable regions within countries.' More broadly, finance ministries perceive limited fiscal headroom as a barrier and few governments allocate consistent DRM funding beyond basic staffing.⁵¹



⁵⁰APMCDRR Co-Chairs' Statement, Asia-Pacific Ministerial Conference on Disaster Risk Reduction, Manila, 17 October 2024.

⁵¹Asian Development Bank, Disaster Risk Management Action Plan 2024–2030.

The constructive turn: pre-arrange the instrument

Against this, interviewees offered a consistent first move; that is deciding on the financing instrument in advance. Rather than improvising funding after each event, match the instrument to the risk layer ahead of time, e.g. contingency budgets and reserve funds for frequent, low-severity events, and pre-arranged or contingent credit and risk transfer for rarer, more severe ones, so that the release of money is a pre-agreed trigger rather than a fresh negotiation under pressure. The emphasis was less on any single instrument than on the discipline of choosing and arranging it before the event, which converts finance from a reactive scramble into a pre-positioned part of the chain. The region has stood up regional risk-transfer and disaster-risk-financing architecture along these lines, a regional relief fund, a disaster risk financing and insurance programme, and a sovereign risk-pooling insurance facility, evidence that the pre-arranged-instrument logic is being institutionalised at regional level.^{52, 53}

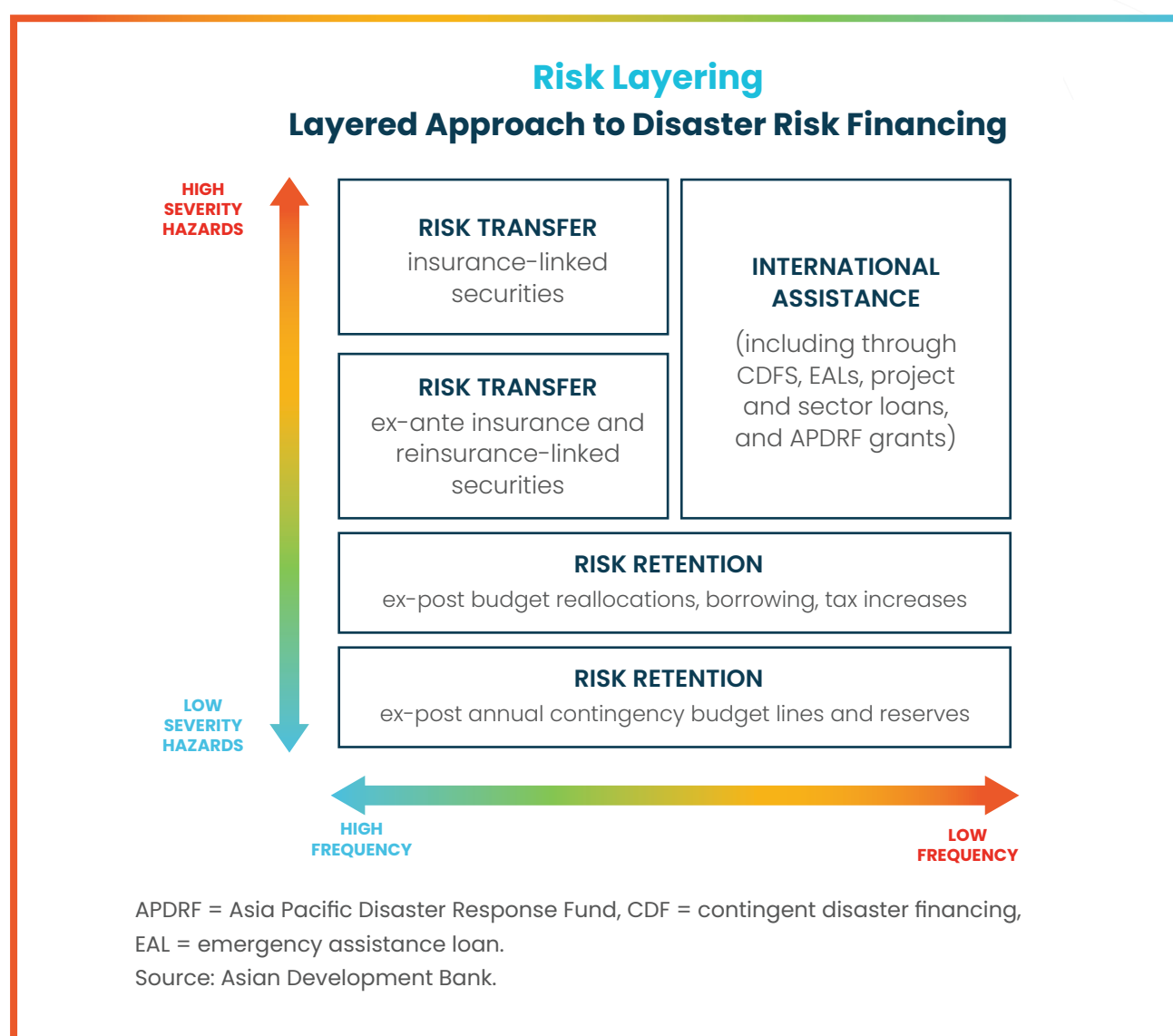


Figure 5. A layered approach to disaster risk financing, matching the instrument to the risk layer: retention (contingency budgets, reserves) for frequent, low-severity events, and risk transfer (contingent credit, insurance) for rarer, severe ones. This is the “pre-arrange the instrument” logic set out above. Distinct from Figure 8, which shows risk reduction shrinking the pool that anticipatory action absorbs. Adapted from ADB, Disaster Risk Management Action Plan 2024–2030.

⁵²ASEAN [Joint Statement for the Global Platform for Disaster Risk Reduction \(GPDRR\) 2025](#), adopted at the ASEAN Ministerial Meeting on Disaster Management, 19 May 2025.

⁵³ASEAN, ASEAN Framework on Anticipatory Action in Disaster Management. 2022.

A useful distinction sharpens what ‘pre-arranging the instrument’ actually requires, because it separates two kinds of money that are too often conflated. In this sense, build financing pays for the systems and structures that have to exist before anyone can act — trigger development, capacity, the institutional plumbing; fuel financing is the money released when a trigger fires, which must be committed ahead of time so the action can run before the hazard strikes. The two are not interchangeable: a system can have its ‘build’ largely in place yet have no ‘fuel’ staged, or vice versa.⁵⁴ The same framing maps the financing onto its likely appropriate source; development finance is the natural home for the ‘build’, while pre-committed humanitarian or contingency finance fuels the action, so that diagnosing which half is missing tells a system which kind of finance gap to address.

