



# Rainwater harvesting projects in Central America

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# Fundación Solar, Guatemala



**ENERGÍA RENOVABLE  
LIMPIA POR NATURALEZA**

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# Who we are

Fundación Solar is a private development organization. It's born from the concern of a group of professionals, committed to Guatemala:

use of renewable energy, environment conservation, the strengthening of the local abilities and the base organization in rural communities,

Fundación Solar facilitates local development processes with gender equality and cultural pertinence, through:

- Promotion of the productive use of renewable energy
- Integrated water resource management (GIRH)
- Risk reduction management.
- Climate Change mitigation and adaptation..
- Governance, incidence and municipal strengthening.



## ENERGY PROGRAM

- “Renewable energy, green by nature”.
- Productive uses of renewable energy - dynamization of local economies and contributing to improve life quality.

Projects include:

- Community managed micro hydro power plants
- photovoltaic projects (on and off – grid),
- house illumination projects through biodigesters,
- energy efficiency (efficient cook stoves and bio gas)
- bio fuels

## Political incidence and Energy – related Regulation promotion

- Law for the Incentives for the generation with renewable energy
- Inclusion of the Renewable Energy Distributed generation,
- Analysis and divulgation of the National Energy Policy 2013-2027.

# Work Programs



# Work Programs



## WATER PROGRAM

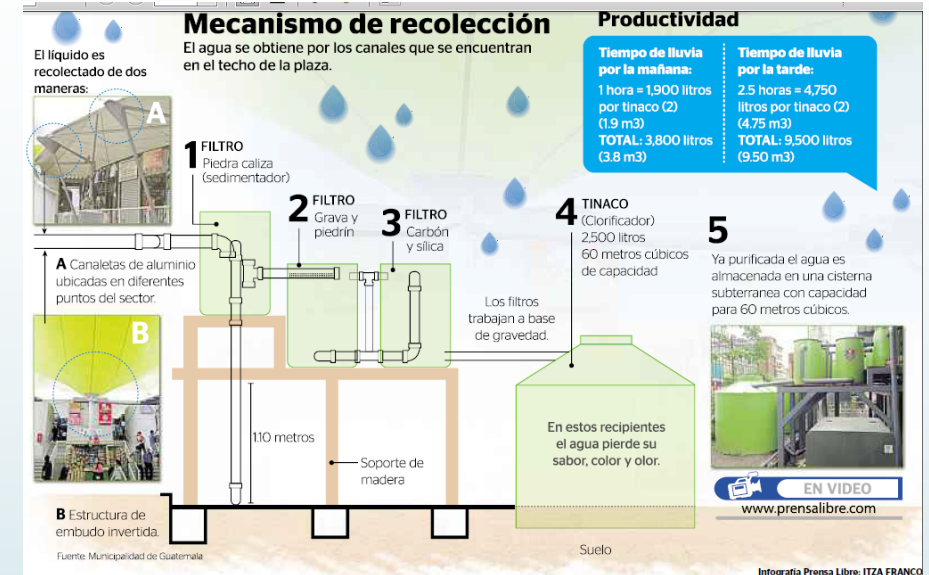
Its purpose is to contribute in **improving knowledge and abilities** of the end users, communities, public and politicians, in a way that it allows the improvement of the actual conditions of governance and water management, to a local, national, and regional level, thus contributing to water security.

- Promotion of the society participation and involvement (governance),
- Strengthening of the institutionality for the Integrated Water Resource Management (GIRH) on municipal commonwealths, municipalities, and organized people in strategic watersheds
- political incidence to promote processes.



# Facts about Rainwater harvesting in Guatemala

- No legal Framework surrounding the harvesting:
  - Municipality: Water use where the service is irregular or non existent (domestic)
  - Environment and Natural Resource Ministry and Other Joint-work programmes: Promote food security
  - No water law, however there are some regulations preventing from the profit and distribution of water



RWH systems in the urban (above) and rural (below) areas



# Facts about Rainwater harvesting in Guatemala

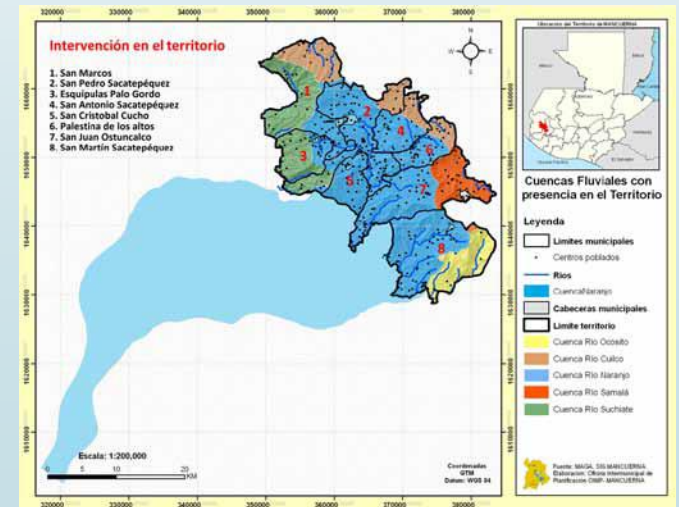
- ▶ **Successes:** Local abilities created, empowerment, sensibilization about proper water use and crops, climate change mitigation and adaptation activities.
- ▶ **Challenges:** High costs, poor divulgation until recently, no monitoring of the water availability and supply, in some cases no training at all causing the dismissal of the systems.



