

Climate Change, Food Security, Regenerative Agriculture, and Health: Latin America and the Caribbean

Course: International Nutrition: Social and Environmental Policies (NTR 331): UT- Austin

March 1, 2024 9:00 AM Central Time

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# Presentation Outline:

- Climate Change and Climate Migration in Colombia
- State of the Climate in Latin America and the Caribbean (WMO, 2023)
- Latin America and the Caribbean: UN Office for the Coordination of Humanitarian Affairs (OCHA) Update (January 18 – February 23, 2024)
- The Big Picture: Climate Change, Conflict, COVID-19, (and Costs) Threaten Food Security and Nutrition
- Latin America and the Caribbean: Regional Overview of Food Security and Nutrition (FAO et al., 2023)
- The Current Food Crisis: Building Resilience at the Nexus of Food Insecurity, Climate Change and Conflict
- Creating Sustainable Livelihoods - The Potential of Regenerative Agriculture: Agroforestry, & Silvopasture in Latin America
- Crossing the Darién Gap: Migrants Risk Death on the Journey to the U.S.: Economic Insecurity, Political Upheaval, Violence, and Climate Change Are the Drivers
- Upcoming Webinar Series: Climate Change, Migration, and Health in Latin America and the Caribbean (March – November 2024)



May 30, 2023

# Colombia Moves Closer To Legally Recognizing Internal Climate Displacement

Rahul Balasundaram & Amali Tower · Climate Displacement

People displaced by the effects of climate change in Colombia **could soon receive** legal recognition under a landmark bill that passed the first stage in Congress.

Source: Balasundaram R, Tower A. Colombia Moves Closer to Legally Recognizing Internal Climate Displacement. *Climate Refugees*. May 30, 2023. Available at: <https://www.climate-refugees.org/spotlight/2023/5/30-colombia#:~:text=The%20bill%20proposes%20the%20Colombian,fleeing%20sudden%20events%20such%20as>

## Colombia Moves Closer to Legally Recognizing Internal Climate Displacement

- The Norwegian Refugee Council estimates nearly 800,000 Colombians are dependent on humanitarian services due to climate change-induced impacts. According to UNHCR, the bill could be an important step forward in properly identifying and guaranteeing protection to people displaced by climate change contexts.
- Individuals most exposed to these climate change impacts and emergencies are the poorest and most vulnerable.
- The recent bill proposes the Colombian government “recognize the existence of forced internal displacement due to causes associated with climate change and environmental degradation.”
- The proposed law encompasses a broad definition of climate displacement, from families fleeing sudden events such as hurricanes to slow onset events like drought and environmental degradation, situations that are increasingly forcing farmers to move due to crop failure and food insecurity.

Source: Balasundarm R, Tower A. Colombia Moves Closer to Legally Recognizing Internal Climate Displacement. *Climate Refugees*. May 30, 2023. Available at: <https://www.climate-refugees.org/spotlight/2023/5/30-colombia#:~:text=The%20bill%20proposes%20the%20Colombian,fleeing%20sudden%20events%20such%20as>

## Colombia Moves Closer to Legally Recognizing Internal Climate Displacement

- The bill aims to give individuals internally displaced by the effects of climate change priority access to housing, health services and education. The bill also aims to create a national register of climate-displaced people. Such a tool would be critical in identifying and guaranteeing protection for those displaced by the effects of climate change
- If passed, in addition to providing legal recognition and the development of public policy to meet government demands of displacement driven by climate change, [the bill](#) also outlines the principal causes of displacement, including families living in geographically vulnerable regions.
- If successful, the law would be the first of its kind in Latin America and the Caribbean, a region where the [World Bank's estimates](#) there could be as many as 17 million internal climate migrants by 2050, representing 2.6 percent of the region's total population.

Source: Balasundarm R, Tower A. Colombia Moves Closer to Legally Recognizing Internal Climate Displacement. *Climate Refugees*. May 30, 2023. Available at: <https://www.climate-refugees.org/spotlight/2023/5/30-colombia#:~:text=The%20bill%20proposes%20the%20Colombian,fleeing%20sudden%20events%20such%20as>



# State of the Climate in Latin America and the Caribbean 2022

● PUBLICATION

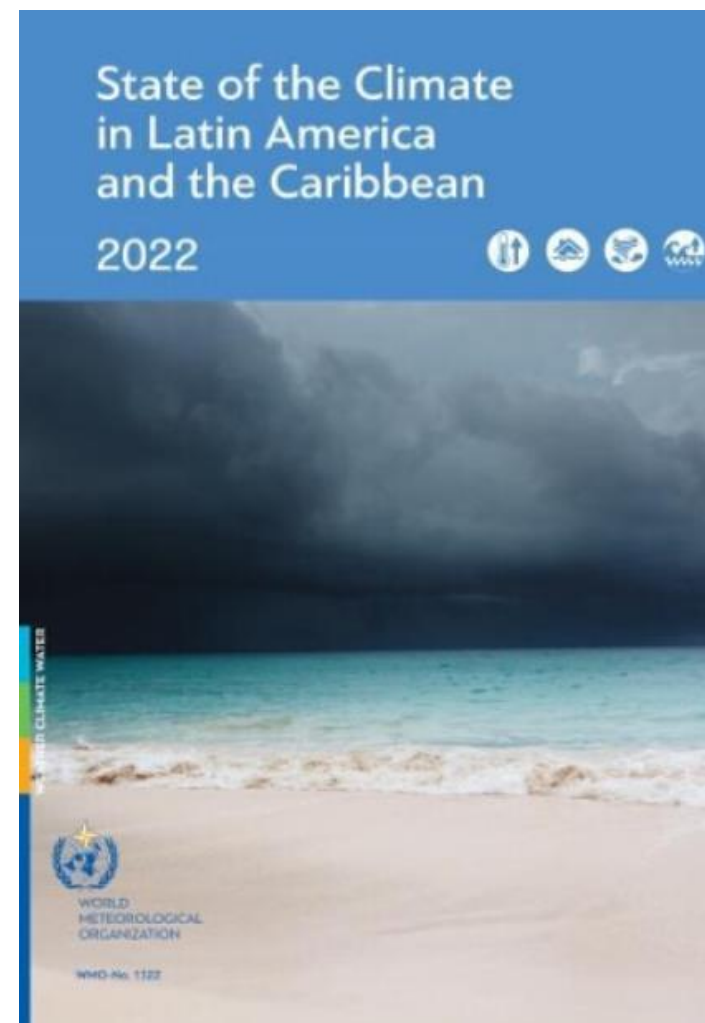
05 July 2023



## Key messages

- Long-term warming trend accelerates
- Sea level rise is above global average
- Floods and landslides kill hundreds and cause billions in damage
- Drought hits food production and energy
- Wildfires cause local surge in CO<sub>2</sub> emissions
- Adaptation efforts and switch to renewables must increase

## State of the Climate in Latin America and the Caribbean 2022 report



**Sources:** World Meteorological Organization (WMO). *State of the Climate in Latin America and the Caribbean 2022*. WMO-No. 1322. Geneva: WMO, 2023.  
<https://wmo.int/publication-series/state-of-climate-latin-america-and-caribbean-2022>

# Climate Change Vicious Cycle Spirals in Latin America and the Caribbean

## ***Major Climate Drivers.***

Latin America and the Caribbean is surrounded by the Pacific and the Atlantic oceans, and the climate is largely influenced by the prevailing sea-surface temperatures and associated large-scale atmosphere–ocean coupling phenomena, such as the El Niño–Southern Oscillation (ENSO).

2022 marked the third consecutive year of La Niña conditions. This was associated with higher air temperatures and precipitation deficits over northern Mexico, a prolonged period of drought conditions over much of south-eastern South America, and increased rainfall in parts of Central America and northern South America and in the Amazon region.

