REPORT

Heat Stress & UK Food Imports

May, 2026

Acknowledgements
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Summary

- 2023, 2024 and 2025 are the three hottest years on record as the world has heated, on average, by over 1.3˚C. If, as expected, we see an El Niño later in 2026, and into 2027, it will turbo-charge climate change impacts and likely make 2027 the new hottest year.
- In 2024, around 1.5 billion people worldwide – a quarter (25.3%) of the working-age population – worked outdoors.
- Research has shown 640 billion potential work hours were lost as a result of heat exposure in 2024. That was higher than 2023 – the previous high – and a staggering 98.1% higher than the decade from 1990-1999.
- Agricultural workers are by far the group most exposed, globally, to heat stress, accounting for nearly two-thirds (63.5%) of all potential works hours lost – or three quarters (75.5%) in low Human Development Index countries.
- The most climate-vulnerable and least climate-resilient nations were the source of 13% of UK food imports, worth £8.9 billion, in 2025. The 15 top suppliers from that group alone made up 11% of UK food imports, worth £7.4 billion.
- In 2024, agricultural workers across these 15 countries lost an estimated 216 billion hours to heat stress. This is roughly 590 hours per worker across a workforce of 366 million people. In 1990, the figure was 394 hours per worker.
- Losses increased by roughly four additional hours per worker each year on average – faster in recent years, at closer to five additional hours lost per worker each year.

Context

Average global temperatures have risen by more than 1.3˚C since pre-industrial times – i.e. since humans began burning fossil fuels, as well as encroaching onto and eroding nature. The resulting climate crisis is driving ever more dangerous and expensive extremes in all parts of the world as our changing climate drives volatility in weather, ocean, and atmospheric currents, and critical natural biomes. On top of climate change, 2026, into 2027, looks almost certain to experience a particularly strong El Niño, which will only magnify those temperature rises further and could propel 2027 to be the hottest year on record yet.

As the planet heats and climate change impacts worsen, we are seeing the effects on harvests at home and abroad, with knock-on effects on food supplies and therefore prices. We import two fifths of our food – much of it commodities we cannot easily grow in the UK climate. But even the foods we grow at home – sometimes supplemented by imports from southern Europe – are being hit; 2025 saw the second worst harvest on record in this country. And the result is that just five food items hit hardest by extreme weather are disproportionately driving overall food inflation, accounting for up to 40% of food inflation on their own.

We are also seeing how those impacts on food production hit people as well. In Pakistan, for instance – second biggest source of rice imports to the UK – repeated, devastating and deadly flooding, driven by climate change, has hit rice harvests – driving up prices

and threatening food security at home, as well as for importers. In turn, this hits the livelihoods of farmers repeatedly suffering at the hands of extreme weather.

But it is also displacing large numbers of people in the short-to-medium term. In 2024, nearly 123 million people in total were displaced worldwide, by disasters, conflict and violence. That's more than twice the number a decade earlier (59 million) and three times the number in 2004 (40 million), amounting to one out of every 67 people living on the planet. If each country was affected equally, that would equate to around one million Brits – or almost the entire population of Birmingham – displaced in the UK.

Over 83 million of those people (68%) were internally displaced, i.e. forced to leave their homes and live elsewhere within their own country. Disasters accounted for nearly 70% of last year's internal displacements, with storms and floods responsible for 97% of that. An increase in the frequency and intensity of extreme precipitation, storms and floods are expected in a warming climate. As climate change progresses, these and other disasters like heatwaves, droughts and fires will drive further internal displacement of people. In Pakistan, it is driving a higher-than-average movement of people from rural to urban parts of the country. This provides for a longer-term threat to agriculture and food production if people cannot make a living, and so abandon the sector.

Heat stress around the world

2025 was the third hottest year on record, joining 2023 (second hottest) and 2024 (hottest). Global average temperatures are rising, and heat records are being broken every year, in all parts of the world. And 2026 now looks almost certain to experience a particularly strong El Niño effect, running into 2027. If so, that will turbo-charge climate change impacts, and likely propel 2027 to the top of the list of hottest years. One of the growing threats from these rising temperatures is heat stress.

A recent study looked at how the threat posed by our hotter climate is putting limitations on day-to-day activities for people – particularly older people, and particularly those in poorer parts of the world without ready access to air-conditioning. With more than a third of the world's population living in regions where heat severely affects daily life, the researchers found that the number of days on which extreme heat limits people's ability to engage in routine tasks, like walking or undertaking light-to-moderate housework, has doubled over the past 75 years. Since 1995, the limitations have grown most starkly in southern North America, southern South America, the eastern Saharan region in Africa, much of Europe, Southwest and East Asia, and southern Australia. The study concludes that "if warming is not stopped and adaptation measures are not more widely implemented, liveability constraints will only expand, particularly as the global population ages."

That is even starker in relation to how rising heat affects human health in the workplace, where activity tends to be more intense and sustained than in our day to day lives outside of work. The World Health Organisation describes workplace heat stress as the:

> *"Circumstances under which a worker's body accumulates heat due to the combined effects of metabolic heat, environmental factors and clothing worn. Workplace heat stress causes physiological heat strain in the body that can lead to exhaustion, pathological conditions and death."*

The International Labour Organisation calculated, in 2019, that, by 2030, heat stress would cut working hours globally by 2.2%, costing $2.4 trillion in GDP – a rise from $280 billion in 1995. More recently, in 2024, the ILO estimated that 71% of the global workforce is exposed to excessive heat, with that proportion rising to 74.7% in Asia, 83.6% in the Arab states, and 92.9% in Africa.

Studies in the Lancet Countdown consider the growing impacts from heat stress, around the world, including on workers and productivity. Those working outdoors are worst affected, unable to take advantage of building cooling methods, and often with limited shade in increasingly extreme levels of heat.

Freyberg et al (2025) looked at the working hours lost to heat stress over time, in countries around the world. In 2024, around 1.5 billion people worldwide – a quarter (25.3%) of the working-age population – worked outdoors. The team's research used wet bulb globe temperature and metabolic rates to develop an indicator – working hours lost – of the growing impact of heat stress on those people working outdoors.

As the atmosphere warms, so the amount of moisture it can hold increases. In 2024, when average global temperatures rose to around 1.5˚C higher than pre-industrial times, humidity reached record levels. Not only did the total amount of water above the planet's surface – total column water vapour – reach a level where almost 90% of the atmosphere was wetter than the 1991-2020 average, but the global average number of high humid heat days over land hit a record high of 35.6 days more than normal in 2024; 9.5 more than in 2023.

