



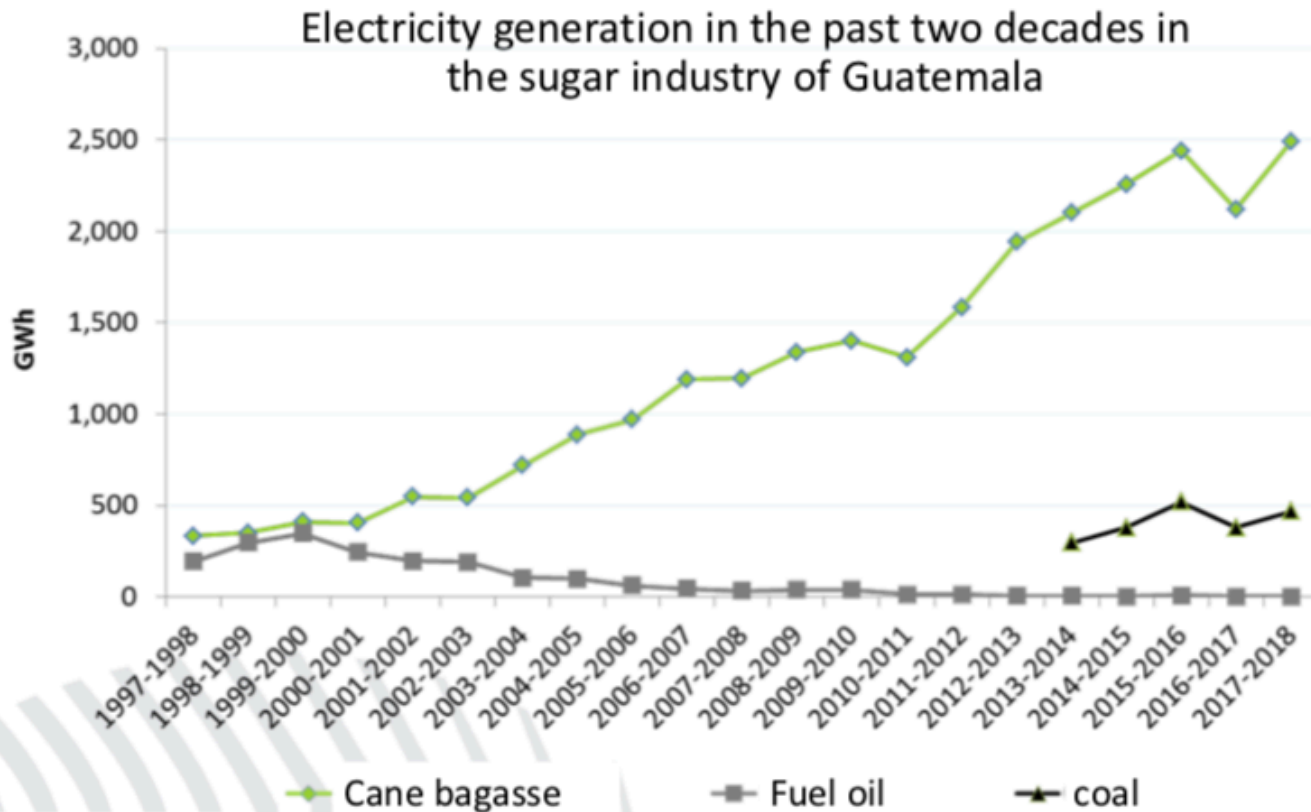
Building resilience through water management before and after disasters: contributions from the sugar sector of Guatemala

Alex Guerra Noriega, PhD
Climate Change Research Institute (ICC)

Guatemala, 15th of December 2020.



