

Workshop on Collaboration Mechanism among APEC Economies to Link Local Development with Disaster Risk Reduction Measures Intensified by Climate Change

APEC Emergency Preparedness Working Group

October 2026



**Asia-Pacific
Economic Cooperation**



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APEC Emergency Preparedness Working Group

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List of Acronyms and Abbreviations

AA	Anticipatory Action
APEC	Asia Pacific Economic Cooperation
ASP	Adaptive Social Protection
CAF	Development Bank of Latin America and the Caribbean
CBDRM	Community-Based Disaster Risk Management
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRRF	Disaster Risk Reduction Framework
EPWG	Emergency Preparedness Working Group
EWS	Early Warning Systems
NGO	Non-government Organization
SADDD	Sex, Age, and Disability Disaggregated Data

1 INTRODUCTION

APEC economies are exposed to various natural hazards due to their geographical location, which are intensified by the effects of climate change. To address these challenges, the Chilean economy and the other APEC economies have a series of local instruments (emergency plans, disaster risk reduction, etc.) that aimed to prepare communities for these events. However, municipalities encountered problems in their implementation due to weak coordination and local capacities to implement them. This project seeks to strengthen the capacities of local actors in APEC economies for a better understanding and exchange of experiences regarding the link that should exist between local disaster risk reduction actions and the various local plans for development, planning, land use and climate change. A workshop would allow the exchange of experiences and discussion on the needs, challenges, and capacities to be strengthened in local actors of APEC economies to link disaster risk reduction actions and the various local plans.

This final project report provides a detailed account of the progress and conclusions of the initiative that supported the integration of Disaster Risk Management (DRM) into local development planning in APEC economies. The report's structure ranges from the executive summary and deliverables—such as background documents and final reports—to a comprehensive analysis of the international workshop held in Santiago, Chile, in March 2026, which forms the core of the study.

The workshop was organized into three thematic sessions where experts from various regions shared critical strategies for strengthening resilience:

- Session 1: Focused on the fundamental links between territorial development and risk management, featuring specialists from the Pontifical Catholic University of Chile and GRID Chile.
- Session 2: Addressed innovative approaches such as Adaptive Social Protection and Anticipatory Action presented by speakers from Peru, along with the strategic role of youth in disaster preparedness, highlighting the case of Papua New Guinea.
- Session 3: Explored the implementation of local strategies in Mexico (CENAPRED), emphasizing a gender-sensitive approach and child protection. Additionally, post-disaster recovery processes and governance in Japan were analyzed, along with the importance of mitigating costs and financial impacts from the perspective of CAF (Colombia).

This report identifies a central issue known as the “implementation gap,” where a lack of institutional coordination generates new prospective risks. To mitigate this, five strategic pillars were proposed:

1. Inclusive Governance: Promote an intersectional agency that considers all social groups.
2. Institutional Architecture: Eliminate “siloed” work to achieve systemic integration among ministries and local governments.
3. Financial Reassessment: Implement proactive fiscal mechanisms that stop viewing prevention as an expense and instead understand it as an investment.

4. Transdisciplinary Knowledge: Integrate technical and community knowledge to address climate uncertainty.

5. Regulatory Frameworks: Established binding and strict land-use regulations to prevent settlements in hazard zones.

Finally, the document confirms the achievement of the objectives set forth in the project implemented by the Risk and Disaster Management Corporation (GRID CHILE), while acknowledging the challenges and difficulties encountered during its execution. The text concluded by emphasizing that resilience was not merely a technical goal, but an essential political and regulatory commitment to the long-term sustainability of local development across the globe, and particularly within APEC economies due to their economic prominence in the development of their territories.

2 BACKGROUND

2.1 Project Summary

APEC economies faced natural hazards that climate change was making more frequent and severe. Chile and other APEC economies have local instruments to prepare communities and municipalities for these events: emergency plans, disaster risk reduction plans, communal development plans, and land-use plans. In practice, weak inter-institutional coordination and limited local capacity prevented these instruments from working as intended. The project worked on that gap. Its purpose was to strengthen the capacities of local actors in APEC economies to connect disaster risk reduction with local development, land-use, and climate-change planning, and to open a space to exchange experiences across the region. The work produced two outputs: a baseline diagnosis of the 21 APEC economies and a two-day international workshop in Santiago, Chile, where participants identified shared needs and the local-level capacities required to make that connection real.

The project aimed to strengthen local capacities in APEC economies to understand and manage disaster risk intensified by climate change. It worked through coordination among municipalities, economic actors, and civil society, and it sought coherence among the local plans and measures for disaster risk reduction. The project aligned with the first principle of the APEC Disaster Risk Reduction Framework (DRRF), Community Participation, and supported the goal of building adaptive, disaster-resilient economies.

2.2 Project Outputs

2.2.1 Baseline document

The baseline document set out the project's analytical framework and diagnosed the state of integration between local development planning instruments and Disaster Risk Management (DRM) instruments across APEC economies. The diagnosis combined three sources: a

systematic literature review of the 21 APEC economies, a structured online survey distributed through APEC focal points (480 valid responses, 471 of them from the Philippines), and semi-structured interviews with international specialists from the World Bank, LA RED, the Disaster Research Unit at Freie Universität Berlin, AMEXCID Mexico, and the PNG National Research Institute.

The diagnosis showed a clear gap between policy and practice. Most APEC economies have legal and regulatory frameworks that mandated the linkage between development planning and DRM, yet a wide implementation gap persists at the local level. Inter-institutional coordination was weak; risk considerations were not systematically incorporated into investment, land-use, and budget planning; and the development process itself often generated new (prospective) risk. Institutional fragmentation aggravated this. Planning and finance ministries operated in silos separated from emergency management agencies, and at the local level short-term visible projects tend to crowd out long-term resilience investments.

The baseline also identified emerging strengths and opportunities: risk-transfer instruments in Chile; Mexico; Peru; Japan's local resilience frameworks; and community-based risk management models in the Philippines. The Emergency Preparedness Working Group (EPWG) was well placed to disseminate these lessons, support capacity building, and promote harmonized standards.

The findings and strategic challenges identified in the baseline shaped the workshop's thematic agenda and guiding questions, so that the discussions were grounded in evidence from the 21 APEC economies.

2.2.2 Workshop

The "Workshop on Collaboration Mechanism among APEC Economies to Link Local Development with Disaster Risk Reduction Measures Intensified by Climate Change" was held in Santiago, Chile, on 20 and 21 January 2026. It was hosted by the Corporación Gestión de Riesgos y Desastres (GRID Chile) under the APEC Emergency Preparedness Working Group, and brought together delegates from APEC economies, international and Chilean experts, and representatives of civil society organizations working on disaster risk management.

The workshop had four objectives: (i) strengthen the capacities of local actors in APEC economies to understand and manage disaster risk intensified by climate change; (ii) share experiences and knowledge on the connection between Disaster Risk Management (DRM) and local development; (iii) identify the main challenges and gaps in that connection; and (iv) develop actionable recommendations for APEC decision-makers on DRM-related capacity building.

The workshop combined keynote presentations from international speakers with three moderated work-group discussions and a roundtable to wrapping conclusions. The agenda was organized along two tracks.

Day 1: Diagnosis and Analysis

The first day focused on diagnosis and problem identification. Introductory sessions presented the findings of the baseline document and an analytical framework for the linkages between DRM and local development. Speakers from Papua New Guinea and Peru then discussed adaptive social protection and anticipatory action, and the role of youth in disaster risk management. Work Groups 1 and 2 ran during Day 1: WG1 examined local-level obstacles to

integrating DRM into development planning, and WG2 looked at how disaster risk and contingent liabilities were factored into budget and investment processes.

Day 2: Recommendations

The second day focused on solutions and recommendations. Speakers from Colombia; Japan; and Mexico presented on the implementation of domestic-resilience strategies at the local level, the human impacts of disasters with attention to children and gender, post-disaster recovery and community resilience, and the integration of local development with DRR for cost and impact mitigation.

Work Group 3 worked on the meaningful participation and leadership of women and marginalized groups in DRM decision-making. The day closed with a roundtable among speakers from Colombia; Japan; Mexico; Papua New Guinea; and Peru, followed by a synthesis of results and a post-workshop survey.

2.2.3 Final report

This Final Report presented the results of the workshop and the recommendations that emerged from the workshop deliberations and the baseline diagnosis. It documented the contributions of each speaker and work group, sets out the strategic conclusions that combined baseline and workshop evidence, and turns those conclusions into recommendations for APEC economies that wanted to strengthen the connection between local development planning and disaster risk reduction as climate change intensified hazards.

3 WORKSHOP RESULTS

3.1 Session 1

The first session focused on diagnosis and identification of issues relevant to the project's core theme. The speaker's presentations provided the technical and evidentiary basis on which the work groups built their subsequent discussions.

3.1.1 Speaker 1 Marcela Rivas. Pontifical Catholic University of Chile, Nomade Consultores. "Key findings of the baseline document regarding: Linkages; Gaps and barriers; Challenges; Capacities; Best practices for linking local development management with disaster risk Reduction measures"

The first session opened with a presentation of the project's Baseline Document, delivered by the associated consultant Marcela Rivas. The presentation gave an analytical framework on the integration between local development management and disaster risk management in APEC economies, based on a literature review of the 21 economies, an online survey, and interviews with international specialists.

It covered the objectives, methodology, and main analytical dimensions of the study, and called attention to the linkages between the two fields and to the gaps and barriers that prevented their effective articulation at the local level.

3.1.1.1 Analytical framework and study objectives

The general objective was to develop an analytical framework to diagnose the state of integration between local development and DRM, and to identify linkages, gaps, capacities, and lessons learned. Specific objectives included characterizing the formal and operational links between local development instruments and DRM instruments, diagnosing the institutional, financial, technical, and political barriers to integration, and identifying replicable good practices across APEC economies.

3.1.1.2 Methodology and analytical scope

The methodology used a mixed methods design that combined an international literature review, a structured survey of APEC economies, and interviews with experts from international organizations, academic centers, and specialized agencies. The analytical scope covered governance models, the integration of DRM into domestic and local planning, financial instruments for resilience, and the incorporation of a gender-responsive perspective.

3.1.1.3 Main findings

- Levels of integration;
- structural decoupling between policy and practice;
- forms of risk financing;
- integration of the gender perspective;
- survey results;
- good practices.

The main problems identified during this session included:

- Decoupling between regulatory frameworks and their local implementation: although robust institutional and regulatory frameworks for DRM existed, their application at the local level showed significant gaps.
- Limitations in local capacities: sub-economy governments faced constraints in governance, technical capabilities, and financial resources.
- Structural inequalities as a risk factor: risk generation was closely linked to public investment processes, insufficient territorial planning, and inequality conditions that increased the exposure and vulnerability of communities.
- Weak integration of the gender perspective: gaps persisted in the systematic incorporation of gender considerations into risk planning and management.

The discussion confirmed that one of the main challenges is to move from emergency management toward proactive disaster risk management, aligned with sustainable, safe, and rights-based local development.

3.1.2 Speaker 2 Claudia González Muzzio. GRID Chile: “Introduction: Linkages between local development and disaster risk management”.