Source: World Meteorological Organization (WMO). *Climate change vicious cycle spirals in Latin America and Caribbean*. Press Release. July 5, 2023. Available at: <https://wmo.int/news/media-centre/climate-change-vicious-cycle-spirals-latin-america-and-caribbean#:~:text=Temperatures%20over%20the%20past%2030,on%20countries%20and%20local%20communities.>



# Climate Change Vicious Cycle Spirals in Latin America and the Caribbean

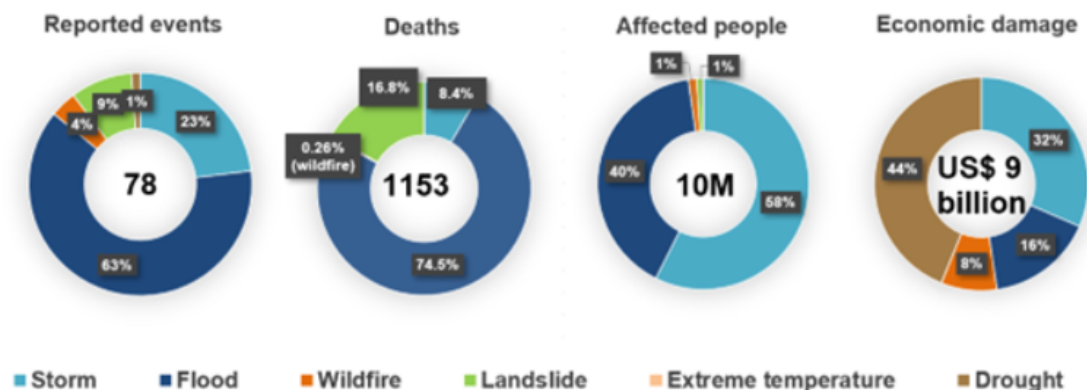
## *Climate-related impacts and risks.*

The Latin American and Caribbean population must be made more aware of climate-related risks, and early warning systems in the region need to be strengthened and to reach communities who need them most. Only 60 % of the population are covered by Multi-Hazard Early Warning Systems, according to 2020 data.

in 2022, 78 meteorological, hydrological and climate-related hazards were reported in the region, according to the Centre for Research on the Epidemiology of Disasters (CRED) Emergency Events Database (EM-DAT).

Of these, 86% were storm and flood related events and accounted for 98% of the 1 153 fatalities documented in the database.

The US\$ 9 billion economic damages reported to EM-DAT were mainly due to drought (40%) and storms (32%). The real figures related to the impacts of extreme events are presumed to be worse because of under-reporting and because data on impacts are not available for some countries.



Source: World Meteorological Organization (WMO). *Climate change vicious cycle spirals in Latin America and Caribbean*. Press Release. July 5, 2023. Available at: <https://wmo.int/news/media-centre/climate-change-vicious-cycle-spirals-latin-america-and-caribbean#:~:text=Temperatures%20over%20the%20past%2030,on%20countries%20and%20local%20communities>.

## Climate Change Vicious Cycle Spirals in Latin America and the Caribbean

“Tropical cyclones, heavy precipitation and flooding events, and severe multi-year droughts resulted in loss of life and billions in economic damages throughout 2022. Increasing sea-level rise and ocean warming pose increasing risks to coastal livelihoods, ecosystems and economies,” said WMO Secretary-General Prof. Petteri Taalas.

“Many of the extreme events were influenced by the long-running La Niña but also bore the hallmark of human-induced climate change. The newly arrived El Niño will turn up the heat and bring with it more extreme weather. Early Warnings for All will be vital to protect lives and livelihoods,” he said.

“The top priority areas for climate change adaptation and mitigation in the region are agriculture and food security, and energy. The report addresses these key topics, highlighting the impacts of the persistent droughts in the region on agricultural production and the unexploited potential of renewable energy, especially solar and wind resources,” said Prof. Taalas.

Source: World Meteorological Organization (WMO). *Climate change vicious cycle spirals in Latin America and Caribbean*. Press Release. July 5, 2023. Available at: <https://wmo.int/news/media-centre/climate-change-vicious-cycle-spirals-latinamerica-and-caribbean#:~:text=Temperatures%20over%20the%20past%2030,on%20countries%20and%20local%20communities>.

## Climate Change Vicious Cycle Spirals in Latin America and the Caribbean

Latin America and the Caribbean has a high share of modern renewables in total final energy consumption, mainly because of hydropower. However, there is also the potential to tap into the region's solar and wind resources, which accounted for only 16% of the total renewable generation in 2020.

Latin America and the Caribbean region plays a vital role in producing food and ecosystem services that benefit not only the region itself, but the entire planet. It is also highly vulnerable to climate risks because about three quarters of the population lives in informal urban settlements and about eight percent of the population is undernourished.

Source: World Meteorological Organization (WMO). *Climate change vicious cycle spirals in Latin America and Caribbean*. Press Release. July 5, 2023. Available at: <https://wmo.int/news/media-centre/climate-change-vicious-cycle-spirals-latin-america-and-caribbean#:~:text=Temperatures%20over%20the%20past%2030,on%20countries%20and%20local%20communities.>



### REGIONAL: EL NIÑO

The Global El Niño Southern Oscillation (ENSO) Analysis Cell identified Brazil, Bolivia, Colombia, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Peru, Suriname, and Venezuela as priority countries with the World Meteorological Organization (WMO) predicting persistent El Niño conditions through early 2024. These countries face potential disruptions to agriculture due to either excess or insufficient rainfall, with some urged to consider anticipatory actions. The region also risks increased health issues, including malnutrition, mosquito-borne diseases, and water shortages, compounded by the possibility of more frequent heatwaves. This scenario is particularly concerning for countries with weaker health systems.

### COLOMBIA: LANDSLIDE

On 12 January, a landslide struck a main road between Medellín and Quibdó, the capital of the Chocó department, burying parked vehicles and affecting a home where some 50 people were sheltered due to rains. The disaster has so far left 39 people dead, 4 missing and 20 injured. Local and national Government institutions, through the National Disaster Risk Management Unit (UNGRD), firefighters, Colombian Red Cross, and others, have mobilized material and technical resources. The Humanitarian Country Team's (HCT) local coordination team in Chocó is working with local institutions to complement assistance and has already provided psychosocial support. National-level coordination is also ongoing with UNGRD to monitor if any additional requests for assistance arise.



### KEY FIGURES

**13**

Countries identified as priority countries with El Niño forecast to persist into 2024

**39**

People left dead following landslide in Colombia, as well as 4 people missing

**130K**

Students in Haiti no longer receiving WFP meals due to insecurity and school closures

### HAITI: ACCESS CONSTRAINTS

Since 11 January, tensions have mounted in southern Haiti under the influence of a Grande Anse ex-Senator who has called for a revolution in Haiti, in protest of the current Government, and civil disobedience. In recent days, instability has also expanded to the North, Artibonite, North-West departments and the Port-au-Prince metropolitan area with shootings, roadblocks and demonstrations. The World Food Programme (WFP) school canteen program is slowing down, especially in the South. An estimated 130,000 students no longer receive meals amid school closures and access constraints preventing WFP delivery. Since 15 January, the UN Department of Safety and Security (UNDSS) has temporally restricted all road missions in the four southern departments. UN Humanitarian Air Service (UNHAS) flights have also been temporally suspended.

### SOUTH AMERICA: FLOODS

On 14 January, Rio de Janeiro took on a month's worth of rain in 24 hours, causing 12 deaths and major disruptions after water levels in major thoroughfares reached car roofs. Severe weather in Brazil, linked to climate change and El Niño, also resulted in 48 deaths in Sao Paulo State in February 2023 and 31 in southern Brazil due to a September 2023 cyclone. Meanwhile, Bolivia's Tipuani region in the west experienced floods affecting 900 families and displacing around 2,500 people. Authorities have declared a disaster, and security forces distributed 13 tons of relief. The Ministry of Defence cited deforestation and landslides as causes, with the national climate office predicting continued rainfall.

### CHILE: WILDFIRES

Since 2 February, intense fires have caused widespread damage to natural reserves, infrastructure, and residential areas. As of 8 February, reports indicate 131 fatalities, a figure expected to rise as emergency responders continue search and rescue efforts. Close to 6,000 houses have been destroyed. According to the latest report from the National Forest Corporation, nearly 32,000 hectares of land have been affected, primarily in the Valparaíso, O'Higgins, Maule, and Araucanía regions. The Government declared a 30-day state of disaster for the provinces of Marga Marga and Valparaíso to expedite resources. A curfew is in place to facilitate evacuation and emergency response operations on major highways. While the Government has not requested international assistance, in-country UN agencies are supporting national efforts.

### HAITI: VIOLENCE & INSECURITY

UN agencies and NGOs temporarily suspended or slowed humanitarian operations this week due to escalating unrest and violence in Port-au-Prince and other major cities, where at least one organization was looted. On 9 February, UN High Commissioner for Human Rights issued an urgent warning of the intensifying humanitarian crisis, highlighting January as the most violent month in over two years. The insecurity is hindering humanitarian access to those in need and civilian access to basic services. The unrest also forced a halt to UNHAS flights. UNICEF has called for the protection of children, while 1,000 schools have suspended classes nationwide since mid-January. Furthermore, weeks of instability have spiked food prices, according to WFP.



