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

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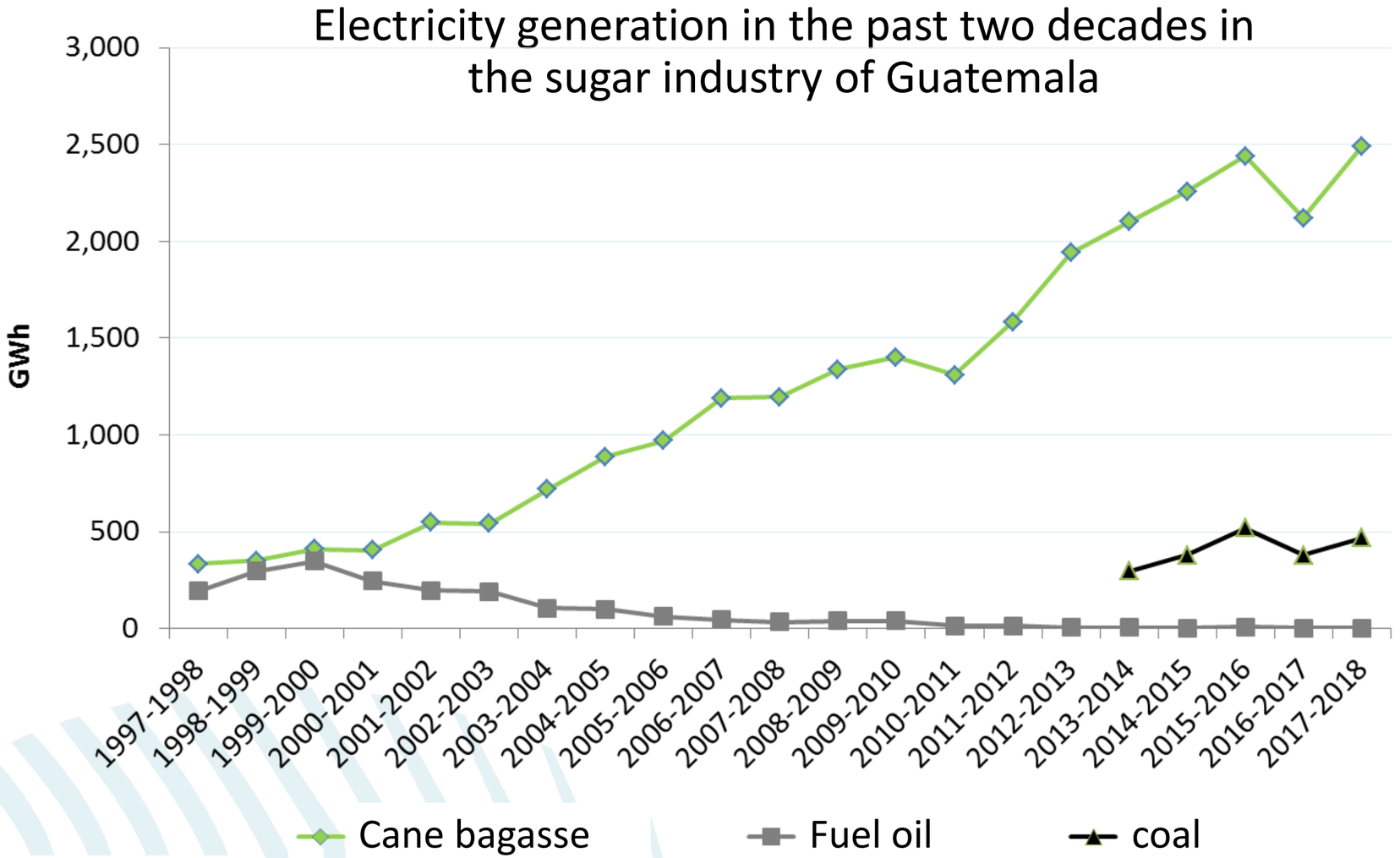
Climate Change Research Institute (ICC)

