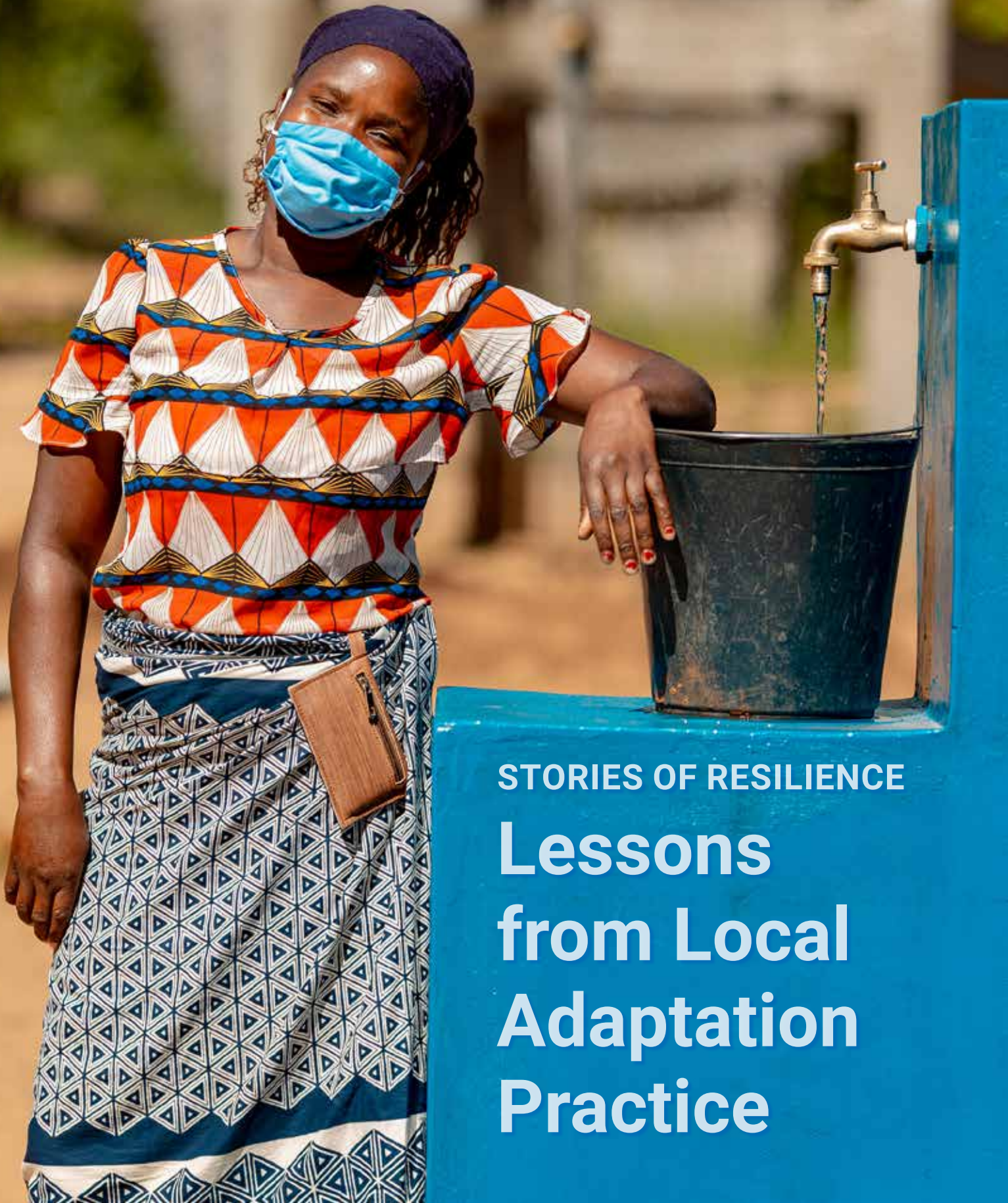




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STORIES OF RESILIENCE

# Lessons from Local Adaptation Practice

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# Principles for Locally Led Adaptation

The eight LLA Principles were developed by the [Global Commission on Adaptation](#) and launched at the 2021 Climate Adaptation Summit, to guide efforts to promote LLA.