### KEY FIGURES

**131**  
confirmed deaths due to ongoing wildfires in central Chile

**1,000**  
schools suspended classes across Haiti in January due to violence and insecurity

**40%**  
increase in violence in Chiapas, Mexico, in January 2024 compared to December 2023

### MEXICO: VIOLENCE & DISPLACEMENT

Mere weeks after reports of the displacement of 2,300 people on 15 January in the state of Chiapas, near the southern border with Guatemala, the municipality of Chicomuselo has witnessed another surge in violence-induced displacement. On 1 February, members of a criminal group allegedly entered people's houses, stole vehicles and farm animals, and threatened the community. Residents from the neighbourhoods of Monte Sinai, San Antonio, el Ocotal, Cuatro Caminos and Galicia have been forced to seek refuge in the houses of relatives or in public spaces in other neighbourhoods in Chicomuselo. According to ACLED, turf wars between gangs drove a 40 per cent increase in violence in January when compared to the previous month, resulting in some of the highest levels of violence in Chiapas in recent years.

### GUATEMALA: EPIDEMIOLOGICAL ALERT

The Ministry of Health issued an epidemiological alert for the departments of Suchitepéquez, Retalhuleu and Huehuetenango following an increase in suspected cases of Guillain-Barré syndrome, with 62 cases and 4 deaths reported so far, and a further 19 cases pending analysis. The syndrome is a rare autoimmune condition characterised by muscle weakness and loss of reflexes, starting in the legs and spreading to the upper body. Although most of the cases are in adults (69 per cent aged 30-64 years old), the condition can also affect children, with one case already reported in a 4-year-old. The Ministry of Health is investigating the possible causes of the rising cases and intensifying prevention measures that emphasize the importance of personal hygiene, food handling and safe water.



# Colombia, a Usually Wet Nation, Reels Amid Widespread Wildfires

Firefighters, many of them volunteers, have been confronting dozens of blazes amid high temperatures this month. The conditions have been linked to climate change.

The New York Times

GIVE THE TIMES



About 600 firefighters have been battling the fires in the hills surrounding Bogotá, Colombia. Federico Rios for The New York Times

Source: Correal A, Glatsky G. *Colombia, a Usually Wet Nation, Reels Amid Widespread Wildfires*. *New York Times*. January 29, 2024. Available at: <https://www.nytimes.com/2024/01/29/world/americas/colombia-wildfire-forest.html>



## In photos: Colombia battles raging wildfires



Rescuers work to extinguish a forest fire in Bogotá, Colombia on Jan. 24, 2024. Photo: Diego Cuevas/Getty Images



Flames rise from a forest during a wildfire near Bogotá on Jan. 24. Photo: Guillermo Munoz/AFP via Getty Images

Source: Amer A, Freedman A. In photos: Colombia battles raging wildfires. *Axios*. January 29, 2024. Available at: <https://www.axios.com/2024/01/29/colombia-wildfires-amazon-gustavo-petro>

# Climate change made unprecedented Amazon rainforest drought 30 times more likely

by *Sam Ezra Fraser-Baxter, Jamie Taylor*

29 January 2024



**Human-caused climate change was the main driver of the devastating drought in the Amazon last year, according to study by World Weather Attribution.**

The rapid attribution analysis found that climate change made the devastating drought from June to November last year 30 times more likely.

Source: Fraser-Baxter SE, Taylor J. Climate change made unprecedented Amazon rainforest drought 30 times more likely. Imperial College London. January 29, 2024. Available at: <https://www.imperial.ac.uk/news/251057/climate-change-made-unprecedented-amazon-rainforest/#:~:text=Climate%20change%20made%20unprecedented%20Amazon%20rainforest%20drought%2030%20times%20more%20likely,-by%20Sam%20Ezra&text=Human-caused%20climate%20change%20was,study%20by%20World%20Weather%20Attribution>



# Global warming, deforestation, fires combined could hasten Amazon demise, study finds

By Oliver Griffin

February 14, 2024 6:29 PM GMT-5 · Updated 12 days ago



Source: Griffin O. Global warming, deforestation, fires combined could hasten Amazon demise, study finds. *Reuters*. February 14, 2024. Available at: <https://www.reuters.com/business/environment/global-warming-deforestation-fires-combined-could-hasten-amazon-demise-study-2024-02-14/>

## Analysis

# Critical transitions in the Amazon forest system

<https://doi.org/10.1038/s41586-023-06970-0>  
Received: 29 August 2022  
Accepted: 13 December 2023  
Published online: 14 February 2024  
Open access  
 Check for updates

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The possibility that the Amazon forest system could soon reach a tipping point, inducing large-scale collapse, has raised global concern<sup>1–3</sup>. For 65 million years, Amazonian forests remained relatively resilient to climatic variability. Now, the region is increasingly exposed to unprecedented stress from warming temperatures, extreme droughts, deforestation and fires, even in central and remote parts of the system<sup>1</sup>. Long existing feedbacks between the forest and environmental conditions are being replaced by novel feedbacks that modify ecosystem resilience, increasing the risk of critical transition. Here we analyse existing evidence for five major drivers of water stress on Amazonian forests, as well as potential critical thresholds of those drivers that, if crossed, could trigger local, regional or even biome-wide forest collapse. By combining spatial information on various disturbances, we estimate that by 2050, 10% to 47% of Amazonian forests will be exposed to compounding disturbances that may trigger unexpected ecosystem transitions and potentially exacerbate regional climate change. Using examples of disturbed forests across the Amazon, we identify the three most plausible ecosystem trajectories, involving different feedbacks and environmental conditions. We discuss how the inherent complexity of the Amazon adds uncertainty about future dynamics, but also reveals opportunities for action. Keeping the Amazon forest resilient in the Anthropocene will depend on a combination of local efforts to end deforestation and degradation and to expand restoration, with global efforts to stop greenhouse gas emissions.

Source: Flores, B.M., Montoya, E., Sakschewski, B. et al. Critical transitions in the Amazon forest system. *Nature*.2024;626:555–564.



### PERU: DENGUE

Peru's Ministry of Health (MINSA) reports over 13,000 dengue cases so far in 2024, marking a 53.4 per cent increase from 2023, with 3,192 cases in the fifth week of 2024 alone. This surge coincides with prolonged El Niño-induced heatwaves. In the northern region of Piura, the region with the highest number of dengue cases, MINSA has reported more than 100 consecutive unusually warm days and over 200 warm nights, with the town of Mallares reaching a record summer temperature of 38.2 degrees Celsius on 8 January. The warm conditions, exacerbated by El Niño Costero, create favourable environments for dengue transmission, posing heightened risks to vulnerable groups. According to Peru's National Centre for Epidemiology, Prevention, and Disease Control (CDC), the persistent El Niño conditions could result in up to 109,297 cases nationwide by June 2024.

### HAITI: VIOLENCE

Since 1 February, approximately 10,000 people in Port-au-Prince have been displaced due to ongoing violence, bringing the total number of people displaced since the start of the year to 20,000. Weeks of prolonged violence and insecurity have forced schools to close, halting associated school meal programs, and disrupted healthcare services, with some facilities being forced to suspend operations. Additionally, the violence has hindered the access of UN agencies and NGOs to carry out their programs in Port-au-Prince and other major cities. UNICEF has condemned the deaths of two children and expressed deep concern about the violence's impact on children, while WFP has emphasized the urgent need for unimpeded access for aid agencies and the free flow of food supplies to prevent the already dire levels of hunger from becoming catastrophic.



### KEY FIGURES

**20,000**  
people newly-displaced  
in Port-au-Prince this  
year

**18,940**  
people affected  
by armed strikes in  
Colombia

**13,000**  
cases of dengue  
recorded in Peru


### COLOMBIA: ARMED STRIKE

A critical humanitarian situation has unfolded in Chocó, where from 10-14 February a non-state armed group (NSAG) initiated an armed strike in the municipalities of Medio San Juan, Nóvita, Sipi, and Istmina, affecting 18,940 people. Communities faced restraints and restrictions in accessing essential goods, healthcare, education and basic sanitation. Since December 2023, indigenous groups have grappled with the persistent presence of NSAGs on their lands, resulting in the confinement of approximately 1,397 people (296 families) across various municipalities. The NSAG's directives have restricted movement in vital areas, notably those where food is sourced, exacerbating the growing humanitarian situation.


### REGIONAL: EL NIÑO

El Niño and Coastal El Niño conditions are driving climatic crises across the region. Chile and Peru have experienced persistent heatwaves in early 2024, with devastating wildfires affecting nearly 10,000 people in Chile, and extreme temperatures, reminiscent of previous El Niño years, spiking disease rates and heatstroke in Peru. The eastern region of Guatemala saw temperatures reach 40 degrees Celsius in February, despite it being the cold season. In Colombia, 515 El Niño-related events, including forest fires and flooding, have affected 97,000 people, while Ecuador, where half of the population live in floodable areas, faces intense rainfall, particularly in coastal regions. On 14 February, the Start Fund allocated US\$265,082 in anticipation of El Niño-related flooding in the Santa Elena province of Ecuador. El Niño conditions are forecast to persist until at least March, with a 79 per cent chance of transitioning to ENSO-neutral by April-June 2024.