Water and energy nexus through biomass from sugarcane



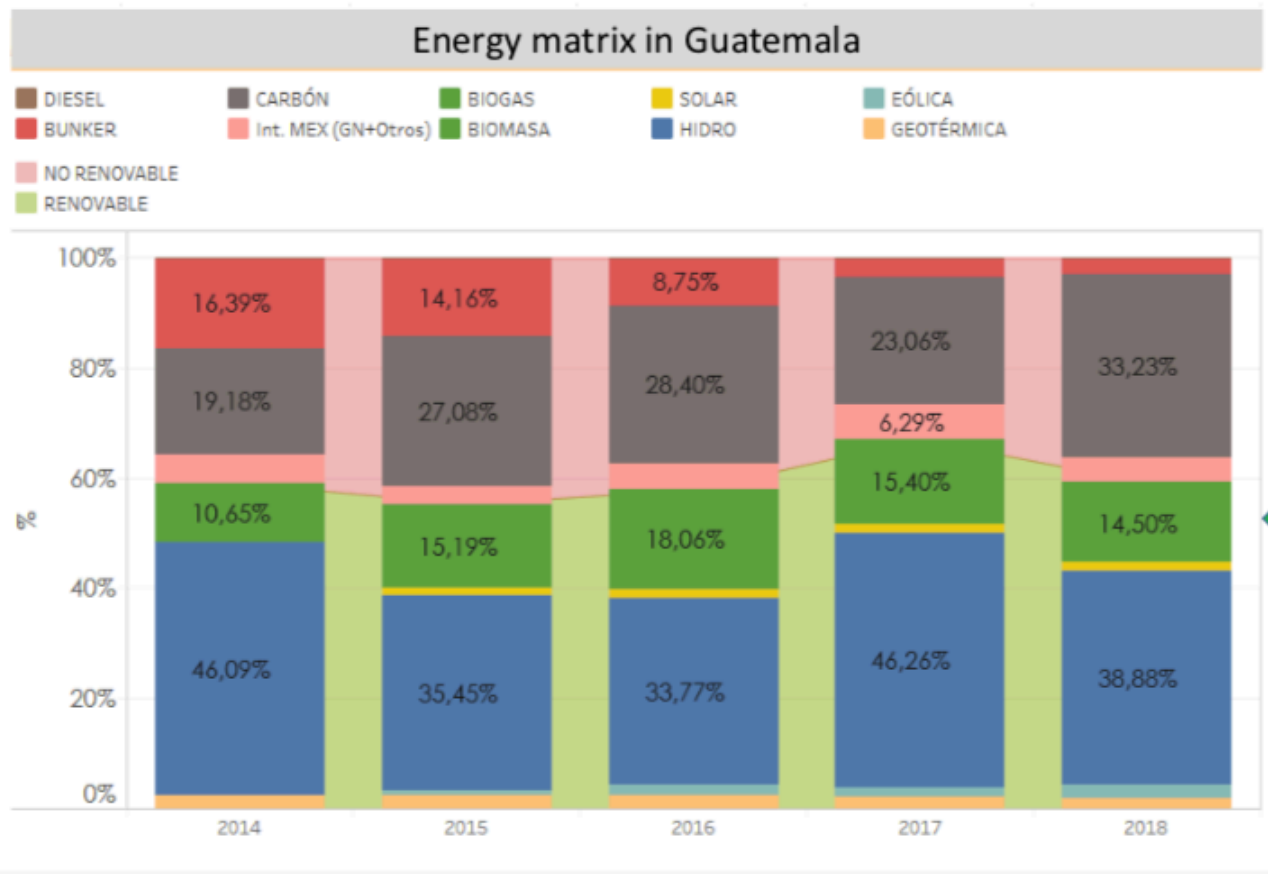
Growth has resulted from growth of cane crushed but also from **doubling efficiency**

Around 10% of the country's total emissions are **avoided**



4 million tons of CO₂eq are prevented by generating renewable energy from sugarcane bagasse

