

Responding to climate change to sustain
community-managed water services in Vanuatu

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CERTIFICATE OF ORIGINAL AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as part of the collaborative doctoral degree and/or fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Dedicated to the memory of my mother

Sherlene Kohlitz

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Abbreviations

ACFID: Australian Council for International Development

DoW: Department of Water

DLA: Department of Local Authorities

DWSSP: Drinking Water Safety and Security Plan

IPCC: Intergovernmental Panel on Climate Change

IWRM: Integrated Water Resources Management

NAB: National Advisory Board for Climate Change and Disaster Risk Reduction

NGO: Non-governmental organisation

NWP: National Water Policy

NWS: National Water Strategy

SDG: Sustainable Development Goal

SES: Social-ecological system

TAC: Technical Advisory Commission

UTS: University of Technology Sydney

VCRF: Vanuatu Community Resilience Framework

WASH: Water, sanitation, and hygiene

Abstract

The aim of this research was to provide holistic, detailed, and integrated knowledge and guidance on the ways in which community-managed water services are affected by and sustained against climate change disturbances.

Climate change poses one of the most significant challenges to the world with potential for far-reaching, detrimental impacts on water access in rural areas of developing countries. The water, sanitation, and hygiene (WASH) sector has yet to adequately and explicitly conceptualise the different ways that climate change affects water services and how water services are sustained against climate change disturbances. Without clear conceptualisations, actions taken to adapt water services to climate change run the risk of being ineffective, inefficient, inequitable, or environmentally unsustainable. This research filled the conceptualisation gap in the context of community-managed water services in a developing country setting using Vanuatu as a country of reference.

To conduct this research, I followed tenets of transdisciplinarity and utilised a case study methodology in two rural sites in Vanuatu that included 70 participants from rural communities and local and central government. Methods included semi-structured interviews, technological and environmental surveys, observations, participatory workshops, and document analyses.

I first drew on three bodies of climate change theory-practice to fill the conceptualisation gap: risk-hazard, vulnerability, and resilience. I demonstrated that using risk-hazard, vulnerability, and resilience lenses each make different, but valuable, contributions to conceptualising the biophysical, social, and social-ecological impacts of climate change on community-managed water services. I argued that the WASH sector currently favours a technocratic framing of the climate change problem and must consider the wider range of perspectives that I demonstrated.

I then synthesised key concepts from risk-hazard, vulnerability, and resilience theories, such as those relating to risk management, agency, and human-environment feedbacks, into an integrated conceptual framework to emphasise their synergies and manage tensions between them. My proposed framework acts as a heuristic for assessing the capacity of community-managed water services to

sustain water access against climate change disturbances. The framework sensitises WASH stakeholders to the different ways of regarding climate change impacts and facilitates interdisciplinary research.

Lastly, I showed how my findings are useful in a real-world setting. I discussed how my proposed framework can be used to inform Government of Vanuatu strategic decision-making processes. I also considered how my framework can be used to evolve a Vanuatu-based NGO framework and I shared lessons learned from carrying out my analyses with other researchers in Vanuatu.

