Pacific region

Gender Equality, Disability and Social Inclusion Case Study

HYDROLOGY SUPPORT FOR FLASH FLOOD EARLY WARNING SYSTEMS IN THE PACIFIC

Partners
The Pacific Community (SPC), Alluvium Group

Australian Aid

THE AUSTRALIAN WATER PARTNERSHIP

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Adriu Kaisau (Vatukacevaceva Village Turaga ni Koro), Kacaraini Rokonabe (Rewasa Village) and Fane Lomani (FemLINK) at a community engagement workshop in Vatukacevaceva. (Source: SPC)

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Overview

The Pacific region is one of the most at risk from the impacts of climate change, particularly from extreme weather events such as cyclones and flash flooding. To build resilience, the Pacific Community (SPC) identified an important area of work to better understand the potential likelihood and consequences of flash flooding and the role that hydrology can play to reduce these. The Australian Water Partnership (AWP) has supported SPC and Alluvium Group to lead an activity over two years (2022–2024) to strengthen flash flood early warning systems (EWS) in the Pacific. The work integrated gender equality, disability and social inclusion (GEDSI) principles across the activity, supported women in technical roles at the National Hydrology Services (NHSs) and involved stakeholder and community engagement that included diverse perspectives to inform flood EWS planning.

Activity Background

The Pacific region covers a vast area and is comprised of 26 countries with a population of over 13.5 million people. The region is made up of thousands of islands with a variety of geological landforms including high volcanic islands, low-lying and raised coral atolls, and raised atolls. SPC is the principal scientific and technical organisation in the Pacific region which is owned and governed by its 26 country and territory members who it serves.

Given the exposure to and significant cost of water related disasters and flooding in the Pacific, AWP has supported the re-establishment and strengthening of the regional support that SPC can provide in hydrology to address flash flood early warnings. The activity was guided by the development and implementation of a flash flood early warning system framework for Pacific countries. AWP has also assisted SPC to support the long-term sustainability and potential for scaling of hydrological services in the Pacific region through the development of a strategy for a regional program of support for hydrological services for effective flood early warning.

The primary purpose of this activity was to increase climate resilience and strengthen disaster risk reduction systems in Pacific countries through increased hydrological capacity and enhanced performance of flood early warning systems. The activity was aligned with the Framework for Resilient Development in the Pacific[1], and the Sendai Framework for Disaster Risk Reduction (DRR)[2], which includes the goal: *Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030*.

The activity aimed to support NHSs in Fiji, Samoa, Vanuatu and Solomon Islands to address gaps in national flood monitoring and warning services. It also aimed to improve timely communication for official flood warnings to ensure they are accurate and actionable. Two catchments were selected as pilots for strengthening flood EWS: Rakiraki catchment in Fiji and the Teouma Valley in Vanuatu.

Case Study Highlights

This case study provides an example of how to integrate gender equality, disability and social inclusion principles into an activity from the design phase, ensuring it is a key component of the activity strategy and plan. It is also an example of how to ensure its prominence as the activity continues through regular monitoring of GEDSI progress. The inclusion of a GEDSI expert, as well as inputs from SPC's Human Rights and Social Development Division, enriched the perspective and activity approach.

It also highlights the benefits of an inclusive program in stakeholder and community engagement that engages diverse stakeholders, including a local women's media organisation, to ensure voices of those most impacted by flooding are heard in the process.

During community engagement, partners took steps to a) ensure any information provided was culturally appropriate and accessible to those with low literacy and other differences, b) involve a diverse group of people and to ensure vulnerable and intersectional groups[3] were represented, and c) that sex and disability disaggregated data was collected, reported and analysed. They also took steps to structure workshop activities at times convenient for community members, including women, people with a disability and other vulnerable and internsectional groups and provided translation in local vernacular.

[1]Framework for Resilient Development in the Pacific (2017) available at: https://www.resilientpacific.org/en/resources/framework-resilient-development-pacific
[2]Sendai Framework for Disaster Risk Reduction (2015) available at: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030
[3]Intersectionality is a concept that that acknowledges the multiple and intersecting forms of disadvantage. Intersectionality moves away from binary causes and experiences of disadvantage.

GEDSI Activity Context and Objectives

As a principle, partners agreed that a flood early warning system should be people-centric and focused on the preparedness of the community to respond to a flood. An objective of the activity was to provide technical support to NHSs to improve information regarding timing, location and magnitude of flooding to help inform community members' decision making. The activity focussed on both technical support, for example, collection and interpretation of hydrological data, and support in bridging the gap in understanding between the communities and technical experts for tailored responses.