The second session sets out a reference framework for the work group discussions that followed. It centered on the linkages between local development management and disaster risk management, drawing on the conceptual results of the baseline document and on illustrative cases from APEC economies.

The following points framed the discussion and the current reality of the APEC context:

1. The presentation identified a barrier between domestic policy frameworks and local implementation. That implementation gap came from a broader split between policy design and practice, and it constrains the effective integration of DRM into local development.
2. The presentation also identified reactive financing as a critical challenge, with post-disaster spending dominating preventive investment. This pattern generates fiscal pressure and reinforces the cycle of disaster, debt, and vulnerability.
3. The presentation discussed gender and community as central dimensions. It argued for stronger integration of gender perspectives and for treating communities as active agents in risk management rather than passive recipients of assistance.
4. The presentation closed with examples of practical approaches to integrated risk management from APEC economies, including risk-informed planning instruments, community-based resilience programs, and proactive financial mechanisms.

3.1.3 Work Group 1. Challenges in the local context for linking local development management with disaster risk reduction instruments in APEC economies.

Work Group 1 examined the local-level conditions that blocked or supported the integration of disaster risk management into local development planning across APEC economies. Five tables (white, yellow, blue, red, green) discussed four guiding questions: the main obstacles to integrating DRM into local development planning; the stakeholders that were not adequately considered; the capacities missing at the local level for full implementation; and the good practices and success stories worth replicating. The aim was to produce a shared diagnosis of structural and operational barriers and to identify where action was most needed.

The group discussion is synthesized below around the four guiding questions.

3.1.3.1 What were the main obstacles to integrating DRM into local development planning?

White table: Lack of political will and support. Development decisions often generate *new* risks. There was a lack of specific knowledge about risk governance, and risk was not integrated into investment planning. There was also a severe lack of integrated data.

Yellow table: Planning instruments were not aligned. There was a lack of budget lines, lack of educational curriculum on the matter, and authorities often lacked the required profile. Policies suffered from a lack of continuity.

Blue table: The mitigation phase was difficult to integrate because there was "no sense of urgency." There was a lack of reliable, up-to-date hazard data (or its availability). A broader lack of awareness regarding the effects of inaction was also a major barrier.

Red table: "Adult-centrism" and underestimating local capabilities (both regarding children and youth, and the elderly). There was a lack of funding and poor integration between policies. Different sectors used different technical languages, creating silos. Disasters were seen as "more marketable" than prevention, leading to urban expansion into high-risk areas.

Green table: Disconnection between macro and local levels. Lack of strategic planning, political will, and protocols for coordination. There was a "social gap" where resources were unequally distributed for emergencies. Furthermore, there was a lack of standardized hazard catalogs and a disorganized approach to information management.

3.1.3.2 Role of key stakeholders: Who was not being considered, or who should be more actively involved?

White table: Ministries of Finance and Planning, Domestic Data Institutions, the private sector, NGOs, and actors holding local/ancestral knowledge. Key development sectors were generally not fully engaged.

Yellow table: Local communities, schools/kindergartens, local health centers (CECOF), and the local chamber of commerce.

Blue table: Donors (for sustainability), youth, and civic society (who are often involved in recovery but excluded from planning). The private sector should be involved in mitigation, not just recovery. There was also a note on elderly populations holding onto power.

Red table: The private sector (as they also benefit from DRM), development agencies, industry associations, universities (which were often not integrated into the *whole* DRM cycle), and local communities.

Green table: Neighborhood councils (needing more active participation), local radio stations, large private companies (supporting via taxes), foundations, and logistics companies (crucial for DRM transport).

3.1.3.3 What capacities were lacking at the local level to fully implement this integration?

White table: Specific technical knowledge on DRM, agreement on technical concepts (like defining "risk"), training in new technologies, "internal" coordination inside government, and "soft skills" to interact across disciplines.

Yellow table: Community center infrastructure was lacking or annuls capacities. There was a need for better integration of instruments at the local level and collaboration among multiple economy actors.

Blue table: Interaction between academia and decision-makers. A long-term vision that overcomes 4-year political periods. Up-to-date data sharing and specific training for local authorities and technicians.

Red table: Knowledge on how to access and use disaster risk data. Human resource limitations (small teams handling multiple responsibilities). There was a need to use "simple and common words" to avoid working in silos and disconnecting departments.

Green table: Training programs for mayors. Decentralization of decision-making. Local communication systems, inter-institutional leadership, and school-level prevention education.

3.1.3.4 Good practices - success stories

White table: Heat wave protocols (e.g., Renca/Providencia municipalities in Chile). Local strategies for resilient communities (Mexico). Local Early Warning Systems (Tabasco, Mexico). Strong NGO leadership and capitalize on the "social cohesion" of communities.

Yellow table: Early Warning Systems, municipal risk atlases, integration of local knowledge, and cultural icons/mascots (like "Forestín" in Chile regarding wildfires) for awareness.

Blue table: Public-Private partnerships. Academia drafting policies. Information sharing strategies (e.g., Malaysia). Using AI/Digital twins for planning. Collaboration among neighboring economies (e.g., Papua New Guinea and Australia).

Red table: Establishing Community-Based DRM (CBDRM) modules. Utilizing a living ancestral culture for risk management. Voluntary public-private agreements addressing efficient water use aligned with long-term disaster mitigation.

Green table: Standardized Risk Atlases and Integrated Systems (SIGRID in Peru, *Atlas de Riesgo* in Mexico). Standardized disaster event registries (Chile/Peru). Using community communicators to transfer knowledge to locals (Peru).

3.1.3.5 Synthesis of findings

Question 1: Main obstacles to integrating DRM

- **Major consensus:** The most repeated obstacles were a lack of political will and continuity (short-termism), poor integration/alignment of planning instruments across different government levels, budget constraints, and fragmented/inaccessible data. Additionally, there was a consensus that prevention lacks a "sense of urgency" compared to post-disaster response.
- **Other topics:** "Adult-centrism," the absence of housing relocation policies, and the observation that economic development decisions actively generated new risks (e.g., urban expansion into hazard zones).

Question 2: Stakeholders not being considered

- **Major consensus:** There was strong agreement that the **Private Sector** (including industry associations and logistics companies) must be involved in planning/mitigation, not just recovery. **Academia/Universities** and **Local Finance/Planning Ministries** were critical but missing. Finally, **local communities and holders of ancestral knowledge** need to be elevated from passive participants to active planners.
- **Other topics:** International donors, youth, elderly power dynamics, and specific hyper-local entities like local chambers of commerce or kindergartens.

Question 3: Capacities lacking at the local level

- **Major consensus:** A severe lack of **specific technical personnel and training** for local authorities. There was widespread agreement on the lack of **"soft skills" and inter-departmental coordination** (breaking silos). **Data accessibility** and the inability to maintain a **long-term vision** beyond political cycles were massive hurdles.
- **Other topics:** The need for simplified technical language ("simple & common words"), lack of community infrastructure, and training programs explicitly targeted at mayors.

Question 4: Good practices and success stories

- **Major Consensus:** The successful implementation of **Early Warning Systems (EWS)**, the creation of standardized **Risk Atlases/Integrated Data Systems** (like SIGRID in Peru or the Atlas in Mexico), and the active integration of **Community-Based DRM (CBDRM)** modules that respect and utilize local/ancestral knowledge. **Public-Private partnerships** were also frequently highlighted.
- **Other topics:** Advanced technological integration (AI / Digital Twins), specific municipal protocols for slow-onset disasters (like heatwaves), and cross-border international collaboration.

3.2 Session 2

3.2.1 Speaker 3 Angel Chávez, Perú. GRACC Consultores: “Aligning Adaptive Social Protection with Anticipatory Action to support vulnerable communities before disaster impacts”.

This presentation on Adaptive Social Protection (ASP) and Ex-Ante Anticipatory Action (AA) for vulnerable populations in Peru, highlighted institutional advances, operational challenges, and field-based evidence. The presentation outlined how integrating social protection and disaster risk management could enable more timely and effective responses to climate-related risks.

3.2.1.1 Main topics

Regulatory framework and institutional progress: The presentation highlighted recent regulatory milestones that established the foundation for adaptive social protection in Peru. Legislative Decree 1654 and its operationalization through Supreme Decree No. 002-2025-MIDIS provided a framework to adapt social protection services in emergency contexts. These instruments enabled adjustments in coverage, duration, and delivery mechanisms, while linking risk information with social registries to facilitate timely responses.

Core structural challenges: A central issue identified was the weak linkage between social protection systems and disaster risk management. Key challenges included slow or incomplete targeting of affected populations, limited interoperability between systems (e.g., early warning, social registries, and disaster management), lack of predefined financing and trigger mechanisms, and uneven local capacities. These gaps resulted in disproportionate impacts on vulnerable populations, including women, children, older persons, persons with disabilities, Indigenous Peoples, and community-based organizations.

Integrating Adaptive Social Protection (ASP) and Anticipatory Action (AA): The presentation emphasized the complementary nature of ASP and AA. While ASP focuses on adapting social programs to shocks, AA enables early action based on forecasts before impacts occur. Their integration allowed social protection systems to function as instruments of risk mitigation rather than purely reactive responses.

Early warning systems and opportunity windows: Effective anticipatory action depended on the existence of robust early warning systems (EWS) and predefined protocols. Key components included risk knowledge, monitoring and forecasting, accessible communication, and prepared response capacities. The presentation stressed that early warning systems must be linked to targeting mechanisms, payment systems, and local coordination structures to be effective.

System adaptation and delivery mechanisms: Social protection systems could be adapted through different expansion and delivery strategies, including vertical expansion (increasing benefits for existing users), horizontal expansion (incorporating new at-risk populations), piggybacking on existing systems, and simplifying administrative procedures. Existing programs in Peru provided a foundation for scaling anticipatory responses through established targeting and delivery channels.

Role of social organizations and priority populations: Social organizations were identified as key operational actors, contributing to community-level monitoring, dissemination of alerts, validation of beneficiary lists, and support for delivery mechanisms. The presentation

emphasized the need to prioritize populations with higher exposure and vulnerability, applying inclusive and context-sensitive targeting criteria that integrated socioeconomic, territorial, cultural, and protection dimensions.

Field experiences and operational evidence: Evidence from field experiences in regions such as Amazonas and San Martín demonstrated that anticipatory action was feasible when risk analysis, targeting, and local validation were aligned.

Case studies, including early activation mechanisms based on hydrological thresholds, illustrated how early warnings, coordinated communication channels, and cash transfer systems could be mobilized prior to disaster impacts.

Innovative approaches and regional relevance: The presentation also referenced innovative experiences such as the “GalA” platform in El Salvador, which integrated satellite data, spatial analysis, and socioeconomic information to identify vulnerable populations and enable anticipatory interventions. This example highlighted the potential of data integration and inter-institutional coordination to enhance targeting precision and response timeliness.

Key lessons learned: Lessons from Peru indicated that anticipatory action was most effective when institutionalized rather than implemented as isolated pilots. Critical factors included the need for operational protocols beyond regulatory frameworks, dynamic and risk-informed targeting systems, functional early warning systems, pre-existing delivery channels, and the active involvement of social organizations.