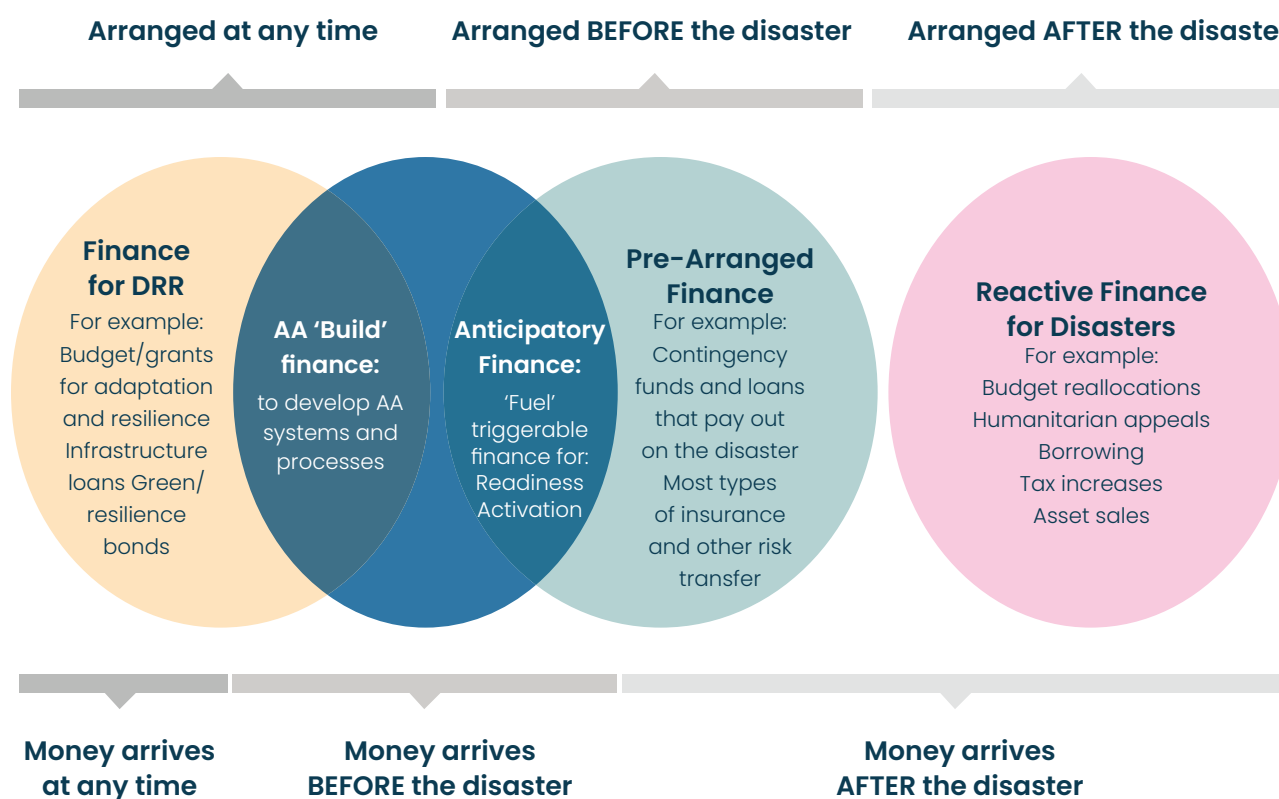


Figure 6. Financing flows related to disasters, organised by when finance is arranged (any time, before, or after the event) and when it arrives. It distinguishes “build” financing for the systems that must exist beforehand from “fuel” financing released when a trigger fires — the distinction set out above. Distinct from Figure 5 (instrument-layering by frequency and severity) and Figure 8 (residual-risk logic). Adapted from UNDRR, *Anticipatory Finance: An Introductory Guide*.

Unlock domestic financing

A second constructive theme was the importance of unlocking domestic financing rather than relying on external or donor funds. Interviewees argued that durable, institutionalised financing should come substantially from a country’s own budget, and that domestic resources can be more owned, and not subject to the shifting priorities of external funders, as well as that an over-reliance on external financing is part of why much of DRM remains project-shaped, short-lived and unsustainable. The role for external support, on this view, is to complement the domestic financing architecture, not to substitute for it.

⁵⁴Anticipation Hub and Asia-Pacific Technical Working Group on Anticipatory Action, Report from the 8th Asia-Pacific Dialogue Platform on Anticipatory Humanitarian Action. 2025.

Adaptive social protection

The findings point to adaptive social protection as a delivery channel and a vulnerability-reduction instrument. Several interviewees pointed to it as a promising route for moving money to risk, because it uses national systems that already exist, such as registries, payment mechanisms, and national frameworks for targeting, to reach vulnerable populations quickly when a shock hits. Its appeal is precisely that it does not require building a new delivery apparatus: where a social protection system is already in place, it can be made shock-responsive as an add-on. But its contribution is not only to move money after a shock. Regular, predictable social protection also reduces vulnerability before one, protecting household assets, preventing the negative coping that turns a shock into a lasting loss, and building the adaptive capacity that determines how severe a hazard's impact becomes, which is a risk-reduction function operating on the same vulnerability the diagnosis found under-weighted upstream. Interviewees also cautioned, however, that all of this depends on the basics being in place first, a functioning registry, a payment mechanism able to reach vulnerable people, and the legal and financing architecture, and that grafting shock-responsiveness onto a weak system tends not to work. Social protection is a delivery channel for finance and action, not a substitute for the underlying financing arrangements.

The literature sharpens why this delivery channel matters by highlighting a structural barrier upstream of it. UNDRR's anticipatory-finance guidance documents that anticipatory finance has flowed overwhelmingly through the humanitarian sector to UN agencies and NGOs, and that the global anticipatory-action pooled funds (e.g. the CERF, FAO's SFERA window, the IFRC-DREF anticipatory pillar, the WFP Anticipatory Action Trust Fund and the Start funds) are 'not accessible to governments directly', so the money often routes around the national systems that government-led risk management depends on. The emerging exception seems to be the social-protection route, with several examples of government-linked channels which run through national social-protection systems, with arrangements developing in Nepal, Fiji, Bangladesh, and the Philippines to pass triggered funds to governments for distribution.⁵⁵

The macro gap: pointing forward to private finance

Finally, some of the interviewees situated all of the above within a larger frame; the public money available for adaptation and disaster risk reduction is a fraction of what the scale of risk requires, and the largest part of the gap can be closed by mobilising private and investable finance. This is less a diagnostic finding about the current system but more of a strategic direction, and the report takes it up in Part 2, where the question of how an embedded function might help national actors access such finance is more appropriately addressed. The point to note here is only that the public financing challenges this section documents sit inside a still larger financing gap that public budgets alone will likely not close. It is worth flagging that the region's political consensus points in the same direction, and ministerial statements lean on private capital and innovative instruments as a near-term lever.⁵⁶

⁵⁵UNDRR, *Anticipatory Finance: An Introductory Guide*, 2024.

⁵⁶APMCDRR Co-Chairs' Statement, Asia-Pacific Ministerial Conference on Disaster Risk Reduction, Manila, 17 October 2024.

