

# Planning for Climate-resilient Urban WASH in Pacific Islands

## Lead organisation

International WaterCentre

## Partnering organisations

USP-Vanuatu

USP- Fiji

Urban Analytics and City Systems (UACS)

Solomon Islands National University (SINU)

**Start date: 01/01/2022**

**End date: 30/09/2022**

## Project Synopsis

There is little indication that WASH service delivery models for urban and peri-urban settlements are planned with resilience to threats such as climate change or changing populations. Research suggests future impacts will be disproportionately felt by residents in informal settlements, particularly women, who often bear the responsibility of household water and sanitation-related tasks in the Pacific.

We propose to extend our research on WASH in Vanuatu marketplaces, combined with our recent work using spatial analysis for planning WASH in settlements across Melanesia, to explore processes that enable planning (i) from the bottom-up supported by knowledge and information from the top-down, (ii) that improves the resilience of WASH service delivery models to climate change and future population changes, and (iii) that links to catchment-scale land use. The project goal is to explore opportunities for contextually relevant processes that could be used in Pacific countries that allow for climate-resilient WASH service delivery integrated into urban and landscape planning.

## Project design

The research will be conducted in urban areas of four countries - Vanuatu, Fiji, the Solomon Islands and Papua New Guinea, all of which have large informal urban/peri-urban settlements, and designated new urban growth areas. Working with our in-country research partners at USP (Vanuatu, Fiji) and SINU (Solomon Islands National University), we will combine mixed information sources to spatially characterise existing WASH service delivery models and their resilience in settlements and markets, and explore collaborative planning processes for governments to use this information in WASH planning with stakeholders.

These objectives are common to all four countries, but research activities and outcomes will be country-specific in recognition of the contextual diversity across countries and in urban informal settlements.

The project includes four key components (concurrent activities):

### **(1) Integrated and collaborative planning information and processes**

Review existing information and processes to understand how urban planning for future and existing formal and informal settlements occurs in each country, (e.g., information systems/platforms, processes and knowledge). We will conduct a meta-review of literature, and consult with key stakeholders through workshops and targeted key informant interviews (KII). How gender and social inclusion are considered by policymakers and planners, and

influences decisions within existing planning processes will be explicitly included in this research component.

**(2) Characterising existing WASH service models and their resilience:**

- Community-based research in two of four countries undertaken by USP and SINU, to test the feasibility and explore opportunities to incorporate qualitative data into spatial planning processes. We will pay particular attention to the involvement of women and other marginalised social groups at both ends of data collection activities - those collecting the data and those providing their insights. A mixed-methods approach consisting of household surveys, infrastructure and services observations, Klis, and photovoice techniques will be used to understand the impact of past climate-related events on WASH and people's lives, and to appreciate community knowledge, attitudes and perceptions of climate resiliency.
- An assessment of climate resiliency of WASH service delivery models, based on literature review, including IWC's current work on climate-resilient sanitation with WHO, and the community data. This will be mapped to the hazard types identified in component 3.

**(3) Exploring the integration of existing information to support planning:**

- Desktop and spatial analyses to explore how different types of data can be usefully integrated into spatial information systems to help communities and planners build resilience.
- Identify settlements and market places. The research will use innovative machine learning processes to analyse the urban space in Vanuatu, Fiji, SI and PNG, and map relevant locations. Our team includes an urban analytics planning consultancy at the forefront of data-driven planning (UACS Consulting) to conduct an innovative pilot using high-resolution aerial photography to autonomously recognise urban landscape features. Our research partners will ground-truth our remote outcomes whilst conducting field surveys.
- Incorporate demographic, climate, environmental, land use/geographical, and quantitative and qualitative WASH data, including catchment-scale land use and water resource data. This will be accessed in partnership with the Pacific Community SPC, which previously provided IWC with data not publicly available (including for the Vanuatu WASH, COVID-19, and markets research), and have committed to this extended scope. This process will be tested in all 4 countries, though datasets will differ.
- Identify areas of increased vulnerability to climate change. We will collaborate with the Climate Change Response Program at Griffith University and access the latest climate modelling from the Australia Pacific Climate Partnership (APCP) for predicted climate change effects in Melanesia. APCP has committed to assisting us to localise their predictions to the research urban environments.

**(4) Identifying integrated and collaborative planning processes**

By bringing together the above components, we will identify opportunities within existing systems to pursue WASH planning that is collaborative, consider climate, future populations, and catchment links. Workshops with stakeholders will discuss research findings and identify locally relevant planning processes to be pursued.

## Outputs/deliverables

The research will develop recommendations for integrated and collaborative planning processes for climate-resilient WASH in marginalised urban environments. This extends the impact of the Vanuatu WASH in markets research by scaling up information and processes to consider and plan for WASH in marketplaces as well as the connected, poorly-served, urban areas.

The research will have different relevance to different users, and as so we will produce specific outputs relevant to in-country stakeholders, community members, and broader practitioner groups.

These include:

- Summary review: WASH & climate change in urban planning systems in Vanuatu, Fiji, Solomon Islands and PNG
- Technical Brief: Integrated knowledge management for climate-resilient urban WASH planning
- Technical Brief: Climate-vulnerable and climate-resilient WASH service delivery models in Melanesia
- Policy Brief: Opportunities for collaborative and integrated planning processes for climate-resilient urban WASH
- Maps: urban informal settlements, marketplaces, and areas identified for future urban expansion, WASH service delivery vulnerability to climate change hazards
- Research report
- Community reports for participating urban areas
- Community photograph exhibition involving willing participants