High humid heat days are those where wet-bulb temperature exceeds 90% of normal levels. A wet-bulb temperature, taken by wrapping a wet cloth around a thermometer's bulb and exposing it to the air, measures the temperature when the air is cooled by evaporation. It therefore indicates how easily sweat can evaporate, and so the ability of a person to cool down. The lower the humidity – so, the drier the air – the more water/sweat can evaporate. High humidity limits evaporation, therefore limiting a human's ability to cool by sweating. Wet-bulb temperatures above 30˚C become increasingly dangerous to humans, until they risk becoming lethal at around 35˚C.

Wet-bulb globe temperature is specifically designed to estimate heat stress on people. It synthesises three measures: a wet-bulb temperature; black globe temperature

(measuring radiant heat from the sun); and a dry-bulb temperature (measuring just normal air temperature). In doing so, it accounts for humidity, the sun, air temperature, and wind. It is therefore a more sophisticated and holistic measure of heat stress in the workplace – whether indoors or outdoors – as it enables an estimation of the level of danger of performing physical activity in these circumstances.

The relationship between wet-bulb globe temperature and Freyburg et al's indicator – work hours lost – is not linear. In general, for a particular rate of work it is more like a sigmoid curve where the steepest rate of change comes at about the mean core temperature of the human body – 36.5˚C, +/- 4˚C. Humidity therefore has an important role to play in heat stress and there will normally be a significant difference in mean working hours lost between two countries that have similar mean annual temperature, but very different mean annual humidity.

The study calculates the working hours lost indicator using climate measures, population distribution, and estimates of the proportion of people employed in particular sectors. Climate data is averaged over grid cells of 0.5˚ latitude by 0.5˚ longitude, meaning that heat exposure is assessed at a medium scale rather than at individual worksites.

The world's climate is highly complex, with conditions varying sharply across regions and shaping the environments in which people live and work. A widely used framework for capturing this variation is the Köppen–Geiger climate classification, which groups the globe into major climate zones according to long-term temperature and precipitation patterns, including tropical, arid, temperate, cold, and polar climates. These zones create distinct risks for human labour. Tropical regions, for example, are more likely to expose workers to high temperatures and high humidity, increasing the risk of heat stress and reducing work capacity.

Freyburg et al's research found a loss of 640 billion potential work hours as a result of heat exposure in 2024. That was higher than 2023 – the previous high – and a staggering 98.1% higher than the decade from 1990-1999. The biggest impact per worker was in countries that score low to medium on the Human Development Index (HDI), which respectively lost 250 and 358 potential work hours per worker. This is in sharp contrast to high HDI countries (120 potential work hours per worker), and very high HDI countries, which lost only 45 potential work hours per worker.

Agricultural workers are by far the group most exposed to heat stress. Globally, according to Freyberg et al, they account for nearly two-thirds (63.5%) of all potential work hours lost. This rises to exactly two thirds in medium HDI countries, and three quarters (75.5%) in low HDI countries. This compares to construction workers, which account for 17.7%, service workers (10%), and manufacturing workers (8.8%).

Work hours lost (WHL) is expressed in hours but is derived from estimates of the proportion of working time during which heat stress exceeds recommended occupational health thresholds, applied to a standardised reference working schedule. It

is intended primarily to indicate relative exposure and changes over time, rather than to measure actual hours lost in specific countries, sectors, or workplaces. In line with ILO and WHO methodologies, WHL is calculated assuming a 12-hour working day, seven days per week, centred on solar noon, when heat stress is typically highest. In many regions, temperature and wet bulb globe temperatures peak several hours after solar midday, and most estimated losses occur during this period. However, in locations with limited daily variation in temperatures or where prevailing work patterns involve shorter working days and fewer working days per week, this approach may overstate WHL as an absolute value and should therefore be interpreted with caution.

Heat stress – a growing risk to UK food security

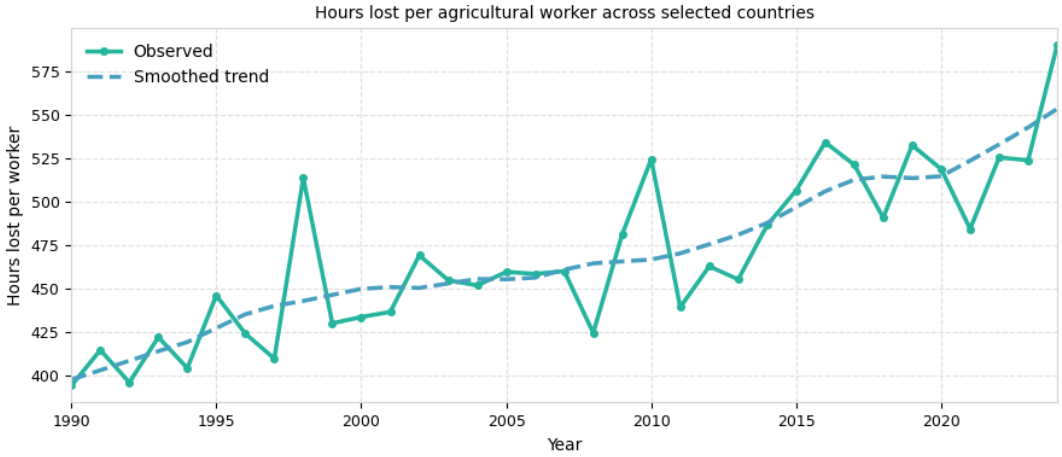
The UK Climate Change Committee's *Fourth Independent Assessment of UK Climate Risk* said, in May 2026, that "risks to food production (domestic and international) are one of the key vulnerabilities of the UK's food supply to climate impacts". It goes on to say that, "increasing, climate-driven heat stress in key growing regions can impact the availability and productivity of labour."

To understand the risk that heat stress poses to UK food supplies, we looked at working hours lost to heat stress in the 15 climate-vulnerable countries most important to UK food supplies. These countries are highly exposed to climate risks and play a key role in producing food that ends up on UK shelves, including food that we simply cannot grow at scale in the UK.

Together, these 15 countries supplied £7.4 billion of food imports in 2025, equivalent to 11% of all UK food imports by value. More broadly, climate-vulnerable countries accounted for £8.9 billion, or 13%, of UK food imports.