### REGIONAL: DENGUE

 PAHO has issued an epidemiological alert calling for intensified efforts across the Americas to control the spread of dengue fever, as the region faces a significant surge in reported cases in early 2024. As of early February, the region has registered 673,267 cases and 102 deaths, a 157 per cent increase compared to last year and a 225 per cent rise over the five-year average. This follows the 4,565,911 cases and 2,340 deaths registered in 2023, the highest number of annual dengue cases on record. Eleven countries and territories, including Argentina, Brazil, Colombia, Costa Rica, Guatemala, Guadeloupe, French Guiana, Martinique, Mexico, Paraguay and Peru, have reported heightened cases. PAHO emphasizes the need for strengthened surveillance, early diagnosis, treatment, and community engagement to reduce mosquito breeding sites and prevent complications.

### BOLIVIA: LANDSLIDES & SEVERE WEATHER

 Heavy rainfall in western Bolivia has resulted in devastating landslides, causing casualties and widespread damage. On 19 February, the National Service of Meteorology and Hydrology (SENAMHI) issued a red alert for three municipalities in La Paz and an orange alert for 279 municipalities across nine departments due to persistent rain and the risk of flooding. Humanitarian aid has been provided to affected communities, including 100 families in the municipality of Oruro, where the Paria River overflowed. Between November and 19 February, severe weather across eight departments of the country has affected 11,509 families, destroyed 446 houses and led to a total of 33 fatalities. Despite challenges, authorities are persisting with rescue efforts and precautionary measures.




### KEY FIGURES

**₡ 673,267**  
cases of dengue  
recorded across the  
region so far in 2024


**👤 290,000**  
children left without  
school meals as  
violence grips  
Port-au-Prince

**👤 11,509**  
families affected by  
severe weather in  
Bolivia since November

### PANAMA: GENDER-BASED VIOLENCE & MIGRATION

 Doctors Without Borders (MSF) warns of alarmingly high levels of sexual and gender-based violence among migrants and refugees crossing the dangerous Darién Gap between Panama and Colombia. In just one week, MSF treated 113 survivors of sexual violence, including 9 minors, surpassing the total number of people treated in 2021. In December 2023, 214 cases were reported, nearly a third of the year's total. MSF has repeatedly voiced concern over the surge in GBV cases and is demanding urgent action to halt this crisis. Meanwhile, the CERF-funded projects addressing the pressing needs of refugees and migrants in the Darién are set to conclude by the end of February 2024.

### HAITI: VIOLENCE & CHILDREN

 A number of schools in Port-au-Prince and other major cities are set to resume classes this week as a precarious calm has returned following weeks of unprecedented violence. Since the beginning of February, a surge in insecurity has forced the closure of 15 schools in Port-au-Prince, including the Lycée La Saline and the École les Papillons. Due to the closures and access constraints to reach facilities, at least 290,000 of the 420,000 targeted children have been deprived of WFP school meals, amid already growing rates of food insecurity and malnutrition. Children have been continuously caught in the crossfire of the violence. In 2023, at least 167 children were killed or injured by gunshots. Recruitment of minors by armed groups has also increased. UNICEF's representative in Haiti emphasizes that conditions on the ground are extremely dangerous for children, describing playgrounds, schools and homes in many parts of the city as war zones.

## FOOD SECURITY, CLIMATE CHANGE, AND HEALTH

### Global environmental climate change, covid-19, and conflict threaten food security and nutrition

**Sheryl L Hendriks and colleagues** describe the global risks and vulnerabilities associated with health, food security, and nutrition

Sheryl L Hendriks,<sup>1</sup> Hugh Montgomery,<sup>2</sup> Tim Benton,<sup>3</sup> Ousmane Badiane,<sup>4</sup> Gonzalo Castro de la Mata,<sup>5</sup> Jessica Fanzo,<sup>6</sup> Ramon R Guinto,<sup>7,8</sup> Jean-François Soussana<sup>9</sup>

September 2021 saw the United Nations Food Systems Summit (UNFSS) take place in New York. It focused on the “three Cs” that are driving disruption to food systems and threatening recent progress in mitigating hunger, malnutrition, and undernutrition: global environmental climate change, covid-19 disease, and conflict. Summit delegates from 183 countries agreed that business as usual would not lead to the change necessary to achieve the sustainable development goals. Summit participants called for urgent action at scale.

The three Cs interact on five mediators (“five Fs”) upon which food systems depend: the geopolitics of our global food, fertilizer, finance, fodder, and fuel systems (fig 1). Our global food supply system is fragile and vulnerable to the impacts of each driver or mediator. However, all can interact to amplify the downstream effects on people, their health, and diets. For example, decreased food availability has financial impacts (and vice versa). In a vicious feedback loop, undernutrition affects the ability to produce food, and lack of food availability can lead to conflict (and vice versa), while environmental climate change can cause both.

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Cite this as: *BMJ* 2022;378:e071534  
<http://dx.doi.org/10.1136/bmj-2022-071534>  
Published: 29 September 2022

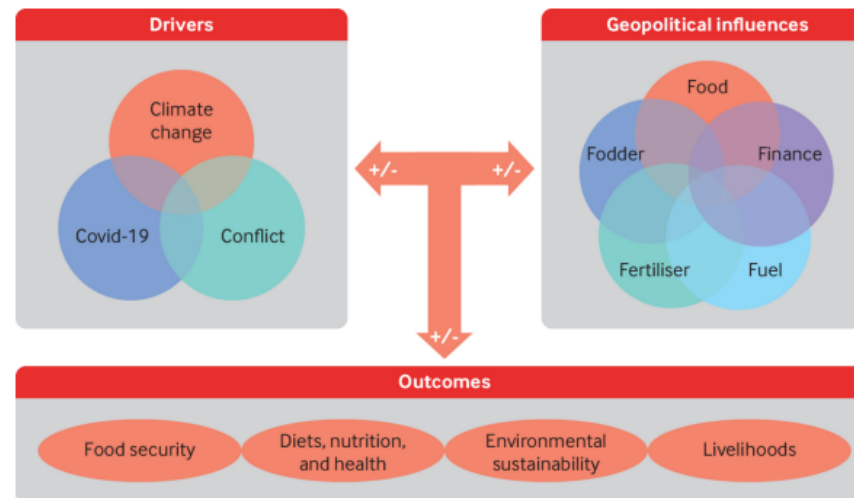


Fig 1 | The “three Cs” and “five Fs” of concern

**Source:** Hendriks SL, Montgomery H, Benton T, et al. Global environmental climate change, covid-19, and conflict threaten food security and nutrition. *BMJ* 2022;378:e071534 | doi: 10.1136/bmj-2022-071534.



## Global indicators on the costs of healthy diets and how many people can't afford them

FAO's FAOSTAT data portal shows that Latin America and the Caribbean has the highest cost of a healthy diet compared to other regions



Indicators developed by FAO with critical inputs from researchers at [Tufts University](#) and the World Bank show, for example, that **Latin America and the Caribbean has the highest cost of a healthy diet compared to other regions, at \$3.89 per person per day in 2020**, followed by Asia (\$3.72), Africa (\$3.46), Northern America and Europe (\$3.19) and Oceania (\$3.07). (FAO, March 2023)

# The Latin American paradox: A leading food producer with expensive groceries

While the cost of feeding a family has risen everywhere, the UNDP says prices in Latin America and the Caribbean have surged the most





Source: Fleck A. Food Inflation in Latin America. *Statista*. May 10, 2023. Available at: <https://www.statista.com/chart/29967/inflation-rates-of-countries-in-latin-america/>





LATEST EDITION

## The State of Food Security and Nutrition in the World 2023

### Urbanization, agrifood systems transformation and healthy diets across the rural-urban continuum

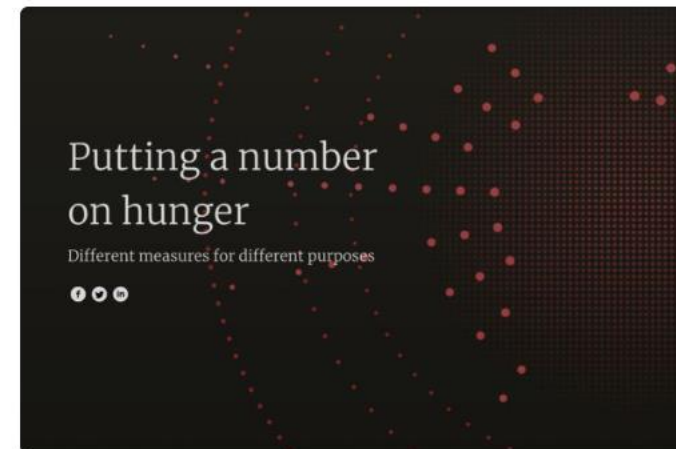
Urbanization is changing agrifood systems globally in ways that can only be understood through a rural-urban continuum lens. The changing pattern of population agglomerations across a rural-urban continuum and its interface as a place of exchange and socioeconomic interactions, is reshaping and being reshaped by agrifood systems, with implications for the availability and affordability of healthy diets, and in turn, for food security and nutrition.