**1 Devolving decision making to the lowest appropriate level:** Giving local institutions and communities more direct access to finance and decision-making power over how adaptation actions are defined, prioritized, designed, implemented; how progress is monitored; and how success is evaluated.

**2 Addressing structural inequalities faced by women, youth, children, disabled, displaced, Indigenous Peoples and marginalized ethnic groups:** Integrating gender-based, economic, and political inequalities that are root causes of vulnerability into the core of adaptation action and encouraging vulnerable and marginalized individuals to meaningfully participate in and lead adaptation decisions.

**3 Providing patient and predictable funding that can be accessed more easily:** Supporting long-term development of local governance processes, capacity, and institutions through simpler access modalities and longer term and more predictable funding horizons, to ensure that communities can effectively implement adaptation actions.

**4 Investing in local capabilities to leave an institutional legacy:** Improving the capabilities of local institutions to ensure they can understand climate risks and uncertainties, generate solutions,

and facilitate and manage adaptation initiatives over the long term without being dependent on project based donor funding.

**5 Building a robust understanding of climate risk and uncertainty:** Informing adaptation decisions through a combination of local, traditional, Indigenous, generational and scientific knowledge that can enable resilience under a range of future climate scenarios.

**6 Flexible programming and learning:** Enabling adaptive management to address the inherent uncertainty in adaptation, especially through robust monitoring and learning systems, flexible finance, and flexible programming.

**7 Ensuring transparency and accountability:** Making processes of financing, designing, and delivering programs more transparent and accountable downward to local stakeholders.

**8 Collaborative action and investment:** Collaboration across sectors, initiatives and levels to ensure that different initiatives and different sources of funding (humanitarian assistance, development, disaster risk reduction, green recovery funds, etc.) support each other, and their activities avoid duplication, to enhance efficiencies and good practice.



## Chapter 1

# The Golap Mohila Dal's Moricchap Drinking Water Plant

### KEY MESSAGES

- Strengthening the resilience of water, sanitation, and hygiene (WASH) systems is not only about building infrastructure to withstand cyclones or tidal surges, but also about leadership and ownership by local communities; strong and inclusive government leadership; well-functioning and accountable institutions; and strategies to tackle gender and social inequalities.
- Building trust, a key ingredient for successful adaptation, is a long-term process. This can be facilitated by working with local organizations who already have good relationships with the community. Long-term local institutional capacity building can also be strengthened in this way.
- WASH provision can reduce internal migration, and promote leadership and entrepreneurship by vulnerable groups. This leadership and entrepreneurship, meanwhile, can change perceptions on traditional roles in society, and inspire others.

Photo Credit: WaterAid/ Drik/Farzana Hossen

Devolved decision making

Addressing structural inequalities

Patient, predictable, accessible funding

Investing in local capacities

Building understanding

Monitoring, evaluation, and learning

Transparency and accountability

Collaborative action

**G**ita Roy was 17 when she was married in 2001, and moved to her husband's village, Tengrakhali in Satkhira, Bangladesh. Located near the confluence of the Ganges and the Bay of Bengal, Tengrakhali has 941 inhabitants clustered on a flat, low-lying area where many streams and water channels, known as *khals*, snake through the plains. The weather is hot and humid, the water and soil saline, and the area is susceptible to disasters, as is typical of the region.