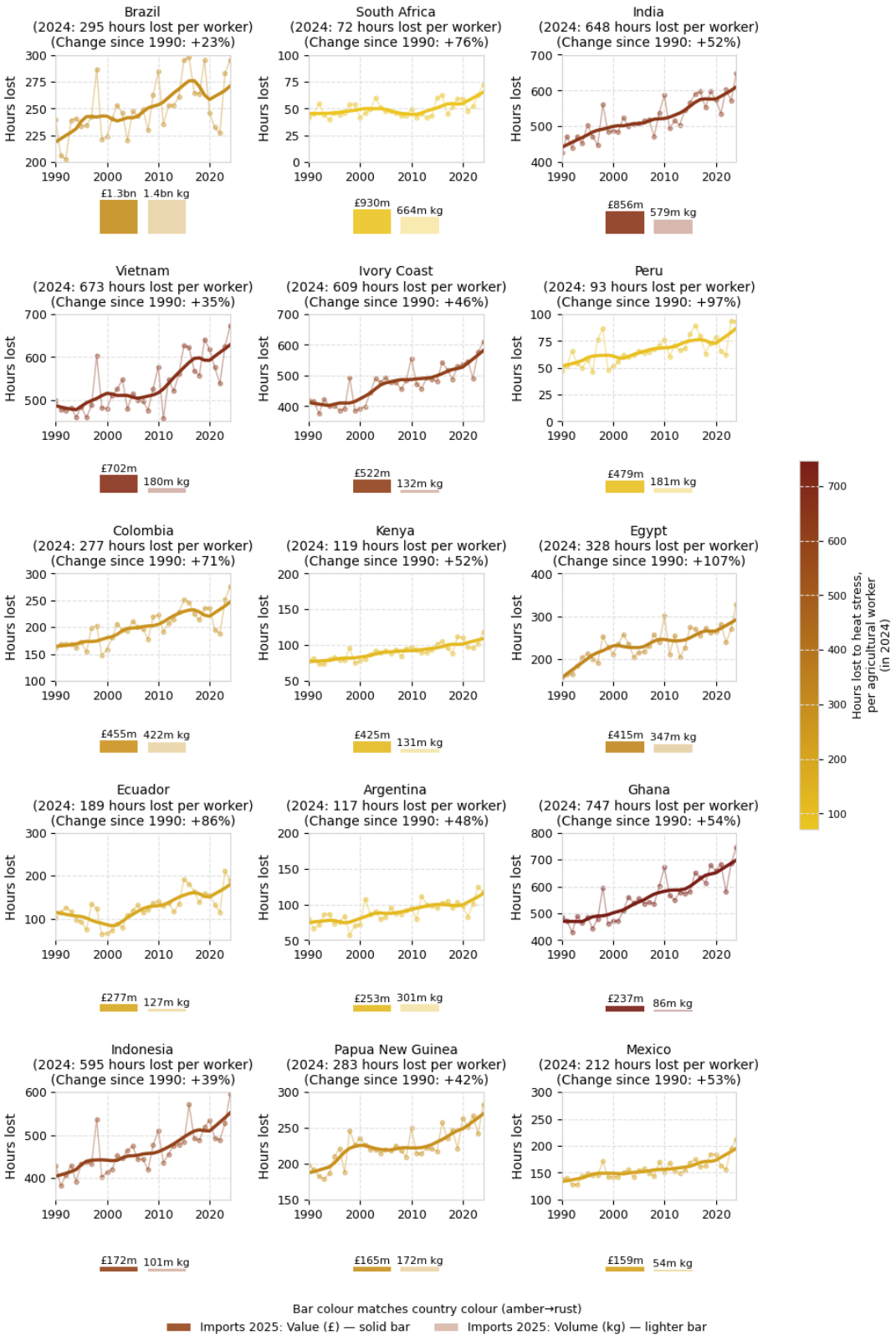
All 15 countries score below 50 on the Notre Dame Global Adaptation Initiative (ND-GAIN) Climate Vulnerability Index, indicating high vulnerability. This means they face significant climate risks while having more limited capacity to adapt. As temperatures rise, heat stress is already putting pressure on agricultural workforces in countries the UK depends on for food.

In 2024, agricultural workers across these countries lost an estimated 216 billion hours to heat stress — around 590 hours per worker across a workforce of 366 million people. This is significantly up from 394 hours per worker lost to heat in 1990, with losses increasing by roughly four additional hours per worker each year on average. In recent years, the pace appears to have accelerated, with closer to five additional hours lost per worker each year. This highlights the growing threat that extreme heat poses to agricultural production in countries the UK relies on for food.



Hours lost per worker = total hours lost ÷ agricultural employment.
Smoothed trend uses LOWESS.

The hours lost to heat stress have been trending upwards in many of the places we most rely on for food



Trendline uses LOWESS smoothing (bold). Raw annual data shown faintly. Import bar heights are normalized to the largest selected country

Brazil – 1st – *most food import significant country among climate vulnerable nations*

Imports. Brazil was a major source of food imports in 2025 by both value and volume: £1.3bn (2% of total by value) and 1.4bn kg (3.5% by volume). This includes coffee (our biggest supplier), soya beans (which are used for animal feed), sugar, and fruits – guavas, mangos and mangosteens, melons, and grapes.

Hours lost. Hours lost per worker reached 295.2 in 2024 - up sharply over the last two years (+30.1% since 2022) but essentially flat over five years (+0.1% since 2019); the long-run trend remains upward with around an extra hour and 20 minutes lost every year to heat stress. Total hours lost rose strongly over two years (+26.8%) but is marginally below 2019 (−0.8%), with the long-run trend pointing down, consistent with a sustained long-run decline in agricultural employment.

Climate impacts. 2023-2024 saw climate change and El Niño combining to inflict severe drought conditions on the Brazilian Amazon; lasting 18 months, it was considered the most intense in the seventy years since monitoring began, and 2025 again brought severe drought to many parts of Brazil. Southern Brazil, hit by disastrous floods in 2024, again saw heavy June rains in 2025, hitting crops and livestock in the region. Rainfall in recent years has been made heavier and more intense by climate change, and turbo-charged by El Niño, which made the 2024 floods twice as likely. On current trends, Brazil is facing around 2.2˚C of temperature rise by 2050, with several regions warming faster than the global average. Extreme temperatures hit crops – reducing yield and quality – with a crop like coffee particularly vulnerable. In 2024, the combination of extreme heat and drought, followed by heavy rainfall and flooding, hit agriculture hard – particularly corn, soy, rice and coffee. Damage to infrastructure hampered logistics of harvesting and transporting food, even when crops were not affected. Reviews of outputs showed declines across multiple crops, with cassava, cocoa, rice and wheat hit hardest.