Start reading

### Digital resources



Digital report

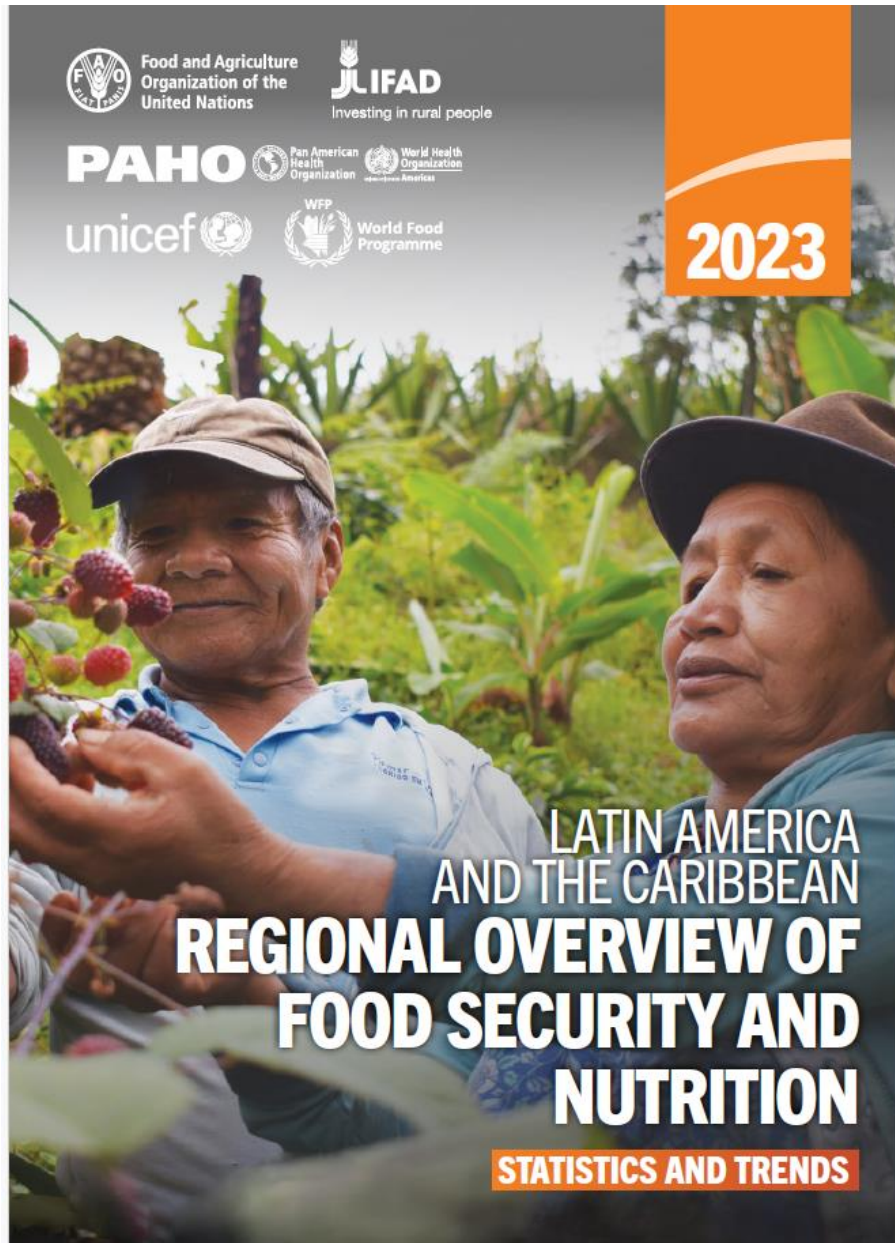


Interactive story

Source: FAO. *State of Food Security and Nutrition in the World*. Rome, Italy: FAO; July 2023. Available at:

<https://www.fao.org/publications/home/fao-flagship-publications/the-state-of-food-security-and-nutrition-in-the-world/en> 24



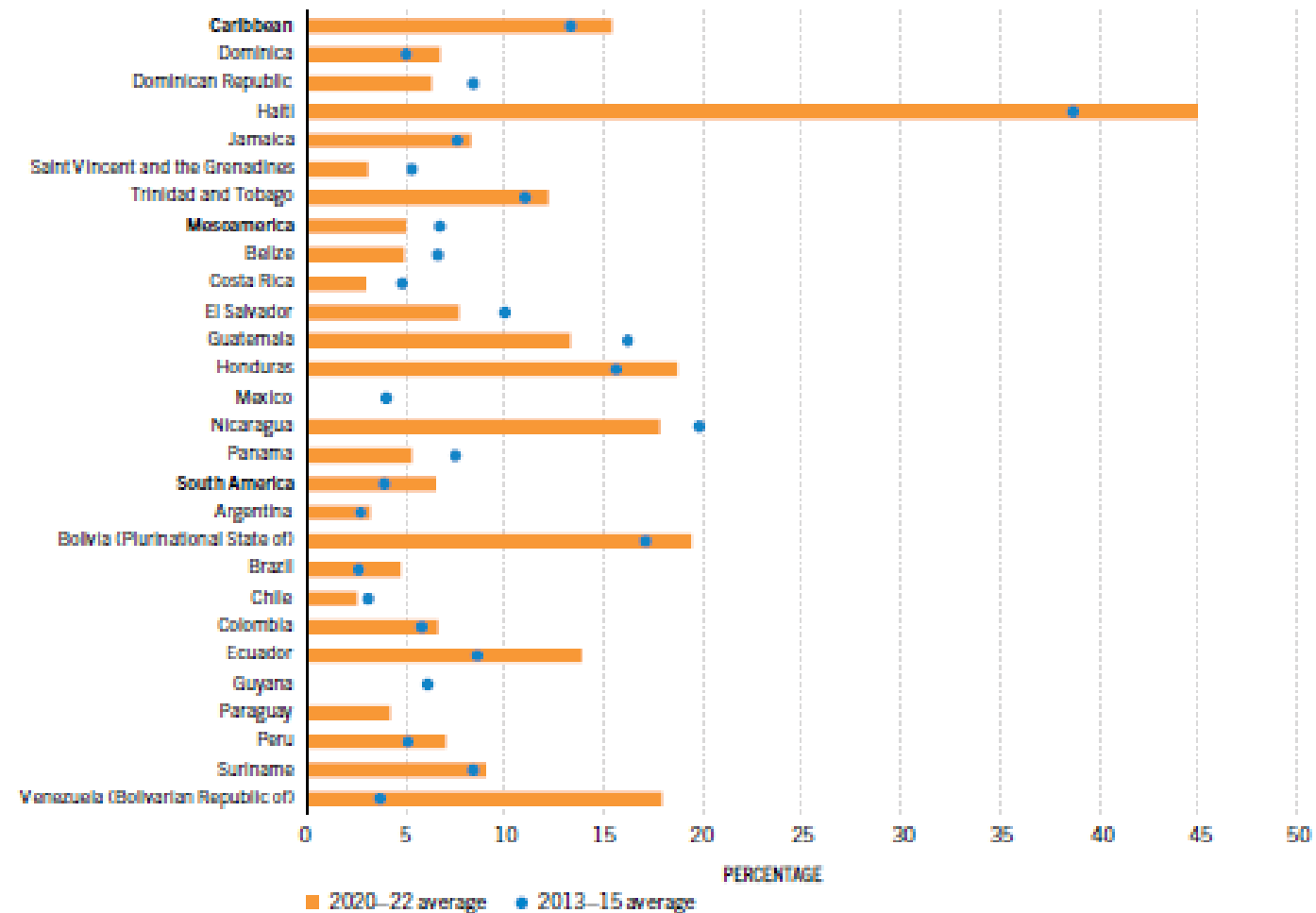


## Key Figures: Food Insecurity and Poverty/Inequality

- In 2022, 247.8 million people affected by moderate-to-severe food insecurity Latin America and the Caribbean.
- In South America, more than a third (36.4%) of the population suffered moderate or severe food insecurity.
- In the Caribbean, during 2022, 60.6% of the population experienced moderate or severe food insecurity.
- The prevalence of moderate or severe food insecurity continues to affect women more than men.
- Poverty affects children, adolescents, women, indigenous people, and rural residents at higher rates. Income inequality across the region remains high.
- Persistent inequalities and climate patterns, particularly affecting women and rural communities, continue to challenge food security.

