Going Bananas: how climate change threatens the world's favourite fruit

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Cover: Amelia with her daughter Yakelin 4, standing beside their dying banana plant. Credit: Amy Sheppey/Christian Aid

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Christian Aid exists to create a world where everyone can live a full life, free from poverty. We are a global movement of people, churches and local organisations who passionately champion dignity, equality and justice worldwide. We are the change makers, the peacemakers, the mighty of heart.

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Executive summary

Bananas are the world's most consumed fruit[1] and the fourth most important food crop globally, in terms of production volume after the usual suspects wheat, rice and maize[2]. In fact, more than 400 million people rely on them for 15 to 27% of their daily calories. And yet this vital crop is under threat from climate change in some of its key growing regions, posing a risk to global supply.

Christian Aid works with banana growers in Guatemala who are finding that climate change is destroying their once hardy banana plants. One grower, Aurelia, says: "The banana crops are dying off. The trees are folding down and dying. In the past there was a prediction that this would happen in the future, but it has come earlier, and this is because we are not taking care of our motherland, our ecosystems, and this is very worrying for our kids and especially for our grandkids. What is uncertain, is perhaps this situation is going to worsen in the future and we lose this whole plantation. This is going to be a huge issue for me."

Most exported bananas are a single variety, the Cavendish, chosen for its high yield. However, this lack of genetic variation within the banana supply makes the crop vulnerable. Europe and the US rely on Latin America for its banana supply with that region set to be particularly impacted with climate change causing a 60% reduction in the area suitable for export banana production by 2080. By 2050, countries like India and Brazil are expected to see declining yield due to climate change with key exporters like Colombia and Costa Rica also being affected.

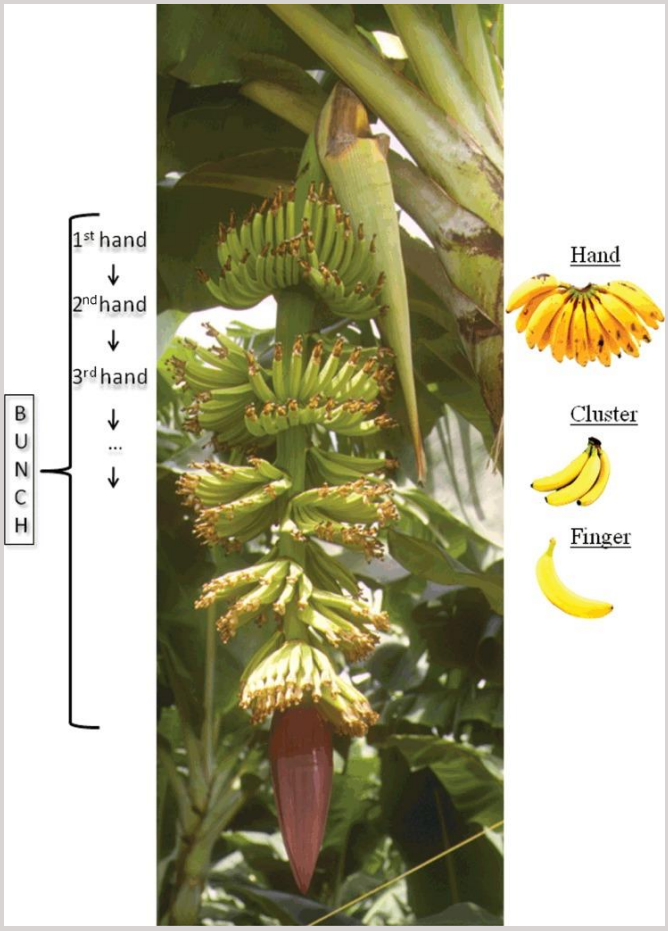
As well as growing conditions and extreme weather directly harming the growing conditions for bananas they also contribute to the spread of fungal diseases. Black Leaf Fungus can reduce the ability of banana plants to photosynthesize by 80% and thrives in wet conditions making bananas at risk from erratic rainfall and flooding. Another fungal affliction, Panama disease, or Fusarium Tropical Race 4 as its known, has been found around the world in recent years and is spread through the soil. Once infection of the soil has occurred, then Cavendish bananas can no longer be grown there.

To protect the livelihoods of banana growers, most of whom have done nothing to cause the climate crisis, Christian Aid is urging governments to use the latest submission new national climate plans under the Paris Agreement, known as NDCs, to reduce emissions driving the threat to bananas. We also call for rich countries, whose current and historic emissions are driving the climate crisis, to commit to paying their fair share of climate finance to developing countries to help them adapt to these changed conditions.

Bananas: An introduction

In Europe and North America, the average individual eats about 12 kilograms of bananas each year, in comparison with many people in Africa and Asia who consume that much of the fruit in a month[3]. Only around 20% of the fruit were grown for export in 2020[4]. While this is still a valuable export market for many countries, it underscores the importance of bananas in the diets of those more local to where they were produced.