South Africa – 2nd

Food imports. South Africa was a major source of food imports in 2025: £930m (1.4% of total by value) and 664m kg (1.7% by volume). This includes grapes (our largest supplier), apples, mandarins and tangerines, cranberries and blueberries, oranges, lemons, clementines, avocados, nectarines, sugar, plums, pears, and wines.

Hours lost. Hours lost per worker rose to 72.3 in 2024, up +38.3% since 2022 and +66.8% since 2014; long-run trends also point upward. Total hours lost increased to 241,288 in 2024 (up +37.3% since 2022; +138% since 2014). Agricultural employment is slightly down on 2022 but higher than 2019 and 2014.

Climate impacts. 2024 saw El Niño bring hotter and drier conditions to areas that would normally see summer rainfall, driving more frequent heatwaves that dried soils and caused problems for maize and wheat, as well as horticulture, and threatened livestock mortality. When rain did fall, it was heavier and fell for longer. This fits with a pattern in

South Africa of climate change leading to fewer, heavier rainfall events, and longer, harsher droughts. This hits crops and livestock. Climate-driven volatility in staple crop production, especially maize, contributed to sharp food-price increases and worsened food insecurity for low-income households. Some projections suggest agricultural production by 2050 could fall by up to half, driven by reduced rainfall, higher temperatures and more frequent extremes. In 2021, some one in five South African households experienced hunger or inadequate access to food, with climate-change driven impacts worsening the situation further.

India – 3rd

Food imports. The UK spent £856m of food imports from India in 2025 (1.3% of total by value) and 579m kg (1.5% by volume). This includes rice (our biggest supplier), tea, grapes, lentils, sweetcorn, pepper, guavas, and coffee.

Hours lost. Hours lost per worker increased to 648.0 in 2024, up +7.5% since 2022 and +18.6% since 2014, with a strong positive long-run trend indicated about 4.5 extra hours per worker per year are being lost to heat stress. Total hours lost rose to 163.3m in 2024 (up +16.7% since 2022; +45.4% since 2014), and trend estimates show sustained growth. Agricultural employment has risen sharply over 2/5/10 years (up +8.6% since 2022; +22.6% since 2014); the long-run trend is positive.

Climate impacts. In 2023, extremes of rainfall in parts of India drove the cost of tomatoes – core to Indian diets – to rise 400% as crops were damaged in flooding, whilst extreme heat and humidity – made 30 times more likely by climate change – and record monsoon rains hit rice crops, driving shortages at home and limits on exports. El Niño cycles can accentuate these impacts, which may raise risks again for food crops in India. In 2025, India faced extreme weather events on 331 of the 334 days from January to November, according to a Delhi think-tank's analysis. Heatwaves, heavy rainfall, floods, landslides, and extreme cold between them cost at least 4,419 lives, alongside increased loss of crops. Extremes are no longer confined to a particular season, with the country's first ever winter heatwave recorded in February. The entire monsoon season had extreme events on every single day, and early 'coldwaves' hit more states than before, leading experts to claim the year as evidence of a collapse of seasonal boundaries, and a shrinking window of normal weather.

Vietnam – 4th

Food imports. Vietnam provided £702m of food imports in 2025 (1.0% of total by value) and 180m kg (0.5% by volume). This includes coffee (our second biggest supplier), cashews, various fish, pepper, and assorted other nuts, and rice.

Hours lost. Hours lost per worker rose to 672.8 in 2024, up +25.0% since 2022 and +20.1% since 2014, with a strong positive long-run trend. Total hours lost increased over 2–5 years but remains below 2014, as agricultural is down sharply over a decade (–23.2% since 2014).

Climate impacts. In 2025, the country experienced a series of historic floods which are estimated to have cost around US$3.3 billion in loss. Flooding and landslides claimed lives, destroyed homes and livelihoods, as well as damage to crops (including coffee), and delays to harvests. Climate change is driving rising temperatures that affect the water cycle and increase the intensity of extreme weather events. Some of these impacts are then exacerbated by El Niño, fuelling record heatwaves, drought, water shortages and saltwater intrusion in Vietnam and other countries in the region.

Côte d'Ivoire – 5th

Food imports. The UK spent £522m on food imports from Cote d'Ivoire in 2025 (0.8% of total by value), and 132m kg (0.2% by volume). This includes cocoa beans (by far the UK's biggest supplier) and related cocoa products, bananas, guavas and mangos, and cashews.

Hours lost. Hours lost per worker rose to 609.1 in 2024, up sharply over both the short and longer term (+24.0% since 2022; +14.9% since 2019; +25.1% since 2014). The long-run trend is strongly upward, with around five extra hours lost per worker each year to heat stress. Total hours lost increased to 3.4m in 2024, rising strongly over 2, 5 and 10 years (+31.0% since 2022; +36.5% since 2019; +71.2% since 2014). Trend estimates also point to sustained growth over the long run. Agricultural employment has also risen markedly (+5.7% since 2022; +18.8% since 2019; +36.8% since 2014), which helps explain why total hours lost are increasing even faster than per-worker losses.

Climate impacts. Côte d'Ivoire, along with Ghana, produces around 60% of the world's cocoa. Both countries have been devastated by climate impacts and the effect of the last El Niño, in recent times, including extreme rainfall in 2023 - more than double the 30-year average for the time of year, in West Africa – that caused a disease outbreak in the cocoa plants. This was rapidly followed by an intense drought and heatwave in 2024 that scientists also linked to climate change. The resulting damage to planting and harvesting drove prices to unprecedented highs, with the volatility and crop losses damaging farmers' livelihoods. After peaking in mid-2025, global cocoa commodity prices have recently fallen.

Peru – 6th

Food imports. Peru accounted for £479m of food imports in 2025 (0.7% of total by value) and 181m kg (0.5% by volume). This includes cranberries and blueberries, avocados, grapes, coffee, asparagus, guavas and mangos, mandarins and tangerines, peas, and quinoa.

Hours lost. Hours lost per worker rose to 93.1 in 2024, up +50.3% since 2022 and +37.1% since 2014, with a steady long-run rise. Total hours lost increased to 365,282 in 2024 (up +27.4% since 2022) and trend estimates confirm sustained growth. This is despite agricultural employment falling sharply in the last two years (–15.3%) and remains below 2014.

