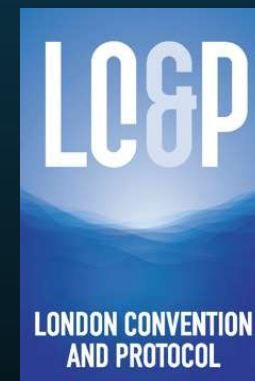




CLIMATE CHANGE IMPACTS AND OTHER ENVIRONMENTAL ISSUES IN GUATEMALA

SCIENCE DAY

Scientific Groups Meetings for the London Convention and Protocol 2025



Guatemala City

13 .March.2025

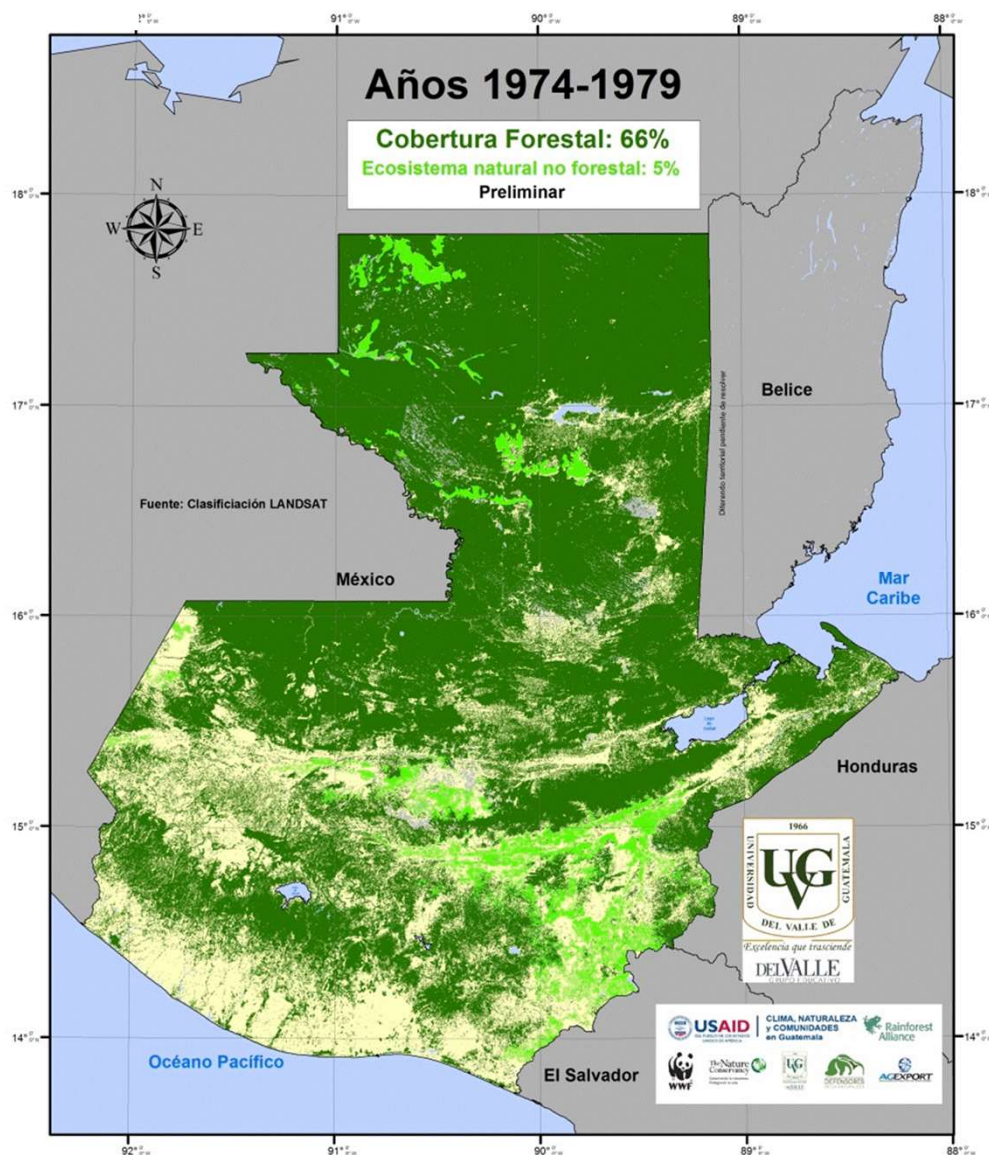
Dr. Edwin Castellanos
Vice Minister for Climate
Change