4.4 Actions

This is the link in the chain about the risk treatment options, and it is the findings this report would most want a reader to take away. Across the interviews, from various institutional vantage, the same challenge was noted; that there is no systematic method for choosing which risk-treatment option to pursue. Systems can identify that a community is at risk, can decide to act, and can even find money, and then face a 'menu' of possible measures (an embankment, a nature-based solution, anticipatory cash, a land-use change, a social-protection top-up, relocation) with no rigorous, comparable basis for selecting among them. The choice seems to be often made, when it is made, by precedent, mandate, donor preference, or whichever option a particular actor happens to promote, not by a defensible comparison of what each would actually achieve. One striking feature of the findings in this sense is that across the conversations and literature, the report does not find a consistent pattern anyone uses. The challenge is not that across the region choices are made properly or in error; it is that apparently there is no shared or nationally-standardised method for choosing.⁵⁷

The implications of having no shared method shows up as uncontrolled proliferation and fragmentation, especially for Anticipatory Action in Asia and the Pacific. A regional mapping counted 137 anticipatory-action frameworks (or systems) across 15 countries in 2024, rising to more than 200 across 20 countries in 2025, with the Philippines and Indonesia ranking highest, and in the Philippines different organisations activated different frameworks for different typhoons in a single year. Addressing this issue in the near term, the regional dialogue on Anticipatory Action report also advocates for the harmonisation-of-frameworks remedy.⁵⁸

The growth in AA systems / frameworks seems to be partly healthy, as more actors adopt the approach for more hazards; but absent a comparable basis for prioritising actions, the frameworks seem to multiply rather than work complementary to each other, and practitioners themselves began to ask whether there are now simply too many, too fragmented.

This is the same gap seen from the supply side; where no commonly-adopted method exists to choose which risk treatment is best, the system accumulates parallel, uncoordinated options instead of selecting among them. It is worth marking the distinction in the proposed solutions and holding it open. The anticipatory-action community frames the fix as harmonising the frameworks with one another and with the national system (e.g. aligning triggers, packages and targeting) and the findings in this report also locate a remedy one level up, in aligning anticipatory action and every other intervention option to a single, comparable measure of avoided loss.

Persistent gap: the quantification mechanism

This is where the quantification challenge diagnosed in the Risk Information section plays out here as well. To rank treatment options, you need a comparable measure of how much risk each one addresses, the risk-reduction value of an embankment versus a wetland versus a cash transfer, set against its cost. That measure is exactly what the region's largely qualitative risk assessment cannot supply. Without a quantified estimate of the loss each option would avert, the options are not commensurable, and prioritisation falls back into judgement and advocacy. In this sense, the chain plants the problem at Risk Information and the consequences manifested here; information that was not quantified cannot, at this stage, be turned into a ranking.⁵⁹

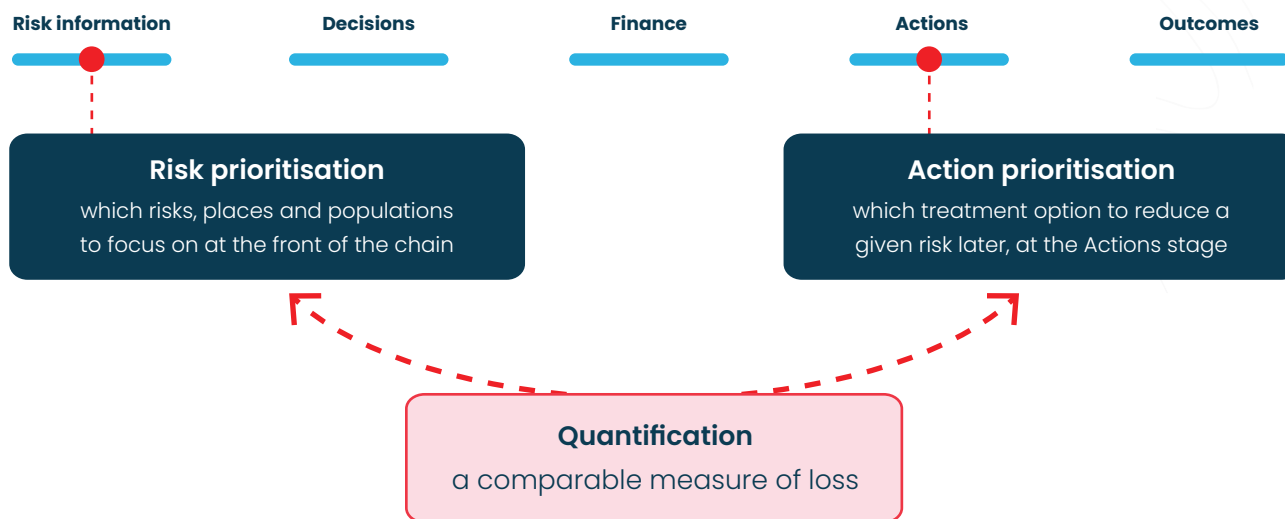
⁵⁷UNDRR's guidance highlights this aspect as well. It lays out the application pathway, that is to evaluate and prioritise risks, then select interventions for unacceptable risks that are technically feasible, financially viable, sustainable and acceptable in side-effects, and asks that each be costed and budgeted; yet this is without supplying a method for ranking options against a comparable measure of avoided loss, and notes that societal impacts 'are not directly comparable' and that prioritisation rests on expert elicitation and political decision. UNDRR, [Words into Action: National Disaster Risk Assessment — A Guide for National Practitioners](#). 2025.

⁵⁸Anticipation Hub and Asia-Pacific Technical Working Group on Anticipatory Action, [Report from the 8th Asia-Pacific Dialogue Platform on Anticipatory Humanitarian Action](#). 2025.

⁵⁹Methodological guidance highlights that the missing comparative method is a field-wide gap, not a regional shortfall, and that the field's own remedy is itself unsettled. The guidance offers the concept of 'risk tolerance' as the field's partial answer, categorising risks as acceptable, tolerable or intolerable to spur and prioritise action, but flags it as 'a relatively new concept, so little guidance on how to operationalize it exists', resting it on two competing frameworks (Mechler and others, 2014; the pre-emptive-action / contingent-arrangements / loss-acceptance clustering of Nassef, 2020) and concluding that how a community values and accepts risk 'remains a subjective and context-specific exercise' UNDRR, [Technical Guidance on Comprehensive Risk Assessment and Planning in the Context of Climate Change](#). 2022.

Prioritisation happens twice

One clarification runs through the chain and is worth stating. Prioritisation happens twice, at two different points, and the two can be conflated. Risk prioritisation — deciding which risks, places and populations to focus on, is a function of producing and using risk information, and sits at the front of the chain. Action prioritisation, deciding which treatment option to choose among the available ways of reducing a given risk, at the Actions stage, and depends on something risk analysis alone cannot supply: a comparable measure of how much loss each option would avert. This report keeps the two separate, because the evidence points to the second as the chain's most consistent weakness.



One word, 'prioritisation', names two different steps at two points in the chain. Both rest on the same thing: a comparable measure of how much loss each risk or each treatment option carries or averts. The thread runs from the front of the chain to the back.

