

# Brewing Resilience: Exploring the Impact of Climate Change on the Tea Industry

Tea is one of the most widely consumed drinks around the globe, second only to water. Tea is an important global commodity and commercially grown in many parts of the world. Key tea growing regions span Asia, Africa, and South America. China is the world's largest tea-producing country, producing 2.8 million tons of tea annually and accounting for more than 43% of total global tea production<sup>1</sup>. Kenya and Malawi are Africa's largest tea producers and exporters, together accounting for about 27% of global tea trade<sup>2</sup>.

## Why is tea important?

The tea industry plays an important role in the economies of the key growing regions, providing the main income source for millions of tea farmers, including women and vulnerable communities. It is an important tax revenue source for local governments and plays a key role in the sustainable development of rural areas. In addition to its economic benefits, tea production can benefit ecological and social systems, through sustaining carbon sequestration, soil fertility, and water conservation.



## What is tea?

The tea plant is an evergreen, perennial bush that flourishes in tropical, subtropical, and temperate regions. It has a long-life cycle, living for around 80 years. Most types of tea originate from two varieties of the same plant (*Camellia sinensis*), with different types of tea produced by a range of processing techniques.



## How does climate change impact tea?



- Both the quality and quantity of tea production are sensitive to climate conditions, including the effects of changing temperature and rainfall patterns, extreme weather, and climate events such as heavy rainfall and drought, as well as changes in the distribution of pests and diseases.
- The longevity of tea plants means that investments and other important decisions for the tea industry need to be made today to address climate variability, but also on longer timescales to adapt to future changes in climate.

Understanding how changes over seasonal timescales through to decadal changes in climate influence tea production is an active area of research. Climate services that provide tailored sectoral climate information to stakeholders in the tea growing industry are essential to help people prepare for and adapt to the risks that human-induced climate change poses to the sector.

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## How is the Met Office collaborating with partners to support the tea growing industry?

### CSSP China – Tea-CUP

- As part of the Climate Science for Service Partnership China (CSSP China), the Met Office are collaborating with scientists at the Institute of Atmospheric Physics (IAP) and Yunnan University of Finance and Economics.
- In the Tea-CUP project (Co-developing Useful Predictions), scientists have been engaging with tea experts and local farmers in Yunnan Province to understand what seasonal and climate information would help to inform their business decisions.
- The project team have used the discussions to help them focus on how specific rainfall measures impact tea growth, quality and price, and the findings are being used to investigate whether there is seasonal forecast skill in predicting these metrics in tea-growing areas. This information could enable tea growers to plan for the coming months as well as adapt to future climate scenarios.



### Future Climate for Africa programme – Cl4Tea



- In the Climate Information for Resilient Tea Production (Cl4Tea) project (part of the Future Climate for Africa programme) led by the University of Leeds, Met Office scientists developed a new methodology for producing site-specific climate change information. This has been co-produced through iterative engagement with tea sector stakeholders in western Kenya and southern Malawi to understand their climate information needs.
- Cl4Tea aims to enhance the long-term sustainability of the tea sector in Kenya and Malawi by providing tailored climate information that is generated in a collaborative way to ensure stakeholders can usefully incorporate this within their climate adaptation decision making.
- Using the co-developed site-specific information, Cl4Tea showed that 9 study locations in western Kenya are at risk of large changes in tea crop sensitive metrics such as increased number of heatwave days, and a reduced number of cold nights by the 2050s compared to the present climate (2020s)<sup>2</sup>.

### The UK Tea Industry

Scientists are currently exploring how climate information can benefit the developing tea industry in the UK. Climate change could have the potential to influence the ability to achieve a sustainable tea yield in tea growing areas across the region.

**If you grow tea in the UK and are interested in finding out more, please contact: [stacey.new@metoffice.gov.uk](mailto:stacey.new@metoffice.gov.uk).**

Building climate resilience in the agriculture sector is vital for ensuring food security and protecting livelihoods all over the world. The Met Office together with international partners are working to provide shorter-term seasonal information and longer-term climate information that is tailored to meet the needs of tea producers. This will inform adaptation decisions and investments made today and help strengthen the resilience of the tea industry to climate change.