

# COFFEE PRODUCTION IN THE FACE OF CLIMATE CHANGE: PERU

## KEY PRODUCTION AREAS IN PERU<sup>(9)</sup>

Arabica  
 Key regions  
 Regions with minor production



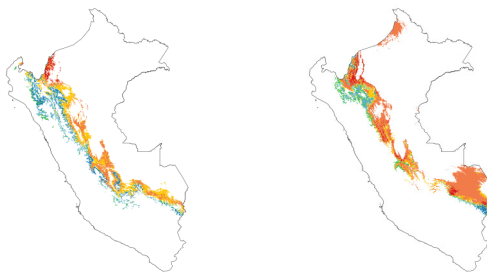
Over 60% of land cultivated with coffee is located in the regions of Cajamarca, Amazonas and San Martín.

<sup>(11)</sup> About 65% of Peru's coffee is produced here.<sup>(9)</sup>

Chanchamayo province in Junin region, is another important growing area, accounting for 16% of national production.<sup>(4)</sup>

### Arabica

### Robusta



- Suitability +

Changes in suitability between today and 2050 <sup>(15)</sup>

## OBSERVED AND PREDICTED EFFECTS OF CLIMATE CHANGE IN COFFEE PRODUCING AREAS <sup>(7,8,10,11,12)</sup>



### Rising Temperatures

- Temperature increases of 2-3°C and 4-6°C are projected for maximum and minimum temperatures respectively for 2050.



### Changing Rainfall

- Large uncertainty regarding the frequency and strength of El Niño and its effect on climate
- Precipitation is expected to increase 100-170 mm in the Andes, with more rain in the wet season by 2050.



### Changing Seasonality

- The number of dry months in the Andes is projected to increase from 1 to 2 months.



### Extreme Weather Events

- More frequent wet years related to El Niño events in the Andes.

## LIKELY IMPACTS OF CLIMATE CHANGE ON COFFEE PRODUCTION

### Predicted changes in coffee producing areas:

- A study <sup>(11)</sup> focusing on the northern key coffee regions indicates that:
  - Around 30% of coffee growing areas will remain suitable but would benefit from good agricultural practices to increase resilience.
  - Circa 15% of the current area will require systemic adaptation to remain viable, such as new varieties, adjustments in shade management, and investments in technology and infrastructure.
- Farmers in the remaining areas should reduce reliance on coffee as their main source of income or shift to other crops altogether. In particular, farms below 1,000 m will be affected.
  - Future suitable areas are found in the key production provinces, Cajamarca, Amazonas, and San Martín. Many of these areas are currently forested and protected areas.<sup>(11)</sup> Between 2001 and 2016 coffee was the main driver of deforestation <sup>(16,17)</sup>. If not managed well, upwards expansion of coffee will continue past deforestation trends.

## THE IMPORTANCE OF COFFEE IN THE PERUVIAN AGRICULTURAL SECTOR<sup>(1,2,3,4,5,6,14)</sup>

### Coffee production and export in 2017/2018

- Arabica: 258,000 tons
- Export: 230,000 tons as green beans
- Domestic consumption is low and mainly in the form of soluble coffee

### Area under coffee production

**Arabica**  
**385,000 ha**

### Farms

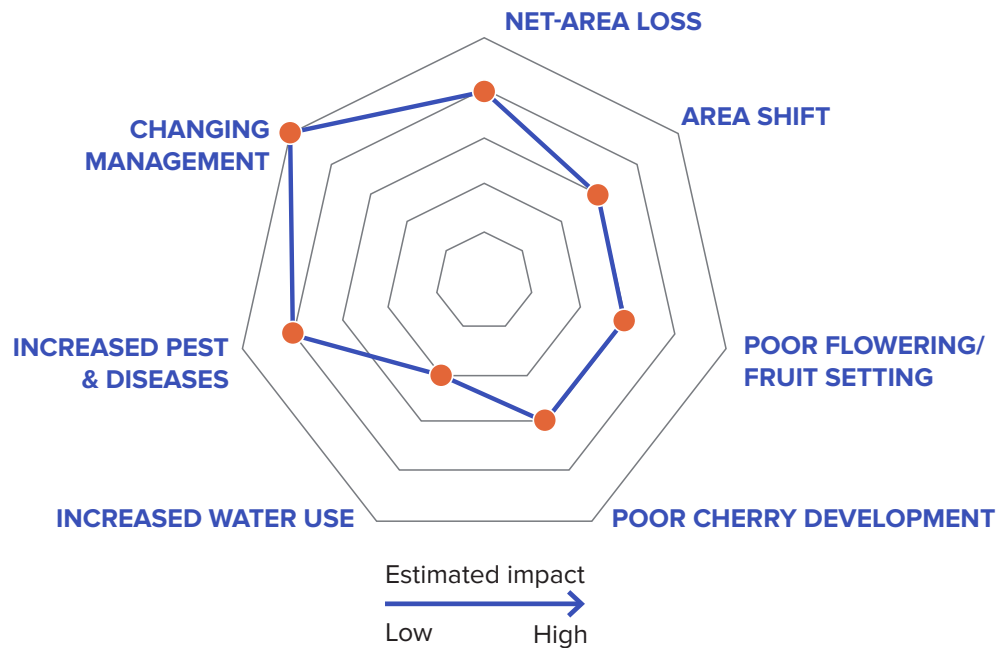
- About 60% of farmers are smallholders (132,000) with an average farm size of 2.3 ha

### Importance in the national economy

Coffee generates:

- 2.6% of export revenues (2011)
- 0.6% of gross domestic product
  - More than 850,000 jobs

## LIKELY IMPACTS OF CLIMATE CHANGE ON COFFEE PRODUCTION



- Peru is already highly water stressed. Glacial retreat caused by climate change is likely to decrease water availability further.<sup>(7)</sup> This may compromise the potential for irrigation or the production of washed coffee.
- The appearance of new pests (e.g. Red Spider Mite, Leaf Miner) and incidences of existing pests and diseases were already observed and are expected to increase.<sup>(11)</sup>
- Higher temperatures may accelerate growth without proper maturation of cherries leading to a reduction of quality.<sup>(11)</sup>
- The shift to more resistant varieties may result in lower cup quality.<sup>(11)</sup>

## PRODUCTION STANDARDS AND PRACTICES



### CERTIFIED PRODUCTION

- In 2015, certification by major standards (Fair Trade, Organic, 4C, UTZ, Rainforest Alliance) covered at least 150,000 ha, likely more.<sup>(13)</sup>
- 73% of the production is considered organic, but not certified.<sup>(5)</sup>
- In 2015/16, 17% of coffee exports were certified.<sup>(14)</sup>



### FARM PRACTICES

- Most coffee is shade-grown, with minor sun-grown production.<sup>(6)</sup>
- The main producers of organic coffee are farmers unable to purchase agro-chemicals.<sup>(2)</sup>
- Coffee is sun-dried and hulled on-farm.<sup>(4,5)</sup>
- At lower altitudes some farmers irrigate coffee.



### FARM ECONOMY

- Average yield: 0.7 tons/ha.<sup>(4)</sup>
- Labor constitutes 80% of production costs.<sup>(5)</sup>
- Organic fertilizer (guano from Peru) is cheaper in Peru than in many other countries.
- Price premiums for organic coffee are low ( $\leq 40$  USD/kg), not compensating for lower productivity.<sup>(4)</sup>
- Farmers receive 85% of the export price.<sup>(5)</sup>

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