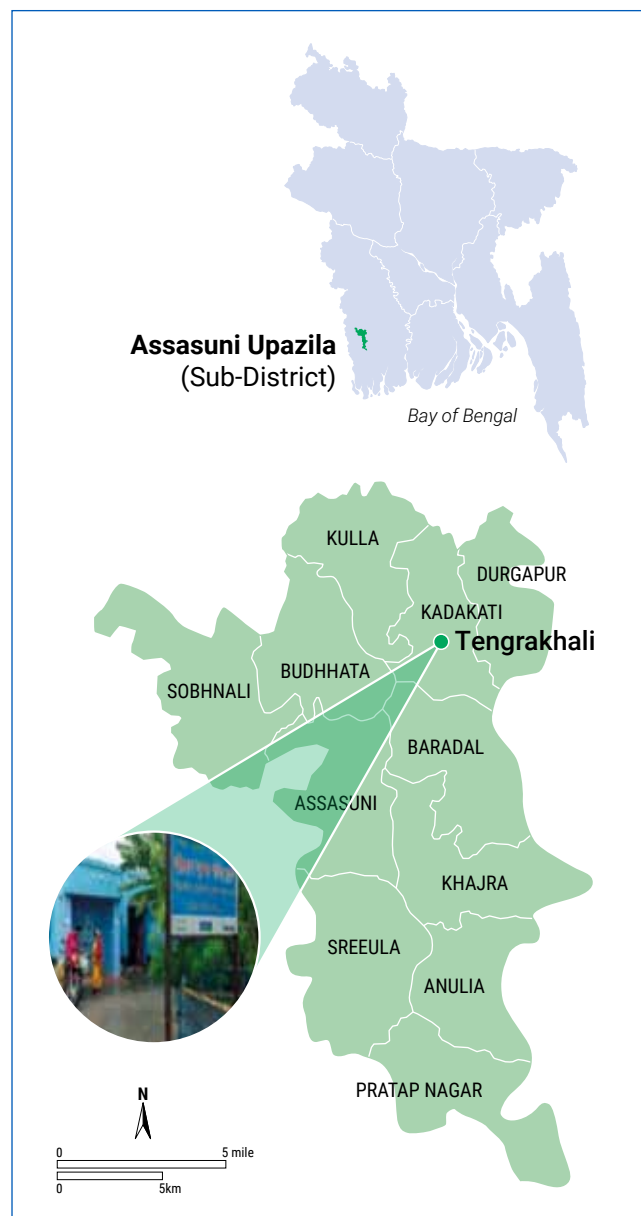
Gita took on the laborious responsibility of walking a long distance every day, to fetch water for her family of 14. Safe and clean drinking water is becoming increasingly difficult to access in Bangladesh. Frequent and intense cyclones, storm surges, and sea-level rise, particularly in the coastal belt, result in water logging, and drive salinity further inland.<sup>1</sup>

River and groundwater salinity currently affects 105 million hectares of land in Bangladesh.<sup>2</sup> Climate change is not the only reason, however. Past attempts to adapt to climate change have worsened the salinity problem, resulting in maladaptation. Forty years ago, agriculture and livestock farming were the mainstay in Satkhira. After rising salinity levels caused grazing land and fodder shortages in the 1980s, communities converted agricultural land into shrimp and crab aquaculture farms.<sup>3</sup>

Once hailed as a breakthrough in alternative livelihoods, this practice led to further water contamination. Salt water was pumped into the shrimp farms (*ghers*), along with low quality feed that introduced suspended nitrates and other pollutants into the water.<sup>4</sup> Salinity spread like a cancer, and pollutants contaminated local water supplies, making them undrinkable and unsuitable for agriculture. Bangladesh's Soil Resource Development Institute recorded soil and water salinity rising across the entire southwest coastal

region, including Tengrakhali.<sup>5</sup> Now, sea-level rise continues to increase water salinity, further affecting the livelihoods and health of local communities.

In 2019, WaterAid Bangladesh examined 57 public and private ponds in Satkhira



and found 28% unusable for any purpose due to high salinity levels. 44% were unsuitable for drinking, but could be used for bathing, cooking, and other household uses.<sup>6</sup> Only 28% of the ponds met drinking water standards set by the World Health Organization and the Bangladesh Department of Public Health Engineering. While the safe level is less than 300 milligrams per liter (mg/l) of sodium, levels in some ponds were as high as 390 to 8,000 mg/l.<sup>7</sup>

Those who could, paid for the water to be transported to them on three-wheelers. The poor residents of Satkhira meanwhile had a choice between drinking contaminated water and getting sick, or walking several kilometers, like Gita, to get clean water while learning to make do with less. Those who chose to drink saline water, especially outside the monsoon season, were found to have average sodium levels of 3.4 g/day in their urine, exceeding the recommended maximum of 2 g/day.<sup>8</sup> This caused a higher incidence of pre-eclampsia and eclampsia among pregnant women, causing abortions.<sup>9</sup> The lack of clean water, meanwhile, caused a high incidence of waterborne diseases among families who could ill afford healthcare.