Climate impacts. Peru is already coping with intense climate impacts. High temperatures and unstable weather are causing recurrent natural disasters, forcing thousands of people to migrate as their homes are destroyed. More intense rainfall, along with periods of intense heat and drought, hit vulnerable rural farming communities particularly hard. During El Niño, these impacts are intensified, and Peru tends to experience even higher temperatures, heavier rainfall and tropical storms, which lead to intense flooding, landslides and an increase in pests (locusts and rats) and vector-borne diseases. For example, as El Niño started to ramp up last time, Peru experienced its worst dengue fever outbreak in history. Additionally, Peru's glaciers are retreating rapidly, leaving communities around them facing the growing risk of glacial lake outburst floods.

Colombia – 7th

Food imports. Colombia accounted for £455m of UK food imports in 2025 (0.7% of total by value) and 422m kg (1.1% by volume). This includes bananas (our largest supplier), coffee, and avocados.

Hours lost. Hours lost per worker rose to 276.6 in 2024, up very sharply over two years (+47.3% since 2022) and still higher than 2019 and 2014 (up +17.7% and +21.3%), with a strong positive long-run trend of an extra two hours and 20 minutes lost per worker per year. Total hours lost climbed to 938,270 in 2024 (up +47.4% since 2022), and the longer-run trend is clearly upward. Agricultural employment is broadly flat in the last two years, but below 2019 (–6.1% over five years.

Climate impacts. Colombia is experiencing glacial melting as a result of elevated temperatures, alongside extreme rainfall; the two put highland communities at increased risk of flooding, landslides and lack of clean water. Changes to rainfall patterns, including droughts, are hitting the agricultural sector, while coastal zones are exposed to rising sea levels, storm surges and flooding. Between 1971 and 2020, Colombia's mean temperature increased by 0.22˚C per decade. Mean temperatures nationwide are forecast to rise such that several parts of the country are expected to endure conditions characteristic of different climatic zones by mid-century, as well as experiencing higher minimum and maximum temperatures including an increase in days passing more than 35˚C, and of tropical nights.

Kenya – 8th

Food imports. The UK spent £425m on Kenyan food imports in 2025 (0.3% of total by value) and 131m kg (0.6% by volume). This includes tea (our biggest supplier), coffee, some beans, cauliflower, sweetcorn and peas.

Hours lost. Hours lost per worker rose to 118.9 in 2024 (up +24.3% since 2022), with a clear positive long-run trend. Total hours lost increased to 852,931 in 2024, up +27.8% over two years. A very strong long-run upward trend suggests that an extra 14,000 hours are being lost to heat stress each year. Agricultural employment is rising (up +2.8% since 2022) and the long-run trend is strongly positive.

Climate impacts. Kenya is experiencing rising temperatures and more frequent, intense extreme rainfall events punctuated by prolonged drought. A World Bank assessment suggested that hot days and nights will increase sharply by mid-century, and precipitation will likely remain highly variable and uncertain, though average rainfall is predicted to increase, as is the frequency and intensity of extreme rainfall events. In El Niño years, Kenya tends to experience even greater than average rainfall. In the 2015/16 El Niño, torrential rains caused landslides, flash floods and buildings to collapse. And in 2023/24, Kenya's worst drought in decades was followed by heavy rains attributed to El Niño. The resulting floods killed more than 100 people, drove tens of thousands out of their homes, submerged farmland and drowned livestock. Such wet conditions also increase cholera outbreaks and can lead to rises in pests like desert locusts that devastate crops.

Egypt -9th

Food imports. Egypt accounted for £415m of food imports in 2025 (0.6% of total by value) and 347m kg (0.9% by volume). This includes grapes, strawberries, sweet potatoes, onions, various beans, oranges, and peas.

Hours lost. Hours lost per worker rose to 327.8 in 2024, up +37.0% since 2022 and +44.4% since 2014, with a strong upward long-run trend. Total hours lost increased to 1,882,725 in 2024 (up +38.5% since 2022), with a clear positive long-run trend. Agricultural employment is slightly higher than 2022 (+1.1%) but far lower than 2014 (−22.6%).

Climate impacts. Egypt's rate of warming has accelerated in the last two decades, and, at 0.38°C per decade, it is heating faster than the global average, bringing more frequent and longer heatwaves. Some of the vulnerabilities which Egypt faces relate to its reliance on the Nile for water and agriculture, and it is now in structural water deficit as a result of increased evaporation, and more erratic rainfall. Agriculture, central to Egypt's economy, is experiencing shorter growing seasons. Heat stress on crops may shift key crops northwards, and lower yields for staples like wheat, and some fruits.

Ecuador – 10th

Food imports. The UK spent more than £277m on food imports from Ecuador in 2025 (0.41% of total by value), and 127m kg (0.32% by volume). This included bananas, cocoa beans, and a variety of fish and seafood.

Hours lost. Hours lost per worker rose to 188.5 in 2024, up sharply over the last two years (+63.6% since 2022) and also above both 2019 (+18.4%) and 2014 (+40.8%). The long-run trend is clearly upward, with around two extra hours lost per worker each year to heat stress. Total hours lost increased to 503,379 in 2024, rising strongly over 2, 5 and 10 years (+66.9% since 2022; +31.6% since 2019; +117.9% since 2014). Trend estimates also point to sustained long-run growth. Agricultural employment is only slightly above 2022 (+2.0%), but is much higher than 2019 (+11.2%) and especially 2014 (+54.7%), helping explain the sharp increase in total hours lost over the decade.

Climate impacts. Ecuador faces a variety of climate change risks, linked to the variety of its geography, having coastal, island, Andean and Amazon regions within its borders. Climate variability is closely related to El Niño events, with increased rainfall and floods in coastal and western Andean regions, and droughts in northern and eastern areas. Rising temperatures are expected to lead to retreat of glaciers in the country, leading to a decrease in annual runoff and greater water stress. As in many countries, droughts are expected to be more prolonged. But the sensitive ecosystems and wildlife populations of the Galapagos are particularly vulnerable to worsening climate change impacts.

Argentina -11th

Food imports. Argentina accounted for £253m of food imports in 2025 (0.4% of total by value) and 301m kg (0.8% by volume). This includes groundnuts (or peanuts), maize, wine, and some fruits – cherries, cranberries and blueberries, and apples.

Hours lost. Hours lost per worker rose to 117.3 in 2024, up +15.9% since 2022, +14.1% since 2019 and up +20.0% over the past ten years (since 2014). Long-run trends point to a steady rise of about an hour extra lost per worker per year. Total hours lost increased to 214,985 in 2024, up +23.9% over two years. Compared to both five and ten years +30.1% on five years and +30.5% (10y). Employment in agriculture rose in the last decade to 1.83m (up +6.9% since 2022), but the longer-run direction is downward, indicating recent increases sit against a longer-term decline.

