

Pacific Geospatial Conference 2022

Topic : Preliminary results of the exposure data survey through PCRAFI II Project

Presenters:

Orisi Naivalurua - Research and Technical Officer

Thompson Auri – Survey Team Leader

(Both are part of PCRAFI II Project with DCRP under SPC)

Presentation Outline

- Introduction
- Project Approach
- Preliminary results of survey data collected
- Conclusion

Brief PCRAFI Project background

Brief Introduction

- Disaster risk management associated with increasing climatic stressors are often a central and streamlined area for policies and programs in Pacific Island Countries (PICs). Estimates of average annual direct loss caused by natural disasters have reached US\$1.07 billion across all Pacific Small Island Developing States (UNESCAP, 2020). Across PICs, there is a high level of exposure to both seismic and climate-related hazards.
- This study documents the results from field data collected from over 10,000 assets across Tonga, Vanuatu, Solomon Islands and possibly Samoa.
- Pacific Catastrophe Risk & Financing Initiative (PCRAFI) was launched in 2006. Phase I started in 2007 & Phase II in 2016
 - a. Pillar I: the PCRAFI Facility – PacRIS , Data Collection, Data sharing
 - b. Pillar II: the PCRAFI Technical Assistance Program. The Capacity Building and Update of the Hazard and Exposure Database Project, which the Pacific Community (SPC) is implementing
- Develop disaster risk assessments tools and practical technical and financial applications to reduce and mitigate the impacts of natural hazards in 14 Pacific Island Countries

PCRAFI Project

Brief Introduction continued..

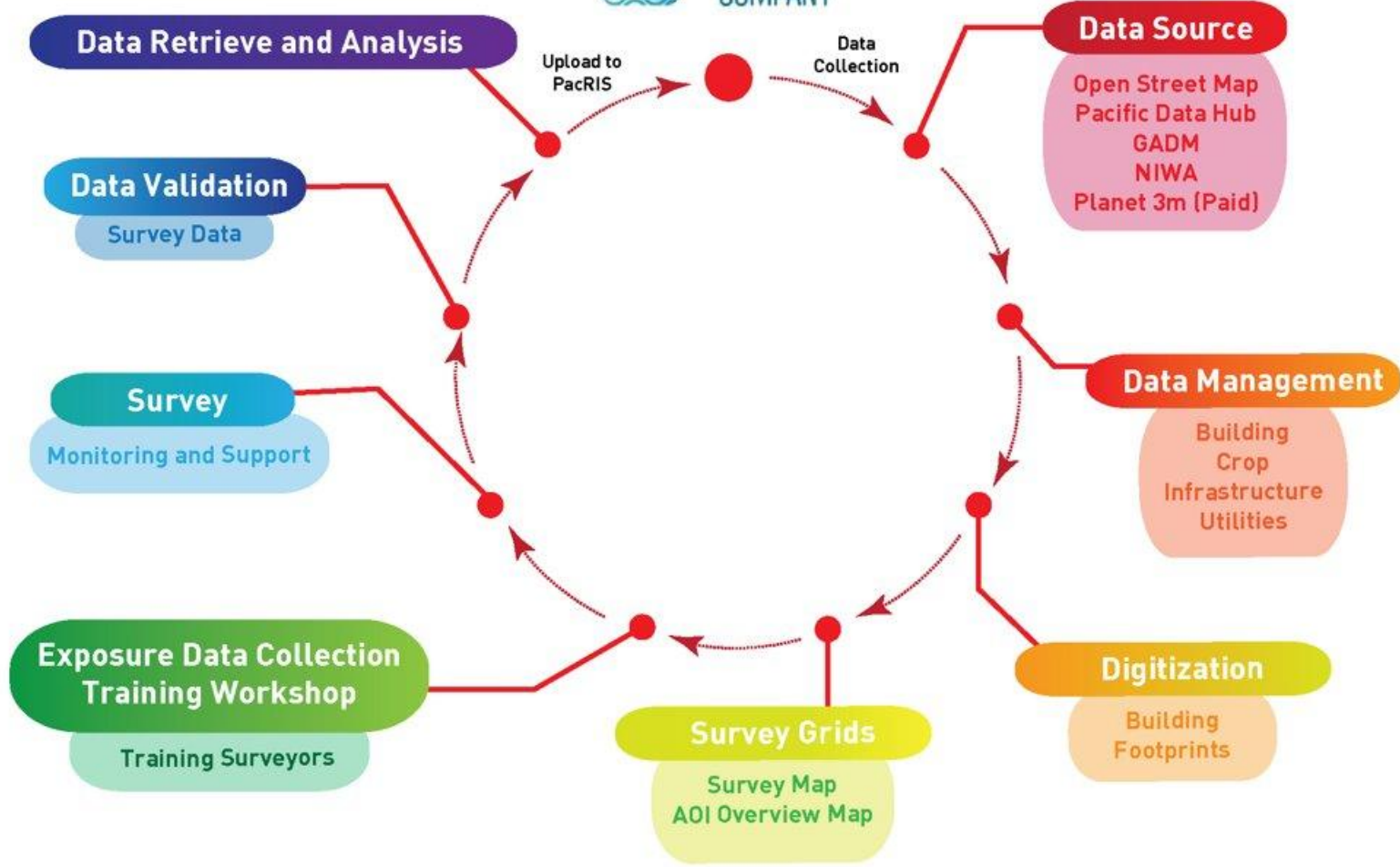
- Pacific Risk Information System (PacRIS), in which risk profiles were developed, and the largest collection of geo-referenced data organized for the region.
- Project to be implemented in 14 countries/Island states
- The Project aims to improve and update PacRIS and contribute towards strengthening the disaster risk finance and insurance capacity of PICs to provide coverage against the potential impacts of natural hazards, through the PCRAFI Program.