Figure 7. Prioritisation happens twice: risk prioritisation near the front of the chain and action prioritisation at the Actions stage, both resting on the same quantification thread. (Author's elaboration)

Where quantification exists

The gap is real but it is not universal, and the exception seems to prove the mechanism. In sectors that already quantify, such as infrastructure ministries that run cost-benefit analysis on competing capital projects, prioritisation works apparently well. Where the risk-reduction value and cost of each option are calculated, options can be ranked and the best one chosen. The prioritisation gap is therefore not a general incapacity but a specific consequence of where quantification is absent. This matters for what follows, because it points to a targeted fix rather than a wholesale one, that is to extend the quantification and appraisal discipline that already works in some sectors to the DRM and adaptation choices, in places where it is missing, while also recognising that the right method differs by sector and country, so the aim is to harmonise the approach, not to impose a single tool.⁶⁰

Partial constructive moves

The scoping study does not yield a complete method, but several of the interviewees offered partial moves that point in a consistent direction. The first is to plan backwards from impact: start from the specific loss or damage you are trying to prevent and work back to the measures that would most reduce it, rather than starting from an available intervention and looking for somewhere to apply it. The second is to target the driver of impact within a hotspot; having identified where risk concentrates, focus treatment on the particular mechanism producing the harm, e.g. loss of livelihoods, failure of a specific structure, a water or food insecurity, rather than treating the hotspot generically. The third is to treat prioritisation as continuous recalibration rather than a one-off ranking: revisiting the choice as conditions, exposure and the climate itself change, instead of fixing a plan once and leaving it. None of these is a substitute for the missing quantification, but together they describe a more disciplined way of choosing under the constraint.

⁶⁰ADB's highlights working examples; where it resources quantified appraisal, infrastructure cost-benefit analysis, the modelled avoided-loss assessment in the Cook Islands, or the cited 'every \$1 spent on resilience investment results in \$4–7 in savings' figure, options can be ranked and the case made. Asian Development Bank, Disaster Risk Management Action Plan 2024–2030. 2024

Anticipatory action: one instrument, not the purpose

Anticipatory action belongs at this link too, as one intervention option among several. Acting in the window between a forecast and an impact is a genuine and sometimes the most effective tool, and for some contexts anticipatory action may be the best available option. Yet some of the interviewees were increasingly clear that it has come to be treated as a goal in itself rather than as a step within a larger system, with cash disbursed and the box ticked without asking what protective outcome it actually bought. The cleaner logic several interviewees converged on is to invest ex ante in reducing the underlying risk so that the overall risk pool shrinks, and then let anticipatory action and insurance absorb the residual risk that remains, in this sense anticipatory action as the last layer of a risk-reduction-first strategy, not as the strategy itself. This also helps explain why governments in the region have been slow to institutionalise it, framed narrowly, as a short-window humanitarian protocol, it is hard for a government to absorb into its own systems; framed as one residual-risk instrument within comprehensive risk management, it has a clearer institutional home.

The institutionalisation move is visible in the region, and the Intergovernmental Organisations' Cooperation on Anticipatory Action ('The Path Forward', FAO-coordinated, presented at the Global Platform for DRR, Geneva, June 2025) is built on the premise that 'government leadership must be central to AA, building on existing Disaster Risk Management and climate adaptation structures' rather than running AA as a standalone humanitarian protocol.⁶¹

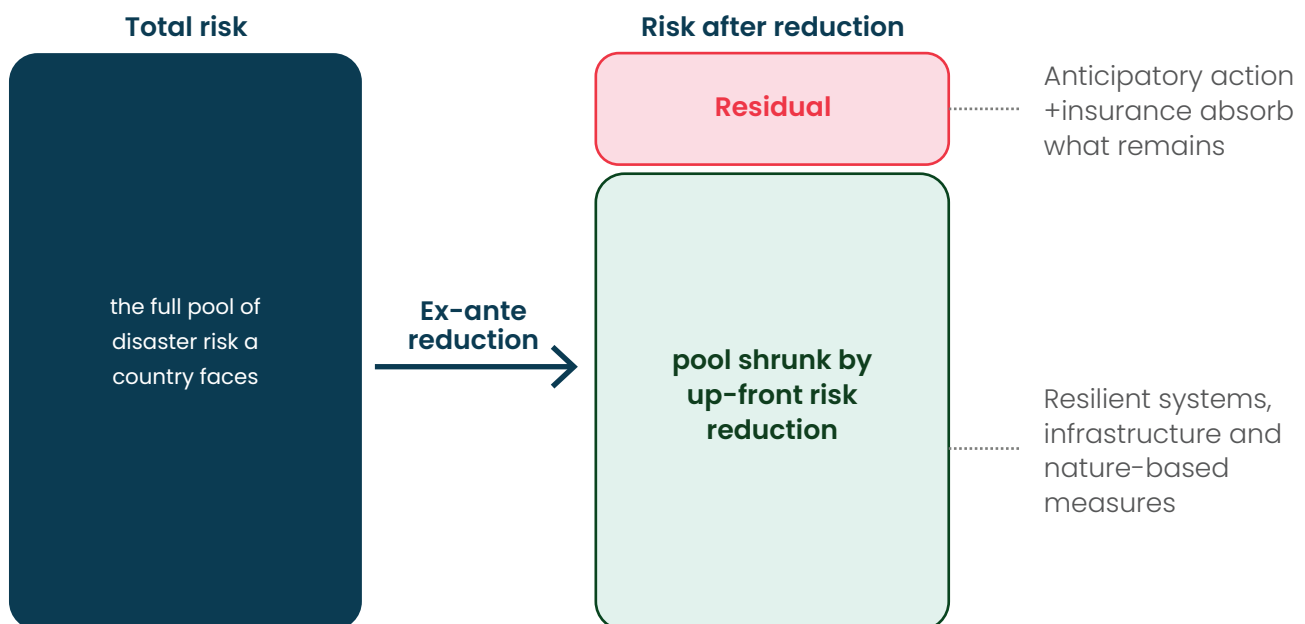


Figure 8. Anticipatory action as the residual-risk layer: ex-ante investment shrinks the risk pool, and anticipatory action and insurance absorb only the residual that remains. (Author's elaboration)

Execution and delivery

Finally, choosing the right action is necessary but not sufficient; it still has to be delivered, and the scoping findings also flagged delivery constraints that recur. Procurement and implementation systems built for routine timelines block even well-chosen, well-financed measures from being executed in time. Interviewees noted that a structural measure can be as hard to deliver as an anticipatory one when procurement is the bottleneck. And delivery that does not connect to the exposed community fails on its own terms; actions decided and executed at capital level, without the community that is exposed, often miss the people they are meant to protect. Where delivery works, it tends to be because the community is treated as a co-owner of the action rather than its recipient, this is the same altitude lesson that runs through the finance link. An ADRRN multi-

⁶¹Intergovernmental Organisations' Cooperation on Anticipatory Action ('The Path Forward', FAO-coordinated, presented at the Global Platform for DRR, Geneva, 2025).

country evaluation evidence highlights this point, showing how community-led innovations gained institutional traction and support only where decentralised governance gave local public institutions the mandate, capacity and budget to act, strong in Indonesia and the Philippines, and where the community was treated as co-owner, one locally owned early-warning system produced a rare measured avoided-loss outcome. In the first rainy season after it was built the village evacuated ahead of a flood and avoided the casualties and livestock losses earlier events had caused.⁶²

A different clock: climate mobility and the long-horizon end of the chain

Interview findings also drew a distinction that usefully corrects the rest of this section's emphasis. Much of the chain, as well as most of the anticipatory-action discussion above, operates on a short clock; acting within days to months of a hazard. But managing displacement risk, people having to leave their homes because livelihoods, water, food security or housing have become untenable, is a different problem on a different clock. Its drivers are structural and slow-onset, and addressing them so that people can stay in their communities, or move by choice rather than necessity, is a long-horizon risk management task measured in years. Displacement, on this framing, is used broadly, to include slow-onset and economic movement, not only sudden post-disaster flight. The implication is that the risk-to-action chain spans a continuum, and the prevention end needs different tools, partners and time-scales than the anticipatory end the rest of the scoping study emphasises, and conflating the two obscures what any given instrument can actually deliver.

