Groundwater, climate change, and inclusion: stories from Vanuatu, Indonesia, and Vietnam

Water and sanitation services can be an entry point to influence gender equality, disability, and social inclusion (GEDSI). Similarly, strong GEDSI can lead to improvements in water and sanitation services for all as well as more inclusive approaches to climate resilience. However, interventions that fail to consider GEDSI can unintentionally reinforce inequalities.

More than a billion people across Asia and the Pacific rely on groundwater for household services and livelihoods. As a water source, groundwater is often invisible, and therefore its management can be more complex than other water sources, requiring a strong consideration of GEDSI principles to ensure different needs are met, voices are heard, and no one is left behind.

On top of existing challenges of groundwater-based water and sanitation services lie the impacts of climate change, which threaten access to clean and reliable water across communities in Asia and the Pacific, particularly for people experiencing marginalisation. Climate change does not affect everyone the same, and inequalities in access to resources and capabilities, unequal decision-making power, and discriminatory institutions shape the vulnerability of people to climate hazards.

Women, girls, people with disabilities, minorities, and other vulnerable groups often bear the brunt of these compounded challenges.

Through the RECHARGE project, we have heard first-hand accounts of how groundwater access intersects with climate resilience, gender equality, disability and social inclusion.

"During the dry season, we struggle a lot": The struggle for accessible groundwater in Vanuatu

In rural Vanuatu, people with disabilities struggle to access water to meet their daily needs, especially in the dry season.

In one of the villages where the study took place, people rely on rainwater and on groundwater supplied through handpumps and occasionally through public standpipes. However, not everyone can afford a private rainwater tank, there are no public standpipes in half of the village, and some of the handpumps require significant physical strength to operate.

Almost everyone must collect water outside their homes and carry it back, and when the dry season arrives, people often have to go further to procure enough water.



A woman carrying water from one of the handpumps (Diana Gonzalez/UTS-ISF)

During our visit to the village, we met Rose, a woman with a physical disability, and an outstanding community leader and disability advocate. Rose's preferred water source is rainwater from her household tank because it is closer to the kitchen and is more accessible. However, when they enter the dry season, she said that people with disabilities face a lot of hardship as they need to resort to using groundwater or pay for community members to fill up their storage tanks. Rose said: *"during the dry season, we struggle a lot"*.



Rose explaining her preference for rainwater to research consultant, Lisa Faerua (Diana Gonzalez/UTS-ISF)

In the context of highly uncertain rainfall patterns from climate projections, this raises serious concerns for the people who heavily rely on rainwater, especially people with disabilities who are less likely to be able to afford and access alternative water sources in the dry season. Rose dreams of getting groundwater supplied through taps to the houses of every person with a disability in her village.



Rose demonstrating how to use the hand pump nearest to her house (Diana Gonzalez/UTS-ISF)

A GEDSI behaviour change perspective for safe groundwater in Indonesia

In low-income communities in urban areas, the struggle for safe water is a daily reality for many households. Not far from Jakarta, the glitzy city centre of high-rises, are densely populated settlements with home industries and small businesses that face challenges of water contamination.

Groundwater, which was once considered safe, is now viewed as contaminated due to nearby industry and poor sanitation. Women, who typically manage water use in the household, expressed concern about the groundwater quality: "*previously it was good, but now there is a lot of pollution*."

Despite their concerns, decisions about water – whether to switch to piped water or continue relying on wells – are typically left to men. Repairing pumps, negotiating fees, and managing infrastructure also fall into men's hands. Yet, many households found the piped water connection costs too high, forcing them to pay more for unreliable, potentially contaminated water sources.

Through focus group discussions, our research revealed how gender shaped behavioural motivations for different water sources. Women prioritised nurture and

comfort, seeking clean water for their families' wellbeing. Both men and women shared feelings of fear and disgust towards contaminated water, but for men in particular, cost and affordability were key.

Recognising these motivations, we co-developed a behaviour change campaign with Universitas Indonesia. The campaign, synthesised in this resources guide, comprises of five outputs: four videos, a booklet to dispel common myths and facts around piped water, recommendations for local water utilities to increase piped connection, a poster for targeted public display and a journal article (currently under revision).



Co-design workshop held in Jakarta in January 2024

Where possible, the campaign aims to avoid reinforcing traditional gender roles, and as such our materials depicted men and women as equal decision-makers. However, some gender roles were maintained to ensure the videos and other materials are perceived as realistic by viewers. The campaign walked a line of balancing gender sensitivity and gender transformation, with its main intent to improve safe water services for all.



Screenshot of behaviour change campaign video appealing to cost-efficiency (UTS-ISF)

People left behind: how social vulnerabilities can shape access to water in Vietnam

Mrs Ly, a 67-year-old widow from an ethnic minority in a small town in the Mekong Delta lives with her only daughter. Neither of them can work – the daughter because of a severe disability, and Mrs Ly because she is her daughter's caregiver.

Under Vietnam's pro-poor policy, they are officially recognised as a poor household, which gives them entitlements to economic support from the government, including a subsidised piped water connection and reduced water tariffs. In their town, piped water is sourced from groundwater sources.



The town's groundwater-based water supply station (Diana Gonzalez/UTS-ISF)

However, it took 11 years for Mrs Ly and her daughter to receive such a subsidy and get their own water connection – three years after their neighbours had been connected to the piped network. Mrs Ly did not know she was entitled to the subsidy and government support, and therefore never requested it.

Social inclusion policies that should have protected her failed in practice, leaving her to ask her neighbours to share their groundwater and having to carry it home, a situation that caused her ongoing distress.



Dr Nguyen Anh Minh interviewing Mrs Ly at her home (Diana Gonzalez/UTS-ISF)

Now that they have finally received the much-desired piped water connection, Mrs Ly expresses significant concerns and fears over being unable to afford the water service due to not being able to get a secure income:

"...I often asked for water with my bucket from my neighbours who were pumping water to water the plants and then brought it back home to use. When I ran out of water, I would ask for more. But if I still had some water left, even if it was a little, I did not dare to ask [again] because I'm shy. I'm just worried that one day I will have to ask for water like before. That is the problem I fear, because my life is still too difficult."



Dr Nguyen Anh Minh and Diana Gonzalez speaking with Mrs Ly (CTU)

A call for inclusive solutions

These stories highlight that an understanding of the intersectionality of gender, disability, social inequality and increasing climate variability is vital for delivering climate-resilient WASH services that leave no one behind.

There is urgent need for water services policies and plans to consider the importance of GEDSI, climate resilience, and the groundwater situation. Addressing these challenges requires inclusive planning, investment in infrastructure, and recognition of the role women and groups at risk of marginalisation play in water governance. By ensuring that everyone has access to clean and reliable water, we can build a more equitable and climate-resilient future for all.

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