Conclusions and strategic implications: The presentation concluded that integrating adaptive social protection and anticipatory action represented a paradigm shift from reactive and fragmented responses toward proactive, coordinated, and risk-informed systems. Peru had an important foundation in place; however, advancing this approach required strengthening the linkage between risk information, targeting systems, financing mechanisms, and local implementation capacities.

3.2.1.2 Policy recommendations

Key recommendations included institutionalizing coordination protocols across relevant agencies, strengthening interoperability between social registries and risk data, improving inclusive early warning systems, pre-positioning financing and logistics, formally integrating social organizations into implementation processes, and scaling pilot experiences to inform broader policy development.

3.2.2 Speaker 4 Ronald Sofo, Papua New Guinea. National Research Institute, PNG APEC Study Centre: Disaster management at domestic and sub-economy levels in Papua New Guinea

This session featured a presentation on the disaster management system in Papua New Guinea (PNG), outlining its institutional framework, coordination mechanisms, and key challenges across domestic and sub-economy levels. The presentation highlighted how governance structures and resource constraints shaped disaster response and risk management in one of the world’s most hazard-exposed economies.

The presentation outlined the main policy instruments guiding disaster risk management in PNG, including the National Disaster Risk Reduction Framework (2017–2030), aligned with regional

and international frameworks such as the Framework for Resilient Development in the Pacific and the APEC Disaster Risk Reduction Action Plan. The Disaster Management Act (1984) remains the central legal instrument, defining institutional roles, coordination mechanisms, and funding arrangements for disaster response.

3.2.2.1 Main topics:

Institutional architecture and central coordination: At the domestic level, the National Disaster Centre (NDC) serves as the central coordination and communication hub. However, in practice, emergency response was often led by a State of Emergency (SOE) Controller appointed by the government. The system establishes clear roles for domestic and provincial disaster committees, including responsibilities related to coordination, resource allocation, and response management. The NDC also plays a key role in civil-military coordination and engagement with international partners.

Sub-economy implementation and local governance: The provincial level was the primary administrative layer for disaster management. Provincial Administrators and Provincial Disaster Committees (PDCs) were responsible for hazard assessment, preparedness planning, coordination of relief operations, and public awareness. These structures act as the main interface between domestic frameworks and local implementation, including receiving requests for assistance and organizing response efforts.

The presentation emphasized the operational role of civil-military coordination in PNG, particularly in logistics and emergency response. This included supporting impact assessments, mobilizing defense resources, transporting personnel and relief supplies, securing affected areas, and maintaining communication flows. Military assets were critical for reaching remote and geographically isolated areas.

Given capacity constraints, international cooperation played a central role in PNG's disaster management system. Multilateral organizations, UN agencies, and bilateral partners supported preparedness, response, and recovery efforts, working alongside domestic and local authorities. These partnerships were essential for strengthening institutional capacity and addressing humanitarian needs.

Mr. Sofo identified several structural challenges affecting disaster management effectiveness across all levels. These included limited financial and technical resources, low prioritization of disaster risk management, difficult geographic conditions that hindered access and logistics, and coordination gaps among stakeholders.

3.2.2.2 Conclusions

The presentation highlighted that PNG was among the most disaster-prone economies globally, facing recurrent hazard events that significantly impacted livelihoods. While the economy continues to strengthen its disaster management capacities, resource limitations persisted. In this context, sustained engagement with regional and international partners remained critical, not only for domestic resilience but also for broader regional stability.

3.2.3 Work Group 2

Examples from APEC economies that integrated disaster risk analysis and contingent liabilities into budget planning and investment processes at the domestic and sub-economy (local) levels.

Work Group 2 explored how APEC economies integrate or fail to integrate disaster risk analysis and contingent liabilities into budget planning and investment processes at the domestic and sub-economy levels. The five tables covered four guiding questions: whether and how the potential impacts and costs of disaster risk were taken into account in development decisions; the financial mechanisms used to address future risk and its costs; the challenges of incorporating risk costs in time, with success stories and good practices; and how the systematic consideration of risk shaped decisions about what to develop, where, and for whom at the local level.

The group discussion was synthesized below around the four guiding questions.

3.2.3.1 Potential impacts or costs associated with disaster risk taken into account—or not—in development projects or decisions.

- **White table:** Future disaster losses were generally **not included** in the evaluation of project profitability. Investment in DRM measures was often viewed incorrectly as an *expense* rather than an *investment*.
- **Yellow table:** There was a lack of funding directed toward geosciences and DRM research. Without a dedicated trust fund, emergency money must be diverted from other programs.
- **Blue table:** Investments often ignore multi-hazards and climate change. Donor-led initiatives sometimes leave communities behind. Government priorities did not always reflect local "reality," and transparency was key.
- **Red table:** Emergency response was extremely expensive. Failing to consider these risks meant the poorest were the most vulnerable, and the investments themselves were at risk.
- **Green table:** Disasters forced the reallocation of resources, leading to the disappearance of funds for other areas. Post-disaster recovery required massive investment (noting historical GDP costs of earthquakes in Chile in 2010 and 2015).

3.2.3.2 Financial mechanisms identified to address future risk analyses and their associated costs.

- **White table:** Financial mechanisms were overly focused on *response*, not *prevention*. Proposals included creating mechanisms that obliged people living in risk zones to have insurance or offering tax incentives for homes and businesses to insure themselves.
- **Yellow table:** Parametric insurance (Mexico).
- **Blue table:** "Capitalist" economies (like Australia and New Zealand) relied heavily on risk transfer. However, insurance was *not* the solution for everything (e.g., certain floods).
- **Red table:** Strategies included Peru's draft Financial Strategy for DRM, Chile's Emergency Fund, and Chile's Environmental Protection Fund. Parametric insurance was used for agriculture against El Niño (Peru). Some suggested adding specific tariffs for a DRM fund within water utility companies. The focus was too often on recovery costs, and reprioritizing budgets during a disaster was very difficult.
- **Green Table:** Insurance, disaster zone declarations, and "relocation bonuses" (for 2 years) to move people out of risk zones.

3.2.3.3 Challenges in incorporating risk potential costs in a timely manner. Success stories or good practices.

- **White table:** A major challenge was making local risk assessments (like Risk Atlases) legally binding ("normative") rather than merely indicative.
- **Yellow table:** Success stories included geoscience academic programs focusing their research directly on DRM, and Mexico's Trust Fund (*Fideicomiso*) for reconstruction, which prevented the diversion of standard public funds.
- **Blue table:** Good practices included allocating funds directly to the local level, such as Community-Based Development Grants (CBDG in the USA) and community-led housing recovery (REKOM PAK in Indonesia). Active, intercultural listening was essential.
- **Red table:** Challenges included establishing standard methodologies and mandates/incentives to actually evaluate and mitigate risk. Good practices included developing local inventories of climate change impacts and incorporating data into Cultural Heritage protection.
- **Green table:** Challenges involved quantifying damages in economic and social equivalents. A key practice was incorporating disaster risk costs into *all* project decisions and generating mitigation measures *before* earthquakes happen.

3.2.3.4 How considering these risks influenced decisions about what to develop, where, and for whom at the local level.

- **White table:** Currently, risk is **not being considered** as a deciding factor in development decisions.
- **Yellow table:** Risk must act as a strict limit ("**Risk = Limit**"). Municipalities must use foundational risk studies to dictate regulatory zoning plans.
- **Blue table:** It forces developing economies to be more aware and integrated risk into contracts, driving necessary investment into data collection and analysis.
- **Red table:** Considering risk drives innovation and different management solutions. It brought people together and promoted nature-based solutions.
- **Green table:** It influences decisions by dictating where *not* to build (avoiding risk zones) and by forcing projects to incorporate externalities to ensure long-term sustainability.

3.2.3.5 Synthesis of findings

Question 1: Impacts and Costs in Development Projects

- **Major Consensus:** There was universal agreement that disaster risks were systematically excluded from project profitability evaluations. DRM was viewed as a sunk cost/expense rather than a protective investment. Consequently, post-disaster response was incredibly expensive and forced governments to divert funds from other crucial social programs.
- **Other topics:** Donor-led initiatives ignoring local context, and the specific lack of funding for geoscience research.

Question 2: Financial Mechanisms

- **Major consensus:** Financial mechanisms were currently reactive rather than proactive (focused on response rather than prevention). Insurance (especially parametric insurance in agriculture) and local emergency trust funds were the most common tools.
- **Other topics:** Innovative local tax models (like DRM tariffs on water companies), relocation bonuses, and the caveat that insurance cannot solve all hazards (e.g., uninsurable flood zones).

Question 3: Challenges and Good Practices

- **Major Consensus:** The biggest challenge was moving risk assessments from being "optional/indicative" to "mandatory/normative." Good practices heavily featured community-directed funding models (USA's CBDG, Indonesia's REKOM PAK) and specialized trust funds (Mexico) that protected local recovery budgets.
- **Other topics:** Protecting cultural heritage, standardizing domestic climate impact inventories, and aligning university geoscience careers with practical DRM needs.

Question 4: Influence on Local Development

- **Major consensus:** In reality, risk was currently *not* a deciding factor in development. However, the consensus was that it *must* become a regulatory boundary—summarized perfectly by one group as "Risk = Limit." It must dictate land use (where not to build) and force the calculation of externalities.
- **Other topics:** Promoting nature-based solutions and driving innovation/community cohesion through risk awareness.

3.3 Session 3

3.3.1 Speaker 5 Constanza Rivera Pereira, Mexico. Public Policy Coordinator for Disaster Prevention at CENAPRED MEXICO: "Strengthening Resilience from the local level: Implementation of the Domestic Resilient Communities Strategy in Mexico".

This session presented Mexico's experience in strengthening disaster risk management through locally driven approaches, focusing on the implementation of the Domestic Resilient Communities Strategy. The presentation emphasized the importance of addressing risk at the territorial level and bridging the gap between central frameworks and local action.

3.3.1.1 Main topics

The presentation highlighted the increasing economic costs associated with disasters, including rising losses, fiscal pressure on governments, and the accumulation of contingent liabilities. It emphasized that failure to address risk proactively led to higher long-term costs and undermines sustainable development. Risk was framed as unevenly distributed and highly context-dependent, shaped by local socioeconomic conditions, territorial dynamics, and decisions related to land use and infrastructure. This reinforced the need to address disaster risk management at the local level, where risk was effectively produced.

Despite strong legal and institutional frameworks at the domestic level, significant challenges remained in translating these into local action. Municipalities often faced technical and financial constraints, alongside a persistent disconnection between development planning and disaster

risk management. The strategy was presented as a key public policy instrument designed to institutionalize disaster risk reduction at the local level. It focuses on strengthening community capacities, preventing the creation of new risks, reducing existing vulnerabilities, and fostering resilience through a territorial approach.

Implementation was grounded in participatory processes that actively involved communities in identifying risks and designing solutions. This included close coordination with local governments to ensure sustainability and alignment with institutional frameworks.

Key tools include the establishment of community committees, the development of community action plans, and the provision of training and technical guidance. These instruments supported local organization, participatory risk diagnosis, hazard and vulnerability analysis, and the design of prevention and response protocols tailored to each context.

The strategy incorporates a broader ecosystem approach, including a local network of implementers, cross-sector collaboration, and mechanisms for documenting and replicating good practices. In addition, training programs for facilitators played a central role in strengthening local leadership and ensuring consistent implementation.