Notably, the operational method described in the findings mirrors the chain and the action-prioritisation logic; begin with national hazard–exposure–vulnerability analysis to find hotspots, then zoom in to identify the specific drivers of mobility within them, and target treatment at those drivers. This is the same shift from prioritising locations to prioritising the driver of impact that the Actions link highlights, applied to a long-horizon domain. The published tooling in this space works on this design: IOM's Climate Mobility Innovation Lab for Asia and the Pacific has developed a Risk Index for Climate Displacement that integrates macro-level hazard, exposure and vulnerability data with micro-level, people-centred insights to identify the hotspots where displacement is most likely and to guide preparedness, risk reduction, adaptation and investment, and it is built through an explicit co-creation model with national universities and research institutes, which is itself the ownership condition this report underlines.⁶³ The scale is not marginal, the region has recorded on the order of 177 million disaster displacements from rapid-onset hazards, and climate-related economic losses in Asia-Pacific are projected to reach around US\$1.4 trillion by 2059, with Pacific small island states among the most exposed.⁶⁴



⁶²ADRRN, Evaluation of the Community-Led Innovation Partnership. 2026.

⁶³IOM Climate Mobility Innovation Lab for Asia and the Pacific, Risk Index for Climate Displacement (RICD), Environmental Migration Portal.

⁶⁴IOM, The Climate Mobility Innovation Lab for Asia and the Pacific (factsheet, 2025).

4.5 Outcomes

The last link in the chain is the one the whole chain exists to produce, reduced loss, environmental damage and human impact, and it is the link the region apparently measures least well. Interviewees consistently described a system that can mount a response and report its outputs (people reached, funds disbursed, warnings issued) but cannot reliably say what those efforts actually prevented. Outcomes, in the sense that also matters, how much loss was avoided, how much better off a population is than it would otherwise have been, are largely uncoun- ted.

The avoided-loss gap: prevention is invisible

The core problem is the absence of a counterfactual. Measuring what a disaster did cost is hard enough; measuring what it would have cost without a given intervention, the avoided loss, requires a quantified baseline of expected loss against which to compare, and that baseline mostly does not exist. Interviewees noted that prevention is therefore peculiarly invisible: a flood that does not happen, or happens without casualties because of action taken years earlier, produces no measurable event, no headline, and no number. Response is visible and countable; prevention is not. The result is that the most valuable thing the chain can achieve, (stop harm before it occurs) is also the thing it is least able to demonstrate.

A measurement gap that drives under-investment

This is more than an evaluation problem, and the report treats it as this link's central finding. Because avoided loss goes uncoun- ted, prevention shows no return on investment, and a finance ministry asked to fund prevention has nothing concrete to weigh against the visible, immediate cost of doing so. Interviewees connected this directly to the under-investment documented at the finance link; officials advocating for preventive spending cannot point to a quantified payoff, so prevention often loses, predictably, to competing demands that can show a return. The measurement gap is therefore not a passive reporting weakness sitting at the end of the chain; it is apparently an active driver of the under-investment that weakens the chain upstream. A system that cannot measure what prevention achieves will likely systematically under-fund it.

Root cause: closing the quantification thread

The apparent cause points in the same direction as the quantification gap that the Risk Information section diagnosed, and the Outcomes link is where that thread completes. Without a quantified estimate of expected loss, a system cannot compute avoided loss, return on prevention, or the optimal level of investment; it can only observe what happened, not what was prevented. The same missing capability surfaces three times along the chain, in three different guises: at Risk Information it appears as qualitative-only assessment; at Actions it appears as the inability to rank treatment options; and here, at Outcomes, it appears as the inability to prove that any of it worked. These are not three separate problems but one problem seen from three positions, and this is why the report treats quantification not as a narrow technical gap but as a thread running the length of the chain.

The one clear success

Against this, the findings do highlight one genuine, well-evidenced outcome; mortality from disasters in the region has fallen substantially over recent decades, and where that fall can be traced, it is largely attributable to improved early warning, preparedness and response, the parts of the chain that have been most invested in. This is a real and essential achievement. On the other hand, some of the interviewees and the wider literature also treat it as an incomplete metric. Falling mortality does not capture economic loss, displacement, livelihood damage or the slow erosion of assets and wellbeing that increasingly define disaster impact in the region, and a system that measures its success mainly by lives saved may be blind to the losses that are growing fastest. The success is genuine; it is also too narrow to stand as the chain's only measure of whether it works.^{65, 66}

⁶⁵ADB also notes overall fatalities have decreased, yet 'direct losses continue to rise more rapidly than GDP in the region as exposure and vulnerability grow,' and mortality remains 'much higher in least developed countries and in disaster risk hot spots within countries that tend to have higher poverty incidence'. The mortality success is real but conceals both rising economic loss and sharp within-region disparity. Asian Development Bank, Disaster Risk Management Action Plan 2024–2030. 2024

⁶⁶The global monitoring is the lead source for the mortality-loss divergence the interviews describe; countries with substantial-to-comprehensive MHEWS capabilities have a disaster-related mortality rate roughly six times lower than those with limited-to-moderate capabilities, yet the number of disaster-affected people continues to climb, from about 1,200 per 100,000 population in 2005–2014 to 2,839 in 2015–2024, a 136 per cent rise, which the report reads as evidence that the impact of disasters is increasing even as the lives-saved metric improves. UNDRR and WMO, [Global Status of Multi-Hazard Early Warning Systems 2025](#). 2025.

Box: Bangladesh floods — AA as a risk-to-action stress test

No single case proves a regional diagnosis, but one country runs almost the whole chain through a single, well-documented system. Bangladesh is rich in institutions, policy and risk information, an elaborated legal architecture reaching to ward level, dedicated forecasting and early-warning bodies, and a long record of operational innovation, yet a single-country deep-dive finds its performance determined less by the strength of its components than by how well they connect, with the joints often failing where the hazard is least familiar.⁶⁷ A Centre for Disaster Protection learning report on the OCHA-facilitated, CERF-funded anticipatory-action pilot for riverine flooding traces the joints this report is concerned with. The pilot's first framework was endorsed in 2020 and triggered within days, releasing US\$5.2 million and reaching roughly 44,000 households; its thresholds were not met again in 2021 or 2022, so the learning is as much about the gaps the pilot exposed as the activation it delivered.⁶⁸