For further information on PCRAFI II, please visit:

<https://gem.spc.int/projects/capacity-building-on-the-hazard-and-exposure-database-for-pacific-catastrophe-risk>

Project Approach – Training/Capacity Building & Survey

- Regional stakeholder engagement meeting – determine the assets & attributes (Think Tank Meetings I, II)
- Develop manuals and data collection templates
- Exposure Field data collection testing
- In-countries exposure data collection training
- Conduct exposure data collection survey (Tonga, Vanuatu, Solomon Islands & Samoa)
- Data validation and cleaning
- Uploading data collected into Pacific Risk Information System(PacRIS)
- GIS/Geonode Training



Assets That Were Collected:

Utilities:

- Water
- Electricity
- Telecommunications

Infrastructure:

- Buildings
- Roads
- Fuel
- Bridges
- Ports Facilities
- Airports/Airstrips

Agriculture:

- Crops
- Livestock

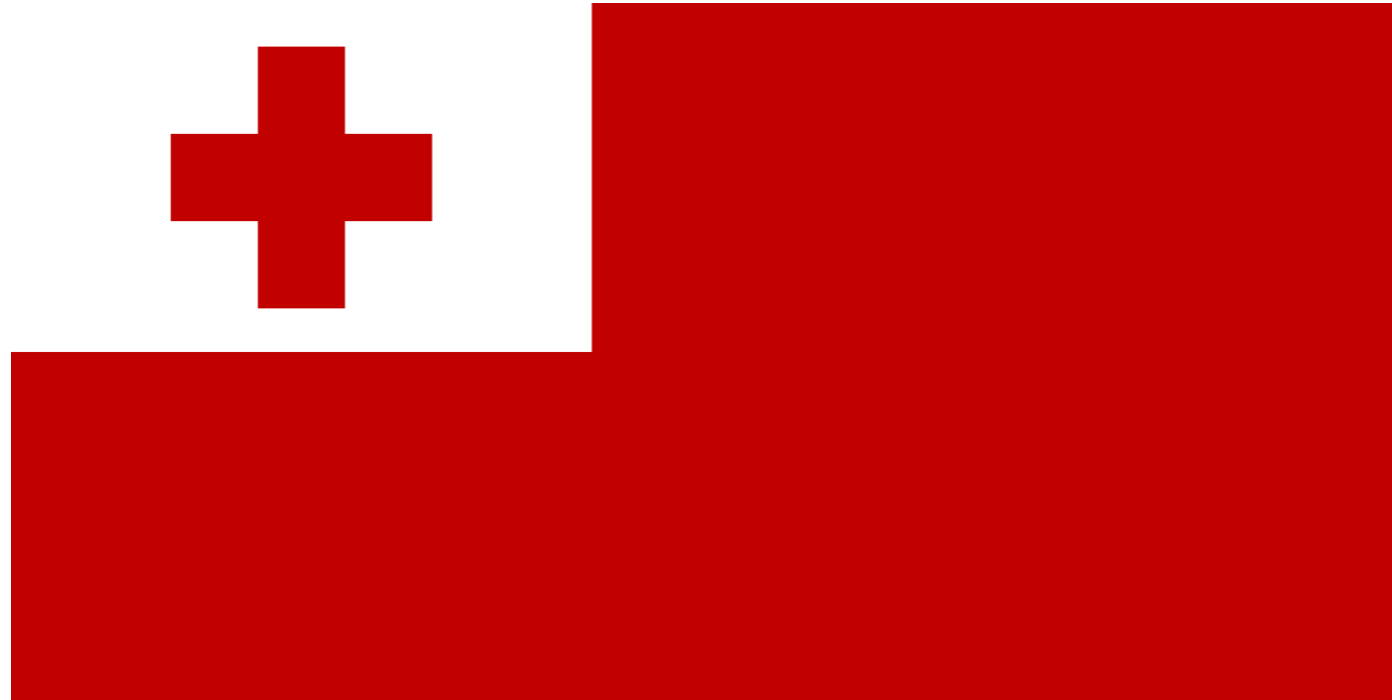
Standardized Data Collection templates developed:

