



# LEARNING BRIEF

## Facilitating Drought Resilience

CARE Honduras uses ecologically and economically sustainable technology to help households cope with droughts

**OVERVIEW** Rain water capture has proven to be a successful approach for ensuring that households in drought prone areas of Honduras have sufficient water for personal, household and agricultural use during droughts.

**300%**

Increase in annual household income

CARE has developed a system that can provide water for agricultural use for up to six months

**\$20-\$80**

Monthly household saving after the adoption of the rain capture and storage system

## COPING WITH CLIMATE CHANGE IN HONDURAS

More than 1.3 million people in the dry corridor of Honduras are affected by severe droughts owing to rainfall deficits in recent years. As a result, there is limited water for human consumption and agricultural production. This in turn aggravates food security and poses negative consequences for the health of communities in this region.

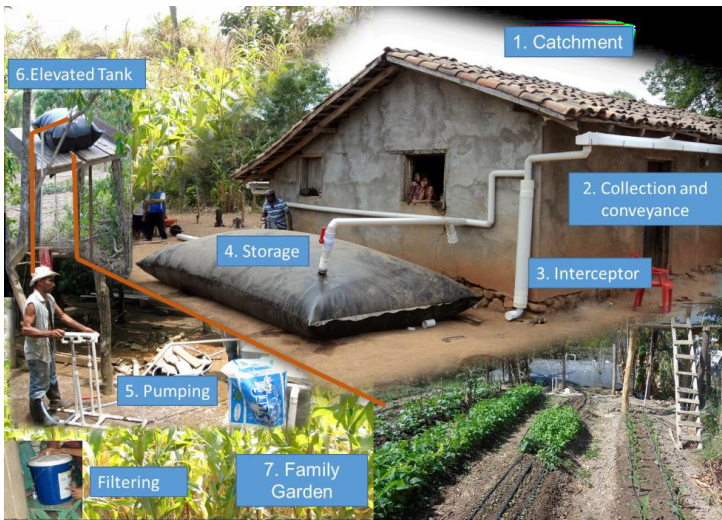
### Water Smart Agriculture (WaSA)

CARE has developed an innovative and cost-effective technology for rooftop rainwater capture and storage. The system includes a durable 25,000-liter geomembrane bag with an estimated lifespan of 30 years, a cheap and easy to construct pump, and a drip irrigation system that can support a 200-square meter garden. The geomembrane bag is ten times cheaper than similar storage options made from cement or brick and it can be easily repaired with local materials. The pump is made of affordable and readily available polyvinyl chloride (PVC) pipes and it can be constructed by individuals in their homes. At capacity, the water stored in the geomembrane bag will be enough to meet basic household WASH needs of a family of six for almost three months. Similarly, the water can drip-irrigate a 200-square meter garden for about half a year. The total estimated cost of the system is \$1000 per household.

**Increased Incomes:** Year-round harvests have significantly increased incomes and savings among households. Growing seasons have increased from one to at least four per annum. Annual household incomes have roughly tripled, and families report savings between 500 - 2,000 lempira (\$20 - \$80) per month because they have more food and water. This rise in income and savings is also due to an increase in the amount of time dedicated to productive activities owing to a decrease in the amount of time spent collecting water.

**Increased household food security:** The increase in water availability has enabled cultivation during dry seasons and ensured that raining season crops survive during dry periods. Drip irrigation has also enabled greater control of crop selection.

These improvements have enhanced dietary diversity at the household level.



Visual image of the water harvest at the household level. Capture, storage, bombing, distribution and irrigation process may be observed. Photo: Eduardo Gonzalez.

**Increased safety and security:** Households with secure water access experience reduced psychosocial stress. Parents have reported that their children sometimes miss school because there is no water for hygiene or because they travel long distances to fetch water for household use. Women and girls often bear the primary responsibility for water collection. On their way to obtain water for the family they are often subject to harassment and abuse from men. Having water close to their home decreases the incidence of such encounters.

**Improved agricultural productivity:** 1,250 households have been able to irrigate a total of 25.20 hectares of land by utilizing the drip irrigation component of the system. This in turn will enable three growing seasons per year of garden fruits and vegetables.

## Partnering for Scale

CARE Honduras partnered with a private sector organization called Mexichem to ensure that the rainwater capture and storage systems are readily available for purchase in the dry corridors of Honduras. Mexichem adopted the design of the

system, manufactures it, and sells it. Municipal governments in the dry corridor of Honduras collectively purchased 1000 geomembrane bags from Mexichem. This investment increased the number of benefitting households by almost ten-fold from 130 household to 1300 households.

Although this innovative technology is revolutionizing the capture and harvest of water for households in Honduras, the technology does have some limitations.

**Water Quality:** Although the system ensures water availability in drought-prone households, the water collected does not meet drinking water standards. As such, additional filtration is necessary. To address this issue, the system is now being fitted with filters.

**Amount of Water Collected:** On smaller plots of land the bag poses a challenge for households as its large size compromises land for cultivation. Despite this setback, households still report an increase of 200% on average in income generating activities per year on the available land.

“We used to walk long distances, dedicating only one day per week for laundry. And it was a great sacrifice. Sometimes we didn’t know if the owner would allow access to the well. We have been blessed with the PROSADE bag, because I have taken out more than 4,000 liters from my bag and still have a lot of water in it. The bag was filled with water from four storms during this past winter. Because my roof is made of zinc sheets, all the water goes straight into the bag. The bag has been a great improvement. This summer we did not need to go to the bore well for laundry.”