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


Instituto Privado de Investigación sobre Cambio Climático 2010-2020

10 AÑOS Contribuyendo a la mitigación y adaptación al cambio climático

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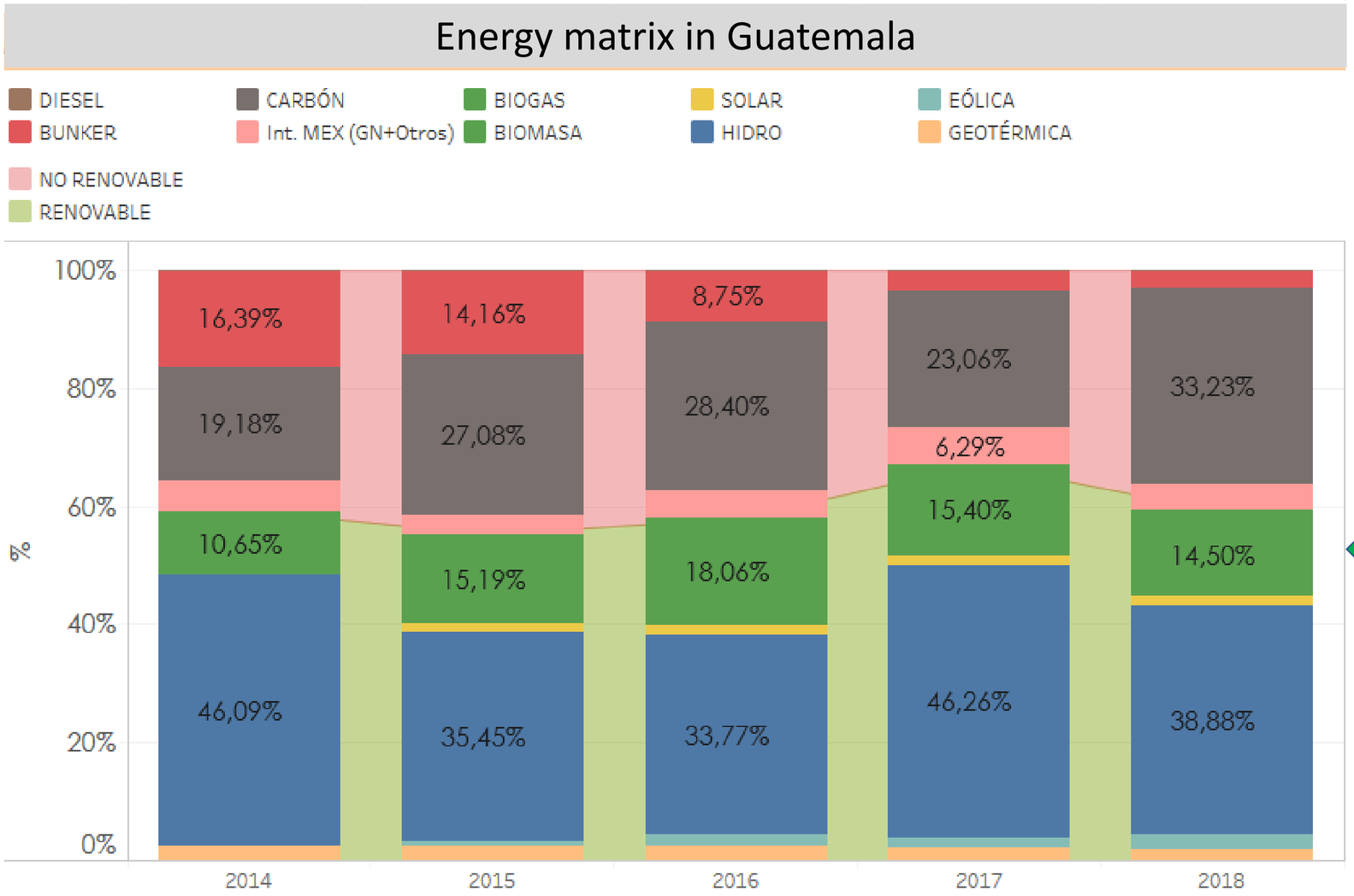
# Importance of electricity generation from sugarcane in Guatemala