Importance of electricity generation from sugarcane in Guatemala

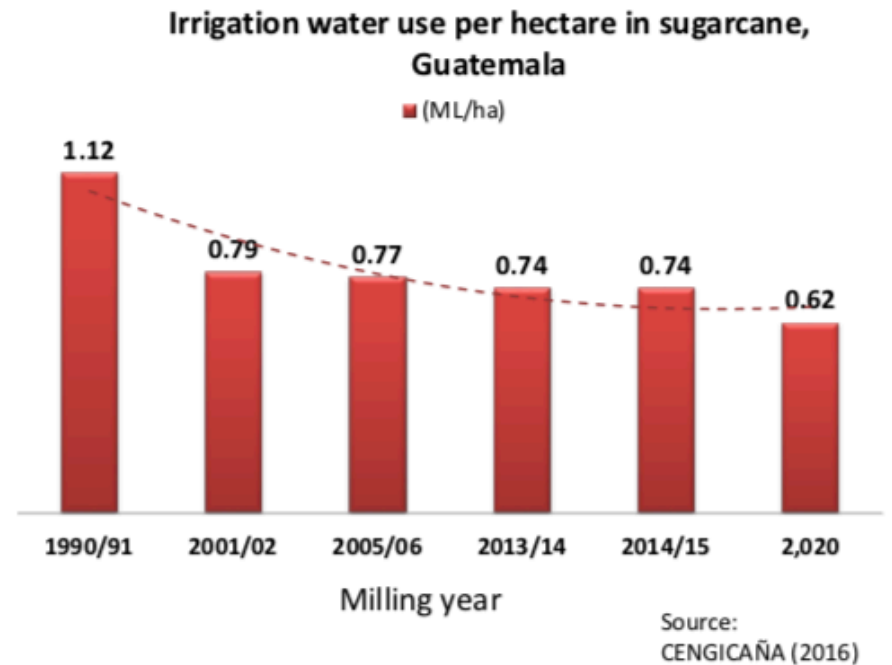
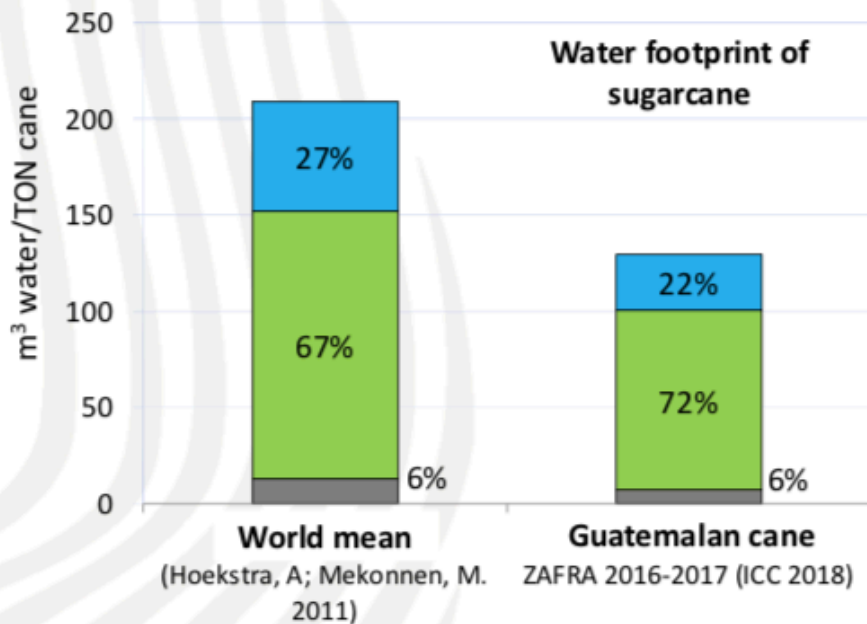


Ethanol is another component of the water and energy nexus through sugarcane. Its use is part of the Low Emission Development Strategy

← **Biomass from sugarcane (virtually all)**

(CNEE, 2019)