Large hard seeds. Source: https://en.wikipedia.org/wiki/File:Inside_a_wild-type_banana.jpg



Source: https://www.researchgate.net/figure/Organisation-of-a-banana-bunch_fig2_225303755

Western markets tend to import a variety of banana known as the Cavendish[5], because of its resistance to banana-killing fungal diseases, long shelf life and high yields[6]. This cultivar has those advantages, but has been propagated by cloning. This means every banana is genetically identical, and this lack of genetic diversity poses a threat to emerging disease, as natural selection cannot act to allow the survival and spread of resistant genomes. In fact, the rise of the Cavendish banana is a result of a previous fungal disease, that wiped out a variety known as the Gros Michel that was the standard export banana until the 1950s[7].

In some parts of the world, including in some small island states and African countries, bananas are not just a nice-to-have tasty addition to a varied diet, but serve as a staple food source. In Uganda, the local word for bananas – matooke – means food[8]. Bananas have the advantage of being non-seasonal and therefore available all year round, allowing them to bridge gaps between other food crops' harvests[9].

As well as being a food staple in many countries, banana trade has significant economic value for some countries and more than one million workers were employed in the export banana sector in 2020[10]. The banana export market is largely dominated by several large corporates: ChiquitaFyffes, Dole Food Company, and Fresh Del Monte Produce which together controlled around 80% of the world's banana sales in 2014[11].

Bananas, like all plants, have favoured environmental growing conditions. Their sensitivity to water shortages means that some areas will become decreasingly suitable for banana production. Because bananas' leaves split and fold over during high winds, they are also vulnerable to storms.

The lack of genetic diversity in commercial production makes bananas susceptible to indirect climate impacts, including through diseases.

Left to right: plantain, red banana, apple banana, and Cavendish banana.

Source: https://en.wikipedia.org/wiki/Banana

Bananas are an important crop globally, as a staple food in many countries, and as an important part of diets more widely. But banana production faces threats directly from the changing climate, and indirectly, from the impacts that climate is wreaking on the biosphere, both increasing the risks of fungal diseases. In this report, we explore the global banana market, and how climate change is impacting banana production, both directly through climate impacts and indirectly through increased disease risk. We explore some social and environmental impacts of intensive banana production, then look at four country case studies: India, Costa Rica, Guatemala and Tanzania. We then outline policy recommendations to help banana growers meet the new and increasing challenges posed by climate change.

Bananas in a changing climate

Bananas are grown well in temperatures ranging between 15-35ºC and in high humidity of 75-85%: these conditions are generally found between 30º North and South of the equator[12]. Bananas prefer growing in lower elevations: higher elevations require specialist varieties. The plants can be susceptible to cold: below 12ºC can cause chilling injuries, while plant growth stops above 38ºC. High winds, above 80km/hr, physically damage the plants by shredding the leaves or by folding them over; both make them less able to effectively photosynthesize[13]. Although bananas like heat, they are very sensitive to water shortages[14]. The changing climate therefore has implications for where bananas can find it tolerable to grow, both through extreme weather events, such as heat waves, and longer-term climatic changes, such as increased average temperatures.

Key temperature parameters for banana growth

Temperature (°C)	Effect of temperature on banana growth
47	Thermal danger point, leaves die
38	Growth stops
34	Physiological heat stress starts
27	Optimum mean temperature for productivity
13	Minimum mean temperature for growth, field chilling
6	Leaf chlorophyll destruction
0	Frost damage, leaves die

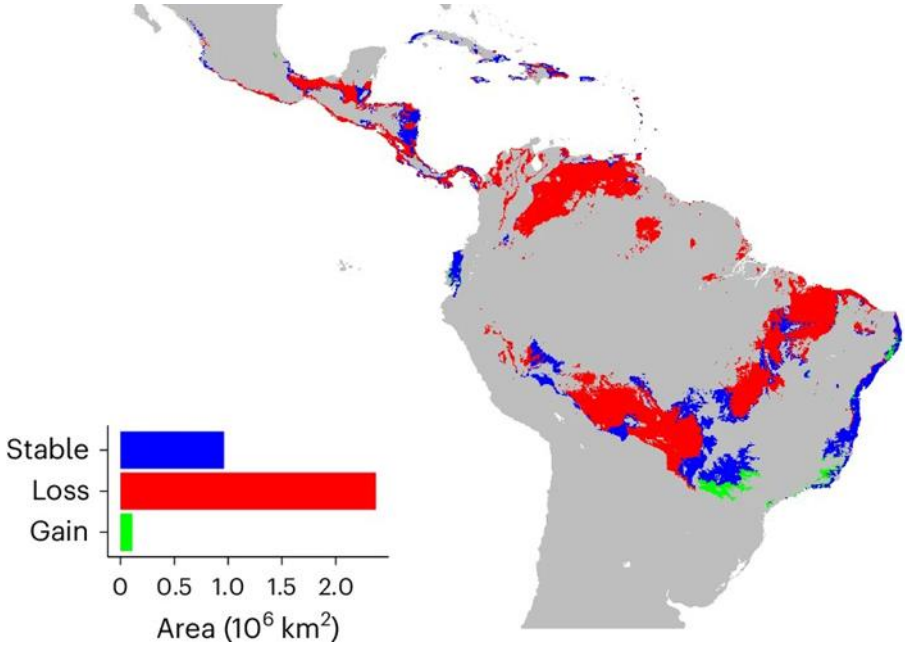
Source: FAO Climate change and food systems: global assessments and implications for food security and trade. Food Agriculture Organization of the United Nations 2015 available at: https://reliefweb.int/report/world/climate-change-and-food-systems-global-assessments-and-implications-food-security-and

Banana production has also been in decline in recent years, a change conditionally attributed to extreme weather events including droughts, floods and storms, as well as the increasing difficulties with pests and plant diseases[15].