Source: FAO, IFAD, PAHO, UNICEF & WFP. 2023

## Undernourishment (Hunger) in Latin America and the Caribbean (FAO et al., 2023)



Note: The values for 2020 to 2022 are projections. The PoU was less than 2.5 percent for Paraguay in 2013–2015, for Guyana and Mexico in 2020–2022, and for Barbados, Cuba and Uruguay (not shown in figure) in both periods.

Source: FAO. 2023. FAOSTAT: Suite of Food Security Indicators. In: FAO. Rome. [Cited July 2023]. <https://www.fao.org/faostat/en/#data/FS>

## Food Insecurity in Latin America and the Caribbean (FAO et al., 2023)

Prevalence of food insecurity (percent)

	Prevalence of severe food insecurity					Prevalence of moderate or severe food insecurity				
	2015	2019	2020	2021	2022	2015	2019	2020	2021	2022
<b>World</b>	7.6	9.3	10.8	11.7	11.3	21.7	25.3	29.4	29.6	29.6
Latin America and the Caribbean	7.3	9.7	12.5	13.9	12.6	27.3	31.5	39.3	40.3	37.5
Caribbean	n.a.	n.a.	32.4	25.7	28.2	n.a.	n.a.	65.4	59.5	60.6
Mesoamerica	6.7	7.3	7.3	8.0	8.6	30.3	28.2	34.2	34.1	34.5
South America	5.0	8.5	12.7	15.1	12.7	22.6	29.9	38.8	40.9	36.4

Notes: n.a. = not available. See Annex III for details about years of data availability and population coverage for the Caribbean.

Source: FAO. 2023. FAOSTAT: Suite of Food Security Indicators. In: FAO. Rome. [Cited July 2023]. <https://www.fao.org/faostat/en/#data/FS>

People face **moderate food insecurity** when they are **uncertain of their ability to obtain food and have been forced to reduce, at times over the year, the quality and/ or quantity of food they consume due to lack of money or other resources.**

**Severe food insecurity** means that **individuals have likely run out of food, experienced hunger and, at the most extreme, have gone for days without eating, putting their health and well-being at serious risk.**

Source: FAO, IFAD, PAHO, UNICEF & WFP. 2023





Photo Credit: FAO, 2023

## Key Figures: The Challenge of Malnutrition:

- “Latin America and the Caribbean is increasingly experiencing the complex problem of malnutrition, which encompasses both undernutrition – stunting, childhood wasting, and vitamin and mineral deficiencies [or ‘hidden hunger’] – and overweight.”
- Between 2020 and 2022, the prevalence of overweight in children under five years of age increased slightly from 8.3% to 8.6%, with a more significant increase in South America (9.7%) and remained stable in the Caribbean (6.6%).
- “In the last 50 years, overweight and obesity rates tripled, affecting 62.5% of the population in the region,” ... the regional prevalence of overweight and adolescents is at 33.6%, higher than the world average. “It is urgent to advance the transformation of food systems to ensure healthy eating for all.”

Sources: FAO, IFAD, PAHO, UNICEF & WFP. 2023; PAHO. New UN Report: 43.2 million people suffer from hunger in Latin America and the Caribbean. November 9, 2023. Available at: <https://www.paho.org/en/news/9-11-2023-new-report-432-million-people-suffer-hunger-latin-america-and-caribbean-and-region>

# The current food crisis: Building resilience at the nexus of food insecurity, climate change and conflict

Cibele Queiroz<sup>1,2</sup>, Amanda Jonsson<sup>1</sup>, Amanda Wood<sup>1</sup>, Albert Norström<sup>1,3</sup>

<sup>1</sup> Stockholm Resilience Centre, Stockholm University, Stockholm, Sweden; <sup>2</sup> Global Resilience Partnership, Cape Town, South Africa; <sup>3</sup> Earth Commission, Future Earth, Royal Academy of Sciences, Stockholm, Sweden



The last three years have been marked by global turbulence and the simultaneous occurrence of catastrophic events such as the COVID-19 pandemic, extreme weather, disrupted trade and food supply chains, and an increase in the number of violent conflicts in different regions of the world. While the consequences are being felt across the globe, they are particularly considerable in the Global South<sup>1</sup>. More countries and populations are now experiencing acute food insecurity or famine<sup>2</sup>, progress toward the UN Zero Hunger goal has been derailed, and the world is facing the largest food crisis in modern history<sup>3,4,5</sup>.

This brief aims to provide an understanding of the current food crisis and provide insights for solutions. It explores the following key questions:

- What are the main impacts of the crisis and who is most affected?
- Why are we experiencing a food crisis now?
- What are its major drivers?
- Why is today's crisis different from previous food crises?
- What solutions have been suggested and can these contribute to increased resilience and the prevention of future crises?

## Box 2. Concepts and definitions

**Food insecurity:** A person is considered food insecure when they do not have regular access to enough safe and healthy food to sustain normal growth and development or an active and healthy life. This can be defined on a scale ranging from mild to severe, where mild entails an uncertainty in a person's ability to acquire food, and severe when a person does not have food for the day or for several days<sup>1,7</sup>.

**Food crisis:** A food crisis occurs when rates of acute food insecurity and malnutrition rise sharply at local or national levels, raising the need for emergency food assistance. It is usually caused by a shock or combination of shocks that impact one or more of the pillars of food security: food availability, food access, food utilization or food stability<sup>8</sup>.

**Emergency:** Food emergency happens when: a) individuals or households experience large gaps in food consumption, reflected by very high acute malnutrition and excess mortality; or b) individuals or households are able to mitigate those gaps but only through emergency livelihood strategies and asset liquidation<sup>9</sup>.

**Famine:** Famine is an extreme deprivation of food, even when individuals or households have employed all coping strategies. Starvation, extremely critical acute malnutrition, and high levels of mortality are often present<sup>2</sup>.

**Driver:** Any natural or human-induced factor that directly or indirectly causes a change in a society, an ecosystem, a biophysical process, or other aspect of a system, such as the food system<sup>6</sup>.

**Resilience:** The capacity to live and develop with change and uncertainty. It includes the capacity to cope, adapt, and transform in the face of disturbance<sup>10</sup>.

Source: Queiroz C, Jonsson A, Wood, A, Norström A. *The current food crisis: Building resilience at the nexus of food insecurity, climate change and conflict*. Stockholm: Stockholm Resilience Center and Global Resilience Partnership. December 8, 2023.

Available at:

[https://www.stockholmresilience.org/download/18.5171530718c4348e8b2f33/1702043204112/Food%20Crisis%20Brief\\_FINAL\\_VERSION-1.pdf](https://www.stockholmresilience.org/download/18.5171530718c4348e8b2f33/1702043204112/Food%20Crisis%20Brief_FINAL_VERSION-1.pdf)



# Creating Sustainable Livelihoods - The Potential of Regenerative Agriculture: Agroforestry & Silvopasture in Latin America