**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)

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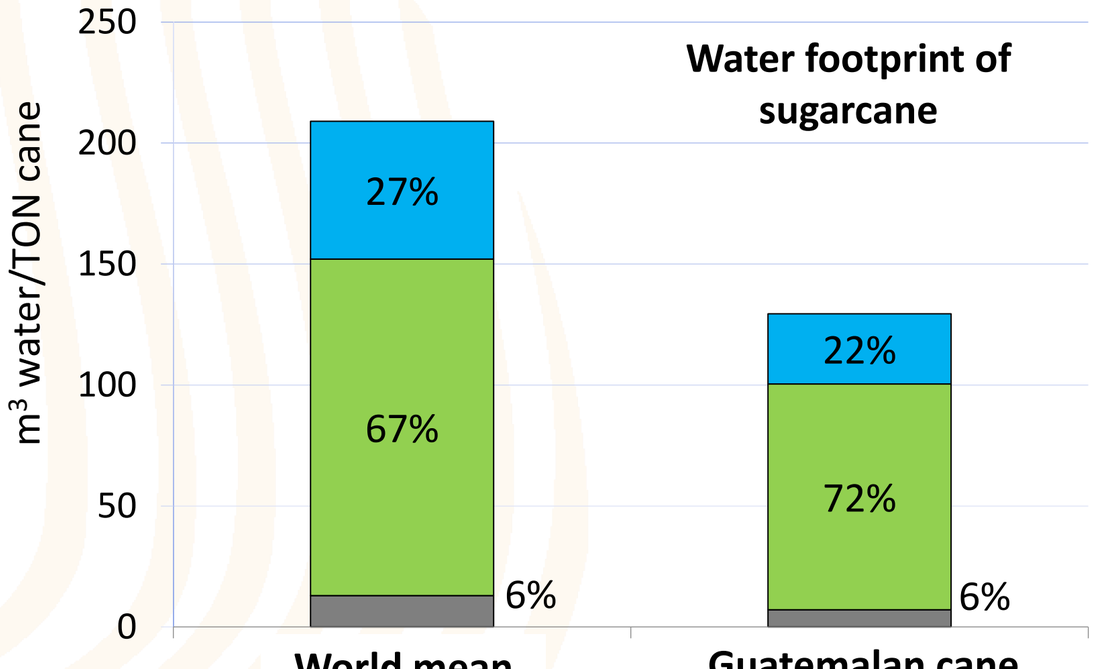
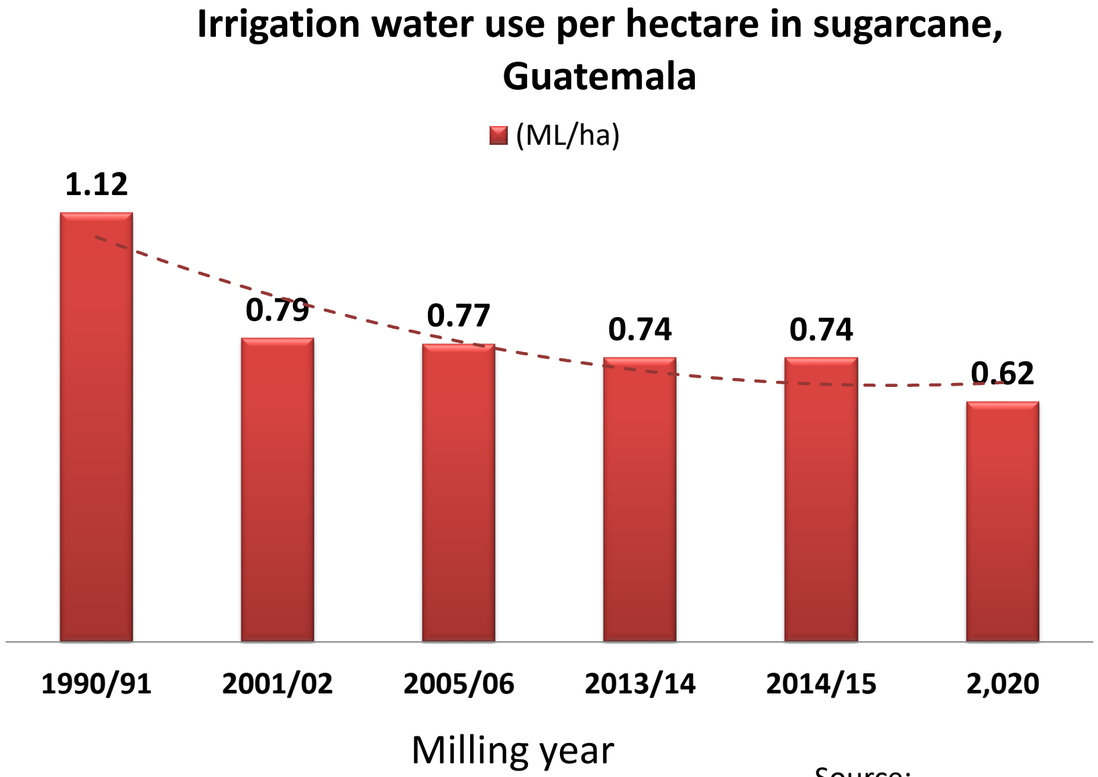
# Rising efficiency in water use in the sugar industry in Guatemala