Exclusion from humanitarian services and decision-making processes in disaster preparation and recovery makes women and people with a disability amongst the most vulnerable groups in society. These groups experience stigma, discrimination, lack of protection and for transgender women and other intersectional groups, the impacts are multiplied. These groups often experience higher mortality, loss of livelihoods, gender-based violence, and for women with intersecting identities such as disabilities and elderly women, they risk being left behind during evacuations and relocation. For example, a 2013 UNDP report found women and children to be 14 times more likely to die due to a natural disaster.[3] Tropical Cyclone Winston provides an example of the disproportionate impact of natural disasters on women, where women in Fiji were negatively affected with reports of damage to their subsistence livelihood activities, nutritional security, household economic welfare, human welfare and increased time poverty.[4] These are key reasons why diverse and intersectional groups need to be involved in all humanitarian programming including disaster preparedness and recovery.

Historically, the most common source of failure in EWS is miscommunication rather than technological or equipment failure.[5] Often, warnings do not reach everyone potentially impacted by flooding and highly vulnerable people are typically the ones that do not receive the warnings, particularly in developing countries.[6] As vulnerability to disasters is a result of various economic, social and political factors determining people's lives and the environment they live in, it also determines their access to technologies such as mobile phones, televisions or radios that broadcast warnings or they may be illiterate or cannot understand the language of the message.

Flash flood warnings need to be tailored to suit the local communities' interests, needs, and values to be effective.[7] Local communities often have deep knowledge of local disasters and have an inherent capacity to respond to them. Involving communities in emergency management planning and including local languages and existing knowledge of indicators of flash floods, can improve responsive actions.[8] The incorporation of GEDSI into flood warning messaging is crucial to ensure vulnerable people, such as elderly people, children at school or people with a disability, do not get left behind. The key objective of integrating GEDSI into this activity was to identify what inclusion and accessibility looks like for each element of a flood EWS.

Key Statistics

>13.5million
Population of Pacific region[9]

60%
of households in the Pacific region have access to at least a basic drinking water service.

33%
Pacific Islands have access to a basic sanitation service.[10]

9 tropical cyclones
occur in the western Pacific region on average per year.[11]

>80%
of the population in the Indo-Pacific will potentially be directly impacted by climate change by 2050, particlarly rising seas and coastal flooding.[12]

[3]United Nations Development Programme (2013) Gender and disaster risk reduction, Gender and Climate Change Asia and the Pacific Policy brief
[4]Relief Web (2016) "Women in Fiji more negatively affected by Cyclone Winston" accessed March 2024
[5]United Nations Development Programme (2018) Five approaches to build functional early warning systems
[6]Perera, D., Seidou, O., Agnihotri, J., Mehmood, H. & Mohamed Rasmy, A. W. (2020) Challenges and Technical Advances in Flood Early Warning Systems (FEWSs), pp. 1–18.
[7]Bucherie, A., Werner, M., van den Homberg, M., Tembo, S. (2021) Flash Flood warning in context: combining local knowledge and large-scale hydro-meteorological patterns, Natural Hazards and Earth System Sciences
[8]Perera, D., Seidou, O., Agnihotri, J., Mehmood, H. & Mohamed Rasmy, A. W. (2020) Challenges and Technical Advances in Flood Early Warning Systems (FEWSs), pp. 1–18.
[9]The Pacific Community (SPC) Statistics for Development Division (2023)
[10]Joint Monitoring Programme (2022) Data Table Water, Sanitation and Hygiene: https://www.UNICEF.org/eap/media/10346/file/ Note: Regional data is not available on "safely managed" drinking water and sanitation service levels.
[11]Goff, F., and Oza, T. (2023) Healthy Environments, Resilient Communities: The vital role of sanitation for improving climate resilience in the Pacific. Melbourne: WaterAid
[12]Pacific Disaster Centre (2023) Indo-Pacific 2050 Climate Change Impact Analysis

"Our village has water as its boundary and the gardens are on the other side of the river. When flooding occurs and if we are not warned early, we are not able to access our gardens and keep our animals safe. Our children cannot go to school, so their education is affected."

Kelera Degai, Vatukacevaceva Village Health worker, Rakiraki, Fiji

GEDSI Approach

The approach, established in the design phase, was to mainstream GEDSI across all components of the activity. The purpose was to develop an inclusive and accessible flash flood EWS. This would include building on existing connections and networks within communities, unlocking community knowledge and facilitating community-based data collection and hazard monitoring.

