

WATER, SANITATION AND HYGIENE:

The foundation for building resilience
in climate-vulnerable communities

Judith Omasete, Johanna Forster and Jo Geere
University of East Anglia Water Security Research Centre



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Cover image:

Parul Begum and her family received a household Rain Water Harvesting System from the climate resilience project supported by the HSBC Water Programme and WaterAid. The system stores and preserves the rain water it so it can be consumed as pure drinking water. Shibbati Poshchim Para, Ward 9, Paikgacha, Khulna, Bangladesh.

ACKNOWLEDGEMENTS

This research was conducted and reported by Judith Omasete, Johanna Forster and Jo Geere, with thanks to the following experts who were interviewed as part of the research:

Name	Role	Location	Organisation
Adib Hossain	Director of Programmes	Bangladesh	WaterAid
Amulya Miriyala	Head of Policy	India	WaterAid
Kabir Das Rajbhandari	Head of Programmes	Nepal	WaterAid
Binesh Roy	Programme Technical Manager	Nepal	WaterAid
Debora Bonucci	WASH Adviser – International Directorate	UK	British Red Cross
Rory Mckeown	Delivery of Water Safety Programme	South East Asia and Africa (Geneva)	WHO
Ronnie Murungu	Regional Programmes Manager	East Africa and Ethiopia	WaterAid
Ncamiso Mhlanga	Team Leader	eSwatini	WaterAid
Jesse Danku	Head of Sustainable Programmes	Ghana	WaterAid
Lucien Damiba	Regional Research and Knowledge Manager	West Africa (Burkina Faso)	WaterAid
Shegaw Fentaye	Head of WASH Programmes	Ethiopia	WaterAid
Om Prasad Gautam	Senior WASH Manager Hygiene	UK	WaterAid
Jonathan Farr	Senior Policy Analyst	UK	WaterAid
Caroline Maxwell	Advocacy Advisor (Water & Climate)	UK	WaterAid

With thanks to WaterAid's Programme Support Unit.

1. EXECUTIVE SUMMARY

This report seeks to explain how water, sanitation, and hygiene (WASH) builds people's resilience to climate change, especially those most vulnerable to its impacts. Climate change is affecting rainfall and weather patterns, increasing the frequency and severity of floods, drought, storm water surges, temperature extremes, fires and sea level rises. Access to clean water, decent toilets and good hygiene as a normal part of daily life helps people mitigate these events and processes. To cope with climate change both now and into the future, people must be able to access what the Joint Monitoring Programme (JMP) of the World Health Organisation (WHO) and UNICEF define as 'basic' levels of WASH, yet in 2020, 771 million people still lacked basic water, 1.6 billion people lacked basic sanitation, and 2.3 billion people lacked basic hygiene services, including 670 million people with no handwashing facilities at all.¹

These figures reflect a number of significant global problems, including generations of under-investment in public services, poor planning and implementation, poverty, and additional vulnerabilities experienced by women, the very old, very young, and people living with disabilities. The water sector is also under pressure from pollution, damage to ecosystems, inadequate management of resources, and increasing demand, particularly in urban areas. Climate change worsens many of these threats and brings additional pressures and unpredictable consequences.

Communities must therefore be supported to respond to a diverse range of scenarios. Climate change is a global challenge, but its impacts happen at a local level. Effective adaptation interventions must draw from local circumstances, knowledge and insights, and it is vital they are led and owned by communities themselves. However, a strong water sector and the necessary political, economic and regulatory conditions are also needed to keep services running.

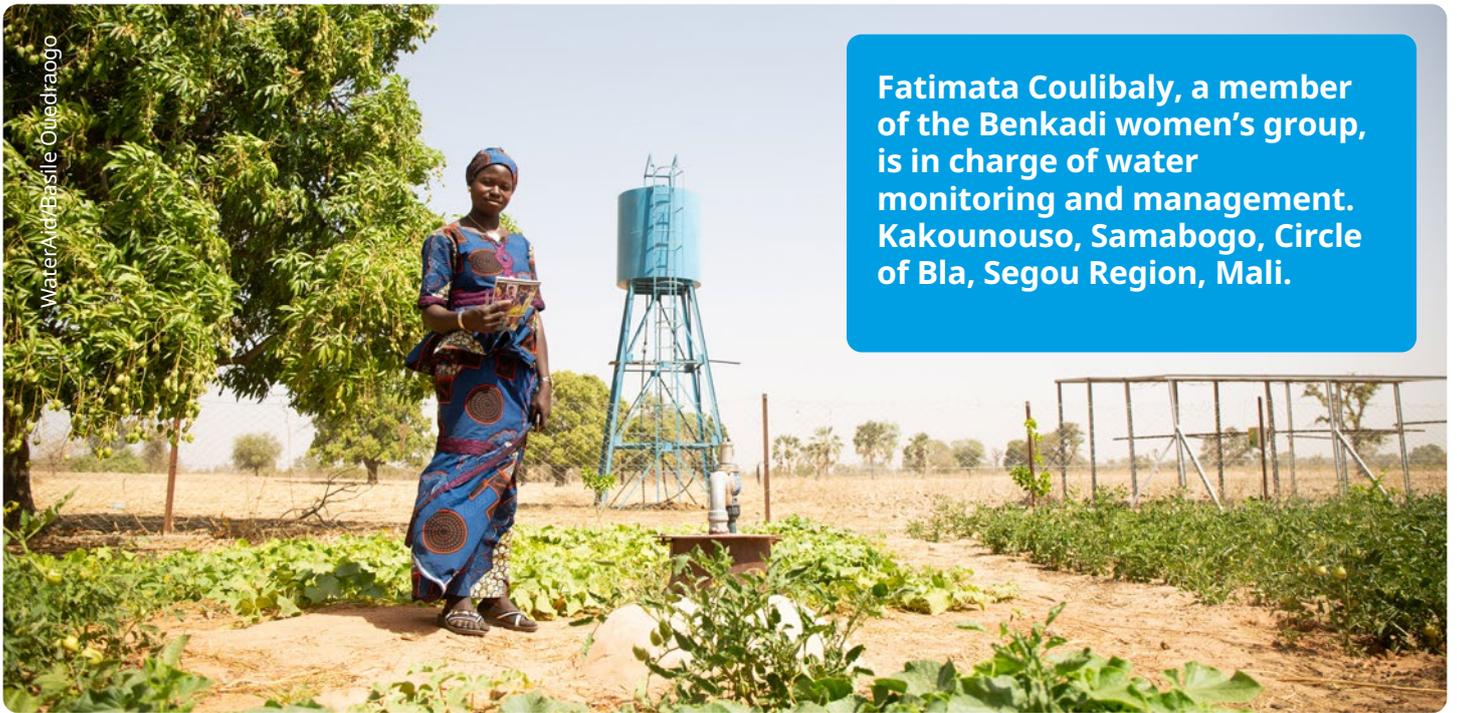
Investing in clean water, decent toilets and good hygiene makes a lasting difference. While these services do not themselves ensure resilience, communities without them will struggle to be resilient. There is robust evidence in published, peer-reviewed literature that community wellbeing and climate change resilience are improved by better WASH systems and services. Key outcomes include:

- Increased household wealth from more secure or diversified employment and livelihoods;
- better WASH governance and empowerment of communities through strengthened social capital and safety, particularly for women;
- improved access to education and training;
- better community health.



WaterAid/Joey Lawrence

Alene and his community used to collect dirty water from a spring that had started to dry up due to the changing climate. As part of the Deliver Life project, three climate-resilient water tanks have now been installed. Dere kwa, Ethiopia.



Fatimata Coulibaly, a member of the Benkadi women's group, is in charge of water monitoring and management. Kakounouso, Samabogo, Circle of Bla, Segou Region, Mali.

Through our work in vulnerable communities, WaterAid has developed programme guidance for climate resilient WASH and a toolkit for strengthening WASH systems so they can respond to a range of threats.

It is essential that we act now by embedding WASH investment in National Adaptation Plans (NAPs), and mobilising funding to make existing NAP WASH policies a reality. This will help vulnerable communities adapt, minimising the human and economic costs already affecting them, and prepare them for the uncertainty and impacts climate change will bring in the future.

Together, we can make a bigger difference for people most vulnerable to climate change. Doing what can and must be done now to improve WASH services and address current challenges will increase community resilience to climate change. Monitoring and evaluating WASH programmes that assess community resilience to climate change will then provide important insight and improvements over time. Much of what we know from existing research and experience can be implemented immediately in strategic, inclusive WASH programmes (Box 1).

WHAT WE KNOW ABOUT WASH SYSTEMS AND SERVICE DELIVERY

- WASH systems, incorporating actors, factors and their interactions, are complex.
- Community engagement is important, but community-led efforts alone are not enough.
- Inclusive and participatory decision-making and implementation is key for sustainability.
- Communities, government and service providers must all be involved in leading programmes to be successful.
- WASH service delivery must be backed up by the necessary finance and political motivation.
- Contextual factors affecting WASH sustainability must be identified and addressed to deliver effective levels of service and strengthen resilience to climate change.
- WASH systems are woven into and are vital for other sectors.