(Hoekstra, A; Mekonnen, M. 2011)

ZAFRA 2016-2017 (ICC 2018)

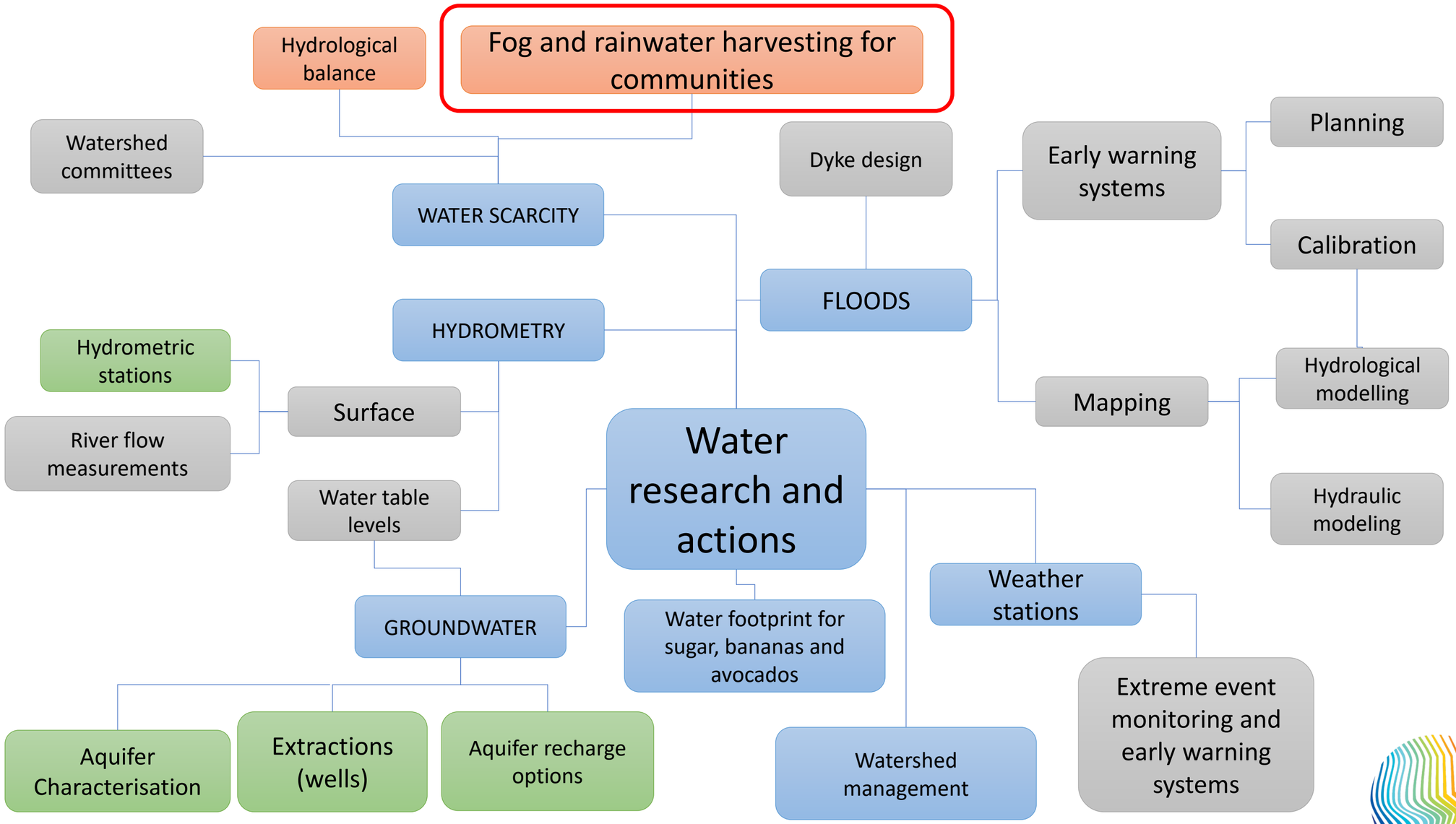