Key GEDSI features of the activity, developed in the strategy and workplans, included:

- A GEDSI expert as part of the activity team
- A GEDSI strategy and workplan, detailed stakeholder communication and engagement plan, and knowledge exchange and capacity development plan
- Support for participation of persons with a disability and women in technical roles in workshops and training opportunities such as the Fiji National Flood Early Warning Stakeholder Workshop
- Engagement of a female-led Civil Society Organisation to organise and facilitate community meetings and to provide guidance on workshop design, attendees, and assistance in translation to local dialects for the Rakiraki Community Engagement Workshop (Fiji)

The Fiji National Flood Early Warning Stakeholder Workshop was a key opportunity for stakeholders to engage directly with the Fiji Metrological Service (FMS) and the activity team. The workshop provided the first opportunity for FMS to engage with multiple stakeholders to understand how they receive, interpret and act upon flood warnings and to explore how requirements of flood early warning differ between stakeholders. It also provided an opportunity for stakeholders to better understand the flood warning process and the role of hydrology in disaster risk reduction. Of the participants 33% were female and five of the nine presenters, speakers and / or panel members were female.

Workshop participants during the Fiji National Flood Early Warning Stakeholder Workshop. (Source: SPC)

Another example of the approach in practice was the community and stakeholder engagement in the Rakiraki catchment in Fiji. The objectives of the engagement included finding out how stakeholders and community members receive, interpret and act upon flood warnings, gaining an understanding of community perspectives on causes of flooding, including extents, timing, hazards and impacts and ensuring that a diversity of voices from community representatives were included in the activity.

To design and facilitate the community and stakeholder engagement, a female-led media organisation, Femlink Pacific, was engaged. Femlink Pacific has demonstrated experience in amplifying diverse rural women's voices through the Women's Weather Watch. The Women's Weather Watch utilises radio and web-based communication tools to support women's leadership to ensure more gender inclusive preparedness and humanitarian responses in disasters, particularly in the post-disaster and recovery phases. Utilising Femlink Pacific's community radio, SMS and Facebook and Viber groups, FMS has been able to communicate weather information in a timely way to those outside of regional centres. Having the necessary information, especially during a crisis, is vital for women to be able to fulfil their roles that contribute to the health, wellbeing and safety of family members, including the elderly and those with a disability.

Femlink Pacific's role in the stakeholder engagement was to ensure any information provided at the workshops was culturally appropriate and accessible to those with low literacy and other differences. It also included coordinating diverse people to ensure that vulnerable groups were represented and included in consultations, workshops, trainings, and that sex and disability disaggregated data was collected, reported and analysed for all activities. They took steps to structure workshop activities at times convenient for community members, including women, people with a disability, children, the elderly and other vulnerable and intersectional groups and provided translation in local vernacular.

Maria Nailevu FemLINK Pacific during the Vatukacevaceva Community Engagement Workshop. (Source: SPC)

Participants during the Rakiraki Community Engagement Workshop. (Source: SPC)

Through stakeholder mapping, Femlink Pacific ensured diverse representation at the meetings. At the Vatukacevaceva Village meeting 46% of participants were female and 54% male (24 participants). At the Rakiraki Town meeting 56% of participants were female and 45% male (16 participants). In addition, there were participants from the youth club, mothers' group, lesbian, gay, bisexual, transgender, intersex, queer/questioning, asexual (LGBTQIA+) community, schools and education department, police officers, business council members, village nurses, market vendors and multi-ethnic groups.

Femlink Pacific also ensured that community presentations included both male and female presenters. Activities were undertaken in small groups, which ensured full participation from all attendees. Translators were also present to help facilitate small group discussions. Two community members were invited to share their personal experiences in the flooding situation in Rakiraki and how it affects their work and community livelihood.

Activity Impact

Given the GEDSI objectives identified in the design phase, early appointment of the GEDSI Adviser and development of the GEDSI strategy and workplan, partners were able to focus on implementing the approach from the beginning of the activity leading to, for example, a stronger emphasis on GEDSI considerations in stakeholder and community engagement. As a result, diverse groups have been informing and learning from the evolving flood EWS approach.