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Some Generalities about Guatemala

- Area: 108,889 km²
- Forests: 32%
Other natural ecosystems: 10%.
- 14 ecological life zones.
- Political Division: Departments (22) and Municipalities (334).
- Population: 18 million (2025). 50% Indigenous People.
Population growth: 1.3%.
- Largest economy in Central America, with average growth of 3.2% between 2014 and 2023.
- GPD per capita: \$5,763 (2023, World Bank).
- Poverty rate has been increasing: 51% in 2006, 54% in 2011 and 55% in 2023.
- Economy: remittances, agriculture (coffee, sugar, bananas), manufacturing (clothing), Minerals (silver, gold), oil.

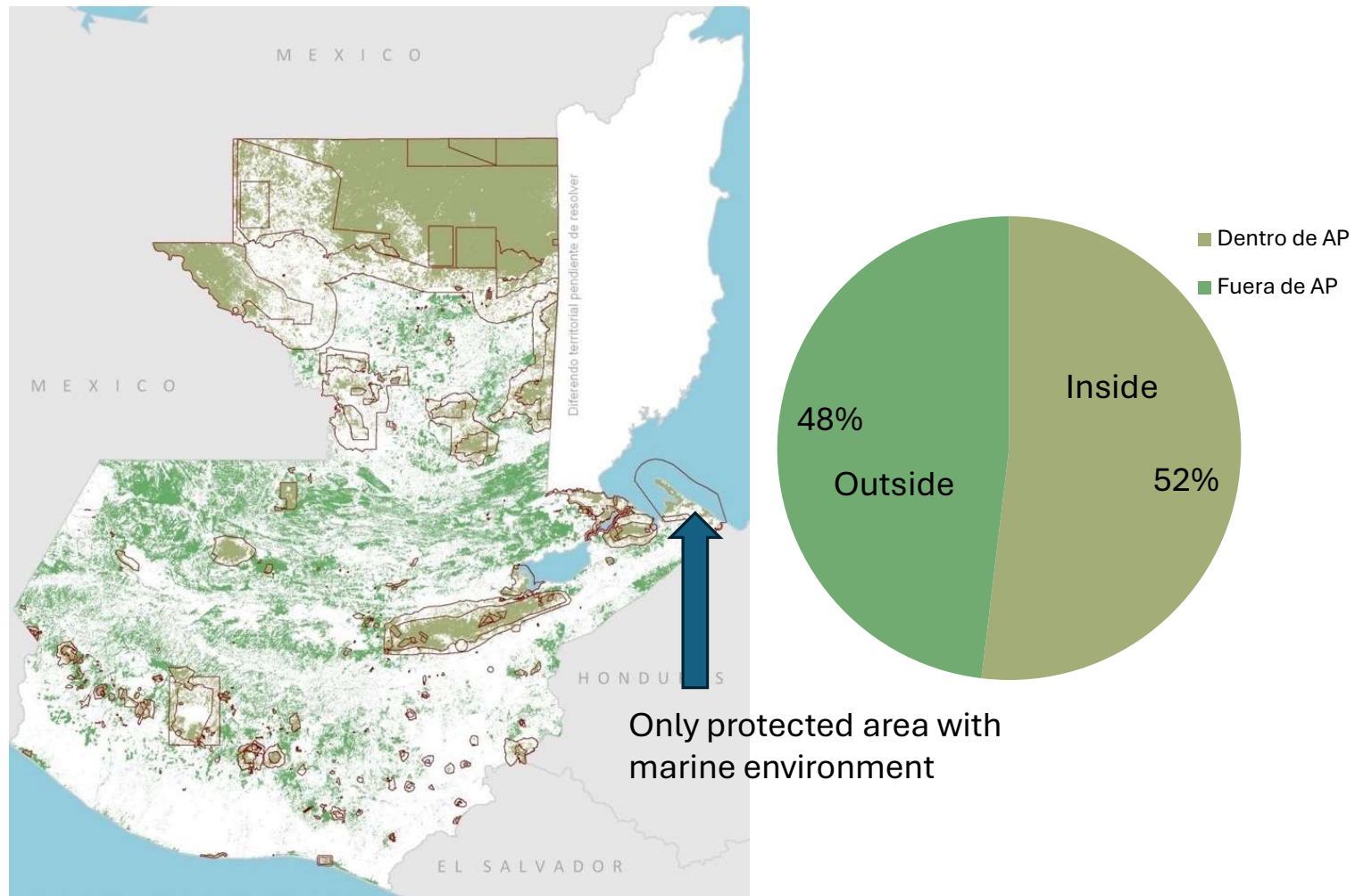




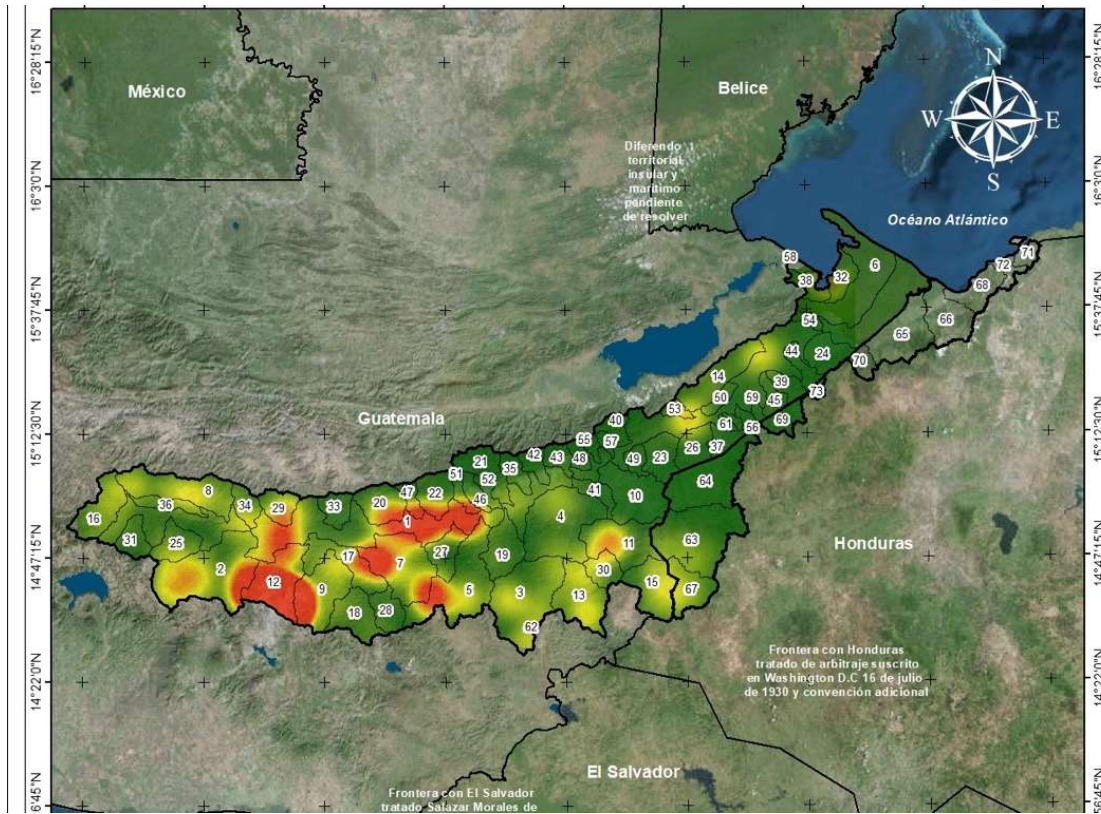
Forest cover dynamics:

Guatemala has lost half of its forests in the last 50 years, mostly in the northern lowlands of the country, an area mainly unpopulated in the 70's but purposely populated since then.

Proportion of forest inside and outside protected areas.

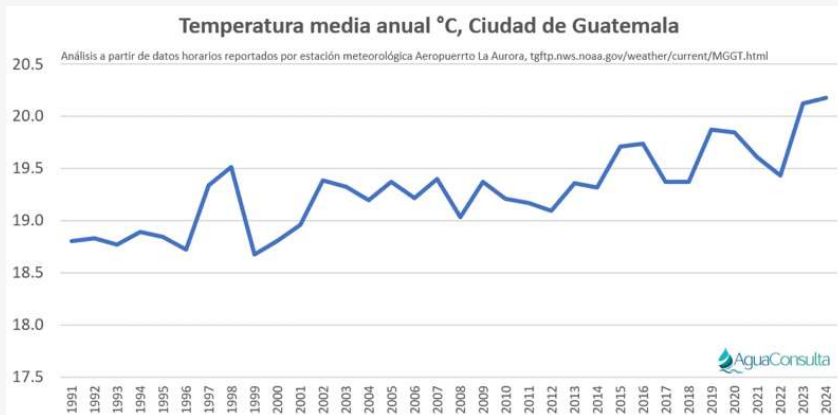


The largest river in Guatemala, Motagua, is now infamous for delivering an enormous amount of waste into the Caribbean Sea.

