



# ADAPTATION COMPONENT SUMMARY

## CAYE CAULKER, BELIZE



In 2019, the Inter-American Development Bank with the assistance of Environmental Resources Management (ERM), officially launched its first climate change adaptation pilot project to provide an independent and off-the-grid water production system for the island of Caye Caulker. A hydropanel array was installed and commissioned at both the Caye Caulker Roman Catholic School and Caye Caulker Health Center.

The adaptation component was selected after conducting a Hazard Risk Assessment for the island that included an assessment of natural hazards with the potential to negatively impact Caye Caulker, including hurricanes/tropical storms, storm surges, coastal erosion, flooding and non-climate stressors. This included an evaluation of the following under current conditions and under a climate change scenario:

- Flood modeling;
- A vulnerability assessment was conducted for the main assets on the island to better understand their vulnerability to natural hazards (specifically flooding); and
- An economic assessment was conducted of the potential damages from these natural hazards such as flooding from hurricanes, storms and storm surges.

An Economics of Climate Change Adaptation study was also conducted that included an economic analysis of various adaptation measures. With all studies complete, a portfolio of projects was prioritized and a stakeholder meeting was conducted to select the top three projects. Once the top three projects were selected, ERM undertook a Feasibility Assessment for each.

In the end, an Integrated Climate Resiliency Project was selected that included hurricane shelter Improvements, capacity building and public education. SOURCE™ hydropanels were chosen as the preferred technology to provide safe drinking water before, during, and after extreme weather events that might require the Caye Caulker Roman Catholic School to be used as a hurricane shelter. As an added benefit, the drinking water produced by the SOURCE™ hydropanels can be used by the students all year round, providing an added benefit to the greater Caye Caulker community.

The independent and off-the-grid water-producing system by Zero Mass Water of Arizona, consists of eight-foot hydropanels that create drinking water simply from sunlight and air – made possible by the combination of thermodynamics, materials science and controls technology. Water is then mineralized with calcium and magnesium and then dispensed from a tap system installed at indoor and outdoor locations at the school. Each panel averages three to four liters each day or one to two 16.9 oz standard water bottles per day, depending on sunshine and humidity. Each hydropanel holds 30 liters of drinking water in a reservoir where it is mineralized and kept clean for optimal taste and health. A standard array of two panels has 60 liters of drinking water storage capacity. The hydropanels utilize solar power and a small battery to enable water production when the sun shines and water delivery on cloudy days or at night, and can be monitored via an App from anywhere in the world. The IDB's local partner, Caye Solar, assisted with the installation.

A total of 21 panels have been installed on the school's rooftop, with a second smaller set-up of two panels installed at the Caye Caulker Health Center. Approximately 70 liters of water a day will be produced and supplied to the school children for free, creating a significant benefit for families who typically pay BZ\$5 a month per child for bottled water at the school.

As Belize sets out to eliminate single-use plastic, bottled water will eventually become harder to obtain, making this independent, off the grid water supply an even more valuable community asset for Caye Caulker.

## ABOUT CLIMATE SMART ISLANDS

To help build resilience against climate change, the Inter-American Development Bank (IDB) launched the Caribbean Climate Smart Islands Program (CCSIP) under its Sustainable Islands Platform. This program aims to demonstrate ways of transitioning to a low carbon and climate resilient pathway in the islands of Tobago (Trinidad and Tobago), Caye Caulker (Belize) and Harbour Island (The Bahamas). CCSIP has been working over the past year to identify and implement climate resilient mitigation and adaptation measures in priority sectors including transport, infrastructure, energy, water, waste treatment and tourism. Under this program, a "Climate Smart Island" is defined as an island that has committed to embark on a journey towards climate change resiliency by assessing its climate change-related exposure and catalyzing public, private, and community actions to the most suitable climate change adaptation and mitigation strategies. By doing so, the Climate Smart Island is continuing to protect its natural and cultural resources so that visitors today and, in the future, will be able to enjoy the island's hospitality.