After nearly 20 years of walking a long distance every day to fetch water, Gita heard about the water, sanitation, and hygiene (WASH) initiatives of WaterAid and Rupantar, a local NGO. WaterAid has been working on providing WASH services for the poor in Bangladesh since 1996. Since 2011, the organization has focused on climate resilient WASH services, recognized as a low-regret adaptation

measure by the Intergovernmental Panel on Climate Change.<sup>10</sup>

WaterAid and Rupantar had received funding from Severn Trent Water, UK, in 2019 to provide water services to 100,000 people in five communities in Satkhira. Their interventions offered reverse osmosis drinking water plants to purify or desalinate salt water by pumping it through a semi-permeable membrane. These plants can purify up to 500 liters of saline water per hour, producing around 1,000-4,000 liters per day.

While the use of reverse osmosis plants was not new along the coastal belt of Bangladesh, they often did not last long because of lack of maintenance. WaterAid and Rupantar recognized the need to build the capacity of community members to operate and maintain the plants; ensure spare parts were available locally; and make manufacturers and suppliers take more responsibility for major repairs through longer warranties.

Thus the Water Entrepreneurship for Women's Empowerment (WE-WE) initiative was launched, focused on training vulnerable groups, particularly women, to manage the water treatment plants. The WE-WE approach recognizes that providing infrastructure that will withstand a cyclone or tidal surge alone is not enough for resilience in the WASH sector. Climate-resilient WASH services need an accompanying "WASH system" with strong government leadership, well-functioning and accountable institutions, sufficient finance, reliable data and updated plans, active and empowered people, and measures to address deeply ingrained gender and social inequalities.

Gita reached out for help to WaterAid through Rupantar, to improve her community's water situation. In response, WaterAid initiated a preliminary participatory assessment to gather insights from a range of local stakeholders, differentiated by gender, age, and position within the community. The assessment identified WASH-related vulnerabilities in the area, appropriate interventions, type and frequency of climatic events, sectoral vulnerabilities, and socioeconomic conditions.

In addition to a traditional institutional mapping, community members mapped their own surroundings, based on socioeconomic status, well-being rankings, and the WASH situation of households, to identify vulnerable families in their community. The assessment in Gita's community identified the lack of drinking water, poor sanitation, lack of jobs, lack of river embankments, and high soil and water salinity as priority challenges.

Gita and a group of other affected women lobbied their community heavily for a reverse osmosis plant managed by women to address water shortages. At first, the men resisted the idea. In Bangladesh, many women need permission from male family members to work outside the home, particularly in rural areas like Tengrakhali. Many men did not think women should take on a managerial or leadership positions. While women can work in shrimp farms besides their husbands, leading and managing a reverse osmosis plants went beyond traditional expectations. Men were also opposed because no jobs would be created for them. It took months for

the women, supported by WaterAid and Rupantar, to convince the community to agree to the plant.

Once agreement was reached, an assessment was conducted to ensure that the plant would not worsen salinity levels in the area. The groundwater source for the plant had chloride/salinity levels of 20,000 mg/l, while the waste brine released after treatment was around 25,000 mg/l. The waste brine would be released into a water canal, where the salinity levels were 50,000 mg/l or more around the year – double the salinity of the waste.

### Moricchap Drinking Water Plant

As a first step, a women's group was established to manage the water plant. Gita led the formation of a group of five women, who called themselves the *Golap Mohila Dal* (Rose Women's Group). WaterAid and Rupantar helped the *Golap Mohila Dal* register as a business and sign a formal agreement with Rupantar. Rupantar would provide training to maintain and operate the plant, and the women would be formally responsible for running it. While the plant was being constructed, the members of the group received training on operating and maintaining it. This included training in marketing, and planning operational teams.

A trade license was obtained from the Department of Environment; and an electricity connection was obtained from the village electricity supply committee. The members of the *Golap Mohila Dal* pooled funds to obtain a 15 year lease for a parcel to construct the plant.

Once these administrative steps were completed, WaterAid and Rupantar developed the technical design of the reverse osmosis plant and initiated construction through a formal procurement process in November 2019. WaterAid covered the €14,500 capital costs for construction, while *Golap Mohila Dal* contributed 20% (about €2,888) for an operation and maintenance (O&M) fund, and for the land lease.