2. WATER POOR COMMUNITIES AND CLIMATE CHANGE IMPACTS

2.1 CLIMATE CHANGE VULNERABILITY AND COMMUNITIES WITHOUT ACCESS TO WASH

The effects of climate change on communities can be experienced as events or ongoing processes, and are variable and difficult to predict. Some communities are also more vulnerable than others. In this context, 'vulnerability' refers to the potential for climate change to have adverse impacts on people's lives, with degrees of impact varying based on people's gender, wealth, mobility and other factors. A community's vulnerability is linked to its 'adaptive capacity', the extent to which they can adapt to new situations – the lower their adaptive capacity, the higher their vulnerability, and vice versa.² It is therefore critical to help communities become climate change 'resilient', defined here as the ability to cope with the effects of climate change in ways that preserve and increase community functioning and wellbeing over time.

Differences in vulnerability to climate change also arise because of differences in local and regional bio-physical risks. Climate change is manifesting as changes in rainfall and weather patterns, increasing the frequency and severity of floods, drought, storm water surges, temperature extremes, fires and sea level rises, and communities experience different circumstances based on a variety of geographical factors. Communities living in low lying coastal areas will likely face different challenges to those living further inland at higher elevations, and to those living in non-coastal areas affected by drought, for example. Such differences affect the type of interventions that are appropriate for communities, and the extent to which basic WASH services can contribute to people's resilience.

The most vulnerable communities are likely to be made up of those living in poverty, who already lack basic WASH services. Such communities often have 'limited' WASH access, rely on surface water sources, or practise open defecation.^{1,3-7} These communities are more vulnerable because people who lack basic WASH services already contend with many problems that are likely to be exacerbated by the effects of climate change. For example, lack of basic WASH services is associated with poorer physical and mental health, poorer maternal and child health, physical injury, lower levels of education, lower wealth, living in remote and rural communities with limited or expensive transport, difficulties accessing public health and other services, and conflict or interpersonal violence.⁸⁻¹⁰ Vulnerable people most affected by inadequate WASH include women and girls, people living with disabilities or long-term health conditions, older adults, and minority groups who face discrimination.⁸

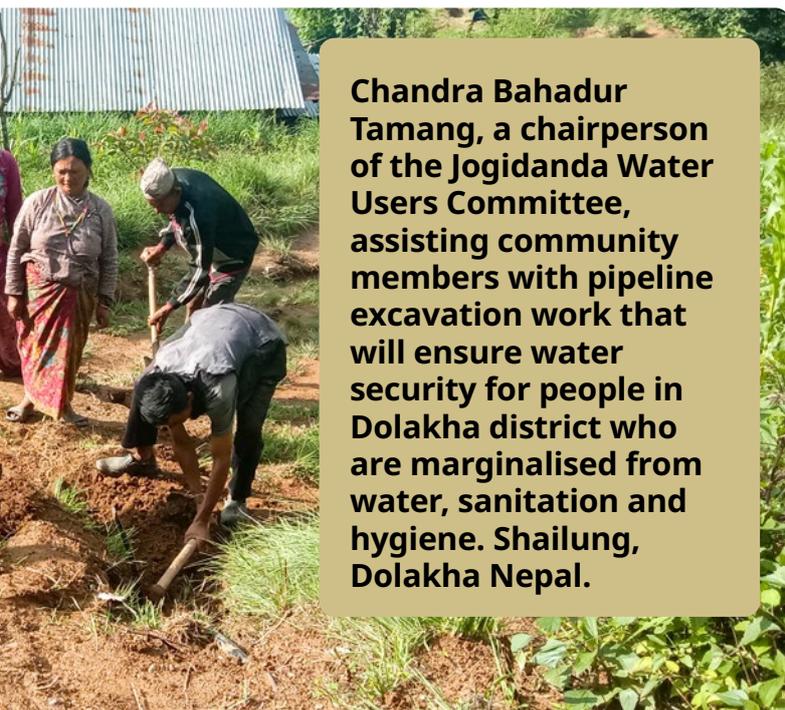


The events and processes associated with climate change, individually or in combination, may intermittently or permanently damage or interrupt:

- premises or property, including homes, buildings and other assets related to activities of daily life and livelihoods, work or business;
- access to existing water sources, and access to or functioning of WASH systems;
- access to education and training;
- transport and mobility within and between communities or regions;
- access or delivery of health, financial and other public services;
- social and cultural behaviours, networks, and events of significance to community wellbeing.

Ensuring access to clean water and sanitation for all is number 6 of the United Nations' Sustainable Development Goals (SDGs), and underpins achievement of many other SDGs, particularly SDGs 3, 4 and 5 on health, education and gender equality and women's empowerment respectively, but also Climate Action (SDG 13).¹¹

Julia Khatun (top) pumping safe water at a Pond Sand Filter plant in the Dacope region where the water is saline. WaterAid initiated this project and it was funded by HSBC. Golchera, Dacope, Khulna.



Chandra Bahadur Tamang, a chairperson of the Jogidanda Water Users Committee, assisting community members with pipeline excavation work that will ensure water security for people in Dolakha district who are marginalised from water, sanitation and hygiene. Shailung, Dolakha Nepal.



WaterAid/DRIK/Habibul Haque



Community members sowing seeds in the commune of Tenkodogo, in the Centre-East region, Burkina Faso.

2.2 CLIMATE CHANGE IMPACTS ON COMMUNITIES WITHOUT BASIC WASH

WASH services mediate people's experiences of climate change. WASH services are provided within a 'WASH system', defined here and by WaterAid as all of the actors (people and institutions), factors (social, economic, political, environmental, technological) and interactions between them that influence achieving inclusive, sustainable, universal access to WASH.¹² However, many existing WASH systems are not climate-resilient, and are derailing efforts to achieve SDG 6. WASH behaviours also influence how effectively such services can improve health outcomes for communities. For example, a recent analysis found that when more than 80% of people used improved sanitation, an associated reduction in childhood death and stunting was observed. A reduction of diarrhoea and acute undernutrition could be seen at over 60%.⁹ Improved handwashing behaviour in healthcare facilities (HCFs) is also key to achieving an effective and resilient healthcare service which protects patients and healthcare workers.¹³ Communities should be encouraged to adopt these interventions to experience their benefits.

For people and communities without basic WASH access, an increase in intensity and frequency of **floods, cyclones, storms and other natural hazards** can mean:

- Increased exposure to health risks such as cholera and diarrhoea, from contact with and/or consumption of contaminated water.^{14,15} This is caused by pollution of usual water sources by waste, faecal sludge and other contaminants, often from damage to sanitation infrastructure (e.g. toilets, pipes, treatment plants).¹⁶
- Destruction or damage of existing WASH infrastructure. This can cause:
 - women and children walking greater distances and being exposed to more hazards when accessing functional infrastructure or water points;
 - extra household expenses to purchase clean water or household water treatment and hygiene products;
 - dependence on emergency humanitarian aid;
 - risk of personal violence and loss of dignity, particularly for women and girls, if damage or destruction of toilets forces them to resort to open defecation.

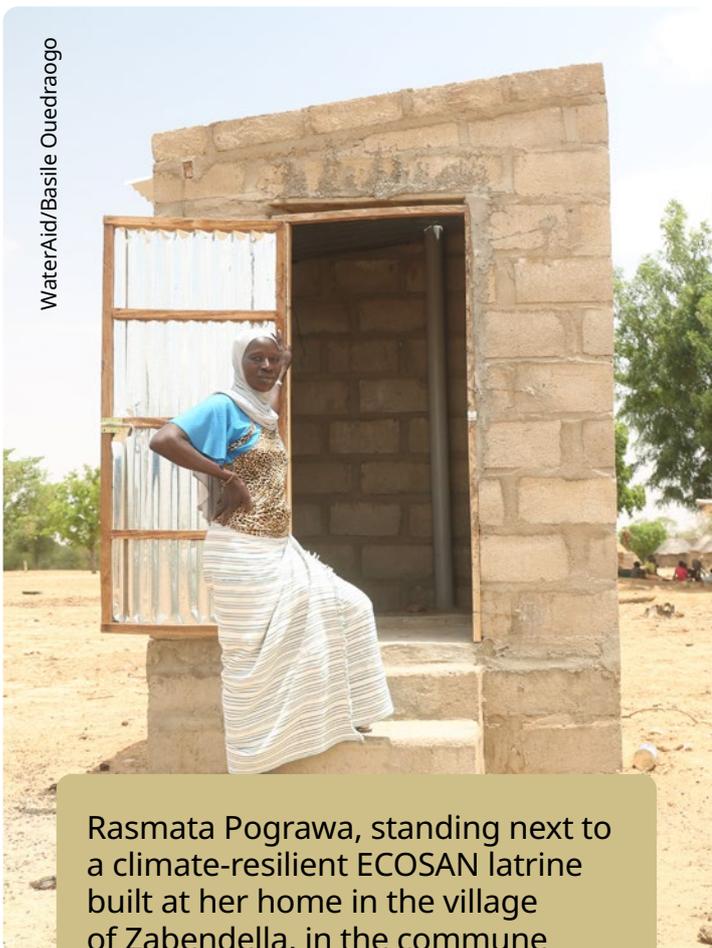
For communities and people without basic WASH access, **droughts** mean:

- a decrease in quantity and quality of water available for household consumption, including drinking, cooking, laundry, cleaning, personal hygiene, home gardening and food production^{17,18} due to water shortages;
- greater physical fatigue, increased risk of physical injury,¹⁰ increased mental stress^{8,19} and sleep deprivation, as women and children get up earlier and walk to more distant water sources before daily work or school;
- threat to dignity and social status due to norms and expectations around women's privacy and bodily functions, plus increased risk of domestic violence,²⁰ as women and children struggle to perform expected household tasks and household members are affected by stress.^{21,22}

Women and girls are most affected by a lack of basic WASH.^{6,23,24} This is because, in low-income settings, when WASH is accessed from basic or limited services, or from surface water sources, women and girls:

- Carry water home, and so are **key to the delivery of water.**¹⁰ They also tend to be carers, and so support WASH access within households for those who need assistance, such as young children, older adults and household members who are sick or living with disability.
- **Are most reliant on the WASH system,** as alongside their own needs for WASH, they are commonly tasked with cooking, cleaning and washing for the whole household, or others as paid formal or informal work.
- **Are the population most critically affected by poor WASH access** because of safety hazards and health risks associated with accessing water away from home¹⁰ and **existing inequalities** in maternal and child health, and girls' access to education.

In these ways, the activities of women and girls are integral to the functioning and resilience of WASH systems for good health outcomes. At the same time, they are most impacted by weak WASH systems that lack resilience. Simply put, resilient women and girls help make for resilient WASH, and vice versa. Given their knowledge of WASH realities and capacity, and experience in understanding and dealing with variations in water access, due to how seasonal differences and changing weather patterns are impacting WASH and health, women's involvement is key to developing sustainable, climate resilient WASH systems and processes. However, we should not rely on, promote or advocate for WASH systems that burden and depend on the informal, unpaid labour of women and girls.²⁵ Women's knowledge and expertise needs to feature within any work to deliver climate resilient WASH in the form of leadership roles and paid positions.²⁶



Rasmata Pograwa, standing next to a climate-resilient ECOSAN latrine built at her home in the village of Zabendela, in the commune of Tenkodogo, in the Centre-East region, Burkina Faso.

2.3 COMMUNITY RESILIENCE FOR COPING WITH CLIMATE CHANGE

Improvements to WASH systems have the potential to enhance community resilience in a variety of ways. For example, better and more sustainable WASH access is associated with the following, all of which can help individuals and communities more easily recover from, adapt or reorient to climate change events or processes:

- Increased household wealth or financial assets. These enable longer term planning and access to insurance and finance, which may spur investments in adaptative measures, repair of property or new livelihood ventures.
- More secure employment. This includes access to markets and technologies that enable longer term planning, access to insurance, finance, and investment in adaptative measures, repair of property or new livelihood ventures.
- Better access to education and training. These are associated with better health, more livelihood options, more secure employment, and higher wealth. Notably, women's level of education is associated with better maternal and child health.
- Better physical health. This reduces episodes of illness, speeds recovery from illness or trauma, and reduces barriers to education and adoption of new livelihood opportunities.
- Better mental health. This helps people recover from illness or trauma, cope with new challenges, problem solve and develop self-efficacy to recover, adapt and reorient to changed circumstances.
- Better access to health services and facilities, such as sexual and reproductive, perinatal and child health clinics. These can improve physical and mental health.
- Better family or community relationships and less conflict over WASH access. These strengthen social capital, equity and access to alternative sources of WASH, as well as other goods and services that might facilitate recovery, adaptation or reorientation.



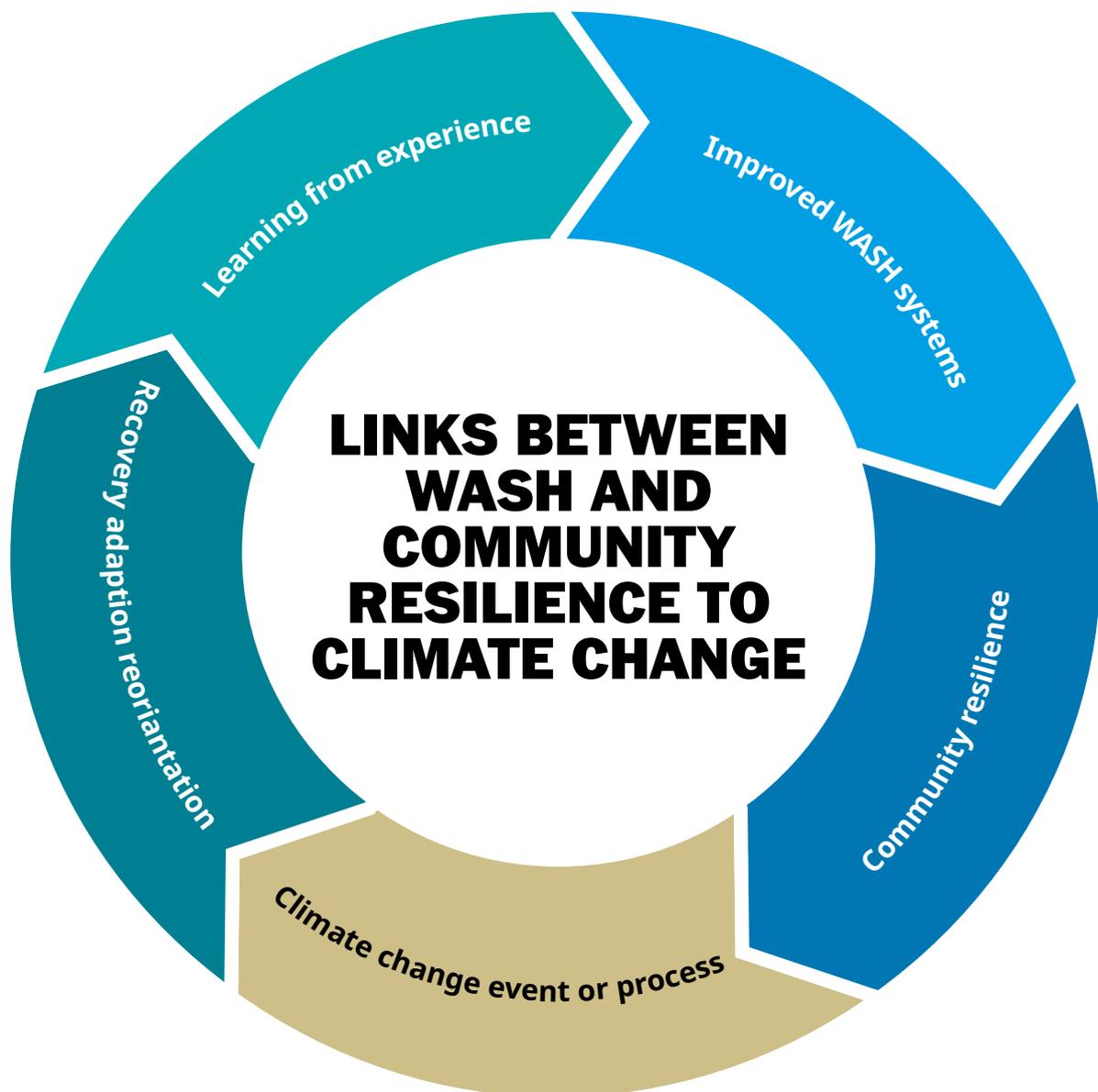
Community members from Basbedo during a village assembly to collectively discuss how water is used, in the commune of Tenkodogo, in the Centre-East region, Burkina Faso.

WaterAid/Basile Ouedraogo



Justine Sawadogo, reading the rain gauge installed by a project supported by the European Union and players of People's Postcode Lottery. Village of Bonam, in the commune of Boulsa, Centre-North region, Burkina Faso.

FIGURE 1: LINKS BETWEEN WASH AND COMMUNITY RESILIENCE TO CLIMATE CHANGE.



3. ACCESS TO WASH AND CLIMATE RESILIENCE

3.1 HOW ACCESS TO WASH INCREASES RESILIENCE TO CLIMATE CHANGE

Evidence of how WASH increases resilience to climate change in communities lacking access to basic WASH services was collected through a systematic review of published literature reporting outcomes of WASH improvement projects, and interviews with 13 project leads currently delivering WASH improvement projects for WaterAid, the ICRC and WHO.