Mrs. Rivera reported progress in scaling the strategy, including the establishment of community committees, training of local actors, and implementation across priority regions. A case example illustrated how community-based early warning systems and preparedness measures enabled timely evacuation and prevented loss of life in a high-risk rural area.

3.3.1.2 Conclusions

The presentation showed that strong domestic legal and institutional frameworks were necessary but not enough. Turning them into local action depends on resolving the technical and financial constraints that municipalities continued to face. Mexico's Domestic Resilient Communities Strategy is an institutionalized public-policy instrument that puts disaster risk reduction at the local level. It combined participatory risk identification, community committees, community action plans, and structured technical guidance. The strategy's progressive expansion into priority regions illustrated a broader point: effective local resilience required strengthening community capacities, preventing the accumulation of new risk, and building an ecosystem of implementers, with cross-sector partnerships and mechanisms to document and replicate good practices, rather than isolated pilots.

3.3.2 Speaker 6 Karla Méndez Estrada, Mexico. Deputy Director of Economic and Social Studies at CENAPRED. Understanding the Human Impact of Disasters: Child-Focused and Gender-Responsive Evidence for Local Development Planning.

This session addressed the multidimensional human impacts of disasters, drawing on evidence from recent extreme events. The analysis emphasized how disasters affected not only infrastructure and livelihoods, but also social structures, well-being, and protection systems, highlighting the need for child-focused and gender-responsive approaches in local development planning.

3.3.2.1 Main topics

Multidimensional impacts on well-being and development: Disaster impacts extended across interconnected dimensions, including livelihoods, living conditions, health, education, gender equality, social inclusion, food security, and the protection of children and adolescents. These factors interact and reinforce one another, shaping uneven and prolonged recovery processes.

The traditional “pyramid of recovery” approach, prioritizing infrastructure before social dimensions, was critically examined. While restoring housing and basic services was essential, dimensions such as mental health, gender equality, and child protection must be addressed throughout the recovery process rather than treated as final-stage outcomes.

Collapse of shelter, services, and daily routines: Damage to housing, electricity, and water systems disrupted daily life and delayed recovery. The loss of basic services generated cascading effects across multiple sectors, while schools played a critical role as stabilizing spaces for children and adolescents.

Mental health and emotional recovery: Psychological impacts were among the most significant, with persistent anxiety and fear linked to environmental triggers. These effects highlighted the importance of integrating mental health into recovery strategies from early stages.

Economic disruption and unequal recovery: Disasters caused severe economic disruption, including job losses and the paralysis of key sectors.

Moreover, recovery trajectories were highly unequal, largely shaped by territorial connectivity and access to services.

Food insecurity and cascading system failures: Failures in critical infrastructure, particularly electricity, triggered cascading impacts on food systems, water access, and local markets. This resulted in acute shortages, dependence on external assistance, and prolonged vulnerability linked to unstable service provision.

Gendered impacts and unequal care burdens: Recovery processes revealed differentiated gender roles, with women assuming disproportionate caregiving and household responsibilities, delaying their economic reintegration. These dynamics reinforced existing inequalities and increased vulnerability.

Territorial and logistical exclusion: Exclusion dynamics were primarily territorial, affecting isolated communities, individuals with reduced mobility, and smaller households. Centralized aid delivery systems often failed to reach these groups effectively.

Differentiated recovery trajectories: Recovery experiences varied across demographic groups. Women’s well-being was closely tied to housing security and marked by sustained environmental anxiety and care burdens, while adolescents and men showed distinct recovery patterns linked to economic and social reintegration.

Disasters as drivers of multidimensional poverty: The analysis highlighted a three-phase dynamic linking disasters to poverty. The initial shock produces simultaneous losses in housing, water, income, and food security. This was followed by survival strategies -such as child labor, reduced food consumption, depletion of savings, and migration- that carried high long-term costs. If unaddressed, these dynamics consolidated into chronic multidimensional poverty, including school dropout, indebtedness, and intergenerational vulnerability.

3.3.2.2 Strategic recommendations for inclusive recovery

The session outlined key recommendations to strengthen recovery processes. These included avoiding the sequencing of basic service restoration by prioritizing the simultaneous recovery of housing, water, and infrastructure; decentralizing food distribution systems to reach isolated communities; supporting inclusive economic reactivation, particularly for small and medium enterprises; institutionalizing mental health within public systems; incorporating a gender-sensitive territorial approach to recovery planning; and strengthening disaggregated, continuous data systems to better capture differentiated impacts and prevented exclusion.

3.3.3 Work Group 3

Recommendations to ensure meaningful participation and leadership of women and diverse marginalized population groups in decision-making and development management planning linked to disaster risk reduction at the local level.

Work Group 3 looked at the meaningful participation and leadership of women and marginalized groups in decision-making and development planning linked to disaster risk reduction. The five tables examined four guiding questions: who was most often excluded from development and DRR processes; how disaster risk affects marginalized populations and how they see their role in local planning; the consequences of their exclusion for DRM outcomes; and the good practices that could be scaled to bring inclusion into every step of the DRM cycle. The aim was to turn intersectional evidence into operational recommendations for inclusive risk governance.

The group discussion is synthesized below around the four guiding questions.

3.3.3.1 Who is often excluded from development and Disaster Risk Reduction (DRR) processes?

White table: This group lists a wide array of excluded individuals: women (specifically indigenous, disabled, non-schooled, and gender-diverse), youth, and children. Also mentioned were foreign migrants, indigenous and Afro-descendant people, older persons, people with disabilities, and low-income communities. They also included the LGBTQI+ population and general citizens who may feel disconnected.

Yellow table: This group identifies exclusion based on ageism (affecting both the young and elderly), students/educators (curriculum-based exclusion), the scientific community, sexual diversity (LGBTQ+), women, and sensory disability. Also mentioned were neurodivergent children (ASD), peasant farmers/rural workers, and indigenous populations.

Blue table: This group explicitly includes women and opposition groups, particularly those politically marginalized at the local level due to power dynamics. Other excluded populations were general marginalized groups (indigenous, ethnic, LGBTQI+, disabled), youth and children who lacked a voice in decision-making, the working class/poor (due to lack of time for meetings), and migrants/undocumented individuals. A sub-point highlights digital exclusion, especially for those in rural areas or refugees without internet access.

Red table: Identified groups include indigenous communities (specifically those in irregular settlements), populations in extreme poverty, migrants, people with disabilities, older adults, and women (including girls/boys and LGBTQ+ individuals).

Green table: Exclusion was based on social status, gender diversity (including transgender individuals), and educational status. Other excluded groups included vulnerable communities, people with disabilities, neurodivergent people, and undocumented migrants.

3.3.3.2 How disaster risk affects marginalized populations and how they viewed their role in local planning.

White table: This group highlights that marginalized populations felt they were the most affected by disasters, yet they were made invisible in planning. They were diverse and required differentiated treatment for their needs, but their specific conditions, ways of life, and organizational forms were often overlooked. Consequently, plans were made without their input, leading them to have no voice and unrecognized capacities, which causes them to question whether they have a role in local planning at all.

Yellow table: For these populations, disaster risk compounds existing poverty, led to job loss or instability, and caused the loss of primary services. It fractured social cohesion and led to an increase in mental health issues and overall insecurity.

Blue table: Disaster risk has disproportionate effects on youth and children, impacting their education and limiting volunteering opportunities. It exacerbated existing disparities across caring, housing, healthcare, physical networks, and the prevalence of illness. It also placed a geographically varying, heavy burden on women.

Red table: Marginalized populations experienced disproportionate economic losses. They lacked access to safe infrastructure and faced high exposure to risk areas. Plans were made without taking into account their traditional knowledge. Consequently, they have limited autonomy to participate in development processes and often view themselves as aid recipients, rather than central actors in their own recovery.

Green table: Marginalized populations lacked identification and exact data in systems, rendering them invisible. This prevented them from having a voice in planning decisions and led to a lack of access to basic services (health, food, education). They were often deprived of aid during emergencies and typically live in precarious human settlements.

3.3.3.3 Consequences of certain groups of population being excluded from DRM processes due to a lack of representation and visibility.

White table: The consequences were severe, leading to increased impoverishment and structural poverty. Paradoxically, recovery efforts could widen inequality. Exclusion worsens the living conditions of marginalized populations and aggravates socio-economic gaps. This created a repetitive cycle of victimization and reduced the possibility of building greater community resilience for everyone.

Yellow table: Lack of inclusion resulted in disaster responses that were not relevant to the specific needs of each vulnerable group due to a lack of appropriate logistics. This overall lack of pertinence increases risk, perpetuates vulnerability, and could lead to an increase in gender-based violence.

Blue table: Exclusion perpetuated a cycle of discrimination and caused a central-values-based response context to overlook the specific needs of each group. This causes frustration, which led to conflict and a lack of collaboration. Exclusion de-motivates youth, fueling inequalities and

potential criminality. Ultimately, this resulted in the adoption of inappropriate mitigation measures.

Red table: Lack of inclusion perpetuated the cycle of poverty and marginalization. It weakened trust in the government, often fueled by misinformation. Specific groups, such as youth and children, suffered from a lack of access to comprehensive recovery processes (e.g., educational recovery during a pandemic).

Green table: Exclusion led to an increase in poverty, social inequality, and a rise in informal employment. It resulted in higher school dropout rates. The economy faces increased costs due to a lack of participation. Critically, there were human losses that occurred outside of formal systems.

3.3.3.4 Good practices to share on inclusion.

White table: Group members shared numerous practical tools: processes to support vulnerable groups with DRM relevance, training processes with intersectional perspectives (gender, disability), inclusive early warning systems (EWS) using bio-indicators and radio (e.g., Senegal), and a focus on analysis and mapping. They proposed developing methodologies to gather differentiated solutions, promoting local governance from neighborhood assemblies upwards, and implementing "active listening" with an intersectional lens. They also included the creation of knowledge exchange networks among communities.

Yellow table: Practices focused on structural and training programs: creating community centers with a gender perspective and disaster criteria, developing disaster resilience training plans, utilizing professionalized trainers, and referencing specific examples like Mexico's resilient communities strategy, Colombia's "Guardians of the Slopes," and psychological first-aid programs (PAP-MINSA). The use of radio as a tool was also mentioned.

Blue table: Recommendations centered on methodologies and tools, including "Active Mapping" of stakeholders with cross-checking to identify missing groups and "Active Listening" as a core tool. The group emphasized developing systematic information-gathering methodologies to ensure all groups were included, creating specific school DRR modules (e.g., Malaysia's UNICEF model), and establishing programs for diverse group engagement in mitigation.

Red table: Key practices included conducting impact assessment evaluations differentiated by gender and childhood. Proposed actions were to incorporate DRM content in schools and to promote community committees specifically for Disaster Risk Reduction (DRR). An example was given of involving women living near a volcano, such as Tungurahua, where they were trained and recognized as observers and guardians of the volcano.

Green table: Shared good practices included having localized DRM plans, conducting domestic and school drills, and implementing school-level specific measures, such as differential protocols for vulnerable groups and a mobile application for school alert management (as practiced in Peru). Suggestions were made to integrate existing plans (like PREP) into workshops and to separate responsibilities for reactive versus prospective/corrective management.