- **Condition Data Collection Template**

<https://www.dropbox.com/s/nuon9io8rznocxs/PCRAFI%20%20SURVEY%20FORM%20-%20Data%20Collection%20%20KoboToolbox.pdf?dl=0>

- **Impact Data Collection Template**

<https://www.dropbox.com/s/kfvvgq4d0o8cvefw/PCRAFI%20II%20SURVEY%20FORM%200-%20Damage%20Assessment%20%20KoboToolbox.pdf?dl=0>



TONGA

•Data at hand, before survey

- PCRAFI I Exposure datasets for Nuku'alofa
- Multi-Hazard Climate Disaster Risk Assessment (buildings, telecommunication etc.) in Tongatapu Project - ADB (2016*)

***Data needed to fill the gaps**

- Assets not covered in PCRAFI I & ADB Project

***Ministry focal point, and ministries involved in PCRAFI II Project**

- Ministry of Finance was the focal – main objective is to facilitate, provide in country support and guidance of the project with support from SPC

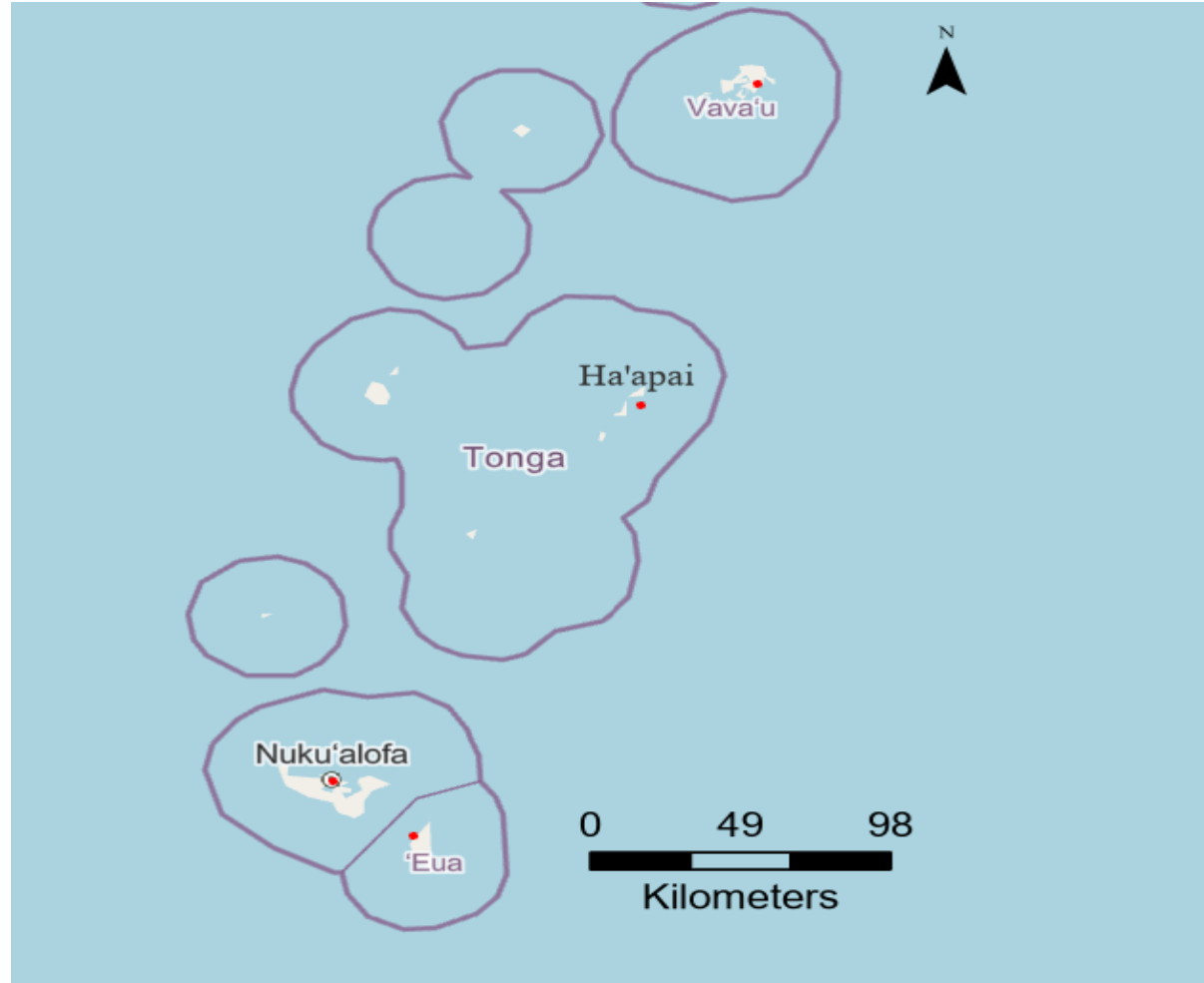
***Ministries that took part in the Assets exposure dataa collection survey**