3.1.1 Literature review

Published literature provides a large volume of evidence that improving access to WASH or improving WASH systems or service levels is associated with a wide range of positive outcomes^{17,26,27} that also enhance community resilience to the effects of climate change. Key WASH improvement outcomes reported as the main drivers of community resilience and adaptive capacity include diversified livelihood strategies and employment opportunities, better governance and improved access to education, food, water and health services.^{28,29}

3.1.1.1 Increased household wealth and employment

Communities need **money and time** to become more resilient to the effects of climate change. **Investing in WASH improvements for communities lacking basic services creates significant economic returns to households and society, enabling further investment in climate change adaptations to build community resilience.**^{27,30} WASH investment can also **directly create new jobs.**²⁶

A 2011 report³⁰ stated that achievement of the Millennium Development Goals for water and sanitation would generate benefits of **US\$84 billion per year with a benefit-cost ratio of 7 to 1.** Three quarters of these benefits stem from time gained by women and girls not having to walk long distances

to fetch water or queue at the source. Hutton's²⁷ World Bank review reported that WASH gives **significant economic returns to society, with higher benefit-cost ratios in lower income groups.** Rural areas benefit more than urban areas, due to lower unit costs and higher capacity to benefit from health and time savings. **The WASH targets with the highest benefit-cost ratio are provision of basic water and basic sanitation and eliminating open defecation.** A recent analysis³¹ found that:

- Basic services are a vital milestone towards safely managed, climate-resilient WASH and can provide up to 21 times more value than upfront costs.
- Achieving universal safely managed water supply will yield net benefits of US\$37 billion per year between 2021 and 2040 – with substantial health and time-saving benefits for women and girls.
- Achieving universal safely managed sanitation will yield net benefits of US\$86 billion per year between 2021 and 2040.

A systematic literature review³² of **climate change adaptations** in the Sahel region, a zone facing recurrent droughts and water stress, found that **the most commonly reported adaptation action was income diversification, followed by water harnessing actions** to absorb water deficit shocks. This included rainwater harvesting, irrigation, water management, sinking boreholes, constructing dams and drainage systems, and using water pumps. In response to common climate related challenges of crop failure, severe soil erosion and water shortage, studies report that farmers in Ethiopia use a range of adaptation strategies including **soil and water conservation techniques, water harvesting and income diversification.** In other countries including Tanzania, Pakistan and Bangladesh, responses to temperature increase, unpredictable rainfall, frequent occurrence of floods,



Tahmina now has a close source of safe drinking water due to the instalment of the Rainwater Harvesting System with funding from the HSBC Water Programme. Alokdia Abason area in Paikgasa, Khulna, Bangladesh.

increased dry spells during rainy seasons coupled with decreased water sources, include diversification of livelihoods, and adaptation strategies are significantly affected by household income. Lower farm income, and lack of market access and credit services are significant constraints affecting farmer's decisions to adopt climate change adaptations, while **farmers with higher household income are more likely to implement climate change adaptation strategies.**^{28,29,33-38}

WASH research participants commonly report that **better access to WASH enables household members, particularly women, to supplement farm income or contribute to household wealth** through more secure employment and diversified livelihoods (which may include WASH services). This is because they have more time, their children are healthier and attending school, they use water to prepare for and engage in productive and economic activities and have improved access to safer, cleaner market environments and other services.²⁶ This illustrates that investment in WASH would make a significant contribution to the reduction of unpaid domestic work shouldered by women and girls daily, positively impact their health and that of wider families and society, increase women's life and work options, accelerate a country's economic success and be transformative for gender equality.³¹

3.1.1.2 Stronger social capital, empowerment and better WASH governance

Social capital, empowerment and good WASH governance strengthen community resilience to the effects of climate change. **These factors are integral to appropriate WASH access, systems and service delivery,** and are also outputs of WASH systems and service improvement processes.

Better WASH governance in low-income settings, including improved accounting and management of water resources and measuring climate resilience in water safety plans, are key to risk reduction and building community resilience to climate change.^{17,39,40} To increase the effectiveness of essential government actions,⁴¹ collaborative working across disciplines and sectors is key,⁴²⁻⁴⁶ particularly considering contextual issues most relevant in particular regions. These include the water, energy and food nexus,^{47,48} equitable access to WASH, health and other essential services,⁴⁹ reducing corruption, conflict and risk of collective violence,⁵⁰⁻⁵³ engagement and representation of marginalised communities⁵⁴⁻⁵⁷ and use of local and indigenous knowledge.⁵⁸⁻⁶⁴

WASH projects that recognise and successfully build capacity for improved local, inclusive governance empower communities and particularly women. For example, WASH system support and maintenance can be achieved with local planning, budgeting, tracking of functionality, and by ensuring that supply chains work for securing WASH system parts. As an example of how this supports women's empowerment, female respondents in Colombia highlighted that being given a job as part of ecosystem-based climate change adaptation projects and thus contributing to their community's development made them feel proud of themselves and increased their self-esteem.^{57,62} Empowerment is not only beneficial for the mental health and wellbeing of women and others living in local communities, but facilitates effective and more equitable involvement of women and use of local knowledge in WASH systems, which is essential to developing contextually appropriate, inclusive and sustainable results.^{3,26}

3.1.1.3 Better education and vocational training

Communities need **education and training** to be more resilient to climate change. **Investment in WASH enables children and adults to attend and engage with education and vocational training, which can be provided as part of improvements to WASH systems and services.** Education institutions are vital for quickly channelling WASH system information and good practice examples to communities, such as through hygiene promotion. Education is also associated with wealth, health and economic growth,⁷¹ which can strengthen resilience to climate change.

School attendance and educational achievement can be adversely affected by inadequate WASH access because of associated childhood infections and dehydration. These cause absence and reduced cognitive function and performance, difficulty managing

menstrual hygiene for girls, truancy associated with fear of assault at WASH facilities without adequate privacy and safety, and absence due to the need to fetch drinking water.⁶⁵ Home and school-based WASH interventions can protect against WASH-related illness,^{5,66} increase WASH-related knowledge and practices,^{67,68} and through reduced absences and better engagement during school improve educational outcomes^{5,66,69,70} and health outcomes, particularly for girls.⁶⁸

Studies identify lack of knowledge, high illiteracy level and limited access to climate change information as contributing to vulnerability and barriers to adopting climate change adaptation and water security measures, and that farmers and people with low literacy can benefit from accessible adaptation and WASH advice or vocational training.^{55,72-79} Education can also support the use of local knowledge systems to increase resilience.⁶³

3.1.1.4 Better community health

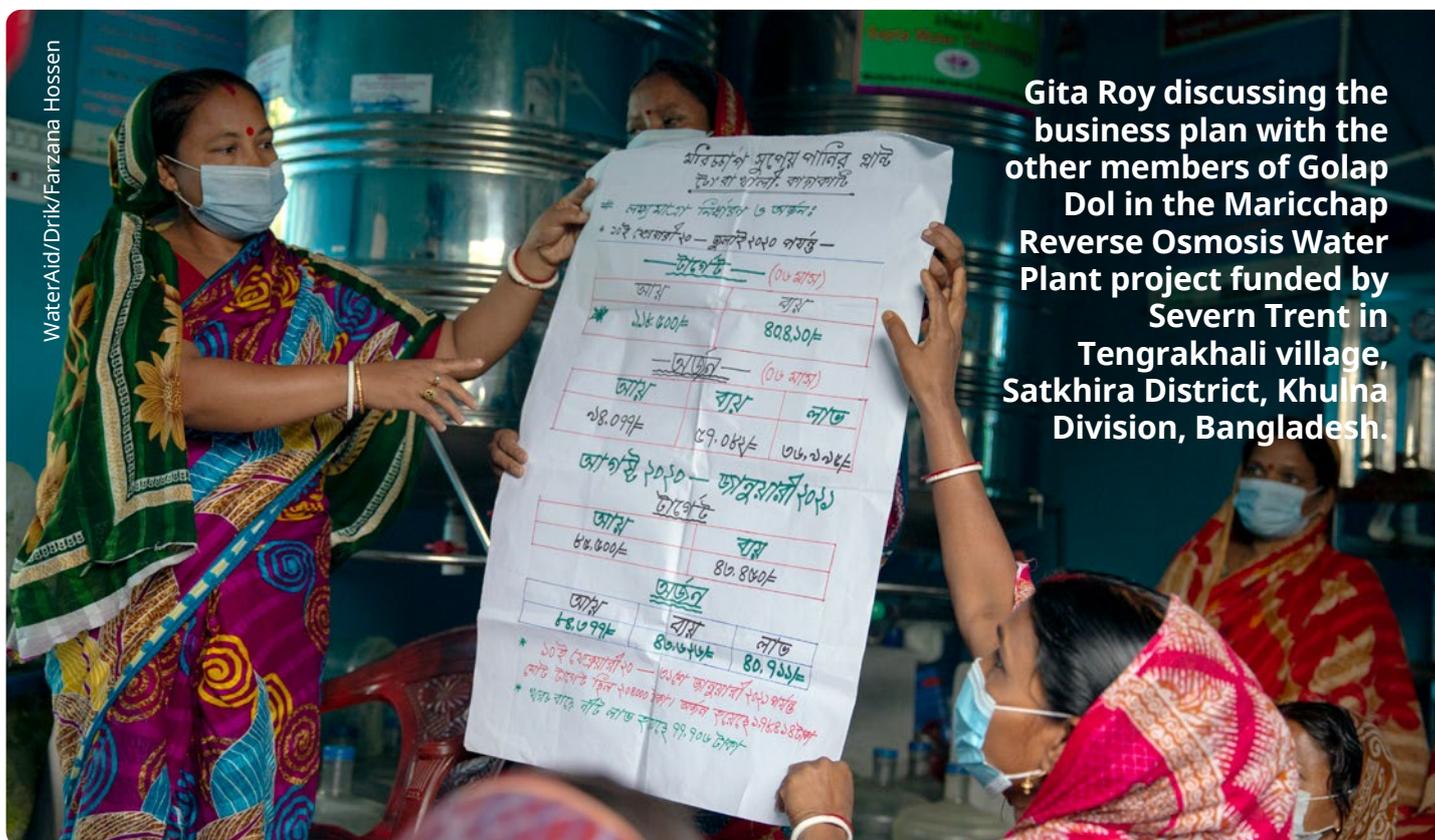
Healthier people and communities have more capacity (wellbeing, time and resources) to deal with existing and exacerbated adversity, engage with planning and preparation for climate change, and to recover from, absorb and reorient to shocks. Investment in WASH in communities and HCFs improves public health, is fundamental to strong and resilient healthcare systems, and results in healthier communities.