3.3.3.5 Synthesis of findings

Question 1: Who are often excluded from development and DRM (Disaster Risk Management) processes?

- **Major consensus:** There was widespread agreement that the most excluded groups were **women** (especially those with intersecting vulnerabilities, such as indigenous or low-income women), **people with disabilities**, the **LGBTQ+ community** (sexual and gender diversity), **indigenous peoples**, **migrants** (particularly undocumented individuals or refugees), **children/youth** and **older adults** (exclusion due to ageism), and people living in **extreme poverty** or irregular settlements.
- **Other topics:** More specifically, some groups identified the neurodivergent population, the scientific community, rural workers/peasant farmers, and local political opposition groups.

Question 2: How disaster risk affects marginalized populations and how they view their role in local planning.

- **Major consensus:** There was strong consensus that disasters **exacerbated pre-existing poverty and inequalities**, generating disproportionate economic losses. Regarding their role in planning, the generalized perception was one of **"invisibilization"**: lacking exact data on them, it was assumed they had no voice or participation. As a result, these populations do not feel like central actors in their own recovery rather than perceiving themselves solely as **passive recipients of aid**.
- **Other topics:** Loss of social cohesion, severe impacts on mental health, the omission of their traditional knowledge in decision-making, and the additional physical burden that geography imposed specifically on women.

Question 3: Consequences of certain groups being excluded from DRM processes due to a lack of representation.

- **Major consensus:** The most repeated consequence was the **perpetuation of the cycle of vulnerability and poverty**, widening socio-economic gaps. Operationally, the greatest consensus lies in the **"lack of relevance"** (pertinence) of the disaster response; by not knowing the specific needs of each group, the measures taken were inadequate, which paradoxically **increases overall risk**.
- **Other topics:** Increase in informal employment, school dropout rates, rise in gender-based violence, loss of human lives outside the official system (under-registration), increase in criminality, and distrust towards authorities fueled by misinformation.

Question 4: Good practices to share on inclusion.

- **Major consensus:** The most supported solutions focused on the **educational sphere** (integrating DRM into school curricula and drills), strengthening **community governance** (creating local committees), and systematically adopting an **intersectional approach** (assessments and plans that differentiated by gender, age, and disability). The use of **active listening and stakeholder mapping** methodologies also stands out.
- **Other topics:** Very valuable hyper-local examples such as the "Volcano Guardians" (women observers) or "Slope Guardians," the use of traditional bio-indicators for Early Warning Systems, and the development of specific mobile applications for schools.

3.3.4 Speaker 7 Kanako Iuchi, Japan. International Research Institute of Disaster Science (IRIDeS), Tohoku University: “Research on post-disaster planning processes, community resilience, recovery governance, community relocation, and spatial re-development.”

The presentation examined post-disaster recovery processes and their role in strengthening community resilience, highlighting the need to move beyond infrastructure-focused approaches toward more integrated and adaptive models. Drawing on international case studies, the presentation explored how recovery could serve as an opportunity to reduce future risk and build more sustainable and resilient communities. The key themes were as follows:

- **Recovery as a complex and dynamic process:** Post-disaster reconstruction involved urgent, evolving, and multi-dimensional challenges. Recovery processes must simultaneously address immediate needs, long-term development goals, and changing conditions on the ground, making them inherently complex and difficult to manage.
- **Functional recovery as a necessary but insufficient foundation:** Initial recovery efforts typically prioritized restoring critical infrastructure and essential services, including housing, transportation, education, and health systems. While this “functional recovery” was essential to re-establish basic conditions for daily life, it often relied heavily on engineering-driven approaches focused on physical reconstruction.
- **From “Build Back Better” to broader resilience thinking:** Recovery approaches in the 2010s were strongly influenced by the “Build Back Better” paradigm, emphasizing hazard-resistant infrastructure and spatial planning measures such as relocation and land-use restrictions. However, this approach has often prioritized physical resilience over social and economic dimensions.
- **Evolving concept of resilience:** Resilience has been conceptualized through both engineering and social systems perspectives, encompassing the capacity of physical structures to withstand shocks and the ability of communities to adapt and recover. Traditional approaches have tended to privilege visible and physical outcomes, overlooking less tangible but equally critical dimensions of resilience.
- **Mismatch between physical reconstruction and lived realities:** Evidence from recovery experiences showed a persistent disconnect between rebuilt environments and the needs and expectations of affected populations. The restoration of infrastructure do not necessarily translate into improved well-being, social cohesion, or sustainable livelihoods.
- **Integrated resilience in practice: lessons from case studies:** Case studies from Japan and the Philippines illustrated how resilience could be strengthened when physical, socio-economic, and organizational dimensions were addressed in a balanced manner. Examples included risk-informed relocation combined with the development of local economic hubs, participatory planning processes, and strong community organizations that supported long-term recovery and adaptation.
- **Risks of unbalanced recovery approaches:** Overemphasis on a single dimension, particularly physical infrastructure, could lead to unintended negative outcomes, including underutilized spaces, economic stagnation, weakened community ties, and reduced quality of life. These imbalances highlighted the limitations of narrowly defined recovery strategies.
- **Towards adaptive and community-centered resilience:** The session emphasized the importance of aligning recovery processes with community needs and ensuring

continuous participation over time. Effective resilience-building required balancing physical, socio-economic, and organizational dimensions, fostering ongoing dialogue, and allowing for adaptation as conditions evolved.

- Recovery processes were framed as opportunities for experimentation and transformation. When supported by inclusive governance, continuous communication, and adaptive planning, they could generate innovative approaches that strengthened long-term resilience and informed future policy and practice.

3.3.4.1 Conclusions

The presentation argued that physical reconstruction was necessary but not enough to rebuild community resilience. Functional recovery of housing, infrastructure, and basic services must match the social, economic, and cultural realities of affected communities; otherwise even sound technical interventions produced underutilized spaces, economic stagnation, and social fragmentation. Evidence from Japan and the Philippines showed that resilience grew when the physical, socio-economic, and organizational dimensions of recovery were addressed together and sustained over time. Recovery was, therefore, an opportunity for experimentation and transformation when supported by inclusive governance, continuous communication with communities, and adaptive planning that evolved with their needs. This moves the policy frame from "Build Back Better" toward a broader, community-centered conception of resilience.

3.3.5 Speaker 8 Oscar Guevara, Colombia. Development Bank of Latin America and The Caribbean – CAF: “Integrating Local Development and Disaster Risk Reduction for Cost and Impact Mitigation”

The presentation explored the challenges and opportunities for achieving a more effective and risk-based investment approach to disaster risk reduction, with a particular focus on enhancing resilient local development. One of its main recommendations was the need to move beyond fragmented financing approaches toward more integrated and operationally grounded strategies, particularly in relation to climate action and DRR measures. The key themes were as follows:

- **Finding common ground:** A key challenge lies in the fragmentation of financing streams across disaster risk reduction, climate change adaptation, and loss and damage. Although these agendas shared a common objective, which was reducing risk and strengthening resilience, they were often pursued through disconnected mechanisms. This presented the need to build complementarity, align investments toward shared development goals, and promote coordination across sectors and actors, particularly at the local level.
- **A risk-based approach to investment:** It was emphasized that all public and private investments should integrate risk reduction as a core principle. This included ensuring that investments across sectors were resilient to current and future hazards and contributed to reducing existing vulnerabilities. At the same time, residual risks must be addressed through financial instruments such as contingency funds, reserves, and insurance, alongside predictable financing for response and recovery processes.
- **Enhancing synergies between climate adaptation and DRR:** An integrated approach between climate change adaptation and DRR was essential to maximize impact. This included simultaneously addressing existing risks, anticipating future threats, and strengthening preparedness and adaptive capacities. These agendas should not

compete for resources but rather reinforce each other through coordinated investment strategies.

- **A land-use planning approach:** There was a persistent gap between risk identification and risk reduction in practice. While technical tools such as hazard maps were increasingly available, they were often outdated, inconsistently applied, or disconnected from planning decisions. Thus, strengthening territorial planning, including land-use regulation, risk assessments, and development controls, was critical to translating risk information into effective, on-the-ground action.
- **Finding common metrics:** Over the last decades there has been a growing interest in DRR research, particularly around concepts such as vulnerability and resilience. Mr. Guevara raises concerns about the overemphasis on these abstract indicators, which might not adequately capture real risk conditions. While these frameworks remained relevant, greater focus was needed on measurable, verifiable, and context-specific metrics that directly informed decision-making. This included improving risk data systems and prioritizing indicators that supported concrete actions to reduce, anticipate, and manage risk.

3.3.5.1 Conclusions

The presentation concluded by emphasizing the need to strengthen disaster risk reduction efforts through concrete, measurable, and context-specific risk information that could directly inform decision-making. Investments such as early warning systems and resilient infrastructure were highlighted as practical entry points that could simultaneously advance climate adaptation and DRR objectives. In this regard, the origin of financing was less important than its ability to strengthen risk-informed systems and deliver tangible outcomes. A key priority was to embed resilience criteria across public investment in all sectors, recognizing its potential to unlock significantly greater resources than standalone DRR funding. Achieving this shift required stronger coordination, clearer incentives, and sustained efforts to translate widely recognized principles into practice. Ultimately, advancing toward a more balanced and diversified investment approach depended on aligning financing with real risk conditions and ensuring that resilience was systematically integrated into development planning.

3.3.6 Round Table. Speakers from: Colombia; Japan; Mexico; Papua New Guinea; and Peru

The roundtable discussion explored the factors linking local development with local disaster risk management, which had been exacerbated by climate change in APEC economies. In this regard, recommendations were made to strengthen this link based on experiences in the economies of Colombia; Japan; Mexico; Papua New Guinea; and Peru. Below is a summary of the most relevant aspects of the roundtable discussion.

Representatives from CENAPRED **Mexico** commented on the value of the public policy known as the “Domestic Strategy for Resilient Communities,” which was adapted to the diverse realities of Mexican municipalities. They highlighted the strengthening of the social fabric to build resilience from the “bottom up,” empowering communities to identify their specific vulnerabilities in the face of phenomena intensified by climate change. Its pillars were examples of progress in strengthening local capacities through the following actions:

Infrastructure and Economy

- Simultaneous comprehensive restoration
- Decentralized food logistics
- Inclusive economic reactivation

Social and Human Resilience

- Institutionalize mental health
- Territorial design with a gender lens

Disaggregated and continuous monitoring

- Gender-sensitive evidence
- Priority protection of children

Additionally, the strategy aims to: strengthen local capacities; prevent new risks; reduce existing risks and increase resilience.

Peru's presentation highlighted two experiences regarding Adaptive Social Protection and Ex Ante Anticipatory Action for social organizations and poor and vulnerable populations in Peru. The recommendations from these experiences that could be applied in APEC economies were the path toward more proactive resilience that requires institutional, technical, operational, and community priorities to advance together.