- Ministry of Infrastructure
- Statistics Department
- National Emergency Management Office
- Ministry of Lands and Natural Resources
- Ministry of Agriculture and Food, Forest & Fisheries
- Tonga Fire & Emergency Services
- Tonga Power Limits
- Marine and Ports Division
- Ministry of Finance
- Ministry of Tourism
- His Majesty's Armed Forces
- Ministry of Public Enterprises

Exposure Data Collection Locations in Tonga

- a. Tongatapu – Nuku’alofa
- b. Eua
- c. Ha’apai
- d. Vava’u

Survey Area Location



Data Collection Results for Tonga

Status: Complete and uploaded to PacRIS

| Tonga | | |
|--------------------------|-------------|--|
| Asset | Submissions | Comments |
| Building | 7778 | |
| Roads | 9 | |
| Electricity | 10 | Also have data sets from ADB for whole of Tongatapu Area |
| Communication | 20 | Have 70 for whole of Tongatapu |
| Water | 48 | |
| Bridge | 7 | |
| Fuel | 10 | |
| Crops | 6 | |
| Livestock | 8 | |
| Port Facilities | 5 | |
| Airport/Airstrip | 2 | |
| Total Submissions | 7903 | Final after data cleaning |

Data Collection Results for Tonga by Island

Submissions by Islands

| Assets | Islands/Districts | | | |
|--------------------------|-------------------|-------------|-------------|-------------|
| | Tongatapu | Eua | Vava'u | Hapai |
| Building | 2830 | 966 | 2361 | 1593 |
| Roads | 4 | 1 | 4 | |
| Electricity | 3 | 3 | 3 | |
| Communication | | 6 | 6 | 2 |
| Water | 15 | 22 | 11 | |
| Bridge | | 1 | 6 | |
| Fuel | 1 | 1 | 7 | 1 |
| Crops | | 3 | | 2 |
| Livestock | 4 | | | 4 |
| Port Facilities | | 1 | 4 | |
| Airport/Airstrip | | 1 | 1 | |
| Total Submissions | 2857 | 1005 | 2403 | 1602 |



VANUATU

***Data at hand, before survey**

- PCRAFI I Exposure datasets for Port Vila

***Data needed to fill the gaps**

- Assets not covered in PCRAFI I or any other related Project

***Ministry focal point, and ministries involved in PCRAFI II Project**

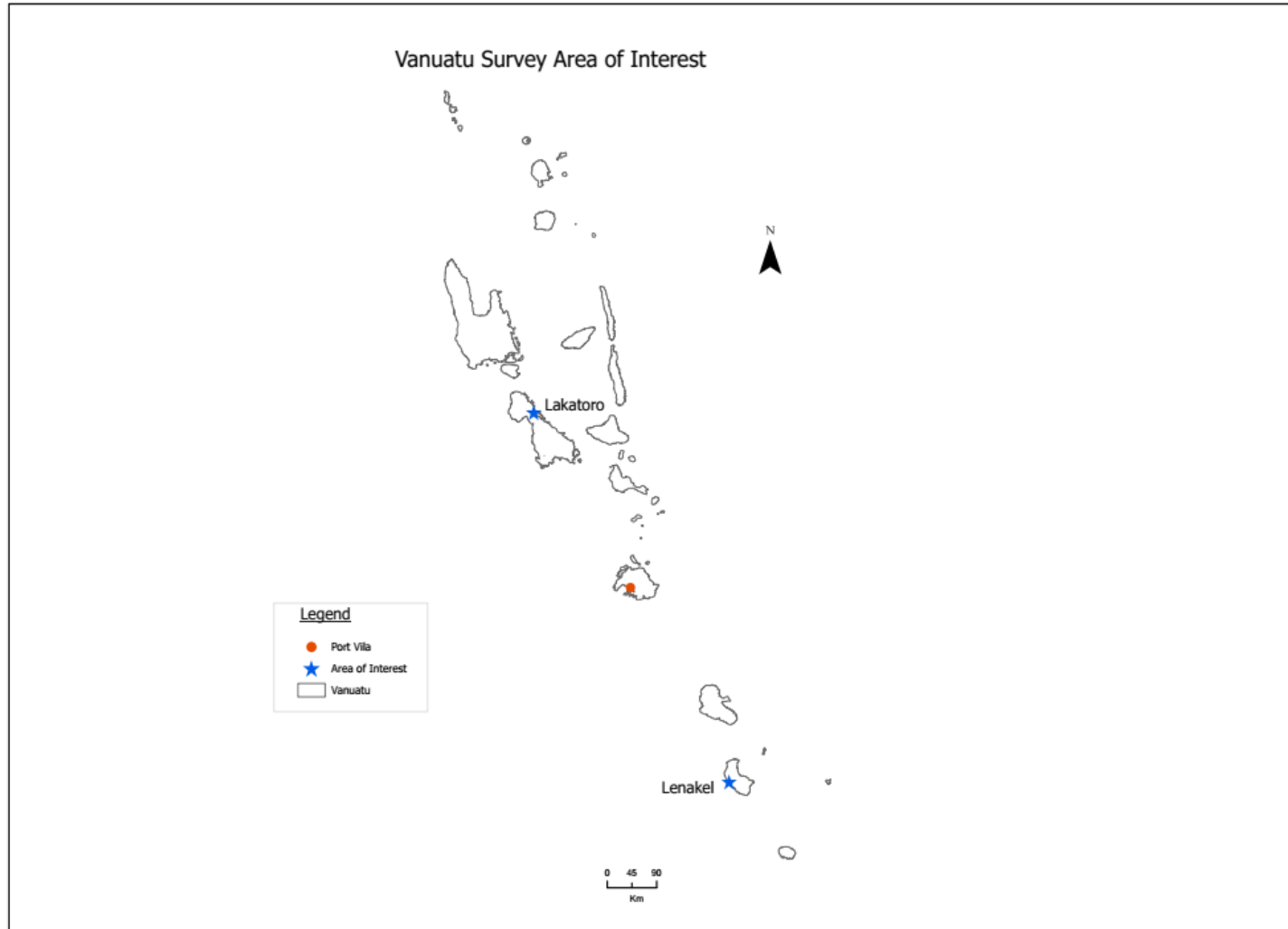
- Department of Urban Affairs & Planning— main objective is to facilitate, provide in country support and guidance of the project with support form SPC