Direct impacts: climatic conditions

Recent research has found that soil and socio-economic factors are important in the resilience of banana production to climate change. Rising temperatures, coupled with requirements for labour and export infrastructure, will result in a 60% reduction in the area suitable for export banana production, along with yield declines in most current banana producing areas within Latin America and the Caribbean. This region is responsible for around 80% of global banana exports[16].

This has been echoed by other research that has shown that by 2050, countries like India and Brazil are expected to see declining yield due to climate change with key exporters like Colombia and Costa Rica also affected.[17]



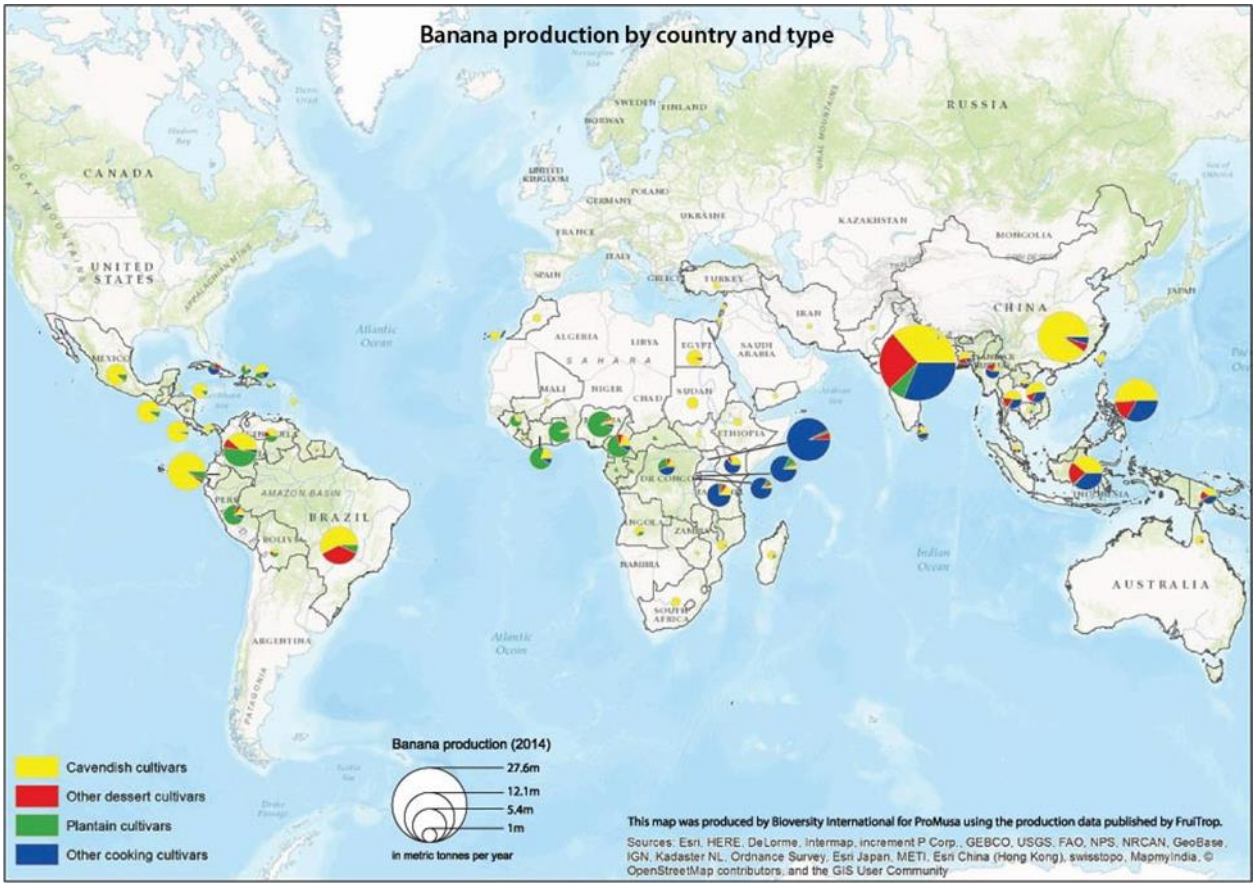
"Suitability based on climatic and edaphic [soil] factors. The green areas are currently unsuitable (suboptimal) but will become suitable (optimal) in the future; the red areas are currently suitable but will become unsuitable. The blue areas will remain suitable." https://www.nature.com/articles/s43016-025-01130-1/figures/4[1]

Extreme weather events impact banana production in a variety of ways. Banana plants are sensitive to water shortages whilst flooding can also be a problem for banana production[18], not least because of the resulting erosion of the rich soils the plants need[19].