Rising efficiency in water use in the sugar industry in Guatemala

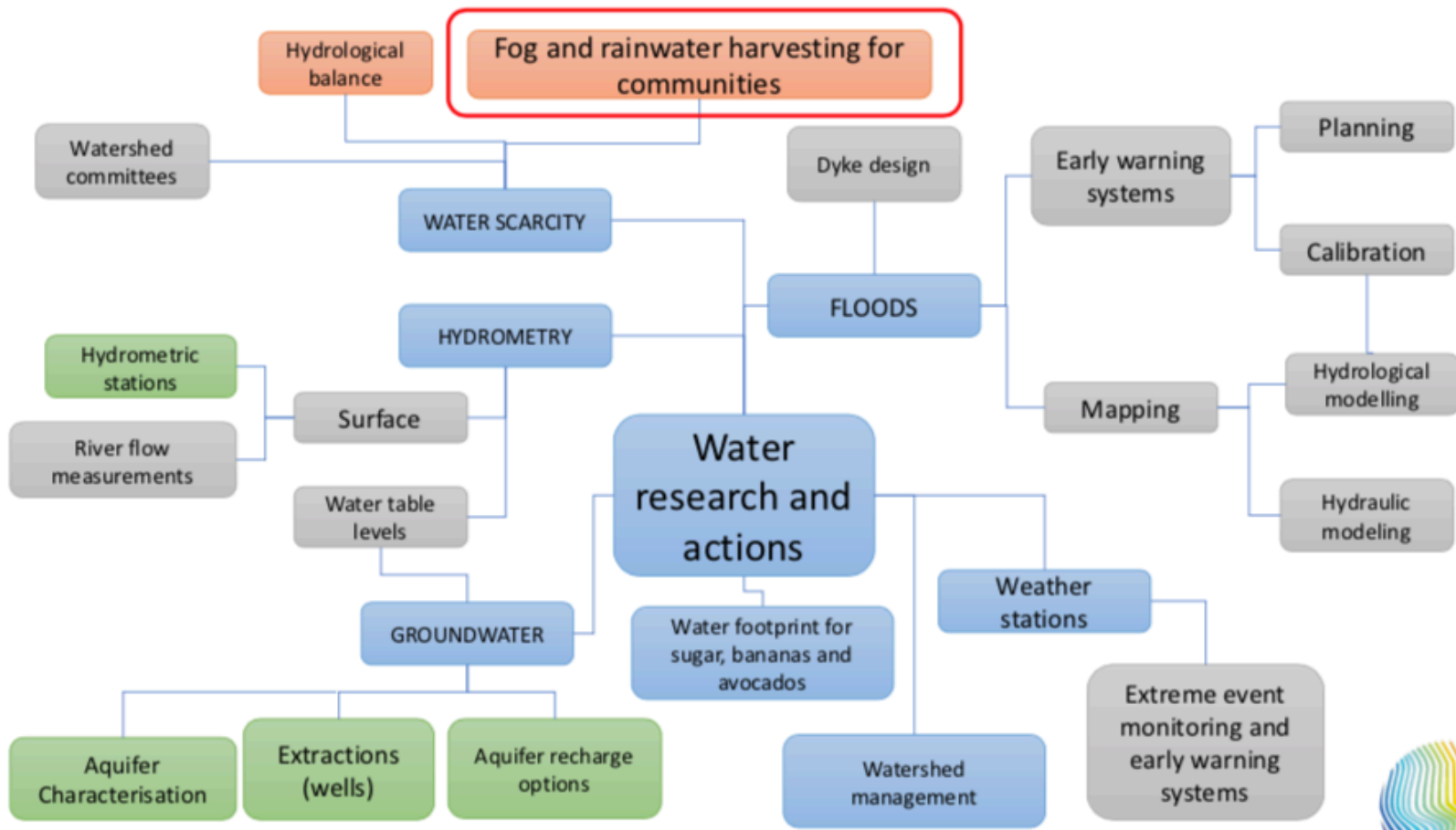


Actions that contributed to reduce water use

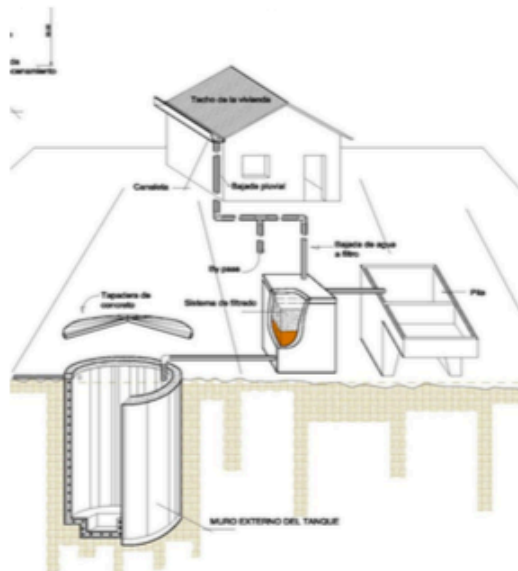
- Shift to more efficient irrigation technology
- Use of soil and weather data in irrigation
- Waterless technology to clean cane before crushing
- Use of wastewater from mills for irrigation
- Water re-use in mills