Climate impacts. Argentina experienced extreme heat in 2025 which would have been virtually impossible without climate change, alongside extremely heavy rainfall which led to flooding. A region around Buenos Aires saw temperatures exceeding 40˚C from mid-February – with the resulting power demand for cooling leading to blackouts. Neighbouring countries also experienced heatwave conditions, alongside 61 cities in Argentina. A sudden cold front hitting hot, humid weather led to the heaviest rainfall in Bahia Blanca's history - over 300 mm of rain in just eight hours; nearly half of the city's annual average. Flooding affected hundreds of thousands of people, killing 16 and displacing 1,400 people, and causing $400m of damage.

Ghana – 12th

Food imports. Ghana accounted for nearly £237m of food imports in 2025 (0.35% of the year's total food imports by value), and 86m kg (0.22% by volume). This included cocoa beans, bananas, guavas, mangos and mangosteens, yams, pineapples, and various forms of fish.

Hours lost. Hours lost per worker rose to 747 in 2024, up sharply over the last two years (+29.0% since 2022) and also above both 2019 (+10.0%) and 2014 (+30.3%). The long-run trend is strongly upward, with around seven extra hours lost per worker each year to heat stress. Total hours lost increased to 3.4m in 2024, rising strongly over two years (+28.2% since 2022) and remaining above both 2019 (+3.4%) and 2014 (+29.6%). Trend estimates also point to sustained long-run growth. Agricultural employment is slightly below 2022

(-0.6%), 2019 (-5.9%) and 2014 (-0.5%), suggesting that rising total hours lost are being driven primarily by increasing heat stress per worker rather than a larger agricultural workforce.

Climate impacts. Along with Côte d'Ivoire (see above), Ghana has been devastated by climate impacts in recent times, including extreme rainfall in 2023 - more than double the 30-year average for the time of year, in West Africa – that caused a disease outbreak in cocoa plants. This was rapidly followed by an El Niño-fuelled intense drought and heatwave in 2024 that scientists also linked to climate change. The resulting damage to planting and harvesting drove prices to unprecedented highs, with the volatility and crop losses damaging farmers' livelihoods. After peaking in mid-2025, global cocoa commodity prices have recently fallen. In 2025 the national average temperature was 28.2˚C, which is about 0.7˚C above the 1991–2020 baseline, making it the country's second warmest year since 1991.

Indonesia – 13th

Food imports. The UK spent £172m on food imports from Indonesia in 2025 (0.26% of the year's total food imports by value), and imported 101m kg (0.26% by volume). This includes coffee, palm oil, desiccated coconuts, and skipjack tuna.

Hours lost. Hours lost per worker rose to 595.1 in 2024, up strongly over the last two years (+21.8% since 2022) and also above both 2019 (+14.9%) and 2014 (+24.4%). The long-run trend is clearly upward, with around four extra hours lost per worker each year to heat stress. Total hours lost increased to 23.6m in 2024, rising over 2, 5 and 10 years (+22.2% since 2022; +19.5% since 2019; +19.2% since 2014). Trend estimates also point to sustained long-run growth. Agricultural employment is broadly flat over the short term (+0.3% since 2022), somewhat higher than in 2019 (+4.1%), but below 2014 (-4.2%), suggesting rising total hours lost are being driven mainly by higher heat stress per worker rather than a substantially larger workforce.

Climate impacts. Rising temperatures, shifting rainfall patterns, and heavier precipitation in a country undergoing rapid deforestation and land-use change, have led to more frequent and intense flooding, including landslides, during 2025. Densely-populated cities have experienced heatwaves, and Indonesia's extensive coastlines and low-lying areas have seen increasing coastal flooding and erosion. Warmer ocean waters are putting greater stress on coral-reef habitats – crucial for supporting marine life, and therefore for fishing – and on mangroves, which are crucial for carbon absorption and flooding mitigation. When El Niño is in the mix, precipitation and water availability can be hit, and the monsoon season disrupted, with all the consequent risks for agriculture and food security. Drier-than-normal conditions under El Niño increase risk of droughts and wildfires.

Papua New Guinea – 14th

Food imports. The UK spent £165m on food imports from Papua New Guinea in 2025 (0.24% of the year's total food imports by value), and imported 172m kg (0.44% by volume). The vast majority of this is palm oil – commonly used in food processing – as well as coffee and skipjack tuna.

Hours lost. Hours lost per worker rose to 282.5 in 2024, only modestly above 2022 (+5.7%) but markedly higher than both 2019 (+27.7%) and 2014 (+27.9%). The long-run trend is upward, with around 2 extra hours lost per worker each year to heat stress. Total hours lost increased to 405,338 in 2024, up over 2, 5 and 10 years (+15.3% since 2022; +71.6% since 2019; +141.0% since 2014). Trend estimates also point to sustained long-run growth. Agricultural employment has risen sharply (+9.1% since 2022; +34.3% since 2019; +88.4% since 2014), helping explain why total hours lost have increased much faster than per-worker losses.

Climate impacts. Papua New Guinea is vulnerable to rising sea levels and coastal erosion which, along with drought, and shifting weather patterns have undermined traditional farming by eroding land, leaving families facing food insecurity and threats to their livelihoods. When the last El Niño hit, in 2024, it drove unusually high daytime temperatures and hot, dry winds. Hotter and drier than normal conditions over large parts of the country led, by late September 2025, to serious and widespread drought conditions that caused water shortages, bushfires, and heat stress.

Mexico – 15th

Food imports. The UK spent £159m on food imports from Mexico in 2025 (0.24% of the year's total food imports by value), and imported 54m kg (0.14% by volume). Tequila is the largest single import, but we also buy coffee, fresh berries - including blackberries, mulberries and loganberries – nuts and seeds, honey, sesame oil, and asparagus.

Hours lost. Hours lost per worker rose to 211.7 in 2024, up sharply over the last two years (+35.5% since 2022) and also above both 2019 (+14.6%) and 2014 (+37.6%). The long-run trend is upward, with around 1.5 extra hours lost per worker each year to heat stress. Total hours lost increased to 1.5m in 2024, rising over 2, 5 and 10 years (+37.0% since 2022; +16.5% since 2019; +41.2% since 2014). Trend estimates also point to sustained long-run growth. Agricultural employment is only slightly above 2022 (+1.2%), 2019 (+1.7%) and 2014 (+2.6%), while long-run trend estimates are slightly negative overall, suggesting rising total hours lost are being driven mainly by worsening heat stress per worker rather than workforce growth.

