The **Pacific Insight Briefs** capture climate and disaster integration knowledge, lessons, and insights from the Australia Pacific Climate Partnership (Climate Partnership). The five thematic briefs draw on the experience of the Climate Partnership's community of aid program managers, implementing partners, technical experts, and staff.

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Pacific Insight Brief 5 | **Climate and Disaster Resilient Infrastructure**

Over the last decade, 37% of total loss and damage by disasters in the Pacific occurred in the infrastructure sector[1]. The Australian Government has been providing grants and loans in the Pacific and has committed to multiple projects worth over $1 billion in infrastructure financing since 2019 to enable climate and disaster resilient infrastructure projects[2]. Ensuring integration of climate and disaster risk, and prioritising infrastructure that supports resilience to future climate and disaster risk is critical. This brief presents broad insights, lessons, and opportunities to enable quality climate and disaster resilient infrastructure in the Pacific. It is consistent with the Resilient Infrastructure Good Practice Guide (RIG Guide) which has been developed by the Climate Partnership.

Insights

More systematic and standardised approaches to climate and disaster resilience integration in infrastructure programs could result in efficiencies and higher impact: Integration of climate and disaster resilience across infrastructure programs in the Pacific is progressing**.** Increasingly, Pacific Island governments are working with development partners and regional infrastructure networks to create an environment that encourages climate and disaster integration in infrastructure projects.

While technical guidance and frameworks exist, good practice climate and disaster resilience can be strengthened through more consistent application and standardisation of processes and requirements. Variations to meet and accommodate national requirements and approvals can be anticipated, but principled approaches that incorporate climate and disaster risk with inclusive design, stakeholder engagement and actions to build broader community resilience from the outset can be adopted more uniformly.

Genuine engagement and appropriate consultation with diverse stakeholders supports effective and resilient infrastructure development: People at higher risk and those who are marginalised experience disproportionate impacts from disasters and climate change, as well as disadvantage related to accessibility and usability of infrastructure. Genuine consultation and engagement are essential early and throughout to identify needs, access to services, and design criteria to be inclusive of all people. Specific efforts should be made to effectively engage diverse groups within community to equally prioritise everyone's needs and voices.

Consultation with multiple and diverse stakeholders supports delivering infrastructure that is responsive to the particular climate and disaster vulnerabilities and resilience needs of local users. This is particularly the case with regard to social infrastructure. When infrastructure investments overlook the specific needs and unique priorities within diverse communities, positive outcomes are less likely to reach communities.

'Strong community consultation for the planning and design of the Rakiraki Market in Fiji was undertaken in consultation with the Vendor Associations, which resulted in enhanced amenities, including a management office, improved water and sanitation, better lighting and an accommodation centre (40 beds) to enable rural women vendors to stay overnight, improving their personal security by limiting night-time travel.' (UN Women Website, 2023).

Programs can support strengthening the enabling environment to effectively integrate climate and disaster resilience in partner government systems for better planning and delivery: Australian Government funded investments can support Pacific Governments to strengthen climate and disaster resilience through funding technical capacity development, policy, building codes, approvals and compliance capacity as they relate to infrastructure planning, management, implementation and operations and maintenance processes.

[1] Thematic Analysis of Climate and Disaster-Resilient Infrastructure in the Pacific, 2022

[2] The Australian Infrastructure Financing Facility for the Pacific: unanswered questions, DevPolicy Blog, 2022: https://devpolicy.org/the-aiffp-unanswered-questions-20221213/#:~:text=Since%20its%20inception%20in%202019,loans%20and%2020%25%20as%20grants

'In the case of Tonga, Pacific Region Infrastructure Facility (PRIF) is now supporting the Government to update the National Infrastructure Investment Plan in light of the damages and recalibration of infrastructure priorities since the January 2022 volcano and tsunami disaster.' (Thematic Analysis of Climate and Disaster-Resilient Infrastructure in the Pacific, 2022).