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## NEWSROOM

# New 3 million Hectare Project to Promote Regenerative Agriculture in Latin America

November 08, 2022 | Berlin, Germany

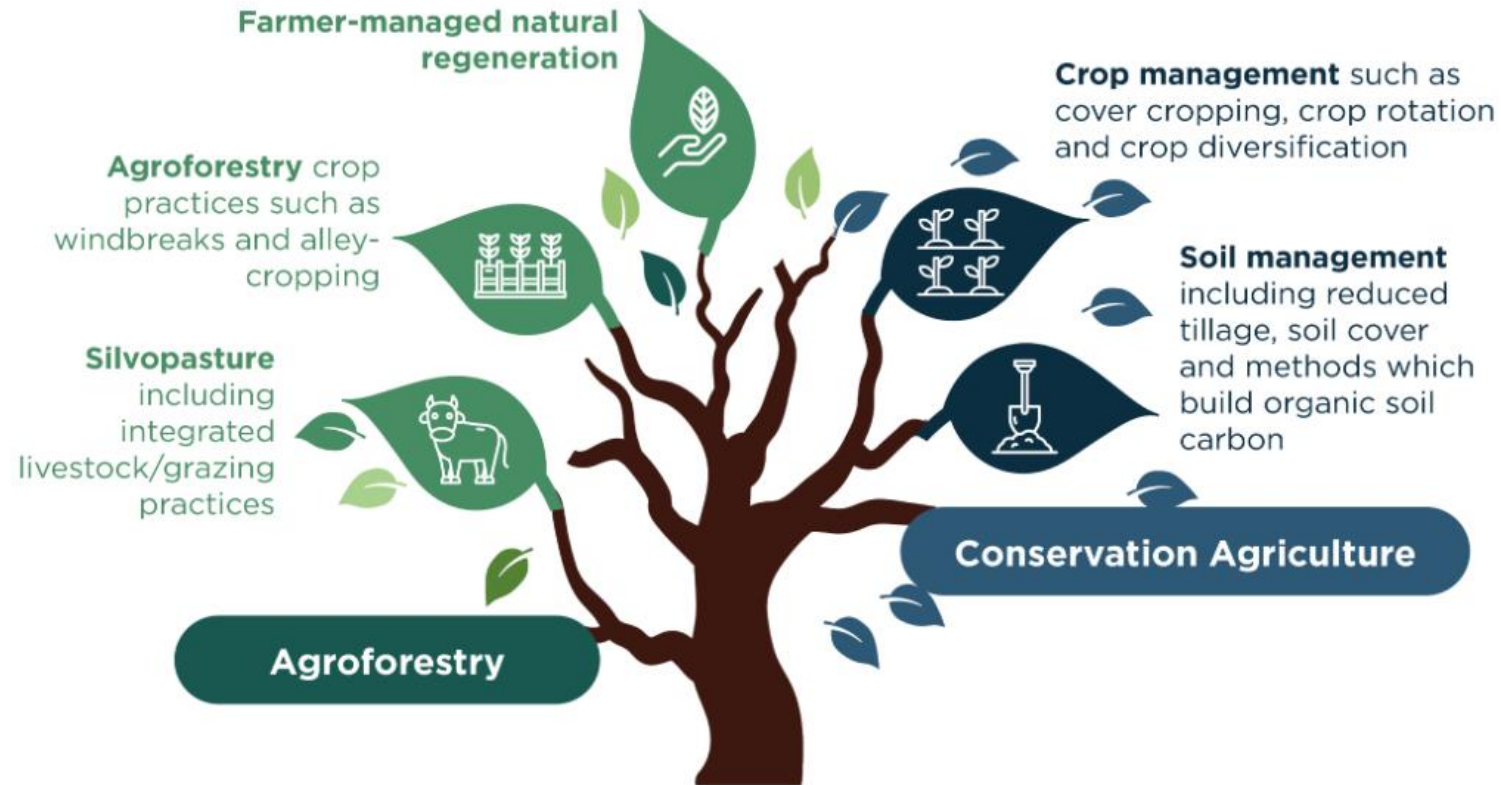


Source: The Nature Conservancy. New 3 million Hectare Project to Promote Regenerative Agriculture in Latin America. November 8, 2022. Available at: <https://www.nature.org/en-us/newsroom/three-million-hectare-project-to-promote-regenerative-agriculture-in-latin-america/>



The Nature Conservancy (TNC) announces the launch of a new six-year project spanning five countries in Latin America (Argentina, Colombia, Ecuador, Paraguay, and Peru) to invest in Ecosystem-based Adaptation (EbA) in Regenerative Ranching and Agriculture production systems. The project will create a multi-stakeholder platform which leverages TNC's and partners' diverse expertise and networks across the region to rapidly scale investments, tools, and methodologies in regenerative food systems in Latin America.

These five countries carry a great deal of importance for the region and the world's food system. In Latin America, extensive agriculture and ranching are responsible for 70% of land clearing and 20% of regional greenhouse gas emissions[1]. This threatens the resources on which this agricultural productivity is based, jeopardizing everything from food security and biodiversity to nature's resilience to the growing climate crisis. Climate change is unsettling Latin America's agricultural systems – a disruption amplified by COVID-19 as value chains have been upended, driving producers into unsustainable production methods. Yet, regenerative agriculture holds great promise to increase agricultural production, restore degraded soils, increase water security, and carbon sequestration while utilizing biodiversity, strengthening climate resilience, and promoting community equity and wellbeing.



Regenerative agriculture focuses on improving soil health through methods including crop rotation and reduced ploughing. Image: IUCN

Source: World Economic Forum. What is regenerative agriculture? October 11, 2022. Available at: <https://www.weforum.org/agenda/2022/10/what-is-regenerative-agriculture/#:~:text=The%20Forum's%202022%20report%2C%20Transforming,%E2%82%AC9.3%20billion%20a%20year>.

# It's Time to Embrace the Potential of Agroforestry as a Climate Solution

Adding native trees to agricultural lands improves biodiversity and farmer livelihoods, and can help address the climate crisis at a global scale.

October 02, 2023

Drew Terasaki Hart, Susan Cook-Patton, Edenise Garcia, Rémi Cardinael, Starry Sprenkle-Hyppolite, Todd Rosenstock

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Birds flit among lush green branches. A few leaves rustle underfoot. Pollinators visit fruit trees and howler monkeys call in the distance. In many ways, it feels like a forest, and yet this is a farm in São Felix do Xingu, in Pará State, Brazil—or more technically an “agroforest”.

Source: The Nature Conservancy. It's Time to Embrace the Potential of Agroforestry as a Climate Solution. October 2, 2023. Available at: <https://www.nature.org/en-us/what-we-do/our-insights/perspectives/agroforestry-natural-climate-solutions-potential/>



There are many different types of agroforests across the globe, from *Leucaena* hedgerows that feed livestock to rows of poplars striping wheat fields to cacao farms with protective layers of shade trees. Some systems reflect longstanding indigenous and traditional practices, while others are adapted for large-scale commercial agricultural systems.

Despite the diversity, agroforestry systems all share one common feature—trees that are deliberately incorporated and maintained in agricultural landscapes. These trees can help to enrich soils, boost yields, buffer crops and livestock from climate extremes, diversify incomes and support biodiversity.

There is also great hope that agroforestry systems can prove a valuable ally in tackling climate change, offering up to 0.31 billion metric tons of carbon removal per year<sup>1</sup>.

Despite this potential, climate-focused agroforestry is under-appreciated.

Source: The Nature Conservancy. It's Time to Embrace the Potential of Agroforestry as a Climate Solution. October 2, 2023. Available at: <https://www.nature.org/en-us/what-we-do/our-insights/perspectives/agroforestry-natural-climate-solutions-potential/>

OUR INSIGHTS

# Regenerative Food Systems



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## A Win-Win Cycle

Together we can turn one of today's biggest challenges into our greatest opportunity—a food system that goes beyond sustainable and creates positive growth for communities, economies and the planet.

LEARN ABOUT OUR APPROACH



Source: The Nature Conservancy. Regenerative Food Systems. Our Insights. Available at: <https://www.nature.org/en-us/what-we-do/our-insights/agriculture/>

# Silvopastoral Systems, a Powerful Approach for Cattle Ranching to Adapt to Climate Change (English)

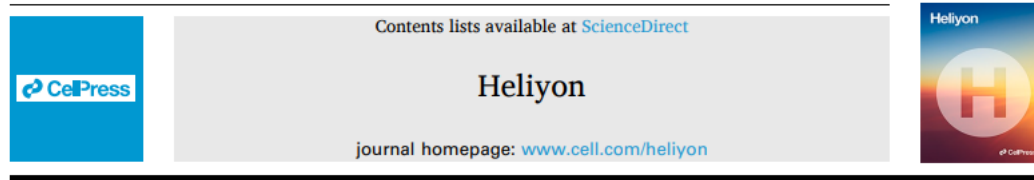
Cattle ranching, one of the most important sectors of Colombia's rural economy, generates income for more than half a million rural families and guarantees a significant share of national supply of beef and dairy production. Extensive ranching - the dominant form of ranching in Colombia - is often unproductive, detrimental to the environment, and highly vulnerable to climate events. This brochure describes a more sustainable cattle ranching model - silvopastoral systems - that enables ranching to adapt to the rigors and risks of a rapidly changing climate. The information presented here draws on a case study conducted for the Colombia Mainstreaming Sustainable Cattle Ranching Project (CMSCR).