- **Institutionalize protocols:** defined roles, triggers, and activation routes among MIDIS, INDECI, SENAMHI, sub-economy governments, and social organizations.
- **Strengthen registries and interoperability:** cross-reference social rosters with exposure and risk information and update them at the local level using a differentiated approach.
- **Improve local and inclusive EWS:** ensured monitoring, accessible communication, multiple channels, and regular simulation exercises.
- **Pre-position financing and logistics:** agreed on funds, usage rules, and delivery mechanisms before the shock rather than after it.
- **Formally integrate social organizations:** in warning dissemination, targeting, accompaniment, food continuity, and accountability.

Based on the presentation by Ronald Sofo of the National Research Institute (PNG APEC Study Centre), he noted that the link between development and risk management in **Papua New Guinea** (PNG) was articulated through an approach centered on social capital and institutional citizenship. The key aspects of its institutional framework were:

1. Local Compulsory Service (Local Compulsory Service)

This was the most distinctive pillar mentioned. PNG uses an institutional structure to mobilize youth not only as beneficiaries but as operational actors in risk management:

- **Integration into Local Development:** Compulsory service seeks to involve young people in infrastructure and community service projects, linking their civic education to the economy's resilience.

- Disaster Preparedness: Institutionally, these young people were trained in preparedness and response tasks, creating a local “reserve force” that knows the territory and could act before external aid arrives.

2. Bottom-up Governance

Due to PNG’s fragmented geography and cultural diversity, its institutional framework recognizes that development cannot be centralized:

- Community Empowerment: Risk management was linked to local development through capacity-building in villages. The domestic institution acts as a facilitator of resources, but the implementation and maintenance of resilient infrastructure fall to local communities.
- Traditional Knowledge: The aim was to integrate ancestral knowledge about the climate and the land into formal land-use planning policies.

3. The Role of Research Centers and the APEC Study Centre

Unlike other purely operational models, PNG had a strong component of applied scientific evidence:

- Monitoring and Evaluation: The National Research Institute (NRI) acts as the bridge between scientific data and policy decision-making. This ensured that local development plans (such as the construction of schools or clinics) were based on up-to-date risk maps.
- Science Diplomacy: Through the APEC Studies Center, PNG aligns its domestic policies with international standards, making risk management a prerequisite for receiving foreign investment in development projects.

4. Focus on Inclusion of Demographic Groups

PNG’s institutional framework places strategic emphasis on sectors that were often overlooked in planning:

- Youth as a Strategic Focus: They were not viewed as a “vulnerable group,” but rather as the engine of economic development. By giving them a formal role in disaster management, the economy ensures that the next generation of local leaders has resilience built into their approach to managing the territory.

All aspects to be considered and adapted according to the specific realities of APEC economies to address the link between local development management and disaster risk reduction measures in the territories.

According to the contributions of Oscar Guevara, Senior Specialist in Climate Action and Positive Biodiversity at **CAF**, his approach for APEC economies focuses on transforming risk management from a reactive expense into a strategic investment in local development.

His main recommendations were structured around the following operational pillars:

1. Integration of Risk Management and Climate Adaptation

Guevara emphasizes that the division between Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) is artificial at the local level.

- **Unified Agendas:** He recommends that local governments use cross-cutting tools (such as the MCR2030 Resilience Scorecard, in whose climate version he actively participated) to simultaneously assess vulnerability to extreme events and long-term climate trends.
- **Rationalizing Uncertainty:** Integrate climate projection models into local land-use plans so that today's decisions do not create future risks (prospective risk).

2. Resilient Infrastructure as a Financial Asset

For CAF, infrastructure must not only “withstand” but also served as the engine of fiscal stability.

- **Public Investment Criteria:** Recommends incorporating resilience standards into Domestic Public Investment Systems. This demonstrated that, although the initial investment was higher, the multiplier effect (savings on reconstruction and reduced insurance premiums) was vital for local GDP.
- **Protection of Essential Services:** Ensured that water, energy, and transportation infrastructure in local communities was the last to fail and the first to recover.

3. Innovative Financing Mechanisms

Given the financing gap (where less than 2.5% of domestic budgets were allocated to resilience), it proposes:

- **Blended Finance:** Mobilize private resources toward local resilience projects through guarantees or concessional loans from development banks.
- **Contingent Instruments:** Promoted the use of parametric insurance and contingent credit lines that provided immediate liquidity to local governments following a disaster, enabling “resilient reconstruction” rather than merely replacing what was lost.

4. Governance and “Breaking Down Silos”

Institutionally, Guevara argues that risk management was not the task of a single agency:

- **Cross-Sectoral Approach:** Resilience must be at the center of the portfolios of Finance, Planning, and Social Development.
- **Risk Transfer:** Encourage APEC economies to share open risk data to facilitate the creation of local insurance markets that were more accessible to vulnerable communities.

In summary, Guevara's vision for APEC was that resilience should be the backbone of all local development policies, ensuring that every dollar invested today reduces tomorrow's vulnerability, under the premise that “there is no sustainable development without risk management.”

Finally, the recommendations of Dr. Kanako Iuchi (Tohoku University) of **Japan** for APEC economies are grounded in her extensive research on recovery governance and post-disaster resettlement processes. Her primary focus was on how communities could live sustainably in changing and hazardous environments.

Based on her experience and recent publications, her key recommendations for community resilience were:

1. Collaborative and Iterative Planning

Dr. Iuchi argues that resilience was not achieved through technical plans alone, but through social engagement:

- **Time Investment:** Participatory processes required a substantial time commitment. She warns that forcing quick results often leads to low satisfaction and a lack of consensus.
- **Early Involvement:** The effectiveness of community participation depended on when residents were involved. Decisions made early in the reconstruction process tend to be more robust and widely accepted.

2. Strategic Management of Relocation

As an expert in community relocation, Iuchi suggests:

- **Assess the Social “Cost”:** Relocation should not be the automatic first option, as it disrupts social networks and livelihoods. A careful decision must be made between relocating (moving the community) or repopulating (rebuilding in situ with better defenses).
- **Adaptability in Low-Income Communities:** It was vital to design relocation frameworks that allowed vulnerable populations to adapt to their new environments without losing their economic capacity.

3. Adaptive Recovery Governance

It was proposed that post-disaster institutions should not be merely “ad-hoc” structures:

- **Multilevel Interaction:** She recommended clear synergy among domestic, regional, and local actors. Resilience fails when there was a disconnect between planning (theory) and implementation (practice).
- **“Compressed Time” Governance:** After a disaster, decisions were made under intense pressure. She recommended establishing predefined governance mechanisms that could operate effectively during these periods of urgency without sacrificing inclusivity.

4. Balance Between Risk Reduction and Development

Iuchi addresses the challenge of the tension between safety and the economy:

- **Regulation vs. Vitality:** Governments must find the middle ground where land-use regulation (to avoid risk zones) does not stifle economic development or destroy the community’s cultural traditions.

- **Solutions Beyond Engineering:** While infrastructure (such as levees) was important, it should not come at the cost of the community losing its traditional ways of life.

5. Social Learning and Transactivity

Promoted the concept of social learning within planning:

- Communities and planners must continuously learn from one another. Resilience was a dynamic process where feedback from residents helped adjust reconstruction policies over the years.

In summary, for Dr. Iuchi, community resilience in APEC depends on slow and thorough planning processes that prioritized social cohesion and land-use justice over the speed of physical reconstruction.

The document presents key strategies for integrating risk management and local development into APEC economies, highlighting four complementary approaches:

Mexico and Peru: They proposed strengthening the social fabric from the ground up and using “adaptive social protection” with ex ante financing to protect the most vulnerable.

Papua New Guinea: Emphasizes the use of “social capital”, mobilizing youth through domestic service and drawing on ancestral knowledge for territorial planning.

Financial Vision (CAF): Suggests transforming risk into “strategic investment”, integrating resilient infrastructure as a financial asset and eliminating institutional “silos” between finance and planning portfolios.

Japan’s Approach: Emphasizes “slow, participatory recovery governance”, where social cohesion and mutual learning between planners and citizens were more important than the speed of physical reconstruction.

In summary, resilience in the region depends on shifting from a reactive response to “comprehensive and transdisciplinary planning” that places community sustainability at the center of public policy.

3.3.7 Workshop Review and Synthesis of Key Results

The workshop turned the baseline diagnosis into a structured exchange among APEC economies and produced a coherent picture of the regional situation. Speakers and work groups returned again and again to a single underlying problem: the gap between formal policy frameworks that mandated the linkage between disaster risk management and local development, and the everyday reality of municipalities that lacked the technical staff, financial resources, and political continuity to carry that mandate out. When that gap was combined with development decisions that ignored risk, local development itself became a generator of prospective risk and erodes the long-term economic stability that APEC works to protect.

Keynote presentations added to this diagnosis from different angles. The baseline presentation (Speaker 1) and the framing session on the local–DRM linkage (Speaker 2) grounded the discussion in evidence from the 21 economies and pointed to reactive financing, weak gender

integration, and structural inequalities as recurring patterns. The Peruvian experience on adaptive social protection and anticipatory action (Speaker 3) and the Papua New Guinean perspective on youth, civil-military coordination, and capacity constraints (Speaker 4) showed that anticipation and inclusion could work in practice when they are institutionalized rather than run as isolated pilots. Mexico's experience on the Domestic Resilient Communities Strategy (Speaker 5) and the evidence on disaster impacts presented from a child-focused, gender-responsive standpoint (Speaker 6) showed how disasters affected households differently and how recovery paths diverged afterward. Japan's research on post-disaster recovery (Speaker 7) argued that physical reconstruction was not enough on its own if it was cut off from the lived realities of affected communities.

The three work groups built this evidence into a shared agenda for action. Work Group 1 confirmed that the main obstacles to local DRM integration were the lack of political will and continuity, the lack of alignment of planning instruments across levels of government, and the absence of a shared technical language between sectors. Work Group 2 found near-universal agreement that disaster risk and contingent liabilities were left out of project profitability evaluations, that financial mechanisms remain mostly reactive, and that risk assessments need to shift from "indicative" to "normative". The workshop captured this in the formula "Risk = Limit". Work Group 3 mapped the intersectional patterns of exclusion that affected women, persons with disabilities, indigenous and migrant populations, youth, and gender-diverse groups, and argued that inclusion has to be built in through educational integration, community governance structures, sex-, age-, and disability-disaggregated data (SADDD), and active-listening methodologies.

The workshop's contributions pointed to one conclusion: closing the implementation gap calls for progress on five fronts at the same time, not for isolated reforms. The five fronts were inclusive risk governance, the elimination of institutional silos, proactive fiscal mechanisms, transdisciplinary knowledge integration, and binding normative frameworks for land-use regulation. They structured the Strategic Recommendations in Section 4 of this report, so that the workshop's discussions became a clear agenda for APEC economies.

3.3.8 Post-workshop survey

A post-workshop survey was distributed to all participants at the conclusion of the event, with responses collected until 15 April. A total of **16 participants** completed the survey, out of 25 attendees. The respondent group included **12 women** and **4 men**, providing a balanced basis to assess participants' perceptions of the workshop's design, relevance, and outcomes.

3.3.8.1 Overall assessment of the Workshop

Overall, participants expressed a consistently positive assessment of the workshop's design and delivery, with all responses clustering between *agree* and *strongly agree* across dimensions, such as clarity of objectives, relevance of content, and achievement of intended outcomes. Particularly strong ratings were observed for the organization of the workshop, the quality of facilitators, and the usefulness of materials, while a small share of participants indicated that time could have been expanded to allow for deeper discussion.