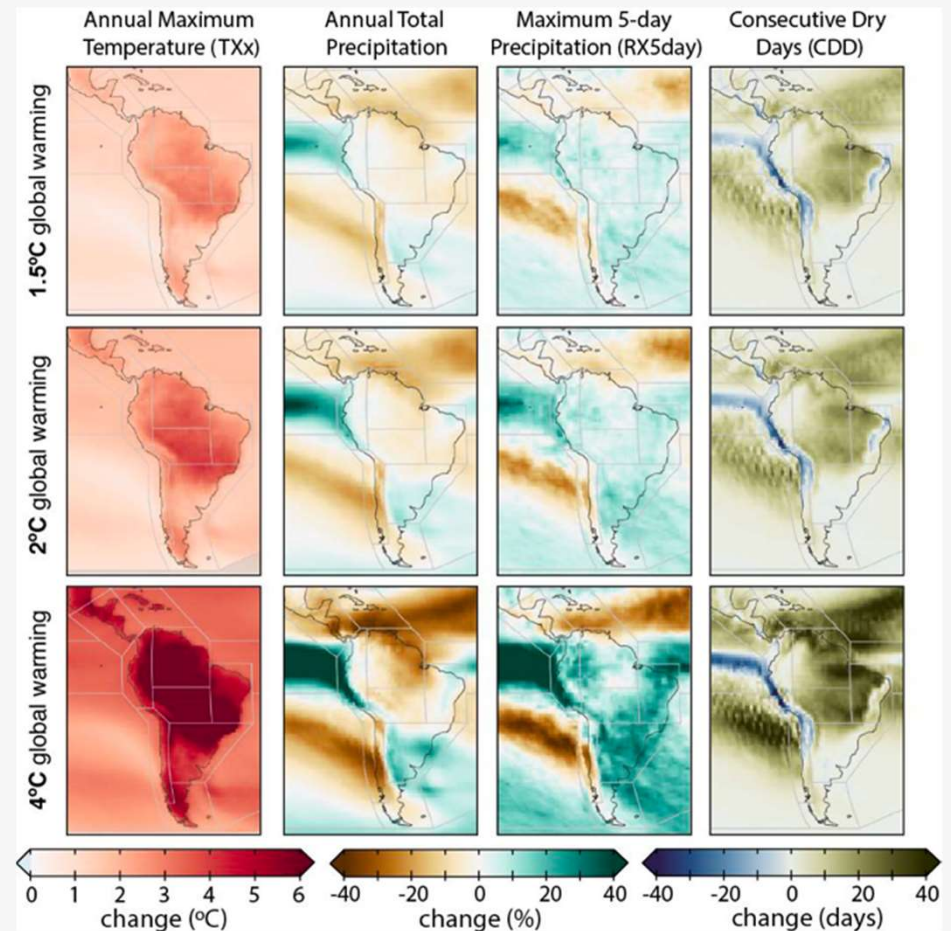


Climate change scenarios for the region

2024 was the hottest year on record for Guatemala City in the last century.



Increasing temperature results in the timing of rainy season and changes in the amount of rainfall



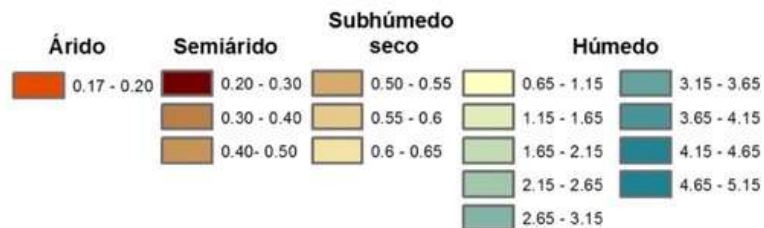
Aridity Index, RCP 4.5 scenario (Intermediate)

Baseline
1960-1990



2050

2070



Pons et al., 2018
(www.revistayuam.com)

High exposure and vulnerability arising from rapid population growth and high poverty levels.



Cyclones
1851-2009
Corrales, 2010



Cambray II buried in a landslide on October 1st, 2015
resulting in a death toll of 280 people.

Climate change is exacerbating socioeconomic vulnerability in Central America, a region with high levels of socioeconomic, ethnic and gender inequality, high rates of child and maternal mortality and morbidity, high levels of malnutrition and inadequate access to food and drinking water.