Overall, there is a need to invest in adaptation if the banana industry is going to adapt to climate change. Increasing irrigation and better managing water more generally in drier areas could be an option, unless water is severely constrained. Investing in research into new, more heat- and drought-tolerant varieties, rather than relying so heavily on the Cavendish variety, could help improve resilience, and changing cropping systems away from pesticide-hungry monocultures.

Indirect Impacts: disease

Bananas are vulnerable to indirect climate change impacts, as well as by direct weather and climatic impacts. Fungal and other diseases are increasingly thriving in hot, wet conditions resulting from climate change and are contributing to reducing banana productivity overall. This general increased risk is enhanced for Cavendish bananas, because this commercial crop, about half of all bananas grown[20], comes from cloned banana plants[21]. This means that they have no genetic diversity which would allow individual plants with genes that allow them to adapt to changing conditions to become more prevalent in the population. In fact, the current reliance on the Cavendish banana for exports is a result of the global collapse of the Gros Michel variety that had previously been the mainstay of production, but which, also as clones, became susceptible to an invading soil fungus[22], Panama disease tropical race 1, TR1, (also known as Fusarium wilt, caused by *Fusarium oxysporum f.sp. cubense*). Since the land could no longer be used for bananas, the farmers were forced to burn the plants and relocate[23]



shows areas where vulnerability may be greatest because of the low genetic diversity of the high levels of Cavendish banana cultivation. Source: http://www.promusa.org/display3123

Bananas are susceptible to a variety of fungal diseases. Panama disease has returned in a new reincarnation, known as TR4, which has already spread from the Middle East through Southeast Asia, India, and Africa[24]. In 2019 it was detected in Colombia, in 2021 in Peru and in 2023 in Venezuela[25]. Like the earlier TR1 version of the fungus, TR4 is spread through the soil and so once infection of the soil has occurred, then Cavendish bananas can no longer be grown there[26]. Since this fungus is soil-based, flooding can also help it to claim new territory: in one 2023 example, growers in Australia's far north Queensland, the source of 90% of the country's bananas, were put on alert to this risk[27]. Increasing climate variability leading to more extreme rainfall can enhance this risk in other already-infected parts of the world also.

Another fungal disease is causing concern in the world of bananas. Black leaf streak fungus (BLS) infects the leaves, making them less able to photosynthesize. It can result in yield decreases of up to 80%[28]. BLS enjoys the wet conditions of the rainy periods[29], and the fungus evolves at a rate that is temperature-determined, and germination of the asexual spores is optimal at 27°C and maxes out at 36°C[30]. With climate change, the seasons of increased risk of infection from this fungus are unlikely to change, but the disease may become more aggressive[31].

Production: social and environmental impacts

The majority of bananas are grown in monocultures with little genetic biodiversity, leading to commercial banana plantations becoming heavily reliant on fossil-fuel based agrochecmicals. The fossil-fuel based emissions contribute further to climate change in a viscous circle.

As well as workers being exposed, communities surrounding these banana plantations suffer the consequences of these chemicals which pollute the air and water. They face increased risks of neurobehavioral effects, including learning disabilities and increased rates of autism and ADHD[32].

One approach to reducing the environmental and social impacts of banana production has been shown through the Fairtrade approach. Fairtrade bananas are grown by smaller-scale farmer organizations or plantations that meet the Fairtrade social, environmental and economic standards. Among other benefits, producers receive the Fairtrade Minimum Price for their bananas, which helps support financial planning and familial sustainability. Small-scale farmers, particularly those practicing agroecology, tend diversify on their farms, avoid chemical fertilizers and improve biodiversity – all of which help to withstand impacts of climate change. By selling Fairtrade bananas, producers also earn the Fairtrade Premium, an extra sum of money that farmers and workers invest in areas such as farming improvements and community initiatives of their choice. In 2024, sales of Fairtrade bananas in the UK alone generated over £9.3 million in Fairtrade Premium.

Country case studies

India

Despite being the world's biggest producer, India is not a major banana exporter, ranking only 12th, at US$2.52 million, by dollar value worth[33]. Tamil Nadu, in the south, has the highest land area under banana production overall, but Maharashtra has the highest productivity, as it specialized in monocultures of Cavendish bananas, with higher density planting and use of irrigation. More than 20 varieties of banana are grown in India[34]. This is because bananas are grown in a variety of climates from the humid tropics to the dry temperate subtropics[35] and different varieties cope with the different conditions. In India, bananas account for around 20% of the total land area for crop cultivation[36].

Most of India's banana crop is for domestic consumption: banana puree is used in dairy products, baked goods and baby food and plantains can be dried into chips. Wine can also be made from the fruit. Bananas are available year-round, are affordable and nutritious, while the fibre is used to make bags, rope and paper[37].

But this Indian staple is under threat from climate impacts in the nearer term, with extreme weather events, and the longer term through increasing temperatures and changes to the monsoon season increasingly impacting the country. In India's central belt, including banana-exporting Maharashtra, extreme rainfall events have increased threefold since around 1950, but with an overall decline in annual rainfall[38]. One study warned that banana yield reductions could be in decline by 2050 unless adaptive action is taken to help prepare growers for the coming changes[39]. This would adversely impact the ~43% of the population dependent on agriculture for their employment. As of 2018, already 14% of the population was undernourished[40]. Indirect climate-related impacts are also being felt. India's bananas are under threat from fungal diseases like the Panama disease, and banana weevils are also a problem for reducing yields. Climate change impacts, including increased weather variability and increased successes of pathogens and pests, imperiling banana and other food production will not help reverse existing undernutrition challenges the country faces.