***Ministries/Department that took part in the Assets exposure dataa collection survey**

- Department of Urban Affairs & Planning
- Department of Lands
- Port Vila City Council
- Shefa Provincial Government Council
- Department of Local Authorities

Exposure Data Collection Locations in Vanuatu

- a. Lenakel – Fafea Province
- b. Lakatoro – Malampa Province



Data Collection Results for Vanuatu

Status: Complete and uploaded to PacRIS

| Vanuatu | | |
|------------------|-------------|--------------------------------|
| Asset | Submissions | Comments |
| Building | 4073 | |
| Roads | 127 | Yet to be uploaded into PacRIS |
| Electricity | 56 | |
| Communication | 39 | |
| Water | 166 | |
| Bridge | 21 | |
| Fuel | 14 | |
| Crops | 8 | |
| Livestock | 11 | |
| Port Facilities | 4 | |
| Airport/Airstrip | | |
| Total | | 4519 After data cleaning |

Data Collection Results for Vanuatu by Province

Submissions by Province

| Assets | District/Province | |
|--------------------------|-------------------|-------------|
| | Lenakel | Lakatoro |
| Building | 1851 | 2222 |
| Roads | 81 | 46 |
| Electricity | 29 | 27 |
| Communication | 21 | 18 |
| Water | 56 | 109 |
| Bridge | 10 | 11 |
| Fuel | 6 | 8 |
| Crops | 5 | 3 |
| Livestock | 9 | 2 |
| Port Facilities | 1 | 3 |
| Airport/Airstrip | | |
| Total Submissions | 2069 | 2449 |



SOLOMON ISLANDS

•Data at hand, before survey

- PCRAFI I Exposure datasets for Honiara & Gizo, Noro-Munda

***Data needed to fill the gaps**

- Assets not covered in PCRAFI I & or any other related Project

***Ministry focal point, and ministries involved in PCRAFI II Project**

Ministry of Environment, Climate Change & Disaster Management – NEMO was the focal – main objective is to facilitate, provide in country support and guidance of the project with support form SPC