The O&M fund was critical for the sustainability of the plant. The women's contribution demonstrated their ownership of the project. Each member contributed €158, collecting €790 in total. Some dug into their savings, while others had to take loans to cover their share of

the 20%. *Golap Mohila Dal* decided that the first profits from water sales, after covering basic costs, would replenish the O&M fund. Once that was completed, 20% of the profits would cover caretaker salaries, while the remaining profits, saved in a business bank account, would be split evenly between the five key members. It was agreed that no profits would be shared during the first six months to ensure the smooth running of the plant.

As construction continued, the group set up a trust-based social solidarity governance structure for the plant and defined key roles such as plant management, operations, and financial management. These positions were filled by nominations or voting. Gita was



Photo Credit: WaterAid/ Drik/Farzana Hossen

**Members of the *Golap Mohila Dal* tending to business.**

appointed President, and other group members were appointed to the posts of treasurer and caretakers based on their education levels or experience working with other income generating activities. Rupantar trained the women in their different roles.

The Moricchap Drinking Water Plant officially opened in February 2020. The residents of Tengrakhali village finally had uninterrupted water supply, and could buy clean water for €0.005 per liter – without additional transportation costs. The *Golap Mohila Dal* went door-to-door to advertise and register interested households as clients. As an incentive, registered clients received a further discounted price, allowing even financially constrained families to buy enough for their daily needs.

The COVID-19 pandemic struck shortly after the plant opened. Special precautions were introduced to safely provide residents with water for drinking – and critically, for basic hygiene. A 24-hour water supply was maintained despite a national lockdown. Women and children could access water closer to home, and hence reduce exposure. Patients suffering from diarrhea and gastroenterological illnesses were prescribed water from the Moricchap Drinking Water Plant, resulting in a lower incidence of water-borne illnesses, and savings on medical costs (up to €80 per month).

Soon *Golap Mohila Dal* was selling enough water to make a good profit. During peak summer months, the plant often worked around the clock, selling up to 4,200 liters of safe drinking water for up to €21 daily. Appreciating how difficult

it is to live without clean, safe and affordable drinking water, *Golap Mohila Dal* keeps water prices stable, even during periods of high demand.

Within the first year, there was enough profit to refund the initial 20% contribution to the O&M fund. The Dal has used the fund for maintenance when needed, and topped it up to its initial reserve amount, each time demonstrating their ability to successfully operate and maintain the plant. “As shareholders, we have been putting money in the O&M fund since the first day, as we had a target to reach,” says Jayanti, a caretaker of the plant.

Between April 2021 and March 2022, the plant generated €1,900 in sales, with €750 in profit. The profit helped *Golap Mohila Dal* members to support their families, and send their children to school. The women also opened savings accounts for more financial security. The services of the Moricchap Drinking Water Plant extend to eight surrounding villages, and the *Golap Mohila Dal* has plans to build another reverse osmosis plant to serve more villages in future.

The Moricchap Drinking Water Plant has also had far-reaching impacts within the community in a variety of ways. Access to reliable drinking water has reduced out migration. Women are accepted as leaders within the community. The caretakers often spend time beyond their shift tending to the machinery to ensure everything operates smoothly. This dedication has added to the community’s appreciation of the women’s leadership abilities and commitment to their work. “All the villagers rely on our plant for drinking water,” says Jayanti.

“We are treated with respect and warmly welcomed everywhere we go. This is something that money cannot buy.” The strong female role models have also resulted in reduced gender discrimination.

There are individual stories of empowerment that have strengthened social resilience. Jayanti, for instance, used her portion of the profits to buy a sewing machine and provide tailoring services to the community. She runs the additional business to support her family, showing how skills development and capacity building contribute to social resilience beyond the scope of the project.

Gita has become even more active in the community. In 2022, she stood for elections on the Kadakati Union Parishad – the local council, responsible for local development. Known for her hard work and determination, she won the election, defeating her rival by more than 1,000 votes. Gita’s dream of finding ways to improve the lives of her family and village continues to come true and to grow.