A key impact of climate change will be increased risk and incidence of water and WASH-related public health problems because of changes to rainfall patterns, water sources and extreme weather events affecting water sources, WASH systems and services.⁸⁰⁻⁸² Reducing current and future risk of water-related disease and improving the baseline health status of vulnerable communities through **better WASH access, systems^{83,84} and service levels⁸⁵⁻⁸⁸ is a first step to enhancing community resilience to climate change.**^{47,89}

The OECD³⁰ confirmed that **economic benefits from WASH are linked to reduction of diseases** such as diarrhoea, malaria or dengue fever. A recent review⁹⁰ reports that, in low and middle income countries in 2016, 60% of the overall diarrhoea burden (a leading cause of childhood illness and mortality), 13% of the burden from acute respiratory infections, 16% of the burden of protein-energy malnutrition, 43% of the schistosomiasis burden, 80% of the malaria burden and 100% of the soil-transmitted helminth infections and trachoma burden **are attributed to inadequate WASH**. Hutton's 2015²⁷ World Bank review reported that **WASH improvements have higher health impacts** and therefore higher benefits for people in lower income groups. An updated analysis⁹¹ found that **WASH improvement interventions were associated with lower risk of diarrhoeal morbidity**, and other systematic reviews show that improved access to WASH can improve a wide range of health outcomes. For example, WASH improvements are

associated with better maternal and child health and access to health services,^{8,9,92} reduced stress, better mental health and social relationships,^{8,19,93} food security,⁸⁹ and reduced risk of physical injury and collective or interpersonal violence.^{8,10,52}

Improved WASH access and behaviour in HCFs is fundamental to safe, dignified and resilient health services, crucial for health workers to do their jobs, and essential to reducing new-born and maternal sepsis and hospital-acquired infections.^{13,92,94-103} Along with improving WASH access in HCFs, improving WASH safety and access in refugee/internally displaced people's camps,¹⁰⁴ schools,^{5,66} at work,^{105,106} in public places and supply chains can also significantly improve public health, reduce risk of illness and disease outbreaks, reduce the burden of caring for sick family members (which commonly falls on women), and manage outbreaks when they occur. This enables communities to function, adapt and reorient to health and climate-related shocks and challenges.¹⁰⁷



Gita Roy discussing the business plan with the other members of Golap Dol in the Maricchap Reverse Osmosis Water Plant project funded by Severn Trent in Tengrakhali village, Satkhira District, Khulna Division, Bangladesh.

WaterAid/Drirk/Farzana Hossen

3.1.2 Interviews

WaterAid WASH project leads reported **multiple, interconnected beneficial outcomes relevant to strengthening community resilience to the effects of climate change and other shocks.** Key findings are outlined below.

3.1.2.1 Wealth and employment

All project leads reported increased household wealth as a benefit of WASH projects. Wealth was increased because of additional income from a range of extended or diversified livelihoods. Increased household wealth or financial assets enables longer term planning, or access to finance and insurance, which in turn allow for investment in adaptive measures to protect from extreme weather events, repair or replacement of damaged property and infrastructure, or development of new livelihood ventures. New livelihood activities encouraged training and technology uptake, hygiene routines, improved health and promoted implementation of climate-resilient WASH infrastructure and standards.

In drought prone and water stressed Uttar Pradesh, India, for example, decades of declining groundwater levels led to a WASH crisis; only 3223 out of 7508 wells and 1193 out of 2292 ponds in the district had water in them. A WaterAid democratic water conservation and recharge project between January 2019 and April 2020 sensitised, mobilised and incentivised 35,000 community members to use rainwater harvesting. As a direct result, communities are now able to increase annual income by sowing two crops per year instead of just one. This has also improved diets and reduced annual migration by the men into informal settlements in cities looking for seasonal income. This provided income security during the COVID-19 lockdown, while the women in the community have been able to develop additional income streams through engaging with agricultural

activities. In Ghana, small local businesses such as local drinks producers, beauty salons and water vendors have emerged because of access to clean water, and for the first time women have been working as toilet artisans to build climate-resilient toilets. Men's livelihoods have also changed through vegetable garden activities in the dry season, introduced by the project's WASH and nutrition scheme. Men were previously unemployed in the dry season, and now they produce higher value crops that fetch higher prices compared to in the wet season. And examples from eSwatini show the financial status of households improving due to piped water access nearer community residences, creating opportunities for brick, polish and soap making, agriculture and improvements in community diet, health and wellbeing. A reduction in money and time spent on dealing with waterborne diseases and associated health costs also improved the financial status of households across multiple WaterAid projects.

Outcomes that improve community resilience to climate change were also reported by British Red Cross WASH projects in Bangladesh, and WaterAid projects in Bangladesh and Ethiopia. These included:

- Increased household financial assets due to time saved from water fetching. This provided more time for income earning activities, reduction in medical costs, and people being healthy enough to participate in livelihood activities.
- People are more productive and have new business activities, such as distribution of seeds and production of handicrafts for sale at the household level.
- Local markets are strengthened with better access to water, closed drainage and good hygiene levels, with more women selling fruits and vegetables.
- Significant increase of participation by women in economic activities. These women are now free to undertake income generating activities of their own that add to overall household income.



After the signing of the declaration of intent, Tripti Rai (Country Director, WaterAid Nepal) and Muni Sah (Mayor, Lahan Municipality) shake hands, Lahan, Siraha, Nepal.

- Women's groups have led water enterprises, such as providing clean drinking water using reverse osmosis technologies. Through successfully managing these businesses, they have earned income and are planning business expansion. The women's businesses are not only selling water to their immediate village, but to restaurants and small businesses, to mobile water venders in distant villages as wholesalers.
- Unforeseen and unintended positive consequences were observed, with new employment demand created for skilled masons to construct arsenic and iron removal plants. In one sub district, 20–30 masons were engaged in training, becoming experts in regular plant maintenance. They then marketed their services, creating auxiliary employment.
- Start-up financial support for WASH enterprises, such as toilet manufacturers. A group of 40 entrepreneurs were trained, start-up capital was provided, and they are continuing with their new businesses. This ensures climate-resilient WASH infrastructure standards are maintained in ways that are user friendly and cost effective.

3.1.2.2 Social capital, empowerment and governance

Various ways of strengthening individual, family, group or community social capital were described as outcomes of WASH projects in different countries. Reduced stress and conflict over WASH access and other positive outcomes facilitated better family and community relationships, and more inclusive participation and representation in WASH-related activities, leading to greater social capital. Projects empowered individuals, more often women, through training and engagement opportunities at local and district governance levels, leading to further improvements in access and fairer distribution of resources. Access to alternative sources of WASH and other goods and services supported better mental and physical health and a greater capacity for recovery, adaptation or reorientation to climate change.

Community empowerment is at the centre of Jal Chopal, or 'Water Caretakers', a WaterAid project in Uttar Pradesh, India. The project **strengthened social capital** by providing a multi-stakeholder platform and facilitating dialogue between researchers, people from civil society, non-governmental organisations (NGOs), government representatives and community members, making sure that women, and other people disadvantaged or marginalised by their caste or lack of education, participated and had their voices heard. This process of democratic dialogue, respecting community needs and preferences, increases several key outcomes that are known to bolster community resilience, such as household wealth and improvements in health. For example, implementation of household rainwater harvesting has reduced the physical burden and stress on women from collecting water, and they are able to engage in agriculture or other livelihood activities they are interested in, or that the family undertakes.

Participatory and multi-level governance processes are also key to the implementation and success of projects in Nepal. Project leads explained the need to link WASH system governance, management and technical user capacity. Doing so strengthens independence and community-level capacity for maintenance, repair and delivery of services to meet local user's needs. With the Nepalese projects, user committees and local governments have a strong relationship, sharing responsibility to check the resource and allocate funding for WASH systems sustainability where appropriate.