Climate impacts. At an average rate of temperature rise of 0.3˚C per decade, Mexico has warmed faster than most of Latin America. From mid-2023, El Niño added to climate change impacts to drive drier conditions and increased wildfire risk, along with intensifying storms like Hurricane Otis, which hit Mexico as a category 5 in October 2023. The country saw exceptional extreme heat, with temperatures exceeding 45˚C at many

stations, and hitting 51.4˚C on 29 August. By the end of 2023, some three quarters of Mexico was experiencing some degree of drought. Extreme heat in mid-2024 claimed more than 125 heat-related deaths in Mexico in just a few months. 5-day maximum temperatures in May-June such as recorded in 2024 are now expected to occur about every 15 years, compared to once every 60 years in 2000, when temperatures were half a degree lower. Climate change made these maximum daytime temperatures about 1.4˚C hotter and about 35 times more likely, whilst the nighttime temperatures were 1.6˚C hotter and about 200 times more likely.

Knock on impacts – food

We looked at the top countries from which we import food. And then we focused attention on those with lower climate readiness and resilience. In other words, our focus here has not been on nations like the US, Canada, and EU member states, which are wealthy, and with better-funded infrastructure and public services. Developing and middle-income nations tend to have lower climate readiness and resilience, and often higher levels of climate vulnerability. They are, all round, more exposed to and less able to cope with, worsening climate impacts than wealthy north American and European nations.

The Notre Dame Global Adaptation Initiative (ND GAIN) index summarises a country's vulnerability to climate change, and other global challenges, in combination with its readiness to improve resilience.

Of the 192 countries ranked in ND GAIN, more than half (104) rank below a score of 50 out of 100 for the composite overall grading of vulnerability to, and readiness for, climate change impacts. Those 104 nations are, together, home to just over 5 billion people in 2026 (Worldometers).

In 2025, the UK imported 6.2bn kg of food, worth nearly £9bn from those countries ranked as low and medium-low – i.e., scoring below 50. That amounts to 13.3% of the overall value of food imported last year, and 16% of overall food imported by volume.

Of our top non-EU/N American food exporting countries, very few scored higher than 50 on the ND GAIN index, with all but one of those scoring in the low-to-mid 50s.

Country	Income	Overall score	Overall position /187	Readiness	Position /192	Vulnerability	Position /187
Argentina	Upper-middle	49.6	85	0.375	109	0.383	71
Brazil	Upper-middle	49.1	89	0.350	128	0.369	54
China	Upper-middle	58.7	39	0.556	38	0.382	70
Colombia	Upper-middle	48.4	97	0.373	110	0.405	83
Costa Rica	Upper-middle	53.9	63	0.455	74	0.376	65

Cote d'Ivoire	Lower-middle	41.5	140	0.319	145	0.489	133
Ecuador	Lower-middle	43.6	122	0.334	140	0.461	120
Egypt	Upper-middle	47.0	103	0.351	126	0.411	88
Ghana	Lower-middle	45.0	115	0.348	129	0.448	113
India	Lower-middle	45.5	111	0.394	102	0.485	128
Kenya	Low	40.3	148	0.306	149	0.500	137
Morocco	Lower-middle	53.1	69	0.431	89	0.368	53
Peru	Lower-middle	49.0	90	0.389	104	0.409	86
South Africa	Lower-middle	48.1	101	0.357	121	0.395	78
Thailand	Upper-middle	52.7	70	0.489	63	0.435	103
Türkiye	Upper-middle	55.3	56	0.481	64	0.375	62
Vietnam	Lower-middle	48.1	101	0.429	92	0.468	122

	Readiness	Vulnerability
Quartile 4		
Quartile 3		
Quartile 2		
Quartile 1		

Solutions

Cutting emissions

The only solution to halt climate change, and avoid ever worsening climate impacts like heat stress, is cutting emissions to net zero, so as to stop adding greenhouse gases to the atmosphere. The Paris Agreement seeks to limit temperature rises to 1.5˚C above pre-industrial levels. At around 1.3˚C of warming, we already see the threats and growing danger; this only worsens with each fraction of a degree of temperature rise.

The global clean energy transition – the principal means of achieving net zero – has been driven by policy decisions flowing from nations' commitment to Paris, with investment in clean energy internationally running at around twice the level of investments in fossil fuels each year.

Adapting to worsening impacts

We also need to adapt to the climate impacts we're seeing now, at the current rate of warming, especially as we remain on track, if all nationally determined contributions are delivered, for temperature rises between 2.3˚ and 2.5˚C (or 2.8˚C on the basis of current policies). Farmers, everywhere, are among some of the most vulnerable to climate extremes.

Climate finance from wealthy nations to those countries with low climate readiness is a key part of the solution, supporting farmers to adapt to climate impacts. This can be about measures to reduce exposure to heat stress for agricultural workers, as well as about adapting crops and farming methods to cope better with climate change-driven extremes. This can secure both crops and livelihoods – both for consumption at home, and for export. Alongside cutting emissions to net zero, to limit further temperature rises, this will help reduce volatility in our food system. In turn, this supports British retailers in keeping supplies and prices stable for UK consumers.

The UN climate conference in Baku in 2024 – COP29 – agreed that climate finance will rise. Although nowhere near the £1.3 trillion a year by 2035 that experts say is needed globally, world leaders agreed the level should treble from the current $100 billion a year to at least $300 billion.

Despite this, 2025 saw many nations retreat from commitments on overseas development assistance. In the US, Trump closed down USAID. In the UK, the government significantly cut the Official Development Assistance (ODA) budget to partially offset an increase in defence spending. The ODA budget funds our climate finance commitments, which includes support to farmers all around the world who grow staples like rice, bananas, coffee and a whole range of fresh fruit and vegetables that we import.

Some other nations have made similar decisions on their aid budgets, although the government in Germany notably increased defence spending in a way that not only earmarked €500 billion for climate infrastructure, but also further embedded commitment to climate neutrality by 2045 into the German constitution, recognising the security implications of climate change.

The UK has recently come to the end of its third round of climate finance commitment, which totalled £11.6 billion over five years, from 2021/22 to 2025/26. Some of that finance goes in bilateral support, directly to nations that need our support. And some of it goes via large, global multi-lateral funds, such as the Green Climate Fund. ECIU analysis in 2024 showed that UK climate finance, via the six largest multi-lateral funds, had contributed to at least 348 projects supporting overseas farmers hit by climate change in 111 countries, 84 of which (76%) grow food sold on UK supermarket shelves.