Sources: Ramirez Diaz, Mariangela, Perez Rodriguez, Karina Kristina. *Silvopastoral Systems, a Powerful Approach for Cattle Ranching to Adapt to Climate Change (English)*. Washington, D.C. : World Bank Group; 2021. <http://documents.worldbank.org/curated/en/295291623048193452/Silvopastoral-Systems-a-Powerful-Approach-for-Cattle-Ranching-to-Adapt-to-Climate-Change>

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## Economic-environmental assessment of silvo-pastoral systems in Colombia: An ecosystem service perspective

Danny Fernando Sandoval, Jesús Fernando Florez, Karen Johanna Enciso Valencia, Mauricio Efen Sotelo Cabrera, Burkart Stefan<sup>\*</sup>

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### ARTICLE INFO

#### Keywords:

Environmental benefits  
Methane emissions  
Microclimatic regulation  
Heat stress  
Sustainability  
Ecosystem services  
Cattle

### ABSTRACT

Cattle production in Colombia has an important social and economic role but causes considerable environmental impacts, such as deforestation and greenhouse gas emissions by ruminants, particularly methane. Thus, technological innovations aimed at reducing these impacts must focus on both economic and environmental sustainability. Silvo-pastoral systems (SPS) offer productivity increases while generating environmental benefits and ecosystem services and are therefore at the center of debate around sustainable production alternatives. The objective of this article is to evaluate the economic-environmental performance of two proposed SPS for a cattle fattening system for the Colombian context: (i) *Urochloa brizantha* cv. Toledo and (ii) *Urochloa* hybrid cv. Cayman, both in association with *Leucaena leucocephala* trees for browsing and shade provision. They are compared with the respective base scenarios of only using the grasses in monocultures. The study consists of a financial analysis, which estimates potential profitability increases in beef production in the SPS, and an environmental evaluation, which estimates the monetary values of microclimatic regulation and reduction of methane emissions. The value of methane emission reductions is then integrated into a combined economic-environmental evaluation. Results show that both SPS improve the profitability indicators of the production system and reduce the probability of economic loss. Likewise, the reduction of methane emissions in the SPS is estimated at US\$6.12 per cattle, and the economic value of microclimatic regulation at US \$2,026 per hectare.

## Highlights

- The studied silvo-pastoral systems (SPS) improve profitability of cattle fattening
- The studied SPS help reducing methane emissions, valued at >US\$6/beef cattle
- A SPS with 1,000 beef cattle saves annual methane emissions of 32 passenger cars
- The SPS generate shade and reduce heat stress of cattle, valued at >US\$2,000/ha
- The SPS are thus a valuable option for mitigation and adaptation in Colombia

**Source:** Sandoval DF, Florez JF, Enciso Valencia KJ, et al. Economic-environmental assessment of silvo-pastoral systems in Colombia: An ecosystem service perspective. *Heliyon*. 2023;9 (8) e19082. <https://doi.org/10.1016/j.heliyon.2023.e19082>.



# Crossing the Darién Gap: Migrants Risk Death on the Journey to the U.S.

Hundreds of thousands of migrants from Haiti, Venezuela, and elsewhere risk their lives each year to cross the Darién Gap between Colombia and Panama. Images from along the journey show the dangers they face.



## Migrants Under Pressure

Economic insecurity, political upheaval, violence, and climate change are [driving record numbers](#) of migrants from their home countries, according to UN experts. At the same time, the lifting of COVID-19 border restrictions has reopened many travel routes across Latin America. Most migrants are ultimately headed for the southern U.S. border, where they hope the Joe Biden administration will [grant them asylum](#). But many coming from the Caribbean and South America first have to cross the sixty-mile-wide Darién Gap, the only break in the Pan-American Highway that otherwise stretches uninterrupted from Alaska to the southern tip of Argentina.





DARIÉN GAP: After spending the night at a base camp in Las Tekas, Colombia, hundreds of Haitian migrants begin their hike through the dense rain forest. Some of them had paid the Gulf Clan, a Colombian paramilitary group, upward of \$80 to drive them to the camp. John Moore/Getty Images

## Crossing the Darién Gap: Migrants Risk Death on the Journey to the U.S.

Source: Roy D, Baumgartner S. Crossing the Darién Gap: Migrants Risk Death on the Journey to the U.S. *Council on Foreign Affairs*. February 1, 2024. Available at: <https://www.cfr.org/article/crossing-darien-gap-migrants-risk-death-journey-us>



# Americas: Migrants Pushed to Cross Darién Gap, Abused

Lack of Safe and Legal Pathways Risks People's Lives, Empowers Organized Crime



## MORE READING



February 22, 2024 | News Release

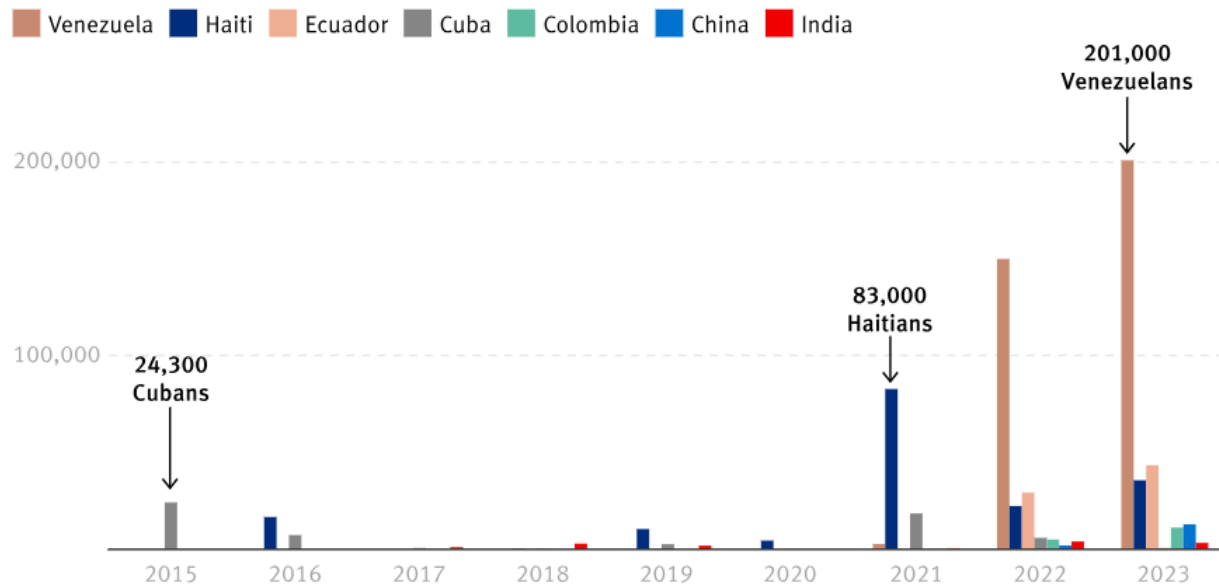
**Panama: Key Services Lacking at Climate Relocation Site**

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**Venezuela: The Government's Escalating Repression and Attempts at Evading Scrutiny Face Resounding Condemnation from International Civil Society**

Source: Human Rights Watch. Americas: Migrants Pushed to Cross Darién Gap, Abused. November 9, 2023.  
Available at: <https://www.hrw.org/news/2023/11/09/americas-migrants-pushed-cross-darien-gap-abused>

## Nationalities Crossing the Darién Gap



Source: Panama's National Migration Service, "Statistics. Irregular Transit in the Darién" ("Estadísticas. Tránsito irregular por Darién"), n.d., <https://www.migracion.gob.pa/inicio/estadisticas> (accessed September 27, 2023).

Since January 2022, over 440,000 Venezuelans have crossed the Darién Gap, the largest number for any nationality. They are fleeing an ongoing humanitarian emergency in their country, which has undermined access to food and medicine, as well as abuses and persecution by security forces, armed groups, and gangs.

**PRESS RELEASES**

# As Darien crossings hit record, UNHCR's Clements urges greater international support

26 January 2024 | Also available in: [Français](#) | [Español](#) | [عربي](#)



UN Deputy High Commissioner for Refugees Kelly T. Clements visits a temporary migrant reception centre in the Darien where UNHCR supports refugee and migrant survivors of gender-based violence, and provides shelter and information.

© UNHCR/Tito Herrera

Source: UNHCR – The UN Refugee Agency. As Darien crossings hits record numbers, UNHCR's Clements urges greater international support. Press release. January 26, 2024. Available at: <https://www.unhcr.org/news/press-releases/darien-crossings-hit-record-unhcr-s-clements-urges-greater-international>



# Free training on climate change, migration, and health in Latin America and the Caribbean

5 March 2024 - 5 November 2024 |  
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Over the course of 2024, the region will have the opportunity for free training through five webinars organized by a network of international institutions. The objective is to provide specific knowledge and case studies on the intersection between climate change, migration, and health in Latin America and the Caribbean (LAC).

Source: International Science Council. Available at: <https://council.science/events/free-training-on-climate-change-migration-and-health-in-lac/>

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**Thank You!**

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