Source: CENGICAÑA (2016)

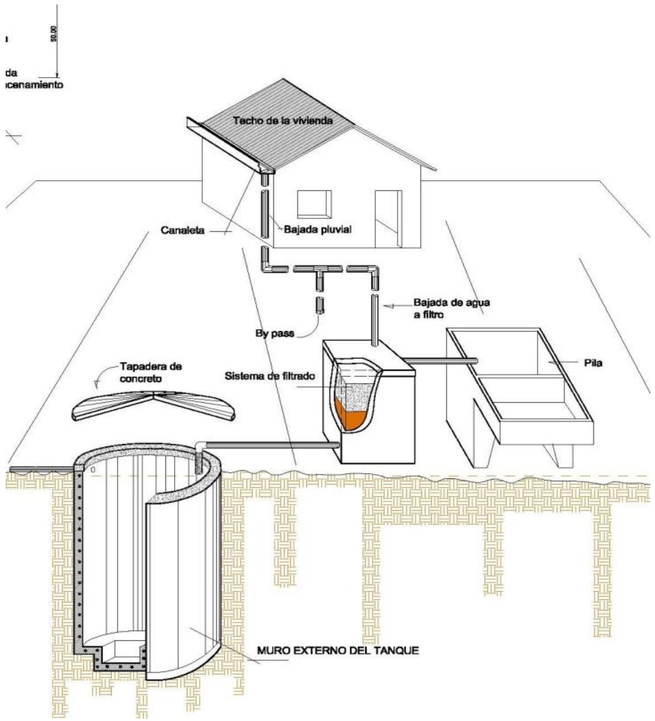
## Actions that contributed to reduce water use