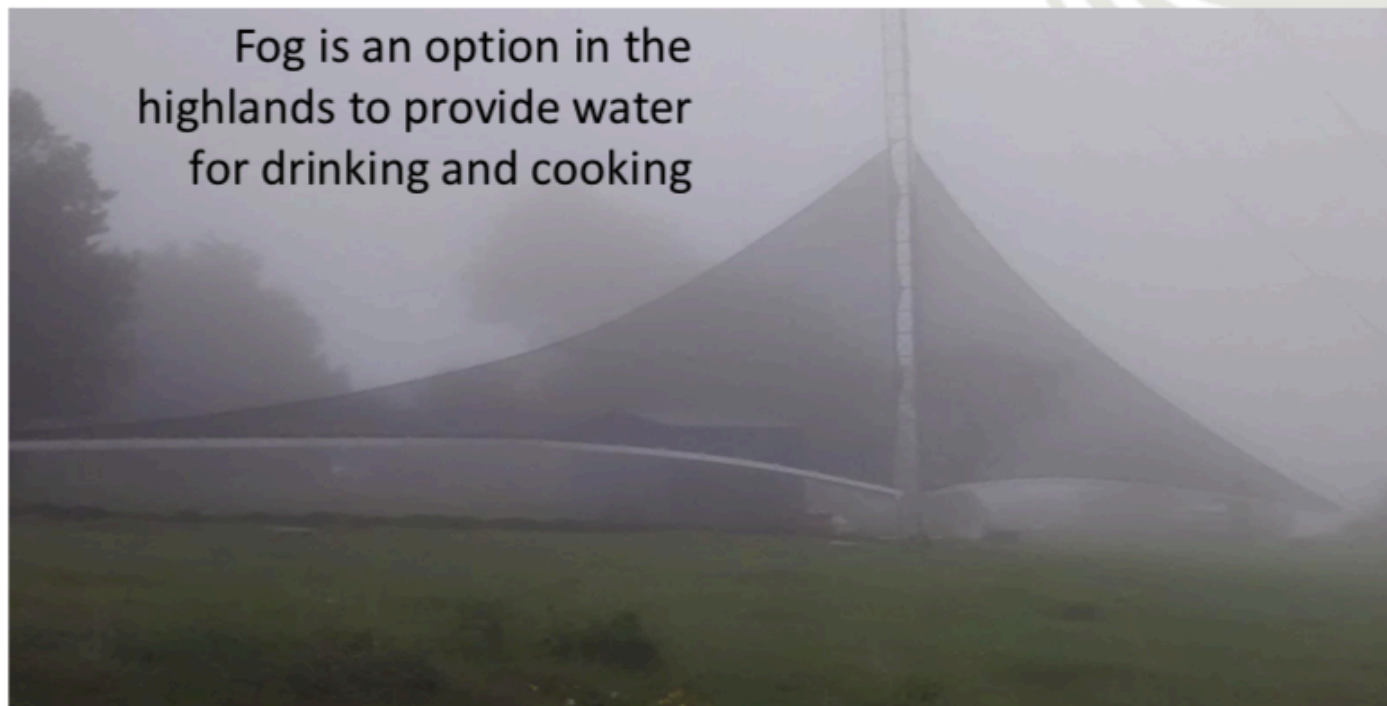
Water research and actions to build resilience