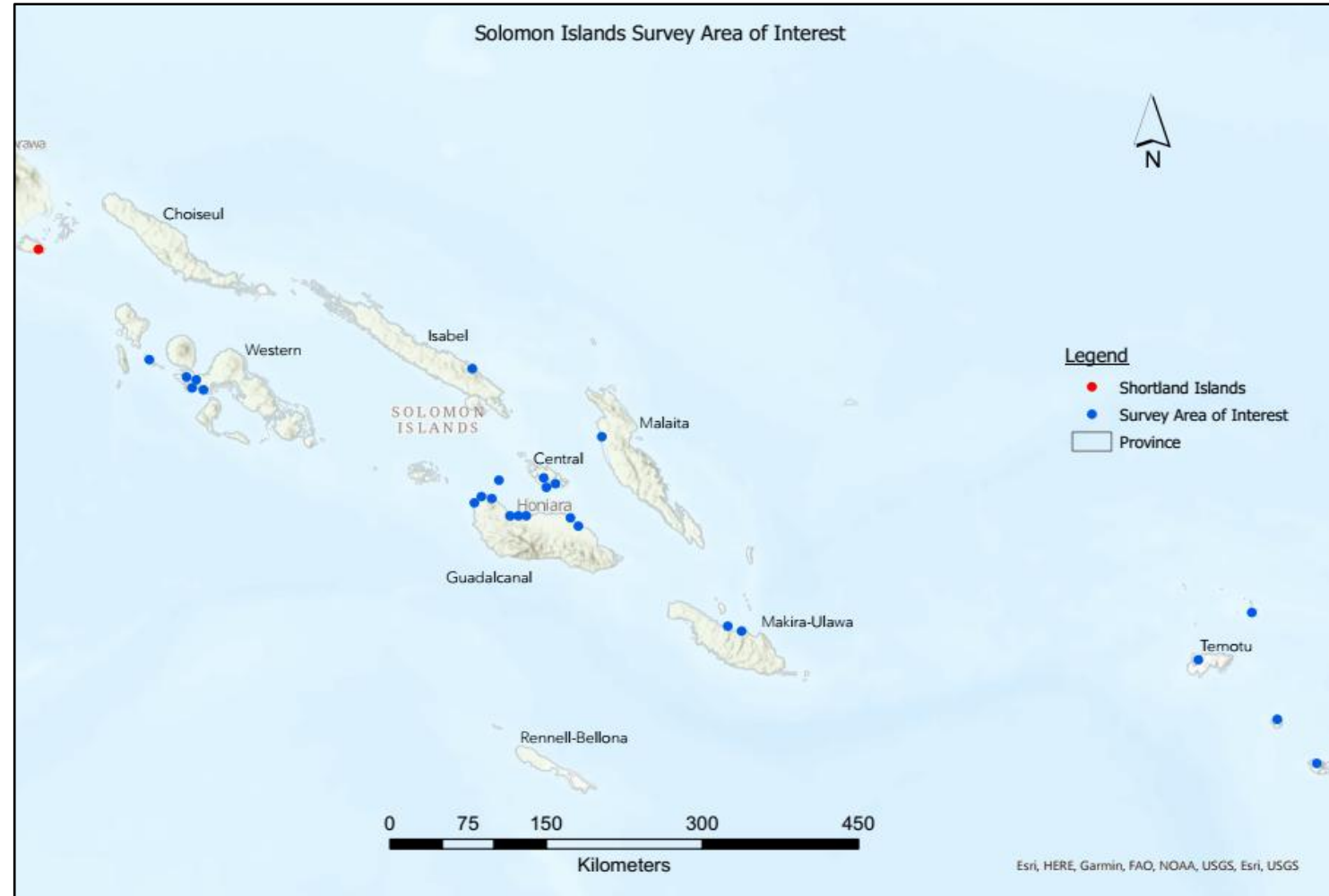
***Ministries that took part in the Assets exposure dataa collection survey**

- Ministry of Environment, Climate Change & Disaster
- Ministry of Lands, Housing & Survey
- Ministry of Mines, Energy & Rural Electrification
- Ministry of Health and Medical Services
- Ministry of Agriculture and Livestock
- Honiara City Council
- Solomon Island University

Exposure Data Collection Locations in Solomon Islands

- a. Honiara
- b. West & East Guadalcanal
- c. Temotu
- d. Makira
- e. Gizo-Noro-Munda
- f. Auki
- g. Buala
- h. Savo