At the **risk-information and trigger** end, the system presents a mixed picture. Upstream capacity is genuinely strong for cyclones and floods (forecasting, dissemination machinery, thresholds, etc) yet a national multi-hazard analysis notes a 'dearth of data-driven decision-making', with poverty data still used as a proxy for prioritisation, and a policy review of the Standing Orders on Disaster warns of 'paper plan syndrome' where assigned roles are not understood; the gap widens sharply beyond cyclones and floods.⁶⁹

The anticipatory-action pilot makes the same point. A riverine-flood trigger already built and maintained by national Red Crescent and Climate Centre actors was adopted intact, evidence of genuine national capability rather than an externally imposed model. Yet the binding weakness is transboundary; flooding is often driven by rainfall in India, and gaps in cross-border forecasts and data-sharing hamper accurate downstream prediction, the same coalition issue the transboundary study describes.⁷⁰

At the **decisions** link the case supplies a sharp, real-world instance of the confidence-under-uncertainty problem: the trigger carries a discretionary stop mechanism widely seen as necessary for ownership and government buy-in. The report holds the counter-risks open as well, that greater discretion also invites politicised activation, faster depletion of funds, and a reputational risk that AA looks unreliable, so it calls for explicit protocols on who may override, when and on what information.⁷¹ The single-country scoping study reaches the same reading at system level, it identifies the 'middle layers' of decision authority, as a persistent challenge.⁷²

At the **finance** link the system shows the build-versus-fuel split as a structural feature. Bangladesh invests relatively well in 'build' finance for preparedness and public systems, much of it domestic but the rapidly releasable 'fuel' finance needed once a trigger fires remains largely donor-dependent and not yet institutionalised in public budgets.⁷³ The anticipatory-action pilot makes the split tangible at instrument level, CERF covers only readiness and activation 'fuel', not the 'build' or preparedness costs that organisations had to carry on internal core funding.

⁶⁷NORCAP, From Risk to Action in Bangladesh: A Deep-Dive into the National DRM System. 2026.

⁶⁸Scott, [How Can Anticipatory Action Reach Scale and Sustainability? Learning from CERF in Bangladesh](#) (Centre for Disaster Protection). 2023.

⁶⁹NORCAP, From Risk to Action in Bangladesh (2026), citing NIRAPAD/Start Network/UNCT Bangladesh, Multi-Hazard Risk Analysis of Climate-Related Disasters in Bangladesh (2021), and BPP/ADPC, Policy Brief on the Standing Orders on Disaster (SOD 2019) (2022).

⁷⁰Scott, (Centre for Disaster Protection, 2023).

⁷¹Scott, (Centre for Disaster Protection, 2023).

⁷²NORCAP, From Risk to Action in Bangladesh. 2026.

⁷³NORCAP, From Risk to Action in Bangladesh. 2026.

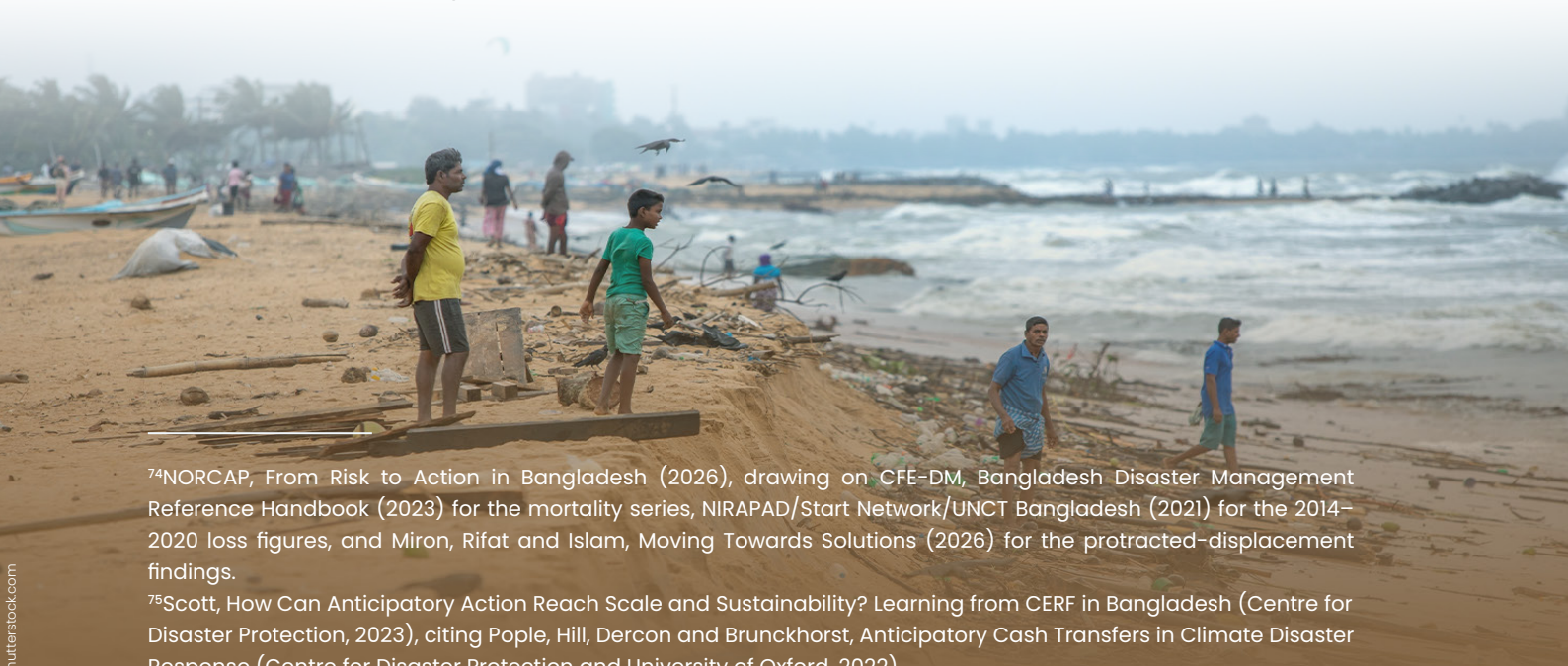
At the **actions and outcomes** end the system shows the chain's central tension in one country, lives saved, losses still high. Cyclone mortality has fallen from an estimated 300,000–500,000 deaths in the 1970 Bhola cyclone to 26 in Cyclone Amphan in 2020, one of the region's clearest mortality successes, yet between 2014 and 2020 fifteen major disasters still affected 42 million people, displaced 9.4 million and generated roughly US\$4.1 billion in losses, and the case study's displacement findings show the worst harm often occurring after the event, in unsafe housing, insecure tenure and livelihood collapse that immediate relief does not measure.⁷⁴

Against that backdrop the CERF pilot offers something the chain rarely has, a quantified protective result. An independent impact study of the 2020 activation found that households receiving anticipatory support were markedly less likely to go without food during the flood (around a third less likely to pass a day without eating), and reported lower asset loss, less costly borrowing and higher subsequent food consumption and wellbeing. This is the avoided-loss evidence the Outcomes link shows to be usually missing, highlighted here because a deliberate study was commissioned alongside the activation, which is the exception, not the rule.⁷⁵

The constructive direction the case points to is the one the wider diagnosis reaches independently; scale and sustainability run through government leadership and through bringing local actors in as full partners, which in turn needs an actor or group of actors holding clear responsibility for the connective work; linking preparedness funding to activation funding, liaising with government, and resolving the cross-agency data-sharing agreements. The single-country scoping reaches the same conclusion independently, finding the highest-value niche to be embedded technical support at the interfaces where a mature system stalls.⁷⁶

| The learning loop

A final, related weakness is that outcomes rarely feed back into the system as learning. Post-event, response data is collected in volume but seldom captured, structured or returned upstream in a form that improves the next cycle's risk information, decisions or choices. Several interviewees described after-action review as the exception rather than the routine, and the chain as a result running in a sort of open-loop, where each event is met more or less afresh, rather than as the latest in a series the system has learned from. Closing that loop, that is treating outcome data as an input to the next round of the chain rather than as a record filed after the fact, is the constructive move this link points toward, and one that depends on exactly the measurement capability the section has shown to be missing.