Fog and rainwater harvesting for communities



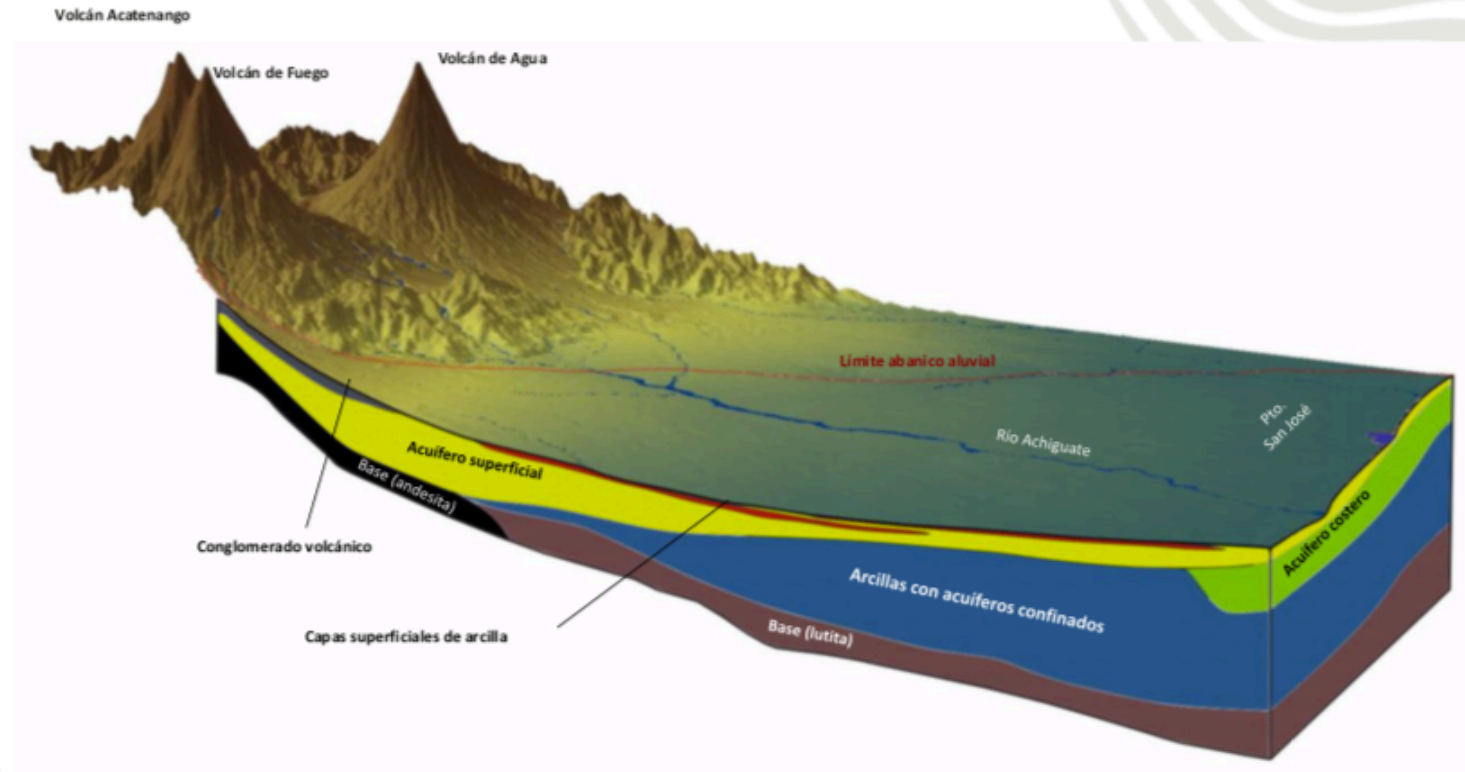
Fog is an option in the highlands to provide water for drinking and cooking



Groundwater research in the sugarcane growing areas

Communities in the lowlands depend on shallow aquifers for needs at the household level. As latrines also use wells, water pollution is a major issue.

Knowledge on aquifers is vital for the use of groundwater for irrigation.



Defining sustainable purification systems for communities: key during and after the COVID-19 pandemic



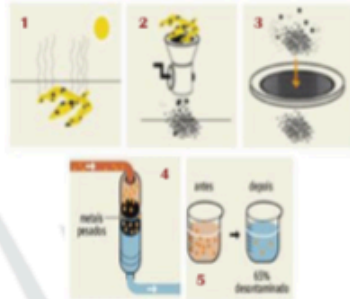
Ecofiltro
Fuente: Ecofiltro, 2017



Microfranquicia
Fuente: AguaVital, 2020



Nanofilter
Fuente: GlobalGiving, 2016.



Cascara de platano
Fuente: Kumpers, 2011.

Recovering the municipal water system of Siquinalá after it was destroyed by lahars following the volcanic eruption in 2018



It included:

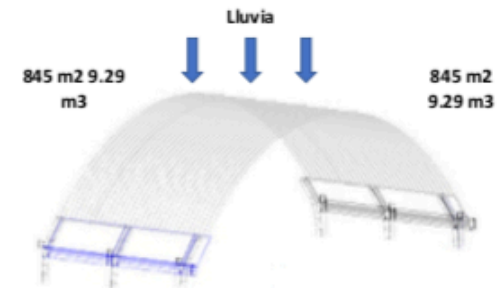
- Building a rainwater harvest system
- Training households
- Building a well to provide some of the water





Water research and actions to build resilience

The sugar industry donated the land and all equipment for the new COVID-19 hospital in southern Guatemala.



Research by ICC helped plan and dig the well to provide water to the hospital.
ICC designed a rainwater harvesting system too.





Alex Guerra Noriega, PhD
Climate Change Research Institute (ICC)
Guatemala – El Salvador, Central America
aguerra@icc.org.gt



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**WATER &
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SOLUTIONS
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