“As a woman, I want to keep working to empower deprived women to have more control over their lives,” she says. “Having my own identity, earning my own income, and not depending on anyone for my needs is very satisfying. It’s time for women to stop confining themselves and their potential within their households only.”

## Lessons for LLA

The WE-WE approach has been implemented in 12 other areas along the south-west coast of Bangladesh, in Assasuni, Shyamnagar, and Dacope. It

provides lessons on devolving decision making to the lowest appropriate level (Principle 1); addressing structural inequalities faced by women (Principle 2), and investing in local capabilities to leave an institutional legacy (Principle 4).

### Devolving Decision Making

A primary principle in the WE-WE approach is the use of inclusive participatory methods to identify key challenges, and solutions. WaterAid and Rupantar facilitated a participatory community assessment for community members to compile information, and prioritize critical problems and possible solutions. Decisions were made by the community members.

In particular, the approach engages with women, usually initiating engagement through microfinance or income generating activities, before starting community mobilization. Focus group discussions take place with the women’s groups to understand their needs, motivation, and willingness. These actions ensure that ownership resides with the women’s groups from the very beginning of the process.

### Addressing Structural Inequalities

In addition to being a mechanism that enables women to lead, the participatory assessment process supports the community to identify other vulnerable groups in the community; and sensitize them to their needs. This approach makes service provision more accessible to community members who may previously have been ignored.

Convincing people that women should lead is not straightforward in rural Bangladesh, where running a business is considered a man's job. Women often need permission from male family members and community elders for what are considered "unusual" activities, such as going to school or running a business after marriage. Women often lack skills for income generating activities because they do not normally manage finances, or have not been employed before.

The WE-WE approach contributes to breaking down these structural inequalities by placing women in the center of development. Women are trained in business management, and in operating and maintaining equipment. They learn critical skills such as how to get a business license, and how to manage budgets. In addition, placing women in strong leadership and decision-making roles erodes systemic cultural barriers that perpetuate gender inequality.

Although women in Bangladesh have the legal right to purchase and own land, this right is often not practiced in rural areas. Leasing land, engaging with government departments to get trade licenses, dealing with electricity providers, managing finances, operating and maintaining machinery – all these actions give women the opportunity to assume roles usually filled by men, and to break cultural taboos and structural inequalities.

### Investing in Local Capabilities

The WE-WE approach focuses on the role of women in building community resilience. When they move on to the next opportunity, they train other women to

step into leadership roles. In the case of the *Golap Mohila Dal*, the women have plans to build another reverse osmosis plant, and to train other women to run it, without any assistance from Rupantar or WaterAid.

Capacity development creates broader social resilience beyond the scope of the project. As women earn profits, they are able to use these funds to send their children to school or start a new businesses. Leadership skills give the women the confidence to engage in new ventures, such as assuming leadership roles.

Partnerships with local NGOs such as Rupantar also build institutional capacity of local organizations to engage in other resilience building activities, in addition to providing authentic access into the community.

## Conclusions

The WE-WE approach demonstrates how the provision of drinking water services can enhance the resilience of vulnerable communities in multiple ways. It provides a road map to create a financially sustainable WASH adaptation project for a small rural community, often dismissed as nonviable, and demonstrates that empowering women can change an entire community for the better.

Cultural taboos and restrictions related to actively involving women in leadership roles was a key challenge. This was overcome through the support and advocacy provided by Rupantar, to enable the women to convince elders and the

community. The endorsement from the government through the provision of a business license, and the ability of the women to maintain and operate the plant at a profit, also helped to overcome it.

Procuring loans for the women proved another challenge. They came from ultra-poor families, that even microfinance institutions consider as high risk. As a registered business, however, the *Golap Mohila Dal* was able to access loans.

The trust of communities is hard-won, and takes time. When planning locally-led adaptation activities, donors and

organizers must be realistic and factor in time for trust-building and establishing relationships with local NGOs and others who have the trust of the community. All planning must be based on the insights and experiences of communities and their trusted local partners.

The sustainability of the approach is strengthened by establishing an O&M fund to overcome early challenges that have caused other reverse osmosis plants to close down. The women's contribution to the O&M fund reduced this risk and at the same time strengthened ownership of the plant.