Adaptation is not out of the question, and adopting new technologies, such as drip irrigation may help to smooth rainfall variability, but only as far as water shortages have not led to wider regional drought. Development of infrastructure, such as improved storage and transportation, should help to get more bananas to their markets, whether international or domestic. Another approach would be to look at ways to make banana growing more sustainable, through organic methods and overall reduction in pesticide use. Reduction in pesticide use can have social as well as environmental co-benefits: between 1995 and 2015, 442,918 people died by suicide using pesticides[41].

Costa Rica

Costa Rica is the world's third largest exporter of bananas by dollar worth, earning US$1.19bn in 2023[42]. Along with coffee and cocoa, they are the country's three most important agricultural exports[43]. Bananas are vital to the country's rural economy, and the industry accounts for over 100,000 jobs[44], 28,000 on the plantations[45], in an overall population of around 5.1 million people[46].

Costa Rica's banana industry came about through growing demand for bananas in the US through the marketing of the Boston Fruit Company, coupled with a railway-building entrepreneur who experimented with growing bananas along the railway[47] and on some of the 324,000ha (800,000 acres) that he was granted

by the Costa Rican government in exchange for funding the national debt[48]. Once food for the railway workers (who died in the thousands to create this route for coffee exports), the bananas could be transported to Costa Rica's Caribbean coast by rail, and so on to the US. The two companies merged to create the United Fruit Company, which having established a base in Costa Rica, expanded banana plantations into Guatemala[49], manipulating the governments to allow its access into the rainforests which the company cleared[50]. It thereby transformed biodiverse rainforests into low biodiversity banana plantations, releasing the stored carbon of the forests as a result. United Fruit has become today's banana giant corporate, Chiquita.

The big corporate, high intensity nature of the Costa Rican exporting plantations is reflected in both the large-scale growth of monoculture Cavendish varieties[51] and the high level of agrochemical use – to the detriment of workers and the environment, despite Costa Rica's well-marketed image as a country that offers a *pura vida* (a pure way of living life). At Chiquita's Tayrona plantation, herbicides are used to clear the land: nothing is born after they are applied. Once the bananas have been planted, three different types of nematicide are applied. Then there's aerial fumigation of the plantations with fungicides to discourage black sigatoka as well as other insecticides. And if that wasn't enough, the bananas are covered in chemical fumigation bags. Eight or nine different pesticides are used on each crop each year and many of the chemicals Costa Rica permits are banned in the EU and US[52]. On Costa Rica's 40,000ha of banana monoculture, 75kg of pesticides are applied per hectare per year[53] and use has been growing across the decades to try and combat growing pest resistance[54]. Approximately 25,000kg (49600lbs) of pesticides are secreted into Costa Rica's biodiverse natural environment each year from the use of banana bags alone[55].

Bananas in Costa Rica, bagged in polyethene to block UV, hold in heat and prevent insect and bird damage: bags may be saturated with insecticides. *Photo ©K Kramer, 2018*

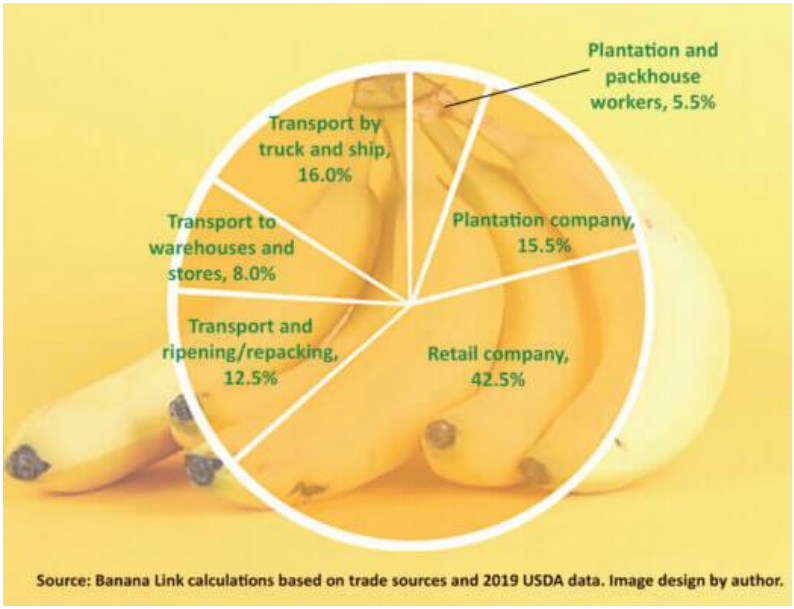
Costa Rica is vulnerable to climate impacts and is the country with the eighth highest economic risk exposure to three or more natural hazards: 77.9% of the population and 80.1% of the country's GDP are in areas at high risk of multiple hazards, including floods, cyclones, storm surges and, over the longer-term, sea-level rise[56]. Costa Rica's banana production is expected to be among the most negatively affected by climate change of banana producers in Latin America and the Caribbean[57].

