Ocotepeque Landscape | Honduras

OCOTEPEQUE LANDSCAPE | OVERVIEW

Located in western Honduras, the department of Ocotepeque is a mountainous region with approximately 150,000 residents, and an elevation ranging from 640m to 2400m above sea level. The department has relatively dense forest cover, but is experiencing an increasing rate of deforestation due to agricultural expansion and urbanization. Agriculture is the primary economic activity and is driven by coffee due to favorable temperature and precipitation conditions. On average, 27,000 tons of coffee are produced each year. Ocotepeque also contains part of the Trifinio Biosphere Reserve, which aims to protect the region’s cloud forests and spans portions of Honduras, Guatemala, and El Salvador.

STRENGTHS

- The landscape has 57% forest cover, which is slightly above the national average (64%), and includes six nationally designated protected areas that encompass 14% of the Ocotepeque landscape. These protected areas contain endemic and endangered species habitats.
- 75% of the area above 1800m is forested. The national decree 87-87, states that areas above this altitude should be forested.
- The number of extreme events (rainfall) remained similar in the recent past (10 years) compared with longer period (30 years).
- The area is well suited for coffee production: in 2014 it produced approximately 1% of the national production. Honduras is one of the top 10 coffee producing countries, and continues to rise in the global production ranking.
- There are pockets of farmers who have been exposed to Climate Smart Agriculture (CSA) practices through existing programs and are open to implementing new practices.
- Farmers in the region have transitioned to three main coffee varieties which are resistant to coffee rust: Lempira, IHCAFE90 and Parenema, though some traditional varieties which are more susceptible to coffee rust (Plecia and Catuaí) remain. Honduras has received recognition and improved its standing globally because of improved coffee quality.
- There have been significant increases in access to public services in rural areas over the past decade including access to electricity and indoor plumbing.
- Access to technology (smartphones) is widespread through the landscape residents, which allows real-time data to be accessible to people in the field.

THREATS

- Over 90% of rural and 50% of urban households use firewood for cooking, illustrating a high dependence on natural resources.
- Although Ocotepeque has a low deforestation rate of 0.20% as compared to the global average, there is an increasing trend of deforestation observed since 2000.
- The carbon stock of the forest has decreased over 10 years which is an indication of forest degradation.
- Although an increase of extreme events has not been observed within the last ten years, there has been a decrease in rainfall during the summer months and an increase in the average monthly temperature. Changes in climate could impact the incidence of pests and disease, placing particular stress on vulnerable crop varieties.
- Coffee is the major driver of deforestation; 56% of deforested land is used to grow coffee.
- Increased demand for coffee could drive additional deforestation to higher altitudes as farmers expand their plantations in hopes to sell more coffee with higher quality specifications. Industry concern about deforestation could cause companies to shy away from buying products from Honduras.
- Population is highly dependent on coffee production for livelihood. This creates potential for increased vulnerability should the crop fail or the market crash.
- Coffee is highly dependent on climate, but there is a lack of historically accurate weather data available to support future decision making with confidence. Additionally, there is a lack of precise and accurate data on local soil and water.
- The population in Ocotepeque, as well as nationally, is becoming less rural. While the urban population increases at a rate of 17%/y, rural population growth rate is about 2%/y. This results in a decreased supply of rural laborers, which might pose a threat to coffee production.

KEY OBSERVATIONS

When considering the Ocotepeque landscape in its entirety there are several activities that promote sustainability in the region—mostly related to the conservation of critical natural capital—but there are also many opportunities for increased and improvement sustainability efforts. A few examples of possible interventions include:

Natural capital:
- Introduction of a more efficient cooking stove program to reduce dependency on firewood.
- Replantation of areas above 1800m and within 50m of rivers to improve compliance with national forest policies.
- Potential implementation of fire control or alternative management techniques to avoid uncontrolled burning of forests and mitigate risks to coffee production.

Production:
- Potential for programs to target youth to increase interest in coffee farming.
- Continued promotion of coffee farm renovation to optimize yields while reducing vulnerability to climate change due to traditional varieties.
- The use of technology (smartphones) to streamline the collection of information throughout the landscape, provides important data about the soil, water quantity, and water use.

Human well-being:
- Promote diversification opportunities for farmers to reduce income dependency on one crop.
**Landscape Assessment Framework (LAF)**

The LAF is an accessible framework for holistically assessing, measuring, monitoring, and communicating the sustainability of a landscape. It is important to note that the data used for this LAF is only suitable for a rapid assessment of the landscape as a whole, and may not be appropriate for decisions requiring fine scale measurements.

The LAF was applied in Ocotepeque to conduct an initial characterization of key indicators in the landscape and provide guidance to stakeholders interested in identifying sustainable investment needs. The Ocotepeque LAF considers three pillars of sustainability: natural capital, production, and human well-being.

The steps taken to develop the LAF include:

- A desk review of existing data
- The creation of an online dashboard to present initial findings
- A field visit to the landscape, which included interviews with local actors as well as ground truthing of satellite images
- An analysis of the landscape and the production presented in a summary card

For further information access: www.conservation.org/lat

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**Honduras**


**Ocotepeque**

**Natural Capital**

Forest cover of Ocotepeque 2016

Forest cover (2016) based on forest conservation legislation

- **Area 50m along rivers**
- **Area above 1,800 msl**

**Deforestation rate**

0.2% /yr is the deforestation rate of Ocotepeque. It is lower than both the national rate (0.69%) and the global average (0.65%), but it shows an increasing trend

**Rainfall and Temperature in July**

- **Barber’s Sheep Frog**
- **Holy Mt. Salamander**

**Percentage of endemic species’ habitats that are protected**

**Percentage of endemic species’ habitats that are forested**

Source: World Wildlife Fund

Source: Hanes/UMD /Google/USGS/NASA

**Production**

Post deforestation land use

Only about 5% of Ocotepeque’s land will become unsuitable for coffee production without adaptation. Nearly half of the land will require substantial adaptation efforts to production systems. The remaining half will be less affected and will only require incremental adaptation to improve the resilience of the system.

Satellite-based data shows a decrease in rainfall and an increase in temperatures in the last ten years, and this has been attested in interviews with farmers. No increase in frequency of extreme events was observed.

56% of the deforested land in Ocotepeque was converted to coffee farms, followed by annual crops and pasture (16% each). Coffee represents one third of agricultural production and approximately 3.5% of the GDP in Honduras (World Bank).

Ocotepeque produced approximately 1% of the nation’s coffee in 2014. Coffee production has risen exponentially since 1980. Because of the increased demand and lowered productivity of other plants, many farmers have chosen to expand to new areas that were not previously cultivated, clearing new lands, which is threatening the forests.

Source: IUCN (2011)

The landscape is home to the Holy Mountain salamander, classified as endangered by the IUCN mainly due to habitat loss. However, its remaining habitat in Ocotepeque is completely protected.

Source: NASA MODIS Active Fire

Source: Conservation International

Source: CAIT

Coffee production 2000-2013

- **Coffee**
- **Annual crop**
- **Pasture**
- **Other**

Source: NICO

Nationally, there has been an increase in population in urban areas. This is also the trend in Ocotepeque, though there remains a large rural population.

There has also been an increase in access to services in rural areas since 2001, including indoor plumbing and electricity.

According to the world bank, Honduras has a Human Development Index of 65.3%.

Source: World Bank, UNDP, IUCN, 2005

**Human Well-Being**