Regarding Gender issues, 62.5% of participants *strongly agreed* and 37.5% *agreed* that these topics were successfully addressed.

Time allocation was also viewed positively overall, although 6.3% of participants indicated that time was insufficient, suggesting some demand for extended discussion or deeper engagement.

Beyond these quantitative results, qualitative responses provided a clearer understanding of how the workshop was experienced. Participants consistently highlighted the workshop's value as a space for exchange of experiences and peer learning across APEC economies. Beyond the formal content, respondents emphasized the opportunity to engage with diverse domestic and local realities, while identifying common challenges related to disaster risk management (DRM) and local development.

Several responses underlined that the workshop enabled a comparative understanding of practices, policies, and implementation gaps, particularly across Latin America, Asia, and the Pacific. This exchange was perceived as especially valuable for learning from both successful experiences and existing challenges, reinforcing the importance of cross-economy dialogue. Additionally, participants noted the workshop's role in initiating or strengthening professional networks, as well as opening opportunities for future collaboration.

Overall, findings suggested that the workshop was not only received as a training activity, but more importantly as a platform for collective reflection and knowledge-sharing, which enhanced its perceived value.

3.3.8.2 Relevance and applicability across contexts

The workshop was widely perceived as relevant, with 62.5% of participants rating it as *very relevant* and 37.5% as *somewhat relevant* to their economy.

Responses indicated that the perceived relevance of the workshop varied depending on participants' professional roles, sectors, and local contexts. While many participants considered the project highly relevant to their economies, particularly in relation to strengthening community resilience, addressing capacity gaps, and improving policy implementation, others noted a more indirect or partial relevance.

Respondents noted that relevance varied depending on their professional roles or sectors, with some indicating that the content was more influential for their knowledge and specialization than for their immediate job functions. This variation suggests that while the workshop successfully addressed broad regional challenges, its practical applicability differed across participants, reflecting the diversity of institutional mandates and levels of engagement with DRM. At the same time, even when direct applicability was limited, participants still valued the workshop as a learning opportunity and a source of strategic insight.

3.3.8.3 Perceived results and capacity building

Participants reported a strong contribution to capacity building, particularly in terms of conceptual understanding and strategic perspectives. Prior to the workshop, self-assessed knowledge levels were distributed across *medium* (43.8%), *high* (37.5%), and *very high* (18.8%) categories. Following the workshop, this distribution shifted positively, with 50.0% reporting high knowledge and skills, 31.3% very high, and only 18.8% remaining at a medium level.

It was reported that the workshop contributed to strengthening capacities primarily through conceptual understanding, exposure to international experiences, and strategic perspectives on the integration of DRM and local development. Key areas of learning included:

- Linkage between disaster risk reduction and local development planning;
- community resilience and governance approaches;
- policy frameworks and implementation challenges;
- cross-sectoral and multi-level coordination.

Many respondents emphasized the importance of accessing case studies, comparative experiences, and practical examples from other economies, which helped broaden participants' perspectives. Additionally, networking was frequently identified as a relevant outcome contributing to capacity building.

The comparison between pre- and post-workshop self-assessments suggested an overall increase in perceived knowledge and understanding, particularly in relation to the need to integrate DRM into local development processes. However, responses also indicated that the knowledge gained was largely conceptual and strategic, rather than technical or operational, with some participants noting that application will occur progressively over time.

3.3.8.4 Intended use and knowledge transfer

Participants identified a wide range of ways in which they intend to apply the knowledge and skills gained, suggesting a strong potential for downstream impact. There were mentioned the following items:

- Contributing to the development or improvement of public policies and regulatory frameworks;
- incorporating DRM perspectives into institutional projects and planning processes;
- replicating knowledge through training and teaching activities;
- strengthening community-level interventions and resilience-building efforts;
- promoting collaboration across sectors, including engagement with the private sector.

Some participants also highlighted the intention to apply these insights in more specific areas, such as education systems, climate change-related risks, and local-level planning tools.

3.3.8.5 Recommendations for future APEC work

Participants strongly emphasized the importance of continuity and scaling up this type of initiative. A recurring recommendation was to maintain and expand similar workshops, particularly with a focus on capacity building at the local level and stronger articulation with implementing actors.

Key suggestions included:

- Strengthening ongoing collaboration mechanisms among APEC economies;
- creating platforms or networks for continuous exchange of experiences;
- developing guidance documents or practical tools to support implementation;
- enhancing the link between project outputs and concrete actions or policies;
- promoting greater involvement of diverse stakeholders, including local governments, civil society, and the private sector.

Participants also highlighted the need to translate workshop outcomes into actionable initiatives, ensuring that knowledge generated is effectively linked to policy development, planning processes, and on-the-ground implementation.

3.3.8.6 Areas for improvement

While overall feedback was highly positive, participants identified several areas for improvement, mainly related to inclusiveness, depth, and continuity.

Key suggestions included:

- Increasing participation from a broader range of APEC economies and institutions;
- incorporating additional perspectives, such as local communities, Indigenous groups, municipalities, and sectoral actors (e.g. environment, private sector);
- strengthening practical components, including applied exercises and case-based discussions;
- improving post-workshop follow-up, such as continued communication, access to materials, and opportunities for collaboration;
- enhancing feedback mechanisms and knowledge integration from participating economies.

Some participants also noted the value of maintaining a shared project or platform beyond the workshop to support sustained engagement and implementation of outcomes.

3.3.8.7 Key insights

The analysis suggested that the workshop was highly valued as a platform for exchange, learning, and collaboration across APEC economies. Its main strength lies in facilitating collective reflection and the sharing of diverse experiences, rather than solely delivering technical training.

Findings also indicated:

- Consistently high level of participant satisfaction across all aspects of the workshop;
- measurable improvement in perceived knowledge and capacity;
- recognition that relevance varies across contexts, but remains broadly positive;
- a strong demand for continuity, deeper engagement, and more action-oriented outputs.

These insights pointed to the importance of positioning future initiatives not only as standalone events, but as part of a longer-term process of capacity building, collaboration, and implementation support within APEC economies.

4 Comprehensive Conclusions and Strategic Recommendations for Integrating Disaster Risk Reduction into Local Development

4.1 General Conclusions: The "Implementation Gap" and the Generation of Prospective Risk

This Final Report represents the culmination of the APEC project "Strengthening community resilience against the intensification of disaster risk due to climate change" (EPWG 104 2024A). The conclusions presented herein were the direct result of a rigorous methodological process

that combined a comprehensive baseline documentary analysis with the participatory, transdisciplinary work executed during the international workshop held in Santiago, Chile.

The primary and most pervasive conclusion drawn from both the baseline study and the workshop discussions was the existence of a critical dissonance between formal policy and local reality, defined as the "implementation gap". At the formal and domestic levels, the majority of APEC economies have established robust legal and regulatory frameworks that explicitly mandated the linkage between development planning and Disaster Risk Reduction (DRR). However, as overwhelmingly corroborated by local officials and experts during the group work sessions, this integration was predominantly procedural rather than operational. Municipalities, which served as the front line of disaster risk management (DRM), systematically lack the specialized technical staff, financial resources, and political influence necessary to translate domestic DRM mandates into concrete local actions.

This implementation gap gave rise to a severe structural problem: the development process itself became the primary generator of future, or prospective, risk. Driven by what the baseline identified as "budgetary myopia", local priorities frequently focused entirely on short-term economic and social development, entirely bypassing long-term risk considerations. Consequently, decisions regarding land use, infrastructure investment, and housing development were executed without rigorous hazard assessments. The workshop discussions strongly echoed this, with working groups emphasizing that disasters were often viewed by local political systems as "more marketable than prevention." This reactive paradigm traps economies in a vicious cycle where unmitigated development was inevitably eroded by the next catastrophic event, forcing governments to continuously divert crucial public resources from productive investments into emergency response and reconstruction.

Furthermore, the project revealed that institutional fragmentation operates in "silos," severely isolating planning and finance ministries from civil protection and emergency management agencies. Workshop participants highlighted that this fragmentation was exacerbated by "Adult-centrism" and the use of divergent technical languages across different departments, which prevented a cohesive, "whole-of-government" approach.

Ultimately, the collective work of this project demonstrated that resilience cannot be achieved through isolated, post-disaster interventions. It required a systemic transformation where governance was informed by risk, financial planning was proactive and anticipatory, and community participation was profoundly inclusive. To bridge the implementation gap and protect the economic dynamism of the APEC region, the following strategic recommendations were proposed.

4.2 Strategic Pillars and Actionable Recommendations

4.2.1 Pillar I: Inclusive Risk Governance and Intersectional Agency

Disasters were not gender-neutral events; they magnified pre-existing social, economic, and political inequalities, making vulnerabilities inherently different across various demographics. The baseline document revealed that while some economies have advanced frameworks, many local DRM policies remain "gender-blind," perpetuating the invisibility of women's specific needs and capacities. During the workshop, the working groups expanded this critical observation, universally agreeing that women (especially those with intersecting vulnerabilities), people with

disabilities, the LGBTQ+ community, indigenous peoples, and undocumented migrants were systematically excluded from DRM processes.

- **Mandatory Collection and Utilization of SADDD:** It was imperative that local risk assessments, emergency response protocols, and recovery plans legally required the collection of Sex-, Age-, and Disability-Disaggregated Data (SADDD). Without disaggregated data, municipal planning would continue to generate responses that lacked relevance to the actual lived conditions of marginalized populations.
- **Implementation of "Active Listening" Methodologies:** Standardized methodologies for stakeholder mapping must be implemented prior to any territorial planning. As proposed during the workshop, local governments must institutionalize "active listening" to accurately understand the organizational forms and traditional knowledge of marginalized groups, ensuring they were engaged proactively in the mitigation phase, not solely during post-disaster recovery.
- **Empowerment of Community-Level Leadership:** The institutional narrative must decisively shift from treating vulnerable populations as "passive recipients of aid" to empowering them as "central actors" in their own resilience. Economies should foster and formalized Community-Based DRM Committees, drawing inspiration from successful hyper-local models shared during the workshop (e.g., the "Volcano Guardians" in South America or community-led risk mapping in Southeast Asia), explicitly granting decision-making authority to women and neighborhood leaders.

4.2.2 Pillar II: Institutional Architecture and the Eradication of Silos

The fragmentation of planning instruments and the lack of political continuity were severe obstacles. The workshop's participatory analysis identified that local DRM efforts were frequently hindered by a disconnect between macro-level domestic strategies and local realities, compounded by a lack of soft skills among local authorities.

- **Overcoming Silos Through "Soft Skills" and Common Language:** A critical disconnect within local governments is driven by exclusive, highly technical languages used by different scientific and political departments. Risk information must be actively translated into "simple and common words" to facilitate inter-institutional coordination. Furthermore, capacity-building programs for local authorities, especially mayors, must move beyond technical DRM knowledge to prioritize the "soft skills" necessary for cross-sector negotiation.
- **Macro-Local Strategic Alignment:** Economies must establish binding protocols that forced the alignment of local development plans with domestic DRR strategies. This includes ensuring that standardized definitions of risk and unified hazard catalogs (such as the Risk Atlases highlighted as best practices in the workshop) were utilized consistently across all levels of the economy apparatus.
- **Integration into Early Education:** To build a long-term culture of prevention, risk management must be incorporated as mandatory content within school curricula, complemented by differentiated local and school-level drills that included specific, actionable protocols for diverse populations.