# Fundación Solar's RWH experience

## GIRH- (Integrated water resources management) 2000-2008

- Netherlands Embassy in Guatemala, MANCUERNA, Fundación Solar
- High Naranjo River Watershed Commonwealth (MANCUERNA, in Spanish)
- Result: "generated and established abilities through rain water harvesting demonstrative actions, potable water projects implementation, forest tree nursery projects, the construction of wastewater treatment plants, and the management or auto regulation of tariff systems"
- 88 concrete water tanks were installed– 10,000 liters each for agriculture
- 213 families directly benefit from 2500 liter water deposits
- Training: Water use, soil conservation, crop diversification
- Local abilities created and strengthened





# Fundación Solar's RWH experience

**Project: Rain Water Harvesting in peri-urban areas in Guatemala City, 2014.**

- **Joint work GWP – Guatemala, Guatemala City's Municipality, Fundación Solar, Neighborhood committees**
- RWH system for 2 public schools for sanitation purposes.
- 5 RWH for household use
- Peri-urban areas where the supply of this resource is irregular or non-existent.
- empowerment of teachers, students, parents, Unique Neighborhood Committees (CUB in Spanish), auxiliary Mayors, and the Guatemala City Municipality
- 300 families benefit indirectly



# Central America Projects

- ▶ **Guatemala, El Salvador, Nicaragua y Honduras**
- ▶ Spanish cooperation funds for water and sanitation
  - ▶ 7 municipalities
  - ▶ Dry corridor
  - ▶ Construction of concrete reservoirs for water storage, for use in schools and agriculture



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# RAINWATER HARVESTING IN PANAMA

## FACTS

- ▶ Average annual rainfall of 1800-2000 mm
- ▶ 90% of population has access to potable water
- ▶ There is 4 month of dry season
- ▶ Climate change effect: extend of dry season to 5 month
- ▶ Many rivers are polluted

## POLITICAL AND LEGAL FRAMEWORK

- ▶ There is a water law
- ▶ No policy framework for RWH
- ▶ Actual government is focus on provide water to the 100% of the population





## **PROJECT 2:** *Design of a compact rainwater harvesting for the semi-urban residential sector in Panama (toilet, laundry and irrigation)*

**Organization:** Technological University of Panama ([www.utp.ac.pa](http://www.utp.ac.pa))

**Type:** research

**Goal:** to design a compact rainwater harvesting that does not need a pump for distribution.

### **Results:**

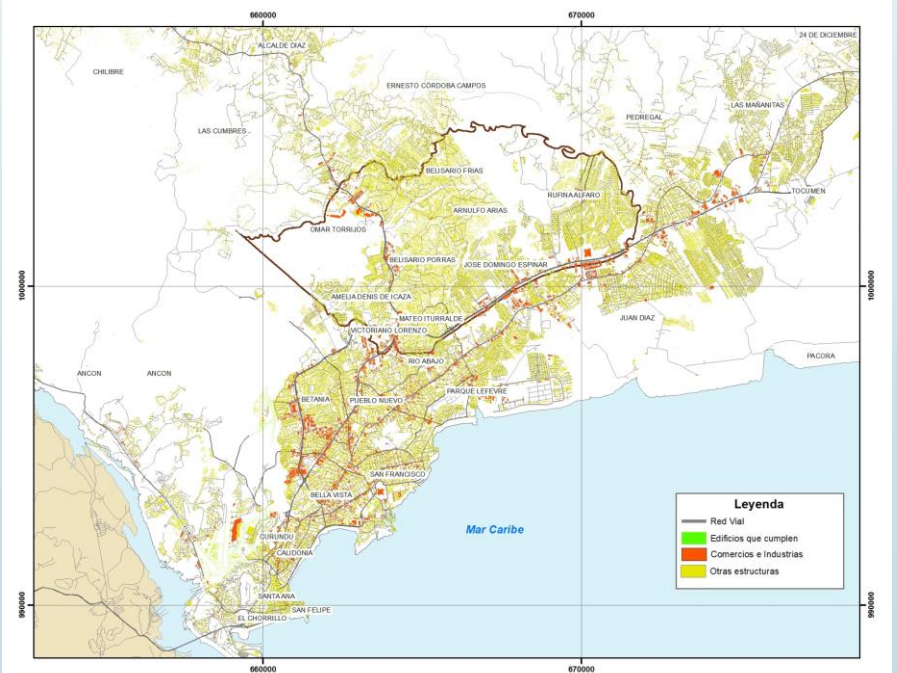
- tank size for daily use: 200 liter
- Use without adjust: laundry and irrigation
- Use with adjust: toilet





## ACTUAL PROJECTS:

- Economic feasibility study of implementing a rainwater harvesting system at urban level in the city of Panama as a **state policy**.
- Evaluation of the roofs area available on the industrial and commercial buildings in Panama City to harvest rainwater using **GIS (Arc Gis)**.



# Statal Project: RWH in rural schools

- **Organization:** Autoridad Nacional del Ambiente (National Authority of the Environment) ([www.anam.gob.pa](http://www.anam.gob.pa))
- **Type:** Development
- **Goal:** to implement RWH system in rural schools for hygienic and irrigation purpose





# Private Projects:

- Beach and Island hotels and residences
- Agropecuary sector





# Central America Projects

## ► Costa Rica

- Florida Bebidas. 10,000 liters system for an school
- Universidad Nacional de Costa Rica (UNA). Agricultural sector.  
[www.cedeme.una.ac.cr](http://www.cedeme.una.ac.cr)
  - Contact. Adolfo Salinas.  
[asalinas@una.ac.cr](mailto:asalinas@una.ac.cr)
- EARTH UNIVERSITY. Agricultural sector and buildings.  
<http://www.earth.ac.cr>



## CAPTACIÓN Y ALMACENAMIENTO DE AGUA DE LLUVIA

Opciones técnicas para la agricultura familiar en América Latina y el Caribe



- <http://www.fao.org/docrep/019/i3247s/i3247s.pdf>



THANK YOU!

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