In Burkina Faso, the water users committee were trained in software for groundwater monitoring. This enabled a village to reject a borehole construction project, because the proposed borehole would not be deep enough to provide water in the dry season. Weather forecast training and comparison with indigenous knowledge has reduced seed loss and debts from crop failure.

“

We are not fighting against religion, we just want the community to know that it is also the right of women to participate in WASH projects.”

JESSE DANKU

Head of Sustainable Programmes,
WaterAid Ghana

In Ghana, women have increased confidence to participate in community project meetings due to active encouragement and the provision of training, allowing them to take up leadership roles. Previously, women were not allowed in meetings, but by using a human rights approach within the Muslim community, both men and women have been encouraged to engage in WASH. Women can now attend meetings and contribute to discussions, and are even taking the role of chairperson in water users committees. The project has exceeded the national standard of 30% representation of women.

Men's perspectives and acceptance of women's involvement in community projects and leadership roles are also changing, and they are willing to listen and take advice from women. Women are leading advocacy groups and have been empowered to express demand for a healthcare centre, nursery and a borehole from the government authorities and district assemblies.

In eSwatini, the WASH project used a gender perspective in its implementation, thereby creating more space for women in leadership and participation, and exposing previously hidden talents and capacity. Having shown strong leadership qualities on the local water committee, women have now been elected into senior positions in government development projects, and are changing perspectives in national government around the need to incorporate gender-sensitive policies that acknowledge women and girl's rights. Through greater investment in working together, community relationships have also improved between Chiefdoms, where previously there had been transboundary conflicts around land and upstream-downstream water resource allocation. Of note, the project cross-cuts two Chiefdoms in the region, engaging both groups in project planning and implementation and has provided a platform to manage differences and build more **cohesive governance**.

In Ergeb Kebero, Meda Village, there is water scarcity. To tackle this problem, the community formed a Water, Sanitation and Hygiene Committee. Jabi Tehnan District, West Gojjam Zone, Amhara Regional State, Ethiopia.



Project leads from Tanzania, eSwatini and Nepal all reported that representation and active inclusion of people with disabilities on water committees has improved significantly. Including diverse voices has meant the design and distribution of more accessible water distribution is now possible.

The British Red Cross WASH projects in flood prone Bangladesh and WaterAid projects in drought prone Ethiopia have also reported improved social capital through empowerment of women and other individuals or groups:

- In Bangladesh, men typically left the slum area to look for jobs, while women stayed in poor sanitation facilities. Some meetings were therefore organised in the evening to accommodate the men who went to work in the day, while women took responsibility and leadership of the project. Similarly, in Ethiopia, men were actively involved in infrastructure installation, such as digging trenches, while women were part of the WASH committee, where they have been learning new technology and becoming leaders. These engagements have made women believe they have the capacity to be leaders or engage in other community activities. Their previous water collection activities were not valued, but they now know their rights.
- Community relationships have improved in the Bangladesh project. For example, the Munda community were isolated and had to travel long distances to access water. Being socially marginalised, even if they arrived early, they had to stand aside from the queue to let others collect water first. Their involvement in the WASH projects at all levels has created acceptance of lower castes. The community is also more coherent and interconnected, and there is now a rapid response team alerting the community of WASH issues. Subcommittees are responsible for many households and they report back required improvements. In Ethiopia, there is less community conflict because there is access to water near households. Neighbouring communities are also visiting the project to collect water and building relationships in the process.

3.1.2.3 Education and training

Improved access to **education and training opportunities** are described as outcomes of WASH projects in various countries that can enhance the climate-resilience of individuals and communities. Through greater participation and inclusion in education, particularly for girls, and capacity building, awareness raising and skills training to improve independence and longevity of WASH projects, people and communities are provided with more diverse and flexible skills to deal with future impacts or uncertainty. By participating in education, they are also able to understand more about the causes of climate change and ways to adapt to it.

One of the major issues identified in the Uttar Pradesh, India project was the role of women and children in the collection of water. Due to local drought, journeys of up to 7km are made to fetch water, increasing school absenteeism and often causing poorer performance due to the associated mental and physical health issues from carrying heavy loads. By bringing piped water closer to households, the project has led to more children attending school. Similarly, in Bangladesh, improved attendance for girls because of better WASH systems has not only led to advances in their education, but also had longer-term social impacts, such as prevention of child marriages. In both Bangladesh and Ghana, WaterAid project leads noted the important link between access to menstrual hygiene facilities and greater school retention and reduced teenage pregnancies. Provision of disability friendly and gender-specific facilities in schools in Bangladesh and Ethiopia has expanded who from communities gets considered during project planning and implementation of inclusive WASH interventions. This longer-term investment in the education of children has also been cited in eSwatini WASH projects as increasing community **awareness of climate change, adaptation and mitigation.**



Training in WASH-related activities is varied and occurs at multiple scales. The Uttar Pradesh, India project worked to engage and empower disadvantaged women and young people who lack education by training them to become community resource persons, and creating alternative employment opportunities. The project builds teams of women and young people who are responsible for managing their community water resources, including planning, implementation and monitoring of project activities. Training has occurred in 470 villages, reaching 18,000 participants. Through **training and education** on water safety management, some of the women have become responsible for water quality testing, reading meters or operating water systems, or master trainers who train women and young people from other villages. This provides further alternative livelihood opportunities, strengthens social capital and self-esteem, and improves WASH system safety and monitoring for better community health.



The community of Kathamari collecting safe drinking water for the Pond Sand Filter project funded by the HSBC. The water in the region is saline and unsafe. The Pond Sand Filter uses a simple technology to treat the water, so it is safe for drinking. Kathamari, Shyamnagar, Satkhira, Bangladesh.

In a British Red Cross project in Bangladesh, training and capacity building was prioritised through engaging in needs assessment, data collection and planning. The participating community is now registered as a community-based organisation and can make project proposals to the local government authority. This enabled them to ask for services such as drainage improvements that will enhance their resilience to flooding. Training included 'Accountability for sustainable WASH', and was conducted to teach people their rights to water. Through this training, people now have time to attend district level courses in jobs, livelihood creation or business start-ups. Training through dedicated user water committees and other local governance structures now allows for easy transfer of knowledge about climate change impacts and water safety throughout the community. Children between the ages of 12 and 16 were also provided with after-school clubs to learn how hygiene in school and the wider community improves health, leading to greater opportunities for youth engagement and leadership training. Water safety and climate resilience training and education has also been integral to the WASH project in Ethiopia.

3.1.2.4 Community health and safety

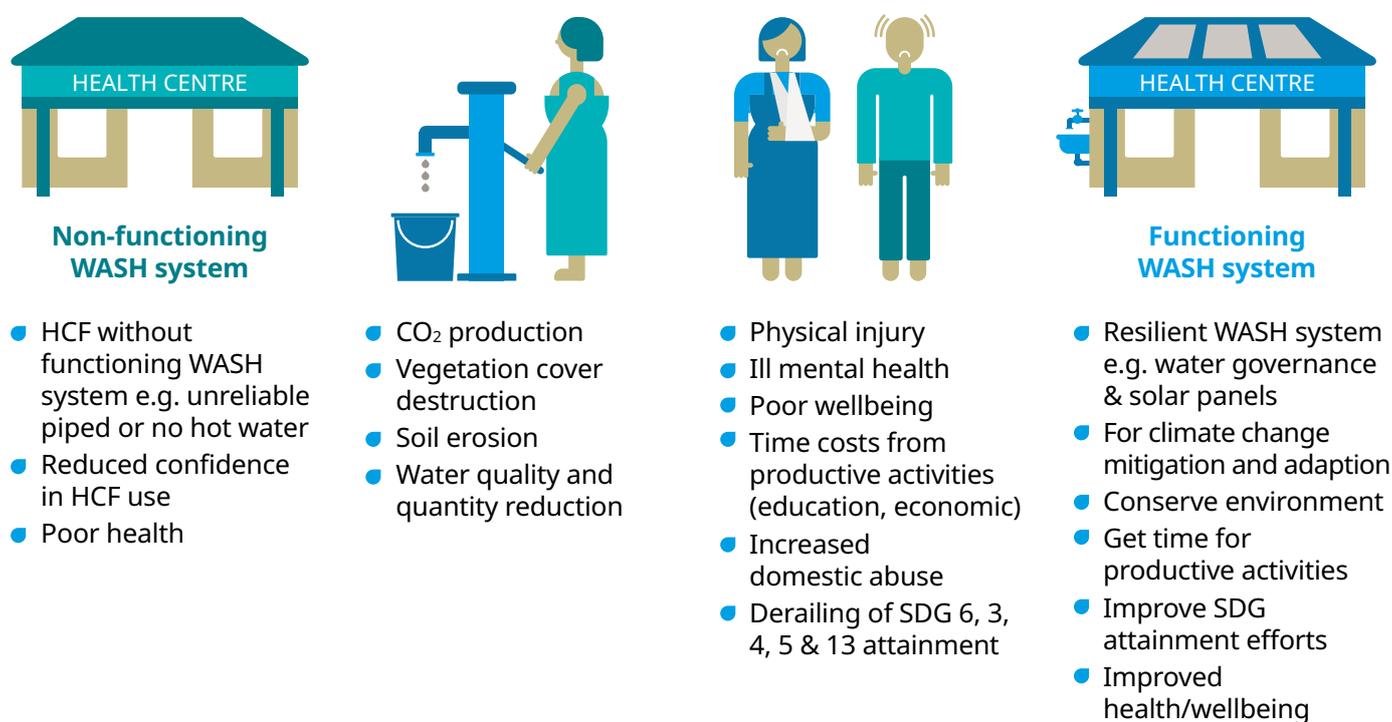
Improved community health and public health protection through hygiene promotion and reduction of water-related diseases are key aims of WASH projects in all countries. WHO defines health as "a state of complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity". Improved WASH access and services in a range of settings support people's physical, mental and social wellbeing through a range of positive mechanisms. Both reduction of disease and enhanced wellbeing enable people to recover, adapt and reorient from shocks and adversity. People's health and wellbeing are integral to community resilience to the effects of climate change.