Participants in the Fiji National Flood Early Warning Stakeholder Workshop and National Rakiraki Community Flood Early Warning Engagement Workshop, including those representing diverse, vulnerable and intersectional groups, highlighted specific issues from their lived experience. For example, they identified a particular need for tailored warnings for people with a disability and their carers including giving more warning time to respond to disaster messages. Their contributions helped identify opportunities for strengthening flood warning such as:

- Improved flood warning maps with clearer information.
- Simplified language regarding flood alerts and warnings.
- Increased accessibility of information catering to all people.
- Increased timeliness of information.
- Incorporation of community and stakeholder knowledge into risk assessments.
- Clear avenue and process for contributing community and stakeholder information during a flood.
- Inclusion of impact information and actionable statements in flood warnings.
- Increased timeliness and accuracy of flood warnings to improve confidence in decision making and responses.
- Incorporation of post-event analysis to improve accuracy of future warnings.

The workshops provided an opportunity for FMS and SPC to hear the traditional and existing community knowledge that exists around flooding and understand how this can inform further work. The workshops were also an opportunity for FMS to share with the community flood early warning resources available from FMS, to help communities be more prepared for flooding. Community members reported that they had increased their knowledge around flooding and resources available to be better prepared.

> *"This was the first time our hydrology division at the Fiji Meteorological Service has had stakeholder engagement on flood forecasting and flood warning at a community level. This was very helpful because we got to meet people in the community and gather local information and their feedback on the products and services that we provide. It also gave us the opportunity to create awareness around the flood forecast and monitoring products that we have at the Fiji Met Service."*
>
> ***Ana Degei, Media Liaison Officer, Fiji Meteorological Service***

Women's participation in workshops and training opportunities has been a priority of the activity. In general, female representation in technical hydrological roles, water governance and water utilities is limited in the Pacific region and globally. Informal discussions with female staff members highlight a range of unique challenges they face in undertaking their work and gaining opportunities to progress their careers. In response to this, partners made requests to NHS management for the attendance of female hydrology staff members during training and workshops, as well as provided funding for additional places to ensure their attendance and participation. Attendees expressed their thanks for the opportunities to be involved in these workshops and contribute their perspectives to the activity.

Participants during the Vatukacevaceva Community Engagement Workshop. (Source: SPC)

Learnings

The team worked closely with NHSs throughout the activity to implement identified actions and pursue GEDSI opportunities. Through the activity, female technical, scientific and communications officers were involved in field assessments, community, regional and national workshops (including as discussion panel members), technical training courses and hydrometric station installations. Key learnings were identified throughout the activity, such as how to further support inclusion, which will be used to inform future activity design.

Following a presentation on the importance of considering gendered perspectives and inclusion of people with a disability in the stakeholder workshop, an in-depth session was held considering all members of the community who may be impacted by flooding and how EWS might better engage and communicate with them about the risks and responses. This approach provided participants with a practical experience of addressing hazards from viewpoints they may not have considered previously and underlined the importance of ensuring their inclusion from the start of any new plan or activity.

During the Vatukacevaceva village workshop, the Acting Director of FMS identified that the “last mile” communication, that is messages to those who are the hardest to reach, is still a challenge in Fiji. The flood warning messages from FMS do not seem to be directly reaching rural and remote communities. However, the workshops also demonstrated that there are diverse methods of communication, including radio, social media platforms and traditional communication hierarchies, that can be used to ensure communities receive messages and warnings to improve the resilience of the communities dealing with flooding.

Participants during the Vatukacevaceva Community Engagement Workshop. (Source: SPC)

Looking ahead

Preparedness for flash flooding is an ongoing priority activity for government agencies and community members in the Pacific region. There is agreement on the importance of communities receiving and understanding weather updates and related warnings that provide accurate and actionable warnings. An early warning system should encourage early action that reduces damages and loss of lives from natural hazards.

Looking ahead, the process remains dynamic to support National Hydrology and Meteorology Services to improve collection and interpretation of hydrological data for timely and accurate flood warnings and to simplify and translate weather information so that diverse communities can be informed and be able to act accordingly.

For more information and resources, visit
https://bit.ly/AWP-GEDSI--Resources

Margaret Amon and Swastika Prasad of the Fiji Meteorological Service during a field assessment. (Source: SPC)

The AWP recognises that the integration of gender equality, disability, and social inclusion leads to more equitable and sustainable outcomes. The AWP GEDSI Policy (2020-2023) and Strategic Plan (2023-2028) reinforces the AWP's commitment to value and promote inclusion and diversity by prioritising the most poor and vulnerable. This case study is an example of the AWP's activities towards the delivery of the Sustainable Development Goals.