⁷⁴NORCAP, *From Risk to Action in Bangladesh* (2026), drawing on CFE-DM, *Bangladesh Disaster Management Reference Handbook* (2023) for the mortality series, NIRAPAD/Start Network/UNCT Bangladesh (2021) for the 2014–2020 loss figures, and Miron, Rifat and Islam, *Moving Towards Solutions* (2026) for the protracted-displacement findings.

⁷⁵Scott, *How Can Anticipatory Action Reach Scale and Sustainability? Learning from CERF in Bangladesh* (Centre for Disaster Protection, 2023), citing Pople, Hill, Dercon and Brunckhorst, *Anticipatory Cash Transfers in Climate Disaster Response* (Centre for Disaster Protection and University of Oxford, 2022).

⁷⁶NORCAP, *From Risk to Action in Bangladesh: A Deep-Dive into the National DRM System*. 2026

What the findings imply for national systems

The preceding diagnosis describes patterns that recur across very different countries. This section sets out what those patterns imply for any national system seeking to strengthen the conversion of risk into action.

The binding constraints are downstream, not upstream

The first and most consequential implication is where to look. Because risk information is the relatively strong link and the conversion failures concentrate downstream, at decisions, finance and the selection of actions, a system that responds to poor outcomes by commissioning more risk information is likely to be solving the wrong problem. The implication is to invest in the joints, the institutional interfaces and decision rules where the chain actually fails, rather than in more components. This runs against a common reflex, and against some of the incentives in the system, which reward visible technical products over the harder behind-the-curtain work of fixing handovers.

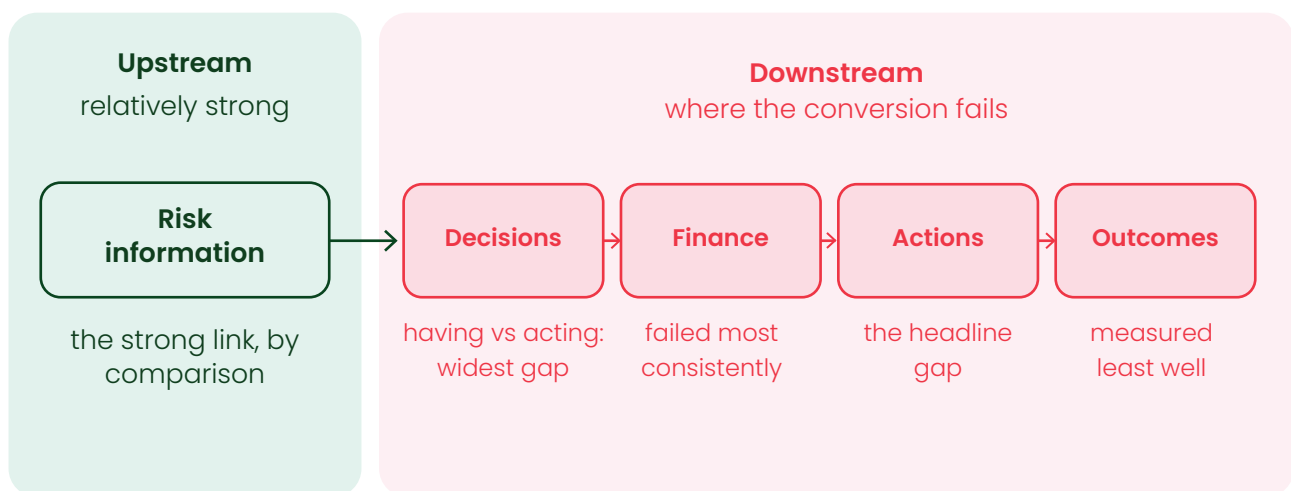


Figure 9. Where the strength sits: risk information is the relatively strong upstream link, while the conversion failures concentrate downstream, across decisions, finance, actions and outcomes. (Author's elaboration)

A quantification capability seems the highest-leverage technical investment

If one technical capability would do the most to strengthen the chain, the diagnosis points to risk quantification, the ability to estimate, in comparable terms, expected loss and the loss-reduction value of candidate measures. Its absence is what reappears at three points: it weakens the upstream information, it disables the ranking of treatment options, and it makes prevention impossible to prove. A system that builds this capability, not everywhere at once, but starting where decisions most depend on it, addresses an essential thread that runs the length of the chain. The qualifier from the diagnosis holds; where quantification already exists, as in some infrastructure appraisal, prioritisation already works, so the task is to extend an existing discipline, not invent one.

Finance must be pre-arranged and reach the local level

The finance link implies two distinct moves, because it often fails in two distinct ways. First, financing must be arranged before and the instrument matched to the risk layer, the trigger agreed in advance, so that money releases as a pre-positioned part of the system. Second, the disbursement machinery and the path to the local level must be addressed, because money that is allocated but cannot move, does not protect the exposed. This second move depends substantially on domestic financing and on public financial management work, which are matters of national budget authority and sovereign reform; needs likely an external partner cannot cover, and which the national system must own itself.

The action-prioritisation method is a shared gap worth solving collectively

The absence of a method for choosing among treatment options is the diagnosis's headline gap, and its implication is unusual; because apparently no country has standardised it, it is likely a gap better addressed collectively. A shared, adaptable approach to appraising and ranking risk-treatment options, grounded also in the quantification capability above, but sensitive to the reality that the right method differs by sector and country, would be a regional worthwhile investment. This is one of the few implications where a national system gains more from a common effort than from a custom-made national one, precisely because the gap is common.

Close the loop: measure avoided loss

Because the measurement gap actively drives under-investment, building the capacity to measure avoided loss is not an end-of-cycle reporting nicety but an upstream enabler. It is what gives prevention a return that a finance ministry can weigh, and what turns each event into learning for the next. The implication is to treat outcome measurement, the counterfactual, the avoided loss, and the after-action feedback, as part of the investment case for prevention, not as a post-operation report.

Coordination and altitude are conditions, not tasks

Two cross-cutting implications run through all of the above. First, because the failures often sit at handovers between institutions, strengthening coordination, that is pre-arranged, rehearsed (simulated, stress-tested) relationships across the specific parts where the chain breaks, is a condition of every other improvement, not a separate workstream. Second, because the same intervention behaves differently at capital and community level, every national-level reform has to be tested against its local-level consequence; a budget instrument or a decision rule that works at the capital can still fail to reach the community that bears the risk. Neither of these is a discrete task to complete; both are disciplines to apply across the chain.