In Ghana, WaterAid projects have developed an advocacy strategy encouraging the national government to prioritise WASH provision in climate change adaptation plans, especially clean drinking water. This advocacy has strengthened **community health** and education through provision of clean water and better sanitation management in HCFs and schools, and by reaching more people through use of improved and locally made technology. **Maternal health** has improved, as women now have confidence in and are happy to deliver their babies at **HCFs** with improved

WASH access. WASH projects have also implemented use of WHO approved double chamber incinerators in HCFs to prevent hospital waste being burned in open pits. In addition to improving **environmental hygiene and safety standards**, this reduces CO₂ production, as the gas released into the atmosphere is treated prior to release. Biofuel digesters have also been developed for use in institutional toilets, which avoids dislodging of septic tanks, reduces transport costs (a major challenge in Ghana) and generates gas for cooking.

BURKINA FASO CASE STUDY

A healthcare facility with a non-functioning WASH system means community members have to bring hot water twice a day for maternity care.



The diagram explains how a non-functional WASH system affects the environment and vulnerable communities, and includes recommendations for a resilient HCF WASH system (from Lucien Damiba, Regional Research and Knowledge Manager West Africa, WaterAid).

Health outcomes of British Red Cross and WaterAid projects in Bangladesh and Ethiopia included:

- Water quality testing by community members as part of project monitoring and evaluation increased the number of people getting **good quality and quantity of water**.
- **Better physical health:** In Bangladesh, midwives and health officers made regular visits to slum communities, discussing hygiene promotion, mother and childcare, and immunisation. In Ethiopia, girls no longer fetch water from dirty water sources and had no accidental injury, and children's faces were reported to be 'cleaner and brighter' at school. Improved WASH access for daily hygiene, including regularly washing children's faces, is a key factor associated with reported reduction in trachoma cases, and was reported as an observation after the WASH intervention. Both countries report reduced illness from waterborne diseases and respiratory infections.
- **Better mental health:** In Bangladesh, communities reported that they were able to access clean water, there was no flooding, better drainage, improved wellbeing, and that they could even visit friends safely. In Ethiopia, children and adults 'looking clean' has removed stigma and increased their confidence; before the project, many did not perceive themselves as good enough to talk to people coming from the city, because of dirty clothes and other hygiene-related issues. Similarly, in Bangladesh, confidence, interactions, and approach to life among adolescent girls has changed, as they have fewer uncertainties and more aspirations about their lives.

WaterAid projects in eSwatini report that communities have made finance and time savings from not spending money on associated health costs of waterborne

Kanchhi BK in her kitchen garden in the community-led, resilient and sustainable WASH (SusWASH) project area (HSBC). Birtadeurali, Chaurideurali Rural Municipality, Kavre, Nepal.



disease. **Women and children also feel safer** in the community, thanks to increased access to healthcare, and health centres' clean water supply to support the delivery of sexual and reproductive health services. Separate water allocation points for humans and livestock have reportedly reduced injuries in Burkina Faso. In Nepal, training on water use efficiency, safe storage of drinking water, and use of wastewater for kitchen gardens has improved health and reduced disease burden and food costs. In India, through training and education on water safety management, some women have taken responsibility for water quality testing, reading meters or operating water systems. Others have become master trainers who train young people and women from other villages, providing alternative livelihood opportunities, strengthening social capital and self-esteem, and improving WASH system safety and monitoring for **better community health**.

Andenet Sahilu, fourth from left, working with his team to dig trenches for water pipes in Wundiye, Ethiopia.



WaterAid/Genaye Eshetu

3.2 WHY ADAPTATION IS KEY

Adaptation is key because **vulnerable communities are already experiencing the effects of climate change.** They also live without basic WASH access, which is associated with social, health and economic problems that reduce a community's capacity to cope with these impacts, and increases their reliance on emergency and humanitarian aid. The same communities live in ways that do not contribute much to greenhouse gas emissions, and so already mitigate climate change as much as is reasonably possible at the household level (WaterAid 2021). Provision of basic and climate resilient WASH services where they are lacking can be used as a key mechanism to boost community wellbeing and therefore resilience.

While basic and climate resilient-WASH systems and services are key to community adaptation, WASH improvements can also reduce carbon emissions to some extent. For example, solar power can be blended with mains power supplies to increase reliability of water supplies, use of local artisans to make toilet facilities can reduce emissions and economic costs associated with transport of materials, and safer waste management at hospitals and HCFs can process and capture gases for use as cooking fuel. Investments made in locally appropriate and climate-resilient WASH to adapt to existing situations and climate change effects can reduce the costs of poor health, time loss and repairing damaged infrastructure, and maximise income generated through better community health, education, wellbeing and productivity.

3.3 FUTURE WASH

WASH programme and project leads from WaterAid, the British Red Cross and WHO explained their vision of an ideal future that ensured WASH for vulnerable communities. They imagined a world where, no matter who they are, where they work or where they live, people have **accessible, affordable and equitable WASH access** in household, work, health and educational settings. Their views align with and reflect the UN's ambitions for safely managed and climate-resilient WASH for all as part of SDG 6.

In this vision, water users were empowered to know and claim their rights to **climate-resilient, inclusive and democratic WASH access**, irrespective of gender, age, ability, race, religion or caste. To achieve this requires improving ways to support people with disabilities who are affected by stigma, and reducing rape, domestic violence and child abuse linked to the vulnerabilities associated with inadequate WASH. It also requires putting communities at the centre of WASH projects, and incorporating indigenous and local knowledge (e.g. local geology, climate and cultural factors) into vulnerability assessments and pre- and post-project implementation. Communities would maintain a sense of responsibility towards managing and protecting their own resources, including sustainable WASH facilities, to improve their health and dignity.

Yet community participation in WASH systems in no way replaces the essential role governments and service providers (utilities) need to play in advancing WASH over the coming years. The WASH sector has been promoting and doing community-led WASH for decades, but the results fall short of the levels of progress needed to ensure access is available for all. **A combination of community-, government- and service provider-led efforts need to be supported by the necessary finance and political prioritisation.** Community-led efforts alone are not sufficient and the evidence for this is abundant, based on the last 30 years of activity in the field,¹⁰⁸ as well as research evidence of barriers due to poor governance.⁵³

Understanding root causes of vulnerability,¹⁰⁹ including varied contextual factors that result in a lack of WASH access (e.g. hydrology, topography, climatic, social) is key to project inception phases. Building on local and indigenous knowledge would improve multi-sectoral data collection of the qualitative and quantitative effects of access to climate-resilient WASH systems. Robust, empirical data gathered over time would more clearly demonstrate the impact of WASH on important indicators of community wellbeing, such as improved livelihoods, cost and time savings, social capital and empowerment, social cohesion, school attendance, educational achievement and mental and physical health. Better data could then increase climate-resilient WASH investment, such that meaningful efforts are made by donors and governments to put policies into action. Donors could be made more aware of pre-implementation costs and time requirements to repair and rehabilitate existing problems with WASH that might jeopardise the sustainability of resilient projects, and support post-implementation monitoring for their continuity.

3.4 COMMUNITY-LED WASH

As highlighted throughout the published literature and by project leads, **the role of partnership with the people most impacted by effects of climate change and lack of basic WASH access is key to programme effectiveness.** This is because through daily lived experience, local people understand current realities and a range of feasible solutions to their challenges. **Dealing with current realities is the first step towards resilience to future problems,** that will often include the challenges they face now, albeit more frequently and severely. Community-led WASH is also **more adaptable to existing and changing local needs,** because it draws on local and traditional knowledge. For example, communities can provide historical and current data on water sources, flood levels and weather patterns to indicate where water resources are depleting. WASH projects engage community members in vulnerability and adaptive capacity assessments, project planning, implementation, monitoring, evaluation, and post-implementation surveys. Community groups monitor ground water levels and rainfall intensity regularly and tell the community what is happening as an early warning system. Local water committees manage the functionality of water services and are responsible for solving challenges, such as calling the solar electricians when there is a fault.