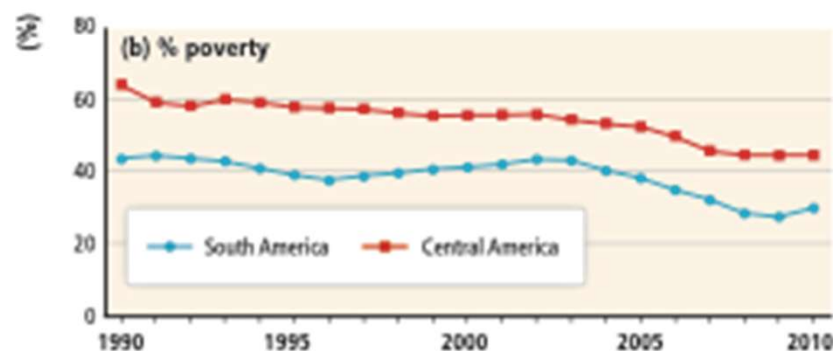


Figure 27-5 | Evolution of GDP per capita and poverty (income below US\$2 per day) from 1990–2010: Central and South America (US\$ per inhabitant at 2005 prices and percentages) (ECLAC, 2011c; 2012a).

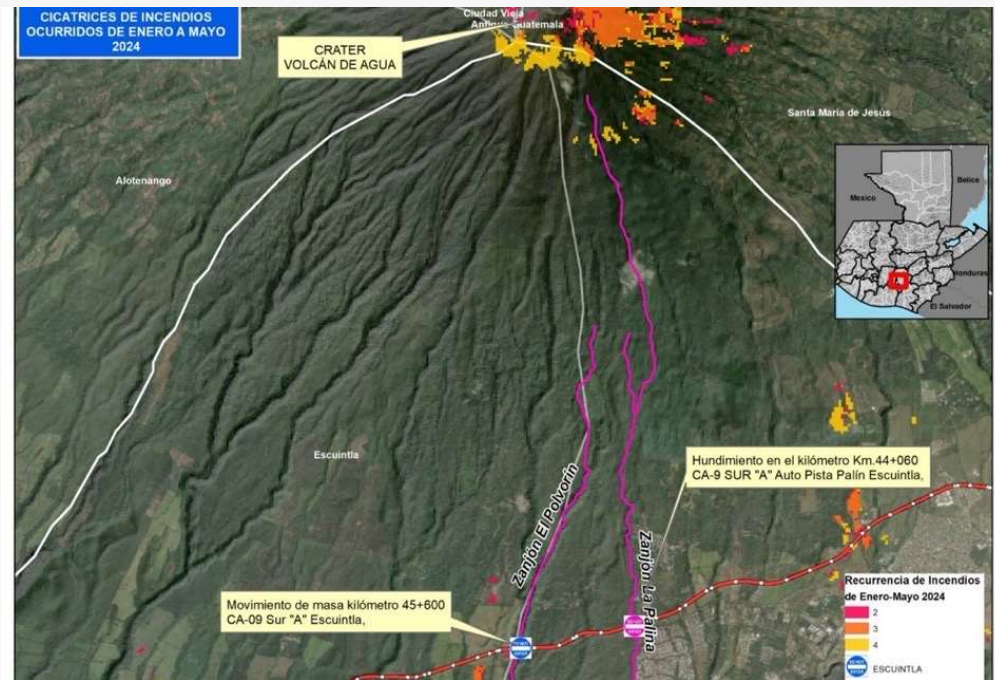
Chain effects of unusually dry and hot weather: dry season of 2024

Guatemala City, May 3rd, 2024



Low air quality from forest fires

Water Volcano, forest fires and mudslides



Opportunities and limitations to tackle climate change

- The development model prevalent in the region in recent decades has proven to be unsustainable, with the emphasis on financial sources based on natural resource depletion and extraction and the persistence and growing inequality.
- Social organization, participation, governance, education and communications to increase perception and knowledge are essential for building the resilience to adapt and overcome expected and unexpected climate impacts
- There is a basic understanding of the needs of the region in terms of adaptation. The limiting factors for implementation have been institutional weakness and financial constraints.
- Adaptation and the construction of resilience offer not only an opportunity to reduce climate change impacts but also an opportunity to reduce inequality and development gaps, to achieve dynamic economies and to regulate the sustainable use and transformation of the territory.



Ministerio de **Ambiente y Recursos Naturales**