The needs and national ownership

Finally, the diagnosis points to requirements that no external support can fully cover and that determine whether any of the rest takes hold; sustained domestic budget lines for the foundational, unglamorous work of risk profiling and system maintenance; the government person-power to run systems rather than pilot them; and the political will to fund prevention whose payoff is invisible and whose horizon outlasts an electoral cycle. These are deep constraints in the diagnosis, and they are sovereign. The most important things a national system needs, it must build and own itself. What follows in Part 2 concerns only the subset of these needs that an embedded, external function is positioned to support, a deliberately smaller claim than the diagnosis as a whole.





| PART 2

WHAT THIS MEANS FOR NORCAP AND iMMAP

The choices ahead: selecting from Part 1's identified gaps

Part 1 set out, without reference to any particular actor, what national systems in the region appear to need to convert risk into action more reliably, yet several of those needs are sovereign and unlikely to be covered by an external partner. This part concerns only the narrower set of needs that an embedded, external function is genuinely positioned to support, and asks what NORCAP and IMMAP, specifically, could offer against them. The starting position is that smaller claim, that not everything the diagnosis surfaced is a role for an outside partner, and the value of the proposition that follows depends on its being matched honestly to the gaps it can actually address.

From the diagnosis, a recognisable subset stands out as amenable to embedded external support; strengthening the interfaces where the chain breaks rather than producing more components.

Altitude: the capital–community discipline

The diagnosis insisted that the same intervention behaves differently at capital and community level, and this is where that distinction should become a working discipline rather than an observation. Both NORCAP or IMMAP operate mostly at capital level, embedded within national ministries, disaster management authorities, or regional bodies, because that is where the connective work on decisions, finance and coordination is done, and where the assignment model usually fits. Yet the diagnosis also highlights that capital-level work that is not tested against its local-level consequence reproduces one of the system's central issues; the budget instrument that works at the capital but whose money never arrives, the decision rule that is sound nationally but unworkable for an overstretched local officer, the risk product that fails to inform a ministry or never reaches the local actors working with the vulnerable community.

The discipline that follows is not for the embedded function to relocate to the community level, but for every capital-level intervention to carry an explicit test of its local-level effect; does this decision protocol reduce or increase the burden on the local officer who must execute it; does this strengthened national risk product connect to what exposed communities already do for themselves. The interviews were consistent that communities are not passive recipients waiting for an official system but active managers of their own risk, so the test is whether capital-level work connects to that local level or bypasses it. An embedded function is well placed to apply this test precisely because it sits at the capital but is accountable, by design, for the chain reaching all the way to its end.

The proposition

The clearest signal from the interviews about where an external actor adds most value was also the most consistent finding of the entire study on the question of role. Asked what function would most help national systems, interviewees mostly converged, from strikingly different vantage points, on a version of the same answer. This is not another producer of risk data or coordinator that fulfills a maintenance role, but an embedded, trusted function that sits inside or alongside national institutions and helps the existing parts of the system connect. The recurring description in the interviews was of that of a broker and translator, someone who helps risk information become a usable decision, helps a decision find its financing, helps institutions that do not naturally talk to one another coordinate at the moments that matter, and one who does so as a neutral, credible presence rather than as an individual actor promoting its own model.

This maps directly onto what the diagnosis identified as the chain's weak points. The failures are at the joints, and the converged answer describes a function whose entire purpose is to strengthen joints. The proposition for NORCAP or IMMAP is therefore to occupy this connective, embedded role. Yet the two are not symmetric, and the diagnosis explains why. Because the chain's failures

concentrate downstream the larger part of the connective work is human and institutional as well as technical; liaising between ministries that hold complementary data but do not normally speak to each other, helping to build the decision-confidence to act under uncertainty, linking a decision to the finance that should follow it, and holding the wraparound coordination that turns a pilot into a routine.

- This work is an operational model NORCAP is familiar with and expanding. Its contribution is often the assignment of senior, trusted, operationally-experienced advisers inside national institutions, such as embedded within a disaster management authority or a line ministry, working through that host's own mandate and authority. That embedding model is what lets a neutral adviser broker the inter-ministerial space where the chain most often breaks, and it is precisely the function interviewees converged on when asked what would most help. NORCAP already has DRM adviser assignment in Bangladesh, and the companion single-country case study that accompanies this report is a direct product of that presence.⁷⁷
- IMMAP's contribution is the analytical complement to that embedded human bridge, concentrated where the chain is otherwise strongest but most in need of translation into decisions. Its comparative advantage lies not in duplicating the forecasting, modelling or response capacities that already exist, but in strengthening the institutional information ecosystem that connects them; embedding information-management and geospatial expertise within national institutions so that governments can integrate diverse sources, produce decision-grade products, maintain a shared operational picture, and close the learning loop between one event and the next.

Given that patterns identified were both advisory-brokering functions as well as technical, likely effective pathway is not necessarily assignments that are aimed either at the technical products or the implementation capacity, upstream or downstream, the diagnosis points to a need for the connective tissue between them, the scales being decided based on context.

The localisation literature converges on the same connective role from a different starting point. The evaluation of a four-country community-led innovation programme concluded that an enabling environment is 'not simply a matter of relationship-building' but of bridging different worlds, connecting local actors with formal technical systems, strengthening their capacity to advocate, reducing power asymmetries with decision-makers, and aligning locally identified priorities with public policy, the same brokering function, seen from the community end of the chain rather than the capital.⁷⁸

What makes the embedded assignment model distinctive is where it places the advantage; that of ownership, and interviewees were consistent that ownership is more important than sophistication, that the interventions which get institutionalised are those handed to the ministry's own people and systems rather than retained by the project. This is a direct response to the sustainability failure the scoping findings identified earlier, that risk-profiling and core system-building remain overwhelmingly project-based and are almost never carried on national budgets, which is the structural reason pilots do not become systems, in a way an external project cannot be.

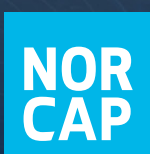
⁷⁷NORCAP, From Risk to Action in Bangladesh: A Deep-Dive into the National DRM System (NORCAP Bangladesh case study, 2026)

⁷⁸ADRRN, Evaluation of the Community-Led Innovation Partnership. 2026.

Some of the interviewees cautioned against arriving with a predetermined model to impose, so the embedded function adds value only where it fills a genuine, identified gap and works collaboratively through the host's mandate, not where it promotes its own framework. The clearest positive case in the findings highlight that where institutionalisation has worked, it has done so when a credible external presence operated through a national authority's mandate and a development or humanitarian partner's leverage, helping the system converge rather than adding to its fragmentation.

The proposition this part sets out is deliberately bounded. It does not claim that an embedded function addresses the deepest constraints in the diagnosis, those are sovereign. The proposition something narrower, because the chain's failures concentrate at the joints, and the most consistent signal from across the interviews was a need for a connective, embedded, trusted function to strengthen those joints.





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