Efforts to promote traditional and local content and capacity support resilient infrastructure: When planning and designing infrastructure, drawing on traditional and local knowledge and experiences allows for integration of essential information to avoid maladaptation. Promoting capacity building and skill development activities can lead to increasing local expertise and strengthening institutional systems, policy and training. Flexible mechanisms are increasingly being adopted to increase the involvement of local contractors and procurement services in infrastructure projects.

Through this approach, local capacity of Pacific individuals, businesses and governments are strengthened which can build broader community resilience through a more skilled and self-reliant infrastructure sector. This is important as climate change impacts increase and in times of disasters. See Tonga Skills case example for details of this insight in practice.

'One of these core principles of Australian Infrastructure Financing Facility for the Pacific (AIFFP) focuses on local content to ensure project investments are maximising the use and skilling of local labour.' (Enhancing Procurement Practice and Local Content in Pacific Infrastructure, PRIF, 2022).

'As part of the Australian Government funded Vanuatu Skills Partnership Program, the Vanuatu Ministry of Education and Training facilitated skill development activities for men and women within communities. The trainees learned about accessing renewable energy and designing disaster action plans for tourist bungalows, which supports progress towards climate and disaster risk integration in local infrastructure…' (UTS-ISF Outcome Harvesting Report, 2022).

Case example | **Supporting climate and disaster integration**

The *Solomon Islands Infrastructure Program (SIIP)* is Australia's 10 year-long flagship infrastructure investment in partnership with Solomon Islands Government. The program is an example of how climate and disaster resilience integration at the design phase of a project provides a clear and planned pathway for implementation.

The SIIP design team included a Climate Change Specialist to integrate climate and disaster resilience measures into the design, consistent with Solomon Islands' priorities and Australia's development assistance policy. This resulted in the design including climate and disaster resilience at the end of program outcome, two intermediate outcomes and a guiding principle. The design included a requirement for the implementation of a situational analysis leading to a program wide Climate Change and Disaster Resilience Framework including guidelines, technical standards and procedures for directly delivered and co-financed projects as well as to guide support to the national government. The implementation team now includes a Climate and Disaster Specialist to lead this work. In 2022, the program launched its Climate Change and Disaster Strategy and the steering committee approved an Investment Fund for continued resilient infrastructure planning.

Caption: Consulting community members on infrastructure (Photo: SIIP)

Lessons

Strong governance and regulatory systems support integrated infrastructure investments: Australia's aid program can continue to support Pacific governments to strengthen their governance and regulatory systems through the provision of strategic oversight, hazard and risk data, policies, regulations and codes, assessment and compliance systems. Evidence from Fiji, Tonga, Vanuatu and Cook Islands highlights how these countries are developing comprehensive strategic planning, reassessing national budgets to enable climate finance for resilient infrastructure.

Up to date and downscaled climate projections and geohazard data is important to identify hazards and address risks for concept, design and implementation of infrastructure projects: Information on hazards for the site as well as downscaled climate change projections for the lifespan of the asset are essential to quantify the risks.

This information, along with diverse expertise for technical backstopping, should be applied in a climate and disaster risk assessment that feeds into climate and disaster design criteria, resilience measures, maintenance regimes and disaster risk management planning for users and assets. Without these steps, there is potential for asset failure and negative consequences to users and communities from impacts of hazards such as tropical cyclones, floods, tsunami and earthquakes. Continued efforts are needed to comprehensively localise hazard information in formats that are usable for planning such as multi-hazard country wide historical and future (modelled climate projections) data in map format (e.g. GIS).

Guidance to managing contractors can underpin comprehensive approaches and leverage expertise across the sector. Managing contractors engaged to deliver economic and social infrastructure projects have a depth of capacity. Integrating standards and expectation into contract requirements will help fully utilise expertise and capacity to drive climate and disaster resilience processes from concept design, procurement, and implementation.

