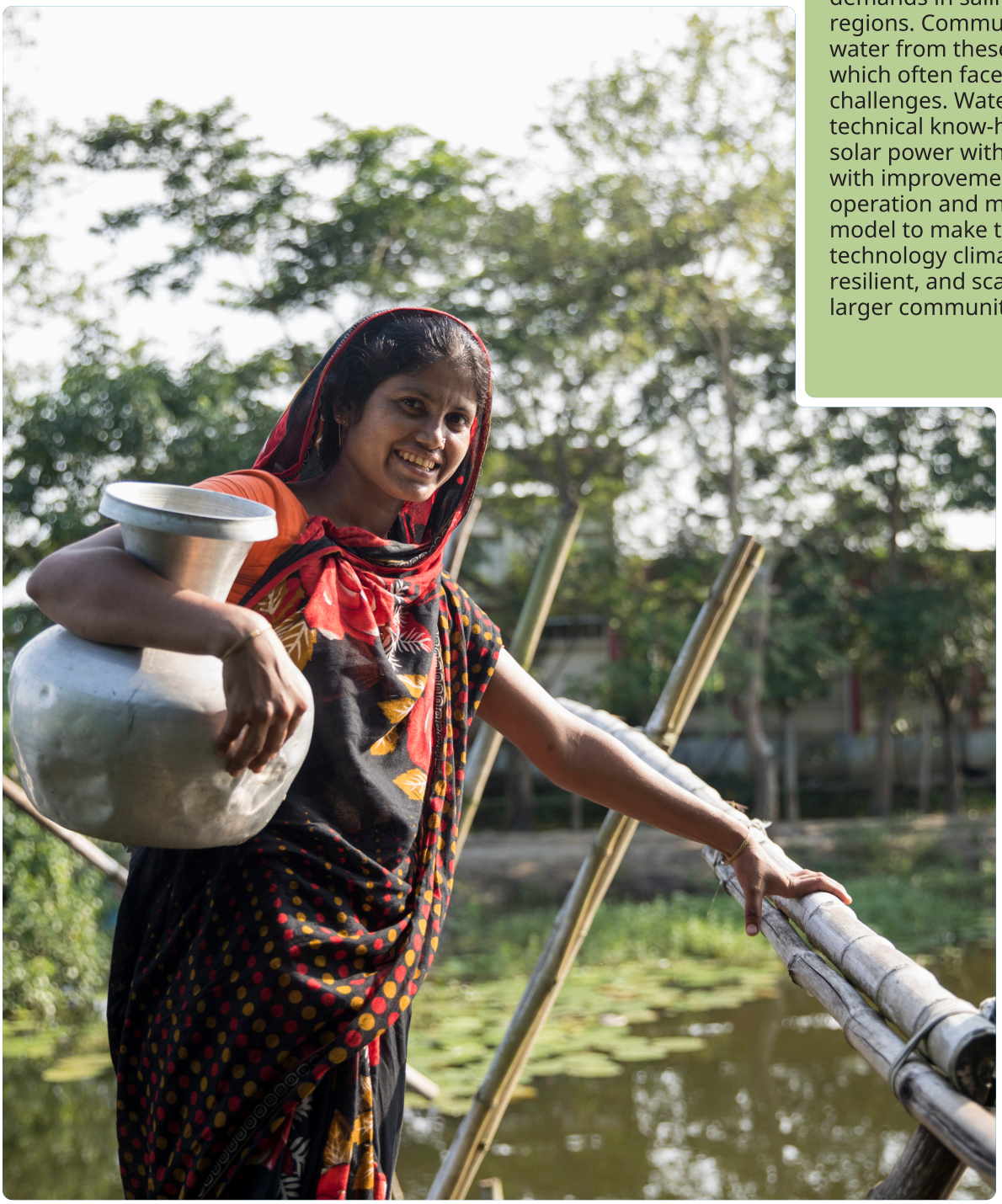
SOLAR-POWERED POND SAND FILTER

A RELIEF FOR THE WATER CRISIS

Climate adaptive water facility for coastal regions of Bangladesh

Pond Sand Filter (PSF) is one of most frequently used local means to access drinking water for people in the coastal belt of Bangladesh. It is a proven technology used for generations to meet the water demands in saline prone regions. Community share water from these sources which often face sustainability challenges. WaterAid with its technical know-how synced solar power with PSFs along with improvement in design, operation and management model to make this locally led technology climate adaptive, resilient, and scalable to support larger communities.



WaterAid/ Habibul Haque

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WaterAid

RAINFALL ALONE CANNOT MEET DEMANDS

In southern coastal belt, communities depend on rainwater harvesting for drinking water. In dry or low-rainfall seasons, community members have to look for alternatives. Women in these communities are often given the primary responsibilities for water collection. Leading them to walk kilometers to find remote potable water sources – which is physically stressful and potentially leads to abuse on the journey. To avoid another trip, they opt to go in groups or consume less water at home and ensuring water is available for family members. To address these issues, PSFs are used as an alternative water source to rainwater. PSF takes water from selective ponds and processes them through multiple filters. However, the traditional PSF model has experienced very little resiliency and efficiency in adaptations with emerging climate vulnerabilities.

CHALLENGES
in traditional PSF's

Time-consuming extraction process

Traditional PSFs work with a hand-pump mechanism that pumps pond water to the PSF's filtration layers. This process pumps clean water to the reservoir chamber in the PSF, which is used through a tap. This process requires someone to manually pump water into the PSF to fill up the reservoir tank - a step which is often skipped. This leads to clean water reservoir drying up; which always needs pumping to go through a filtration process to collect water – curtailing on-demand access.

Not resilient to intensified disasters

PSFs are used historically in coastal belt, conforming to normal risk parameters. However, older PSFs, its source pond, and other peripheries are not prepared to withstand the intensity of climate disasters such as floods, storm surges, and rising sea levels - substantially increasing the likelihood of saltwater infiltration inland and contaminating the pond.

Image/ Pump at the PSF plant in Shyamnagar, Satkhira, Khulna

WaterAid/ Farzana Hossen

RETHINKING POND SAND FILTER APPLICATIONS USING CLIMATE-ADAPTIVE MODELLING AND SOLAR POWER

To improve efficiency, solar-powered PSFs automatically regenerate water reservoirs without human interventions via an automated pump powered by solar energy - an addition to the manual pump mechanics. The PSF plants are built on raised platforms as a countermeasure to face climate change events, such as rising sea levels, frequent floods, tidal surges, and extreme weather events for 25 years. These second generation PSFs also have higher storage capacity, enabling on-demand access to clean water. It continues to serve a larger community of people in ever emerging climate threat across the year.

Image/ A solar-powered PSF plant in Shyamnagar, Satkhira which tops up safe water reservoir automatically.

FACTS & STATS OF SOLAR POWERED PSF:

5,500 litres capacity
for water storage in the second generation PSFs or an 63% increase in capacity - leading to improved coverage.

42% lower O&M costs
in comparison to the maintenance cost of traditional PSFs. This results in incremental gains by value per year and justifies 48% increased capital expenditure in building the PSF.

*For more information, please contact **wateraidbangladesh@wateraid.org**.*
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