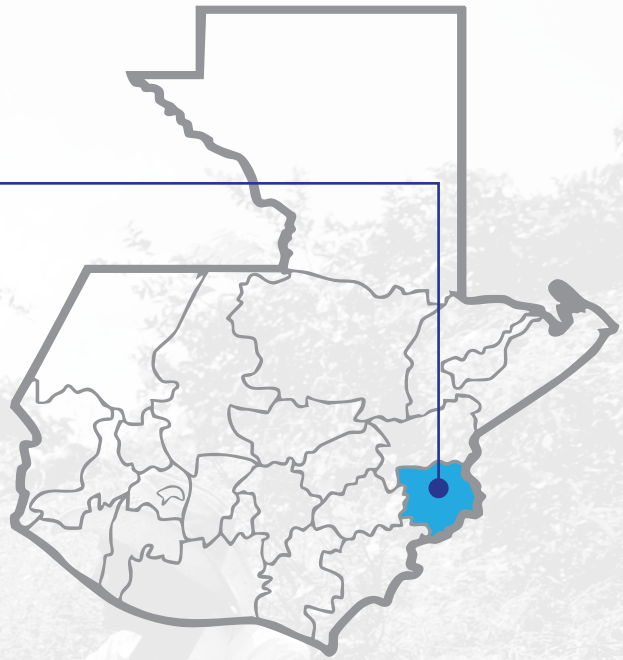
Authors: Martínez, Jesús; Borrayo, Andrea; Arce, Daniela; López, Claudia; Lemus, Alejandro; Martínez-Barón, Deissy.

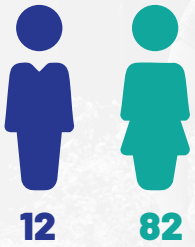
Putting Ecosystems at the Center of Adaptation through the Climate-smart Villages – CSV

Olopa, Guatemala



Communities:

- Chucte
- Cumbre
- Prensa Centro
- Rinconada Valle
- Nuevo



Implemented Practices:

ON-FARM

Practice	Quantity
Live barriers	65
Dead barriers	10
Irrigation channels	45
Terraces	19
On-farm reservoirs	1
Organic composting area	11
Total	**151**

IN HOME GARDEN

Practice	Cantidad
Rainwater harvesting	88
Water reservoir for fish farming	50
Sustainable Home Garden	71
Total	**209**

Main Climate Threats:

Lluvias intensas

Prolonged droughts

Results

Women's Empowerment

- Participation in economic decision -making increased from 35% in 2020 to 67% in 2024.
- Women's control over agricultural spending rose from 55% to 75%.

Food Security and Livelihoods

- 62% of women reported that most of their food comes from on-farm production (vs. 40% in the control group).
- Women's access to agricultural income increased from 20% to 50%.
- Agricultural income savings rose from 18% to 50%.

Access to and Use of Climate Information

- Up to 80% of farmers have access to climate information.
- Up to 80% of women reported being able to use agroclimatic information.

Climate Resilience and Sustainability

- Up to 70% of farmers perceive reduced climate vulnerability after implementing EbA/CSA practices.
- Up to 80% of farmers have made informed changes to cope with climate impacts.
- A 25% increase was observed in the diversification of productive systems on farms, including crops such as maize, beans, vegetables, forestry species, and some local varieties.

Soil Health (Organic Matter – OM)

- OM increased in coffee plots with irrigation channels, from 5.27% in 2022 to 5.96% in 2024, reflecting improvements in soil fertility and structure.
- Dead barriers in coffee also contributed to an increase from 1.9% in 2023 to 3.12% in 2024.

Greenhouse Gas (GHG) Emission Reduction

- Coffee plots using CSA practices reduced emissions by up to 38%.

Soil Moisture Retention

- Live barriers showed higher moisture retention (between 10–15%) during the dry season (March).
- Terraces stabilized moisture levels during the rainy months of June and August.
- Irrigation channels showed greater moisture retention (between 8–25%) during the dry season (December to February).

Participatory Scientific Trials in Beans

- Crops with organic and chemical fertilizers had similar yields (organic up to 2,000 kg/ha and chemical up to 2,100 kg/ha).
- All trials exceeded the national average bean productivity. ICTA Patriarca reached +250% above the national average, ICTA Chortí +247%, and SMN 97 +228%.