Guatemala

Guatemala ranks fourth of banana exporting countries, with exported bananas having a dollar value of US$1.15 billion[58], making bananas the country's most value source of export income[59].

Bananas have long been an important export crop. Indeed, the phrase "banana republic" was coined in 1904 by American writer O. Henry to describe the economic exploitation of Guatemala and Honduras by the United Fruit Company (now Chiquita). The phrase relates to countries that have economies reliant on a single export commodity, here bananas, often controlled by foreign-owned corporates. As a result, these countries

have highly stratified social classes with a large laboring class ruled by weak elites that benefit from their collusion with the corporate monopolies that run large-scale plantations of bananas[60]. In this arrangement, private-sector profits (in Guatemala, leveraged with the power of the US government) are extracted from the public sector, overall leading to inequitable distribution of land and natural wealth. In the first half of the 20th century, United Fruit controlled 42% of Guatemala's land, accounted for over two thirds of its exports and even controlled vital public infrastructure, such as the telephone and telegraph systems[61]. In 1954, convinced by the United Fruit Company who painted the then Guatemalan government as Communist for launching a land reform programme[62], the CIA supported a *coup d'êtat* and installed a pro-business (pro-banana corporation) leader. That leader's assassination three years later led to decades of political instability[63]. Guatemala continues to be heavily dependent on agricultural exports, with much of the wealth generation of the bananas being reaped by the supermarkets, as shown in below.



Source: https://www.bananalink.org.uk/wp-content/uploads/2021/01/What-Difference-Does-a-Union-Make_January-2021.pdf

What this means for Guatemala's banana workers differs between the two main exporting regions. As of 2021, workers on the southern Pacific coast, where 85% of workers are employed, were non-unionized, while those working in the north were unionized. This created stark differences: non-unionized workers receive less the half the hourly pay of their unionized counterparts and work 12 hours a week more. 58% of the women working in non-unionized banana packing plants had been subjected to sexual harassment, compared to 8% in unionized plants. Since the banana republic days, multinational exporters have cleaned up their acts, at least to come extent, with workers facing more stable labour conditions than those employed by nationally owned enterprises[64].

Despite consistent economic growth in the period 2014-2023, poverty rates remain insignificantly changed, with 57% of the population living in income poverty[65]. Guatemala's child malnutrition rate is among the ten worst in the world, with stunting rates in some areas reaching nearly 90%[66]. Guatemala ranks 136th of 193 countries in the UN's Human Development Index[67].

Heavy economic reliance on banana exports is potentially hazardous in a country that ranks 5th of countries within highest economic risk exposure to three or more climate hazards: fully 83.3% of GDP generating regions are in at-risk areas, and the country is also at notable climate change impacts risks, being in the top five countries most affected by extreme weather events, including floods and hurricanes. Guatemala is vulnerable to both low frequency high risk events, but also high frequency lower impacts risks[68].

Increasing concentrations of greenhouse gases in the atmosphere can only continue to adversely impact Guatemala and increasing uncertainties about growing conditions that will impact the 27% of workers employed in agriculture, including bananas[69].

Christian Aid case study – Guatemala

Sophia, 48

Sofia collecting water. Photos: Amy Sheppey/Christian Aid

The greatest problem we are facing here in the community is the high heat, and how the climate here is affecting our plantations, our crops. We have been experiencing this high heat for two years in a row now. The greatest issue is food production.

There is a huge difference between before and now. We had access to a diverse range of food, but now we are dependent on corn and tortilla. Let's not even go back that far. Last December we used to bring bananas and different types of fruit from our land, as well as yucca, cassava, malanga, pumpkin. We would bring the vegetables back and make a big pot to feed my children. That is not happening anymore. We know that we can buy things in town, but that requires money and food is expensive. I'm having a hard time with food. I am very worried about what I'm going to do with my children. The production of corn has been very little, and we are worried about our reserves. We are running out.

Aurelia, 53

Climate change has been killing our crops. This means there is no income because we cannot sell anything.

What is happening is that my planation has been dying. So, what has been happening, is death. Death to my crops. The few cocoa trees I had, didn't develop enough, so we couldn't use them. The same thing happened to the banana crops; they are dying off. The trees are folding down and dying. The crops have been dying. In the past there was a prediction that this would happen in the future, but it has come earlier, and this is because we are not taking care of our motherland, our ecosystems, and this is very worrying for our kids and especially for our grandkids.

Aurelia holding her granddaughter Photos: Amy Sheppey/Christian Aid

What is uncertain, is perhaps this situation is going to worsen in the future and we lose this whole plantation. This is going to be a huge issue for me.

Tanzania

Bananas have a long history in Africa, being thought to have been first introduced over 3000 years ago and since diversified into more than 60 cooking banana types in the East African Highlands region alone[70]. Tanzania is now the world's tenth largest exporter of bananas[71] and is Africa's second biggest producer, after

Uganda[72]. Tanzania is designated by the UN as a Least Developed Country[73] and ranks 167th out of 193 countries on the Human Development Index[74].

Bananas play an important role in Tanzania as the fourth most important crop for food and income generation for more than 30% of the population[75].