Case example | **Infrastructure investment with a GEDSI focus**

The *Markets for Change* project is an Australian infrastructure investment in partnership with UN Women and UNDP. The project is a six-year initiative aiming to ensure that marketplaces in Fiji, Solomon Islands and Vanuatu are inclusive and climate and disaster resilient. Marketplaces such as Gizo Market in Solomon Islands and Luganville Market House in Vanuatu have been upgraded through a consultation process with female vendors (who comprise the majority of marketplace vendors) working in the marketplaces. Women's participation helped the architects to design and construct locally appropriate resilient infrastructure, reducing their vulnerability. The upgrades to Luganville Market House prevented goods from being damaged from Tropical Cyclone Harold (in 2020) and helped cyclone-affected businesswomen to resume their livelihood activities after seven days from the cyclone.

Gizo Market in Solomon Islands (Photos: APCP)

Opportunities

Interpreting and incorporating climate and disaster data in infrastructure strategies: There are considerable gaps in hazard and risk information at the local and national scale across the Pacific. Regional and national decision-makers, businesses and communities often do not have adequate information, support and capacity to integrate technical information such as risk mapping, climate projections, risk assessment, economics and demographic data in infrastructure strategies. Additionally, integrating climate and disaster risk considerations in existing infrastructure (e.g., retrofitting) is often not feasible. There is an opportunity to support Pacific Island countries increase their multi-hazard and risk mapping and downscaled climate change projections as well as support the technical expertise required to coordinate, interpret and apply information for resilient infrastructure outcomes.

Policy barriers and capacity constraints to use local content and expertise: Infrastructure projects and programs can include actions to support nationally led strengthening of the enabling environment such as hazard and risk information, policy, building codes, regulation, assessment, compliance, training and capacity. Aligning to national priorities, based on needs assessments, these actions can address barriers to ensuring resilient infrastructure outcomes. Use of local and sustainable materials and Pacific expertise in resilient infrastructure projects can be improved and presents an opportunity to strengthen local policy, design and building standards. Designing collaborative projects that embed ongoing capacity building, skill development and knowledge sharing through genuine partnerships are helping to address gaps.

Enabling effective participation of communities to prioritise communities' needs and contexts in infrastructure investments: Community engagement in infrastructure decision-making, design and implementation phases is often a challenge. Community consultation helps to ensure tangible, localised benefits from infrastructure investments, improve maintenance of social infrastructure and inform donor partners what types of infrastructure are needed to build community resilience.

'Resilient infrastructure should go beyond ensuring cyclone-resilient structures and impact broader community resilience through developing community spaces, water tanks, evacuation centres and renewable energy.' (Pacific Insight Briefs interview 2023, Climate Partnership Adviser).

Addressing the requirements for resilient infrastructure development in the Pacific countries: The Pacific region requires significant and disproportionately high support and investment to meet infrastructure pipeline demand[3]. Australian investments can encourage Pacific private sector and civil society organisations to engage with the public sector and explore innovative ways of public-private engagement to create pathways for co-financing resilient infrastructure projects. Similarly, opportunities to leverage multi-lateral climate finance through co-financing arrangements can be further explored.

'The public sector, especially in developing countries, cannot cater to the huge demands of infrastructure investments alone. The private sector must play a pivotal role in addressing this gap.' (Thematic Analysis of Climate and Disaster-Resilient Infrastructure in the Pacific, 2022).

Recognising and including local and traditional knowledge: There are limited examples of local and traditional knowledge being drawn on for infrastructure design, construction and use of materials across infrastructure investments. An opportunity exists to better equip infrastructure investment managers to more effectively value and integrate local and traditional knowledge into resilient infrastructure strategies and practices.

'Vanuatu Skills Partnership aimed to improve the standard of tourism construction and integrated local infrastructure knowledge in the Tourist Bungalow Design and Construction guide.' (UTS-ISF Outcome Harvesting Report, 2022).

[3] Enhancing Procurement Practice and Local Content in Pacific Infrastructure, PRIF, 2022

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The Climate Partnership is supporting the Australian Government to integrate climate and disaster resilience in Australia's aid program in the Pacific. The Pacific Insight Briefs were developed with support from the University of Technology Sydney (Institute for Sustainable Futures), including conducting targeted stakeholder interviews.