



Photos: Zoomfiji



Watershed Interventions for Systems Health in Fiji (WISH Fiji)



ACKNOWLEDGEMENTS

The WISH Fiji project is funded by the Australian Government's Indo-Pacific Centre for Health Security and Bloomberg Philanthropies' Vibrant Oceans Initiative and is implemented by University of Sydney, Edith Cowan University, Fiji National University and Wildlife Conservation Society. WISH Fiji has additionally been supported with complementary funding from two Grand Challenges Exploration grants from the Bill & Melinda Gates Foundation.

The WISH Fiji project has benefited from support from numerous agencies and individuals, including the: Ministry of Agriculture; Ministry of iTaukei Affairs, iTaukei Affairs Board and Provincial Offices; Ministry of Education; Ministry of Fisheries; Ministry of Forestry; Ministry of Health and Medical Services; Ministry of Infrastructure and Meteorological Services, Department of Water & Sewerage; Ministry of Rural and Maritime Development, Divisional Commissioners and Provincial Administrators; Water Authority of Fiji; and village water committees, community health workers, and turaga ni koro.



The **Watershed Interventions for Systems Health in Fiji (WISH Fiji)** project is a collaborative, research-to-action approach that has worked within watershed units to reduce risk of water-related disease and improve downstream ecosystem health. Between 2018 and 2022, WISH Fiji was implemented in 29 communities across 5 watersheds in Fiji, located within Central, Eastern and Northern divisions.

WISH Fiji is designed to reduce risks to people from Fiji's three plagues (leptospirosis, typhoid and dengue), as well as other diarrheal disease (collectively 'LTDDs'), by improving overall systems health, which provides co-benefits for downstream ecosystems. We define systems health as the emergent result of interactions and feedbacks between the environment and people, nested across different scales. Improved systems health is accomplished by: (1) identifying disease risks across nested scales (landscape, community, household, individual) through data gathering and participatory planning; (2) prioritizing investments in interventions that maximize risk reduction potential for human health and downstream ecosystem health; and (3) measuring impact.

KEY OUTCOMES

Participatory engagement processes emphasized

5 project watersheds were identified around the Upper Navua, Waibula, Dawasamu, Bureta and Dama rivers through collective decision-making with government staff based on key selection criteria, including history of LTDDs, vulnerabilities, size and connections to the coast.

29 project communities were identified through direct consultation with provincial offices and the Ministry of Health and Medical Services.

A comprehensive process for obtaining **free, prior and informed consent** was carried out, piloting a new approach in collaboration with the Ministry of iTaukei Affairs.

Evidence-based decision-making for systems health supported

9 types of data-gathering instruments were designed based on known risks for LTDDs and downstream ecosystem health.

311 households were enrolled to collect information on individual, household and community risks.

>18,000 measurements of water quality and **> 1,000** DNA samples taken across the 5 subcatchments.

A data storage system was produced in **Tupaia** by Beyond Essentials to collect and assess information on risks, and a visualization system is being designed.

29 water and sanitation safety plans (WSSPs) were produced, expanding methodology from WHO and UNICEF to also include broader systems health risks.

Nearly **80% (23 out of 29)** of communities do not have safely managed sanitation, because they do not have safely contained latrine backends, which may be a contributing factor to higher risk environmental water quality in **12 out of 27 (44%)** of communities.

Salmonella Typhi was detected by **DNA analysis** from the backend leach zones of two community latrines (despite only 40% of samples being analyzed), indicating a possible transmission pathway for Typhoid Fever.

8 out of 29 (28%) communities had highly contaminated piped primary drinking water (*E. coli* > 100 cfu/100mL).

Incidence of the **60** reported cases of **dengue** from project watersheds over three years was related to: low effort to control standing water (including from containers) and bushes around houses; presence of mosquito larvae within households; number of people in households and relative wealth; swamps in close proximity; flooding frequency and the amount of flood risk area in the watershed; and the amount of highly erodible soil and pathways for its entry into creeks through road crossings.

339 priority watershed interventions were identified across categories related to: water systems; animal management; land use management (including Nature-based Solutions); waste management; drainage; sanitation systems; hygiene; integrated planning; and health systems surveillance.

Risk reduction measures achieved

154 watershed interventions were implemented, principally related to improvements in water systems, integrated planning, land use management and waste management.

Comparisons between initial and follow-up monitoring are demonstrating changes to risk levels resulting from project interventions.

Over **5,000** residents of project watersheds now have access to cleaner water, supporting national development targets.

More than **11** hectares have been targeted for reforestation, in partnership with the Ministry of Forestry, that will produce lagged risk reduction through sediment control and flood risk mitigation.

Capacity building for systems health supported

Village water committees were strengthened through training on WSSP processes and linking them to government development planning. **546** community members participated in WSSP planning. Actions from the plans have been integrated into Integrated Village Development Plans.

With project support, a cross-sectoral **National Drinking Water Quality Committee** has been legally established. It is tasked with providing evidence of safe drinking water, even in rural areas, "through sanitary surveys, water safety plans, and drinking water quality monitoring and surveillance programs and integrating it with water-related disease surveillance."

More than **10** staff from Fiji National University and the National Centre for Communicable Disease Control were trained to monitor water quality and pathogens, and upskilled on new DNA extraction methods from water and soil.

15 sub-divisional health inspectors were trained in water quality monitoring using Wagtech kits.

29 volunteers were engaged to assist with data collection.

Knowledge disseminated and shared

5 journal articles have been published to date on WISH Fiji findings, with an additional **5** in review or in preparation.

4 white papers have been disseminated on the WISH approach, including to Pacific Island Forum Leaders.

A planetary health case study, "**Typhoid and torrents**", was produced on the WISH Fiji approach, complete with teaching resources.

16 presentations have been given to a diverse range of audiences.