Despite the importance of bananas in the country, production faces significant challenges, including directly and indirectly from climate change impacts. Directly, bananas require around 25mm per week of rainfall for satisfactory growth, but climate change has resulted in rainfall patterns being increasingly unpredictable or irregular[76]. Indirectly, climate change is affecting the pests and pathogens that can affect banana plants. In Tanzania, the banana weevil (*Cosmopolites sodidus*) is a major threat; its abundance has been positively correlated with higher temperatures and lower rainfall[77]. Fungal diseases, including black sigatoka disease (*Mycosphaerella fijiensis*), flourish in the higher temperatures and wetter conditions that can come with climate change[78].

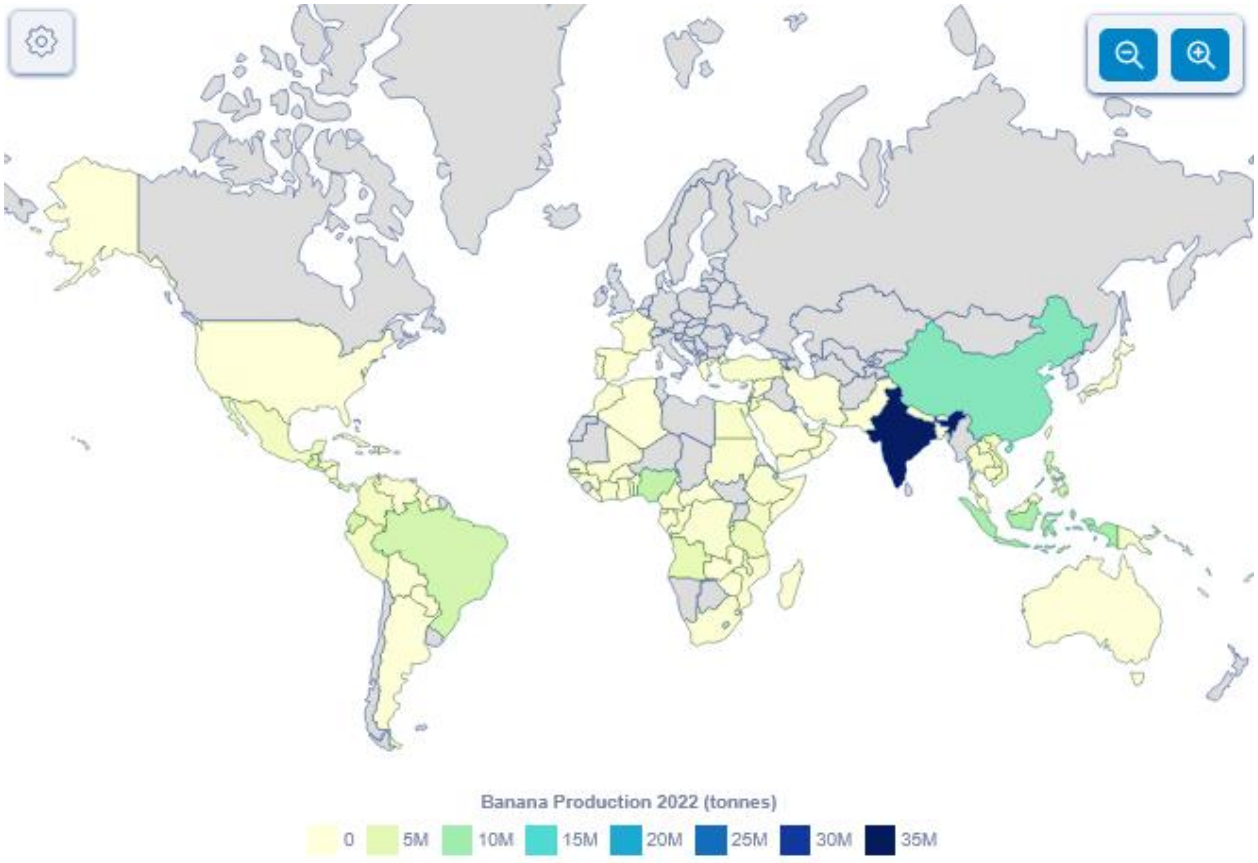
Although there have been significant efforts in Tanzania to breed more disease and pest-resistant bananas, including more drought tolerant varieties, and to encourage more sustainable farming practices[79], research has found that farmers' preferences were significant to new varietal uptake. Resistance to pests and disease and marketability were important considerations, but also were sensory characteristics of the fruit, but no cultivar developed so far has hit the sweet spot that also accounts for the range of ecological conditions and cropping systems used[80].

Tanzania's agricultural sector is vulnerable to climate change impacts, which include increased seasonal variation in rainfall and temperatures, as well as droughts and floods. Since Tanzania's population has increased rapidly, the number of people living below the national poverty line has been increasing, and this lack of economic resilience makes these people even more vulnerable to climate change impacts[81].

Banana market data

Bananas are the fourth most important food crop globally, in terms of production volume after the, perhaps less surprising, trio of wheat, rice and maize (corn)[82].