Survey Area Location



Data Collection Results for Solomon Islands

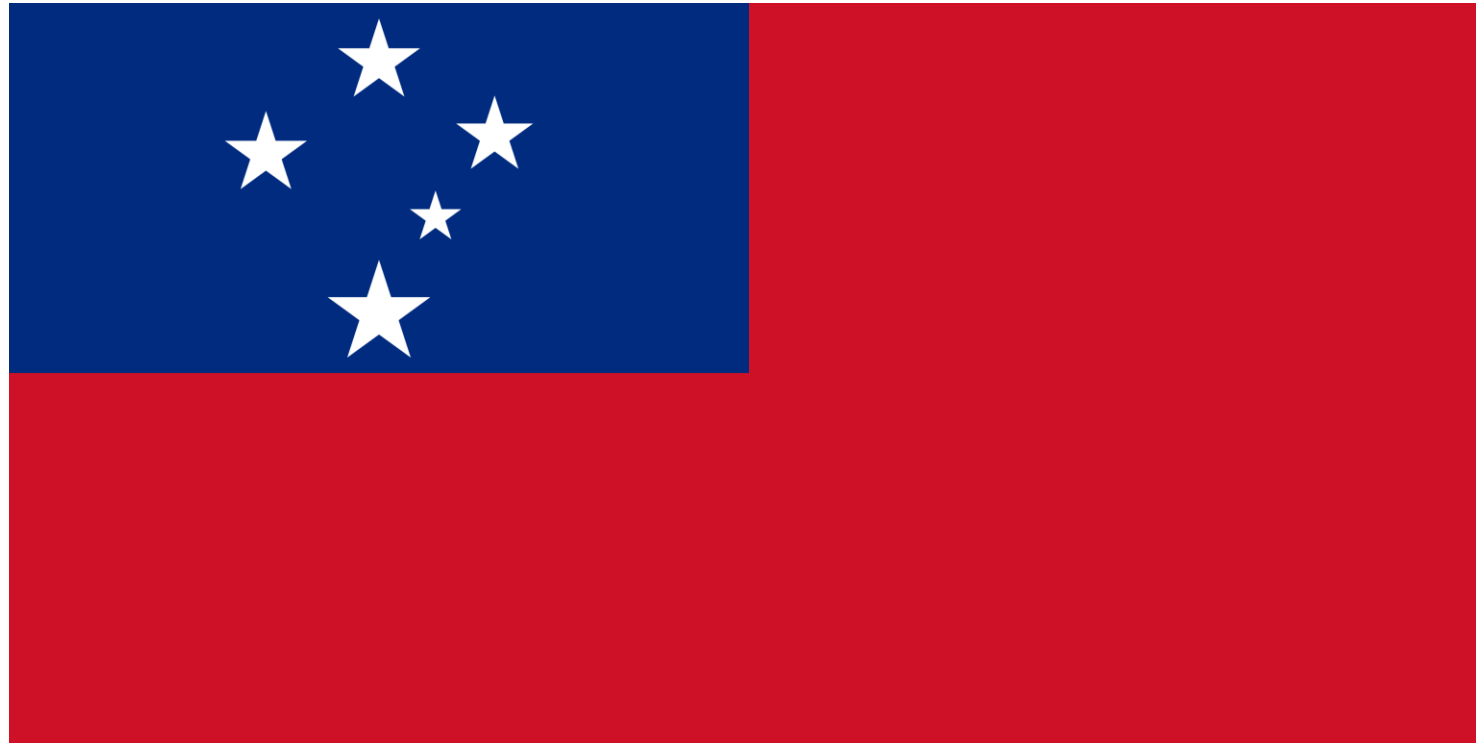
Status: Data Cleaning

| Solomon Islands | | |
|-------------------------|-------------|-----------------------------|
| Asset | Submissions | Comments |
| Building | 6507 | |
| Roads | 30 | |
| Electricity | 275 | |
| Communication | 66 | |
| Water | 408 | |
| Bridge | 159 | |
| Fuel | 50 | |
| Crops | 17 | |
| Livestock | 19 | |
| Port Facilities | 72 | |
| Airport/Airstrip | 10 | |
| Total Submission | 7613 | Data yet to be clean |

Data Collection Results for Solomon Islands by Islands

Submissions in by island

| Province | Submissions |
|---------------------------------|-------------|
| Tulagi | 586 |
| Savo | 527 |
| Buala | 615 |
| Auki | 974 |
| Gizo/Noro/Munda | 590 |
| Temotu | 591 |
| West/East Guadalcanal & Honiara | 2918 |
| Shortlands | 10 |
| Makira | 802 |
| Total Submissions | 7613 |



SAMOA

- *Data at hand, before survey**
- *Data needed to fill the gaps**
- *Ministry focal point, and objectives**