4.2.3 Pillar III: Financial Re-evaluation and Proactive Fiscal Mechanisms

Currently, investments in DRR were frequently mischaracterized as “cost” or “expense” rather than a protective investment. The baseline and workshop data showed that financial mechanisms were overwhelmingly reactive, heavily dependent on post-disaster domestic funds or international donors, which was fiscally unsustainable and created moral hazards.

- **Internalizing Contingent Liabilities in Public Investment:** It was fundamental to legally mandate that the socio-economic profitability evaluations of all public and major private development projects incorporated the “costs of future disaster losses”. Ministries of Finance and Planning must be engaged as central actors in risk governance, shifting the paradigm so that disaster risk was treated as a quantifiable contingent liability that must be mitigated prior to investment approval.
- **Protected Trust Funds and Decentralized Financing:** To ensure financial continuity and prevent the ad-hoc diversion of resources during crises, economies should establish legally protected trust funds (*fideicomisos*) dedicated exclusively to risk mitigation and resilient reconstruction.
- **Community-Directed Grants:** Governments must aggressively promote financial models that empowered the local level. The workshop highlighted the success of Community-Based Development Grants (CBDG) and localized housing recovery funds. Furthermore, local governments should explore implementing fiscal incentives for resilient private construction and introducing localized risk management tariffs within utility companies.

4.2.4 Pillar IV: Transdisciplinarity, Knowledge Integration, and Rationalizing Uncertainty

Effective decision-making was frequently hindered by a lack of accessible hazard data that incorporates future climate projections. However, the project revealed that the solution requires more than just better technology; it demanded bridging cutting-edge scientific systems with the deeply rooted traditional knowledge of local communities.

- **Institutionalization of Traditional Knowledge in Early Warning Systems (EWS):** Early Warning Systems must be intercultural. The workshop strongly recommends formally integrating the ancestral knowledge of indigenous and rural communities into official DRR frameworks. This includes utilizing traditional bio-indicators for climate reading and ensuring alerts were disseminated through hyper-local channels, such as community radio.
- **Rationalizing Uncertainty:** As noted by international experts during the project, uncertainty regarding exact climate impacts must not be used as an excuse for inaction. Local planners must be trained to “rationalize uncertainty” by utilizing available territorial memory and basic evidence to make immediate, preventive spatial decisions (e.g., prohibiting construction in historically flood-prone areas).
- **Strategic Alliances with Academia:** Universities must be systematically integrated into the entire DRR cycle. To address the “worrying vacuum” in academic training identified in the baseline, geoscience, social science, and urban planning programs must explicitly direct their curricula toward practical, transdisciplinary DRM solutions that directly supported municipal technical teams.

4.2.5 Pillar V: Binding Normative Frameworks and Strict Land-Use Regulation

The most resounding consensus achieved during the workshop's group work was that, currently, disaster risk was not treated as a deciding factor in economic development. As long as risk assessments and territorial planning instruments remain merely "indicative" or advisory, urban expansion will continue to generate new risks.

- **From Diagnostic to Law ("Risk = Limit"):** Foundational risk studies, climate impact inventories, and municipal Risk Atlases must be elevated from consultative documents to strictly binding normative tools. Disaster risk must operate as an absolute legal boundary—summarized by the working groups under the maxim "Risk = Limit."
- **Inflexible Zoning:** Regulatory frameworks must explicitly prohibit real estate development and the construction of critical infrastructure in identified high-hazard zones. This strict regulation must be accompanied by comprehensive policies for the safe relocation of housing and the provision of temporary subsidies for vulnerable populations currently trapped in high-risk areas.

5 CONCLUSION

5.1 Fulfillment of Project Objectives

The execution of the project "Strengthening community resilience against the intensification of disaster risk due to climate change" (EPWG 104 2024A) had successfully met its primary objectives, aligning seamlessly with the APEC Putrajaya Vision 2040 and the Aotearoa Plan of Action under the driver of "Strong, Balanced, Secure, Sustainable and Inclusive Growth". The project's overarching goal was to strengthen the capacities of local actors in APEC economies to understand and manage disaster risk intensified by climate change through articulated work among municipalities, economic actors, and civil society.

This objective was systematically achieved through the delivery of the planned outputs. First, the comprehensive Baseline Document provided a rigorous analytical framework, diagnosing the gaps, capacities, and lessons learned regarding the linkage between local development planning and DRR instruments. This diagnostic phase successfully mapped the institutional, financial, and political barriers preventing effective integration across the region.

Building upon this foundation, the two-day international workshop held in Santiago de Chile successfully facilitated the exchange of best practices and collaborative mechanisms among diverse APEC economies. By bringing together local government officials, technical staff, community leaders, and civil society organizations, the project fostered a transdisciplinary dialogue that directly addressed the core objective of harmonizing local plans. The implementation of ex-ante and ex-post evaluations ensured measurable accountability regarding the strengthening of participants' knowledge and competencies.

Furthermore, the project strictly adhered to its gender inclusion commitments. By implementing a Gender Participation Target Goal of 50% for both speakers and participants, and by mainstreaming gender criteria throughout the baseline analysis and workshop discussions, the project successfully elevated the discourse on intersectional vulnerabilities and women's leadership in disaster risk governance.

5.2 Difficulties and Challenges Identified During Execution

While the project achieved its strategic outcomes, several operational and methodological challenges were identified during its execution, providing valuable lessons for future APEC initiatives.

The most significant difficulty encountered pertained to the data collection phase for the Baseline Document. The project utilized an online survey distributed through the focal points of the 21 APEC economies to capture the perspectives of domestic and sub-domestic officials. However, the response rate was highly asymmetric. While the project aimed for a broad, balanced representation, the responses were heavily skewed, with a massive overrepresentation from the Philippines (471 responses) compared to only 1 or 2 responses from the other seven participating economies (Indonesia; Japan; Mexico; Papua New Guinea; Chinese Taipei; Thailand; and Viet Nam). This disparity required the project team to methodologically separate the data analysis to avoid statistical bias and overrepresentation, highlighting the difficulty of securing uniform engagement from local-level officials across diverse international jurisdictions via digital surveys.

Additionally, the inherent diversity of the APEC region presented a persistent analytical challenge. The radical differences in political-administrative structures (federal versus unitary economies), legal frameworks, and institutional capacities made the direct comparison and standardization of DRM concepts highly complex. Accessing specific local planning instruments, such as municipal budgets or land-use plans, was frequently hindered by language barriers, technical limitations, and poor digital updates within the respective economies.

Finally, executing a highly participatory, transdisciplinary workshop required overcoming the practical challenges of "siloe" thinking. Facilitators had to actively manage discussions to bridge the gap between highly technical experts (e.g., geoscientists) and local policymakers, proving in real-time the baseline's finding that building a "common language of risk" was one of the most difficult, yet essential, tasks in integrated disaster management. Despite these challenges, the project successfully navigated these complexities to deliver robust, actionable recommendations for the APEC region.

6 ANNEX I

6.1 Workshop Agenda

WORKSHOP AGENDA

Workshop on collaboration mechanisms among APEC economies to link local development with disaster risk reduction measures intensified by climate change (EPWG 104 2024A)

 24 and 25 March

 9:00 - 17:30 hrs.

 SENAPRED Auditorium
Av. Beauchef 1671,
Santiago

TIME	TUESDAY 24/03
8:30 - 9:00	In person registration
9:00 - 9:30	Welcome and introduction remarks GRID Chile/SENAPRED • Workshop Objectives • Expected Outcomes • Brief Introduction of Participants and Facilitators
9:30 - 10:00	Presentation Marcela Rivas Morales <i>Pontificia Universidad Católica de Valparaíso, Nomade Consultores</i> Key findings of the baseline document regarding: Linkages; Gaps and barriers; Challenges; Capacities; Best practices for linking local development management with disaster risk reduction measures
10:00 - 10:25	Coffee Break
10:25 - 10:45	Presentation Claudia González Muzzio <i>GRID Chile</i> Introduction: Linkages between local development and disaster risk management
10:45 - 11:35	Work Group 1 Challenges in the local context for linking local development management with disaster risk reduction instruments in APEC economies
11:35 - 12:00	Plenary Presentation of Work Groups: Comments, Questions, Reflections
12:00 - 14:00	Lunch Break

14:00 - 14:30	Presentation Angel Chavez, Peru <i>GRACC Consultores</i> Adaptive Social Protection and Ex Ante Anticipatory Action. For social organizations and poor and vulnerable populations in Peru.
14:30 - 15:00	Presentation Ronald Sofe, Papua New Guinea <i>National Research Institute, PNG APEC Study Centre</i> Disaster management at domestic and subnational levels in Papua New Guinea
15:00 - 15:50	Work Group 2 Examples from APEC economies that integrate disaster risk analysis and contingent liabilities into budget planning and investment processes at the domestic and local levels
15:50 - 16:20	Coffee Break
16:20 - 17:00	Plenary Presentation of Work Groups: Comments, Questions, Reflections
17:00 - 17:30	Day Summary, Conclusion and Closing Statement
TIME	WEDNESDAY 25/03
9:00 - 9:20	Recap day 1
9:20 - 09:50	Presentation Constanza Rivera Pereira, Mexico <i>Public Policy Coordinator for Disaster Prevention at CENAPRED MEXICO</i> Strengthening Resilience from the local level: Implementation of the Domestic Resilient Communities Strategy in Mexico.
09:50 - 10:20	Presentation Karla Méndez Estrada, Mexico <i>Deputy Director of Economic and Social Studies at CENAPRED</i> Understanding the Human Impact of Disasters: Child-Focused and Gender-Responsive Evidence for Local Development Planning
10:20 - 10:50	Coffee Break

10:50 - 11:40	Work Group 3 Recommendations to ensure meaningful participation and leadership of women and diverse marginalized population groups in decision-making and development management planning linked to disaster risk reduction at the local level
11:40 - 12:00	Plenary Presentation of Work Groups: Comments, Questions, Reflections
12:00 - 14:00	Lunch Break
14:00 - 14:30	Presentation Kanako Iuchi, Japan <i>International Research Institute of Disaster Science (IRIDeS), Tohoku University</i> Boosting Community Resilience: Lessons from Post-Disaster Recovery Processes
14:30 - 15:00	Presentation Oscar Guevara, Colombia <i>Development Bank of Latin America and The Caribbean - CAF</i> Integrating Local Development and Disaster Risk Reduction for Cost and Impact Mitigation
15:00 - 15:20	Coffee Break
15:20 - 16:10	Round Table Speakers from: Colombia; Japan; Mexico; Papua New Guinea; and Peru Recommendations for linking local development management with disaster risk reduction measures or instruments in APEC economies
16:10 - 16:40	Debate: Questions, Answers and Comments
16:40 - 17:00	Workshop Review and Synthesis of Key Results
17:00 - 17:30	Post-workshop survey
17:30	Conclusion and closing statement