

## Risk Tools: Informing resilient development

### What are risk tools and why are they useful?

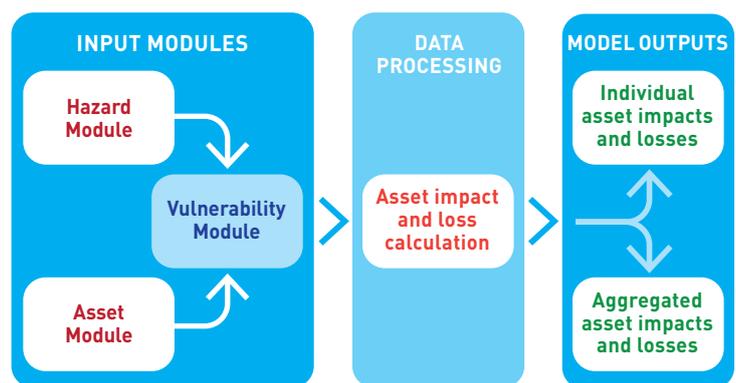
Risk tools combine what we know about natural hazard events with information about communities and infrastructure to assess the economic and societal impacts that these events cause. Risk assessment is a key component informing resilient development and communities.

Risk tools enable decision-makers to assess existing risk, prepare for future disasters, and how potential impacts could be reduced under different policy or mitigation options. Risk tools are designed to help users perform complex risk-assessment calculations simply and quickly without needing specialist modelling knowledge.

They require information about the hazard, populations and assets (e.g.

buildings, roads, water supplies), as well as information about what happens to people and assets that are exposed to a hazard event. This information often comes from research of the impacts of past events to better understand human or asset vulnerabilities. The tools utilise this information to provide estimates of how many people or assets are exposed and consequences such as damage, economic loss or casualties.

Previously decision makers relied on their experience and knowledge of past events to estimate potential impacts. Risk models can now provide this information to people who may have never experienced a natural hazard.



# Risk Tools: Informing resilient development

## Working together in the Pacific

Risk information can be very technical and difficult to use and understand. Risk-assessment modelling tools help with interpreting the data, and while there is no one tool which can do everything, some can be very effectively used together.

New Zealand, Pacific and Australian scientists are adapting two risk modelling tools for use in the Pacific. The tools, RiskScape and PacSAFE, are being developed with local practitioners to benefit from their knowledge and ensure the tools are relevant for application in Pacific Island countries.

RiskScape is being tailored for use by Pacific Island countries in partnership with the Disaster Management Offices of Samoa and Vanuatu through the *Pacific Risk Tool for Resilience* (PARTneR) project. PacSAFE was initially adapted for the Pacific with the support of Fiji and Samoa as part of the Asian Development Bank funded *Strengthening Disaster and Climate Risk Resilience in Urban Development in the Pacific* project. It is now being further developed in collaboration with the Disaster Management Office in Tonga.

### What's happening

The PARTneR and PacSAFE teams are actively collaborating on fundamental requirements for effective use of risk tools:

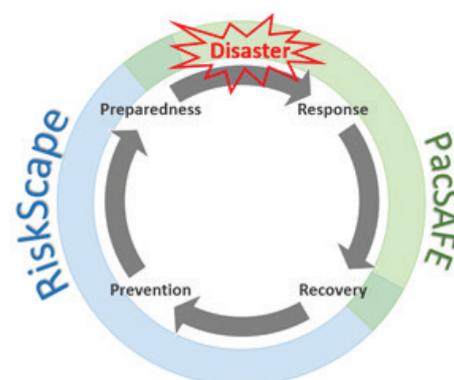
- Integrated national and regional disaster risk data management including Pacific standards.
- Sustainable and targeted training.
- Standardising on disaster, risk and resilience data collection, storage and exchange in Pacific.
- Developing strong and sustainable institutional partnerships between risk decision support tools, stakeholders and users across international technical agencies, Pacific countries and implementing partners.

## Introducing RiskScape and PacSAFE

RiskScape provides a modular framework to estimate impacts and losses for assets exposed to natural hazards. The software combines hazard, asset and vulnerability modules through a data selection process to quantify a range of economic and social consequences.

RiskScape is readily applicable to the *preparedness, recovery and prevention* phases of the disaster management cycle. It provides information for evaluating options and policies to mitigate the impacts of disasters, allowing comparison of long-term impacts of disasters under different assumptions about changes to exposure and vulnerability.

PacSAFE is based on QGIS and the InaSAFE plugin and is designed and developed for non-GIS users. PacSAFE was initially developed to enable hazard data and asset data, such as the Pacific Catastrophic Risk and Financing Initiative (PCRAFI) asset database, to be used to provide general impact information to assist disaster planning, preparedness and response activities for Pacific Island countries. PacSAFE uses scenario footprints to provide an assessment of exposure to a hazard. It is ideally suited to planning disaster response activities, and potentially *preparedness* activities.



## Contacts

**PARTneR: Dr Kate Crowley**

NIWA

Kate.Crowley@niwa.co.nz

**PacSAFE: Craig Arthur**

Geoscience Australia

Craig.Arthur@ga.gov.au

PARTneR is funded through the New Zealand Ministry of Foreign Affairs and Trade Partnership Fund with technical support from NIWA, GNS Science and the Pacific Community. The PacSAFE project is currently funded by the Government of Australia with technical support from Geoscience Australia, World Bank GFDRR and the Pacific Community.

	RiskScape	PacSAFE
<b>Hazards</b>	<ul style="list-style-type: none"> <li>✓ Earthquakes</li> <li>✓ River flooding</li> <li>✓ Coastal flooding</li> <li>✓ Tsunami</li> <li>✓ Volcanic ash fall</li> <li>✓ Cyclone winds</li> <li>✓ Hazard footprints</li> </ul>	<ul style="list-style-type: none"> <li>✓ Earthquake</li> <li>✓ Floods</li> <li>✓ Volcanoes and volcanic ash</li> <li>✓ Cyclone winds</li> <li>✓ Tsunami</li> </ul>
<b>Tool outputs</b>	<ul style="list-style-type: none"> <li>✓ Economic loss</li> <li>✓ Infrastructure and building damage levels and loss</li> <li>✓ Population affected, killed or injured</li> <li>✓ Exposure</li> </ul>	<ul style="list-style-type: none"> <li>✓ Numbers of buildings / infrastructure affected</li> <li>✓ Population affected / displaced</li> <li>✓ Response needs</li> </ul>
<b>Primary Users</b>	National Disaster Management Offices Planning Agencies Infrastructure providers Researchers	National Disaster Management Offices Response Agencies
<b>Initial country partners</b>	Samoa, Vanuatu	Tonga