***Data at hand, before survey**

- PCRAFI I Exposure datasets for Apia

***Data needed to fill the gaps**

- Assets not covered in PCRAFI I & or any other related Project

***Ministry focal point, and ministries involved in PCRAFI II Project**

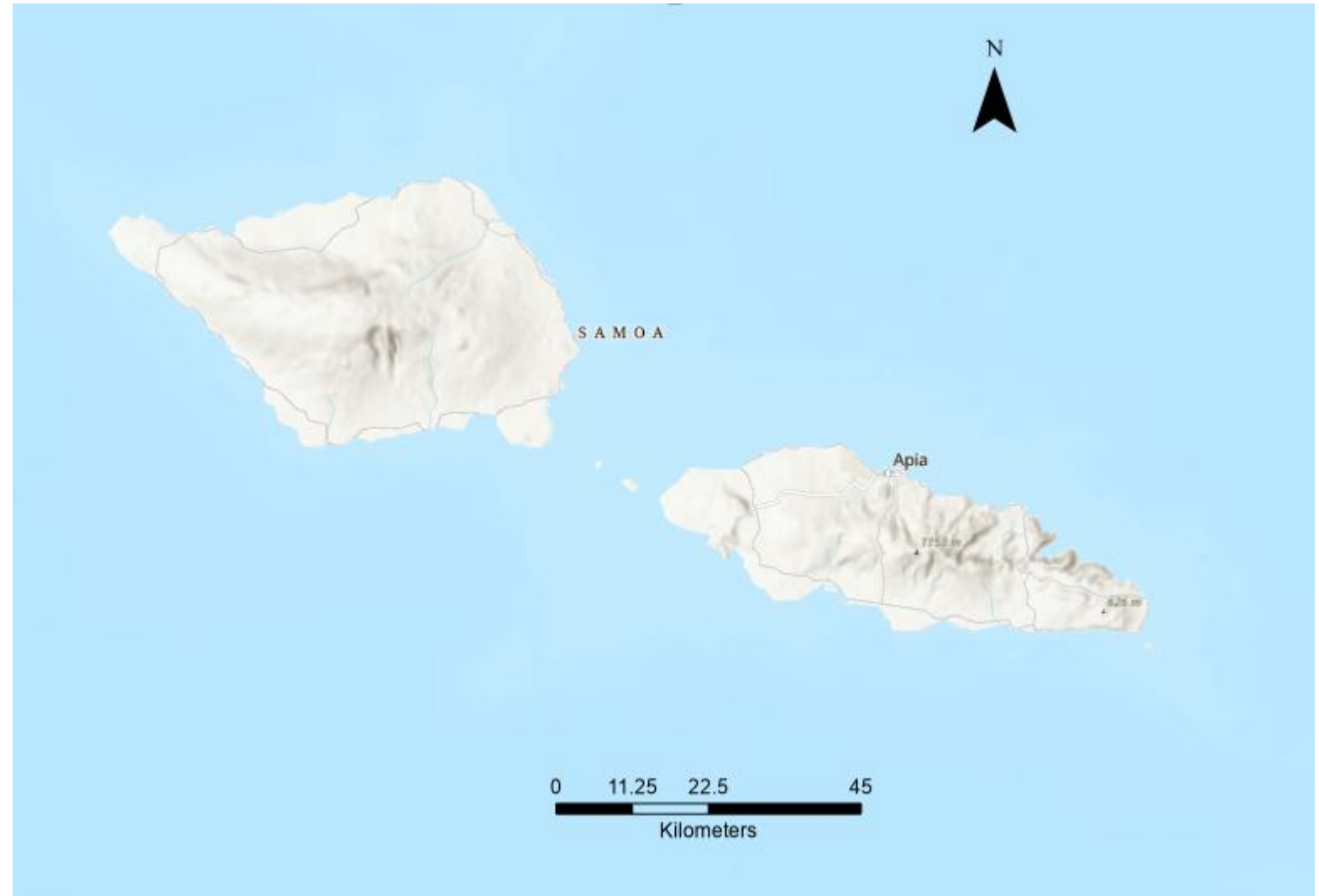
Ministry of Finance – main objective is to facilitate, provide in country support and guidance of the project with support from SPC

***Ministries that took part in the Assets exposure dataa collection survey**

- A total of 13 Ministries & Agency took part in the survey

Exposure Data Collection Location in Samoa

a. Apia - Samoa



Data Collection Results for Samoa

Status: Data Cleaning

| Samoa | | |
|------------------|--------------|-----------------------------|
| Asset | Submissions | Comments |
| Building | 9825 | |
| Roads | 207 | |
| Electricity | 2445 | |
| Communication | 119 | |
| Water | 170 | Data cleaning under process |
| Bridge | 22 | |
| Fuel | 11 | |
| Crops | 46 | |
| Livestock | 1 | |
| Port Facilities | | |
| Airport/Airstrip | 1 | |
| Total | 12847 | Data yet to be clean |



Exposure data collection - Vanuatu



Exposure data collection - Tonga



Exposure data collection training - Samoa



Exposure data collection - SI

Conclusion

- Capacity Built within different ministries/agencies involved for each country
- Co-operation between ministries/departments within countries, bridging the gap between silo's
- Step towards updating of risk profiles for countries
- Update towards national exposure database
- Open-sourced tools/software's – sustainability
- Introducing sustainable, relevant, convenient workflows
- PacRIS – centralized open-sourced data depository for countries (GeoNode)

Looking Forward

- Through future discussions, would be of great benefit to have access to data collection templates that were being used within ministry/department or the actual data itself in order to accurately determine the gaps in data that can be targeted; also, to ensure there is no duplication of data. (pre-survey)
- There is a real need to guide conversations on an ongoing issue within countries of data accessibility, maintenance and utilization. Willingness of departments to share data, update data, plan and action long-term sustainability of not only the PacRIS platform but also their various ministry/department databases.
- Contextualizing of data collection templates and country training manuals to countries assets
- Opportunities to institutionalizing trainings conducted (*Exposure Data Collection – KoBo Toolbox, Fundamentals of Exposure & Hazard Mapping Analysis on QGIS, etc*)