Food security is an element of national security, as emphasised starkly in a recent UK national security assessment of the risks posed by global biodiversity loss which warned, in early 2026 that: *"cascading risks of ecosystem degradation are likely to include geopolitical instability, economic insecurity, conflict, migration and increased inter-state competition for resources."*

Withdrawal from overseas aid and climate finance would leave some of the world's most vulnerable farmers exposed to climate change, with the potential to undermine global food production.

Yet despite this, and growing warnings of the rising threat of a food crisis, the UK has reduced its commitment to climate finance for the coming three years. Although climate finance remains roughly the same proportion (20%) of the UK's overseas development assistance (ODA) budget as it was before ODA was cut, the annual climate finance commitment for the next three years will total around £2 billion; down from around £2.3 billion in each of the last five years. This frontloads commitments made by the UK to raise its climate finance, and potentially limits our ability to provide additional support to farmers around the world who produce our food, to enable them to adapt to worsening climate change impacts. The UK is also reported recently to be cutting in half the pledged amount that they provide to the Green Climate Fund.

Data Appendix

Table A1. Food imports from selected climate-vulnerable countries, 2025

Country	Import value 2025 (£)	Import value rank	Import volume 2025 (kg)	Import volume rank
Brazil	1,319,973,321	1	1,374,579,632	1
South Africa	930,280,965	2	664,399,689	2
India	856,137,975	3	579,165,779	3
Vietnam	702,019,193	4	180,471,373	8
Côte d'Ivoire	522,428,823	5	132,335,489	10
Peru	479,419,693	6	181,069,670	7
Colombia	455,165,001	7	422,133,383	4
Kenya	424,507,099	8	131,401,973	11
Egypt	415,427,749	9	346,834,505	5
Ecuador	277,373,442	10	126,750,958	12
Argentina	252,795,754	11	300,803,702	6
Ghana	236,706,238	12	85,884,202	14
Indonesia	172,154,915	13	100,949,890	13
Papua New Guinea	165,088,401	14	172,395,111	9
Mexico	158,812,359	15	53,632,268	15

Table A2. Hours lost per worker due to heat stress

Country	Latest year	Latest value	2y change (%)	5y change (%)	10y change (%)	OLS slope/ yr	OLS p-value	LOWESS avg/yr
Brazil	2024	295.2	30.1	0.1	13.3	1.39	<0.001	1.26
South Africa	2024	72.3	38.3	22.3	66.8	0.37	0.003	0.53
India	2024	648	7.5	8.4	18.6	4.32	<0.001	4.65
Vietnam	2024	672.8	25	5	20.1	4.3	<0.001	4.52
Côte d'Ivoire	2024	609.1	24	14.9	25.1	4.93	<0.001	4.98
Peru	2024	93.1	50.3	27.5	37.1	0.81	<0.001	0.81
Colombia	2024	276.6	47.3	17.7	21.3	2.41	<0.001	2.27
Kenya	2024	118.9	24.3	6.6	27.8	0.9	<0.001	0.93
Egypt	2024	327.8	37	25.5	44.4	2.95	<0.001	3.43
Ecuador	2024	188.5	63.6	18.4	40.8	2.36	<0.001	1.73
Argentina	2024	117.3	15.9	14.1	20	1.06	<0.001	1.03
Ghana	2024	747.4	29	10	30.3	6.89	<0.001	6.83
Indonesia	2024	595.1	21.8	14.9	24.4	3.69	<0.001	3.95

Papua New Guinea	2024	282.5	5.7	27.7	27.9	1.79	<0.001	2.29
Mexico	2024	211.7	35.5	14.6	37.6	1.35	<0.001	1.54

Table A3. Total hours lost due to heat stress

Country	Latest year	Latest value	2y change (%)	5y change (%)	10y change (%)	OLS slope/ yr	OLS p-value	LOWESS avg/yr
Brazil	2024	2431489	26.8	-0.8	8.7	-14514	0.004	-9921
South Africa	2024	241288	37.3	38.2	138	1662	0.001	2662
India	2024	1.63E+08	16.7	35.3	45.4	1305396	<0.001	1768467
Vietnam	2024	12733404	27.2	3.6	-7.8	3825	0.857	-9008
Côte d'Ivoire	2024	3414219	31	36.5	71.2	59804	<0.001	64614
Peru	2024	365282	27.4	8.8	25.8	5419	<0.001	5834
Colombia	2024	938270	47.4	10.5	17.4	14246	<0.001	12800
Kenya	2024	852931	27.8	14.9	30	14000	<0.001	13417
Egypt	2024	1882725	38.5	22.9	11.8	22433	<0.001	17928
Ecuador	2024	503379	66.9	31.6	117.9	10138	<0.001	9928
Argentina	2024	214985	23.9	30.1	30.5	743	0.038	876
Ghana	2024	3435198	28.2	3.4	29.6	44181	<0.001	42997
Indonesia	2024	23571041	22.2	19.5	19.2	160881	<0.001	184321
Papua New Guinea	2024	405338	15.3	71.6	141	6126	<0.001	7862
Mexico	2024	1534567	37	16.5	41.2	7052	<0.001	7558

Table A4. Employment in agriculture

Country	Latest year	Latest value	2y change (%)	5y change (%)	10y change (%)	OLS slope/ yr	OLS p-value	LOWESS avg/yr
Brazil	2024	8236472	-2.5	-0.9	-4	-113090	<0.001	-89145
South Africa	2024	3338238	-0.8	13	42.7	9767	0.033	19845

India	2024	2.52E+08	8.6	24.8	22.6	750243	0.005	1497226
Vietnam	2024	18925425	1.7	-1.3	-23.2	-165070	<0.001	-192316
Côte d'Ivoire	2024	5605166	5.7	18.8	36.8	86725	<0.001	94711
Peru	2024	3922282	-15.3	-14.6	-8.2	33760	<0.001	42531
Colombia	2024	3392400	0.1	-6.1	-3.2	33868	<0.001	29511
Kenya	2024	7175928	2.8	7.7	1.7	97133	<0.001	89249
Egypt	2024	5744044	1.1	-2	-22.6	21780	0.109	-7313
Ecuador	2024	2670023	2	11.2	54.7	44774	<0.001	49313
Argentina	2024	1832469	6.9	14	8.8	-13511	<0.001	-11600
Ghana	2024	4596443	-0.6	-5.9	-0.5	24399	<0.001	22529
Indonesia	2024	39609869	0.3	4.1	-4.2	40863	0.330	73971
Papua New Guinea	2024	1434723	9.1	34.3	88.4	19953	<0.001	25482
Mexico	2024	7247753	1.2	1.7	2.6	-18303	0.032	-24850