Locally and community-led WASH improvement programmes are also key to improving WASH in ways that are **suited to the local context and socially acceptable,** and that reflect differences in rural versus urban environments and community needs. This has led to acceptance and uptake of climate-resilient WASH infrastructure, such as raised platforms, stand taps, and pit toilets, and environmental management for WASH infrastructure, such as planting trees upstream and in areas of flooding during monsoon season to avoid contamination. Other WASH adaptations

adopted by communities include covering water sources, digging diversion ditches around boreholes, elevating storage tanks above flood level, moving critical assets out of flood levels, sinking supplementary boreholes to futureproof water quantity, and building water storage. Household willingness to invest in or pay for WASH facilities supports the WASH system project life cycle and beyond.

Community participation facilitates WASH programmes that connect to local culture, politics and business practices, but where necessary can **challenge and improve social norms** that can lead to greater uptake of WASH facilities, safer and more inclusive practices, and minimise the risk of unintended consequences. For example, communities in WASH projects are maintaining hygiene behaviour change to ensure water is not contaminated during storage or use, and keeping sanitation facilities in hygienic conditions to prevent spread of diseases or re-contamination of the environment. WASH project communities are breaking down cultural barriers by reducing stigma and increasing acceptance of women, people with disabilities and lower caste participation in WASH meetings and engagements.

Community-led WASH that **facilitates empowerment, knowledge sharing and training in new skills for local people** is more resilient and sustainable, because it builds capacity for WASH repair and maintenance within the community.^{54-59,61-64,72} This can create employment opportunities and reduce resource and transport costs and associated greenhouse gas emissions. Trained WASH committee members and students in WASH clubs and media are training community members and providing information about climate change effects and climate change resilience.

Locally-led WASH can also **create social capital for the community** through connections to local, regional and national government departments and NGOs. Project leads and published literature provide evidence of how communities working and negotiating with other water users and sectors, both across stakeholder groups and upwards in the governance chain, and engaging in public-private partnerships have made an impact by improving WASH governance overall. This matters for stronger representation of vulnerable communities who are often excluded from political processes, or when local resources need additional support, such as during and after extreme weather events.

However, communities do not function in isolation, and an important consideration is to stress that **'community-led' does not mean allowing government authorities to abdicate responsibility**, placing greater onus on communities for implementation and monitoring. Government authorities are key to delivery, monitoring and regulation of WASH systems, but successful projects must be planned and operated in conjunction with communities. Community-led means strengthening interactions and feedback loops between communities and authorities, at multiple governing scales, in combination with institutional strengthening and capacity-building of authorities.

The role of government to provide WASH standards, services and monitoring and evaluation, or to regulate private WASH service providers, ensuring consumer protection, effective competition, and properly carried out activities and functions, are key to sustainably meeting long term WASH needs.¹⁰⁸ **Governments and NGOs must also address multiple factors affecting WASH sustainability in specific contexts that are not predominantly driven by climate change**, and are driving unacceptable rates of service failure, poor service levels and slippage in behaviours.¹¹⁰ For example, an analysis of factors affecting sustainability of water services in rural areas of Uganda and Ethiopia identified many interrelated factors, including: coordination between stakeholders; community engagement and local capacity; finance; hardware supply and access; monitoring, operation and maintenance of systems; adequate planning; and politics, regulation and water resource management. Addressing the multiple factors affecting WASH sustainability through monitoring and evaluating WASH systems,¹² and ensuring appropriate service quality improvements and behaviour changes, will not only have the potential to make WASH systems more sustainable but also to increase climate resilience.

Members of a committee inspecting new toilets during the technical monitoring of the new water, sanitation and hygiene infrastructures at Talo Health Centre, Municipality of Falo, Circle of Bla, Segou Region, Mali.



WaterAid/Basile Ouedraogo

4. ACTING NOW, NOT LATER

4.1 ACT NOW

Investing in at least basic levels of WASH services now as a stepping stone to higher levels of service, and providing contextually appropriate, climate-resilient WASH systems and services enables communities to adapt and become resilient to current and future climate linked challenges. It may also prevent exacerbation of social and political problems linked to climate induced migration and reduce risk of collective violence.

Even though there are future 'unknowns' and predictions are variable, we do understand how climate change and WASH issues are affecting low income, climate vulnerable communities now, and the issues are urgent. Impacts of climate change are being felt through changed water flows and weather; ground and surface water levels are depleted in some areas,¹¹¹ seasonal rainfall patterns have changed, people are being forced to live and work in extreme temperatures, and natural disasters due to climate effects are more severe and frequent. This is already being felt in many parts of Africa, Asia and the Pacific Region, leading to short and long term migration. Wilkinson et al. (2016) state that 'between 2008 and 2015, an average of 25.4 million people per year were displaced by disasters within and across borders. The large majority (85%) of these were climate-related disasters (extreme weather and related events such as flooding)'.¹¹² Mass movement of people from arid or semi-arid areas to regions that have access to water, such as Tanzania and Kenya, for example, creates challenges around land ownership and use of resources in the regions they migrate to. This is an immediate issue that many people are not aware of, and which can be prevented by providing people with more reliable water sources in their own region or country.

WASH programme leads expressed views that climate change is currently de-railing existing efforts to fulfil SDG 6 commitments on water management and WASH access, and that national reports are not capturing the reality of vulnerable communities on the ground. Concerns were expressed that applying a WASH lens to climate change must be prioritised within existing policies to ensure long term climate resilience.

WASH improvement strategies for tackling these issues and building community resilience exist and can be developed for different climate change scenarios. Lessons have been learned from parts of the world that have already experienced climate induced problems and can be used to help build climate-resilient WASH systems. Monitoring and evaluation to gauge the effectiveness of WASH programmes can also be used so that learning is derived from action, and so that WASH programmes can be more flexible and responsive to climate change to achieve better outcomes.

The economic benefits of investment in WASH are clear, substantial and likely to have the greatest effect in the poorest communities.²⁷ Finance is available for WASH improvements, but it needs to be 'unlocked' and made accessible to least developed countries. Currently, WASH finance is not being accessed by least developed countries because of challenges in demonstrating how they will implement WASH projects to build additional resilience; by contrast, more developed countries have been able to use tailored studies as evidence that funding will lead to benefits. NGOs can therefore play an important role in supporting least developed countries to demonstrate the benefits of WASH as part of climate change adaptation programmes, and then adopt these at scale through unlocked financial investment in WASH.

Now is the time to provide climate-resilient WASH to everyone, to reduce loss of life and livelihoods, and to minimise financial losses. Investing in climate-resilient WASH addresses existing problems and facilitates adaptation to climate change. Investing in WASH empowers stakeholders to engage and be proactive from a position of relative strength, rather than reactive and poorly prepared for change. Considering the latest IPPCC report, prospects do not look promising. If we do not act immediately, this situation will only worsen, affecting future generations significantly.

A Water Monitor testing a new rain gauge in her village in the commune of Tenkodogo, in the Centre-East region, Burkina Faso.



4.2 POLICY ASKS AND RECOMMENDATIONS

WASH project leads provided the following broad recommendations:

Government and public sector

- Develop clear, coherent national WASH and integrated water resource management policies, and realistic roadmaps.
- Have a dedicated climate resilience government department or unit to work effectively across the different sectors such as health, environment, water etc.
- Increase and prioritise investment in climate-resilient WASH strategies within National Adaptation Plans.

Donors and private sector

- Mobilise private sector and water utility companies to fund climate-resilient WASH activities, such as supporting WASH in informal settlements and WASH infrastructure that has been built to contend with extreme weather events.
- Fund programmes that support women's leadership and participation through training and engagement opportunities at local and district governance levels. This can lead to further improvements in community level access and fairer distribution of resources.
- Invest in healthcare and education facilities that have at least basic and safely managed, inclusive WASH that is climate resilient.

NGOs and civil society

- Empower all water users to know and claim their rights for climate-resilient, inclusive and democratic WASH, and ensure the needs of older adults and people living with disabilities are taken into consideration.
- Engage local communities and keep them at the centre of WASH improvement projects, to ground projects in local realities, use and support indigenous knowledge and skills, raise community awareness of climate change issues, develop a sense of community responsibility and ownership for WASH, and promote sustainability.
- Work together through community-led WASH to strengthen dialogue and interactions between communities and authorities, and to ensure government duty-bearers are held accountable.

Finally, this report recognises there are multiple factors affecting the WASH sustainability crisis, which is not predominantly driven by climate change. These are driving unacceptable rates of service failure, poor service levels and slippage in behaviours. Addressing the multiple factors affecting WASH sustainability, such as quality of service and behaviour change implementation, is within the control of key actors, NGOs and governments in particular.

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Back cover image:

Moustapha Thombiano watering tomatoes crops in a garden with water drawn from the hole dug in the sand around the riverbed crossed with sand dam, in the village of Sablogo, in the Commune of Lalgaye, province of Koulpelogo, Region of Centre-East, Burkina Faso.

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