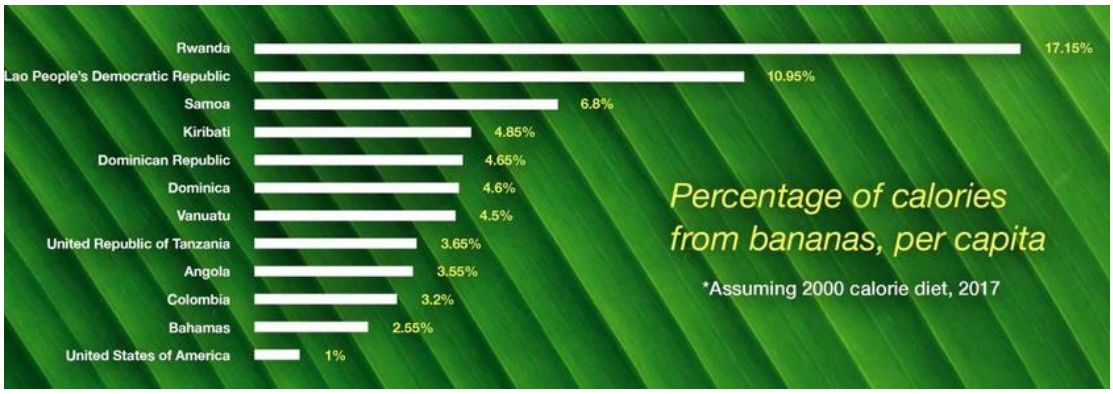
In 2022, India topped the banana production charts, producing 31.30 million tonnes of the fruit[83], dwarfing even second-placed China's 10.70 Mt output that year. The other countries in the banana producing top ten were Indonesia (8.35Mt), Nigeria (7.26Mt), Brazil (6.26Mt), Ecuador (5.53Mt), the Philippines (5.35Mt), Guatemala (4.25Mt), Angola (4.17Mt) and Tanzania (3.18Mt)[84].



Source: https://worldpopulationreview.com/country-rankings/banana-production-by-country

Together those ten countries produced 86.45Mt of bananas, an equivalent mass to 850,000 blue whales, 8,500 Eiffel Towers or 3500 Statues of Liberty[85]. A lot of people are eating a lot of bananas.

In fact, more than 400 million people rely on them for 15 to 27% of their daily calories. In Rwanda, an estimated 17.15% of calories consumed came from bananas (assuming a 2000 calorie diet).



Source: https://www.bayer.com/en/agriculture/article/history-modern-banana

While the US and Europe are quite mature import markets, the fastest growing markets are in the Middle East and Africa. The US tends to import its bananas from Central and South America, while Europe tends to source its bananas from Caribbean nations[86]. The US has some domestic production in Florida and Hawaii, but its main role, other than as a consumer, is as a re-export hub. Germany and The Netherlands play a similar role in the European market, with Germany commanding a quarter of the European market share. European consumers show preferences for organic and fair-trade bananas, and there are well-established certification systems to give consumers confidence that their bananas meet these production standards[87]. Overall, the global market demand for organic and sustainable sourced bananas is increasing[88]. The Dominican Republic is the largest producer and exporter of organic bananas, employing more than 20,000 people, including many migrants from neighboring Haiti[89].

Overall, the global banana market is highly fragmented, with a number of large companies, including Dole, Chiquita, Fyffes and Del Monte, producing alongside much smaller players, and where highly vertically integrated players who control production through to distribution, sit alongside specialist regional actors that have specialisms in the supply chain or in particular regions[90].

Recommendations

Cut emissions

To limit the damage climate change Is already wreaking on the banana growing regions, and the people whose diets and livelihoods depend on this crop, it is imperative that rich countries set ambitious climate mitigation targets in line with the Paris Agreement to limit global warming to 1.5ºC above pre-industrial times. Countries are due to submit their updated 'Nationally Determined Contributions' in 2025, representing a great opportunity to demonstrate how they intend to cut emissions fairly.

New "polluter pays" sources of climate finance

Rich countries, which are responsible for the vast majority of historic emissions, need to commit to paying their fair share of climate finance to developing countries. Whilst the outlines of a new climate finance target were agreed at COP29 in Baku in 2024, rich country governments have so far failed to outline how they will pay their fair share of climate finance. The much greater sums involved necessitate new taxes based on the polluter pays principle, particularly on high polluting industries and high net worth individuals such as a fossil fuel extraction levy, one option is a Climate Damages Tax, on oil, gas, and coal producers as well as higher taxes on private jets and superyachts to start with.

Invest in resilience

Banana growers and others in agricultural communities who rely on a stable climate for their livelihoods need targeted support to diversify their income and adapt to a changing climate, one they have played little to no role in causing. Climate finance must prioritize farmers in building adaptive capacity through access to sustainable technologies such as drip irrigation and drought-tolerant banana varieties, as well as enhanced infrastructure and transportation, together with alternative livelihood opportunities.[91]

Consume well

Consumers of bananas, particularly in rich banana-importing countries, should consider buying fairtrade bananas given the greater amount paid to banana farmers and the investment in their communities. Consumers should also seek out organic bananas to help tackle the high use of chemical fertilizers used in banana production which significantly contribute to greenhouse gas emissions and impacts on ecosystems' long-term health.

Endnotes

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