- 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

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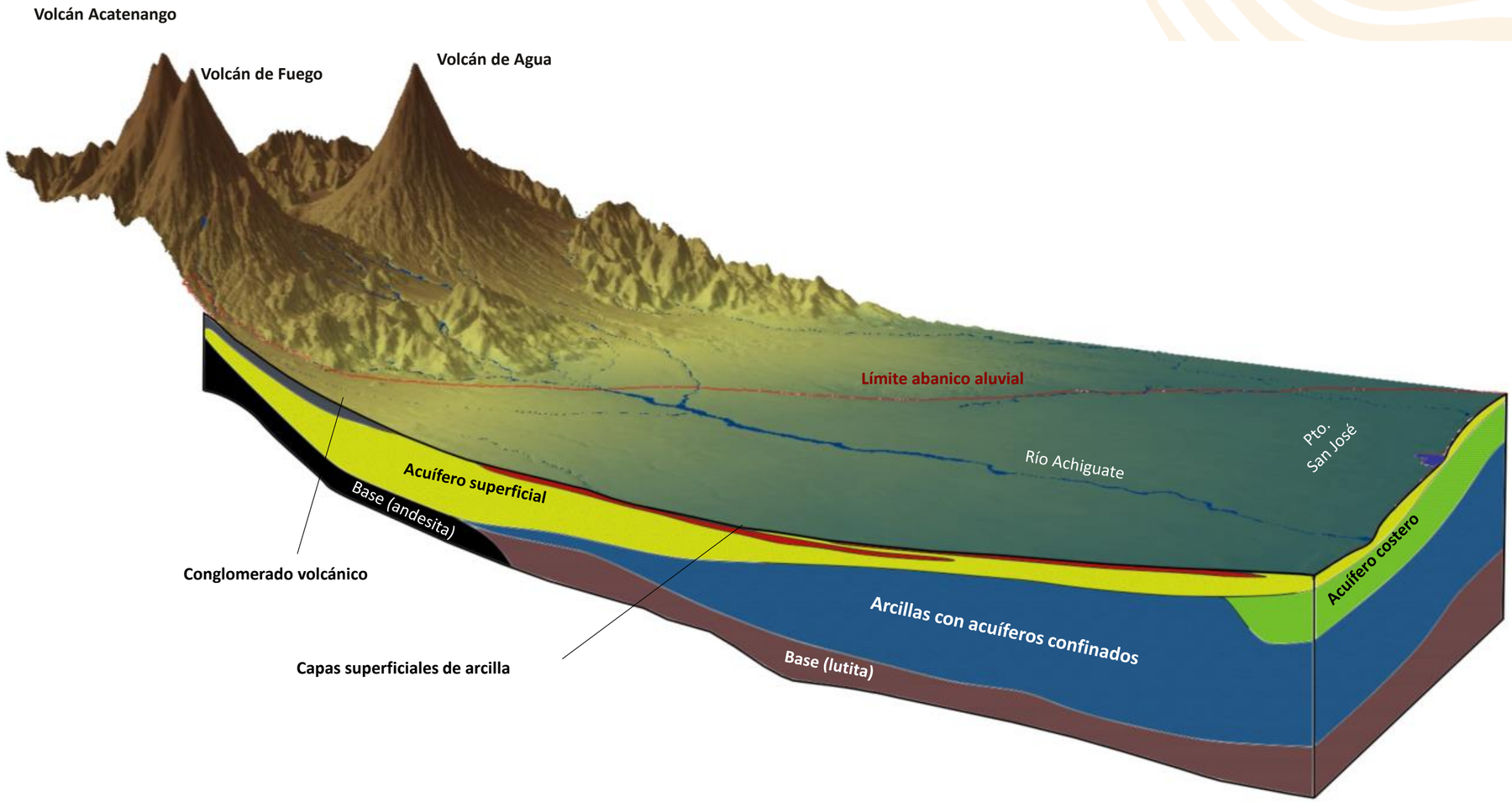
# Grounwater research in the sugarcane growing areas

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.

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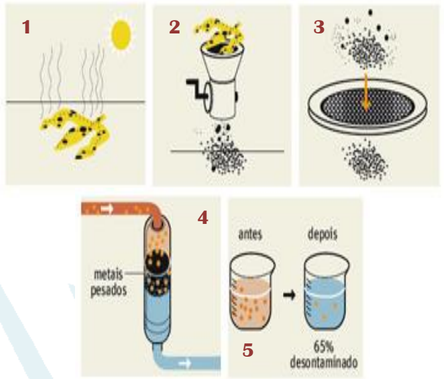
# Defining sustainable purification systems for communities: key during and after the COVID-19 pandemic


Ecofiltro
Fuente: Ecofiltro, 2017

Microfranquicia
Fuente: AguaVital,2020

Nanofilter
Fuente: GlobalGiving, 2016.




Cascara de platano
Fuente: Kumppers, 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

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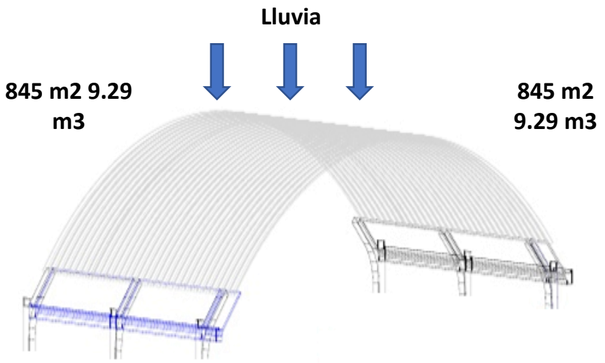
# Water research and actions to build resilience

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.

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