Cornell University: Guest Lecture

NS 2450: Social Science Perspectives on Food & Nutrition

The Polycrisis: Impacts on Planetary Health and Food Systems with a Case Study from Colombia

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SustainableRDN

sustainable eating for a healthy planet

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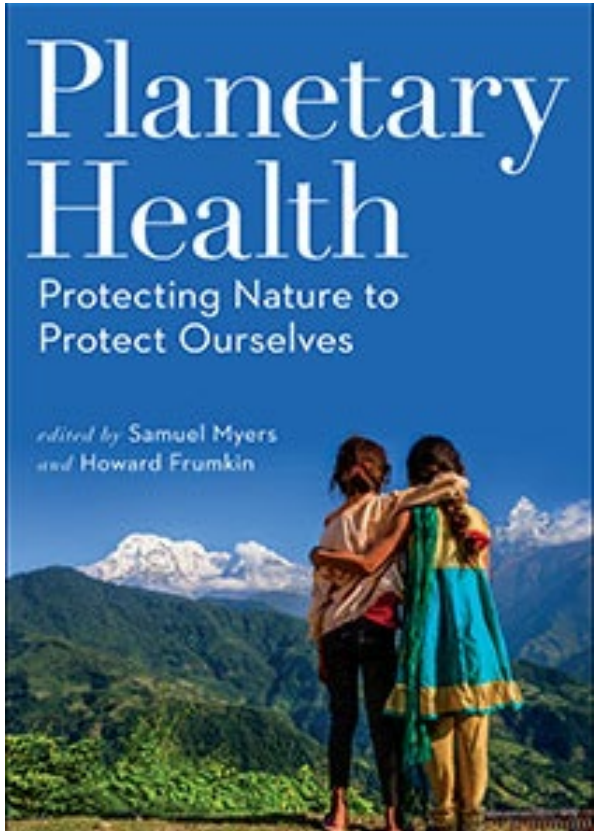
What is Planetary Health?

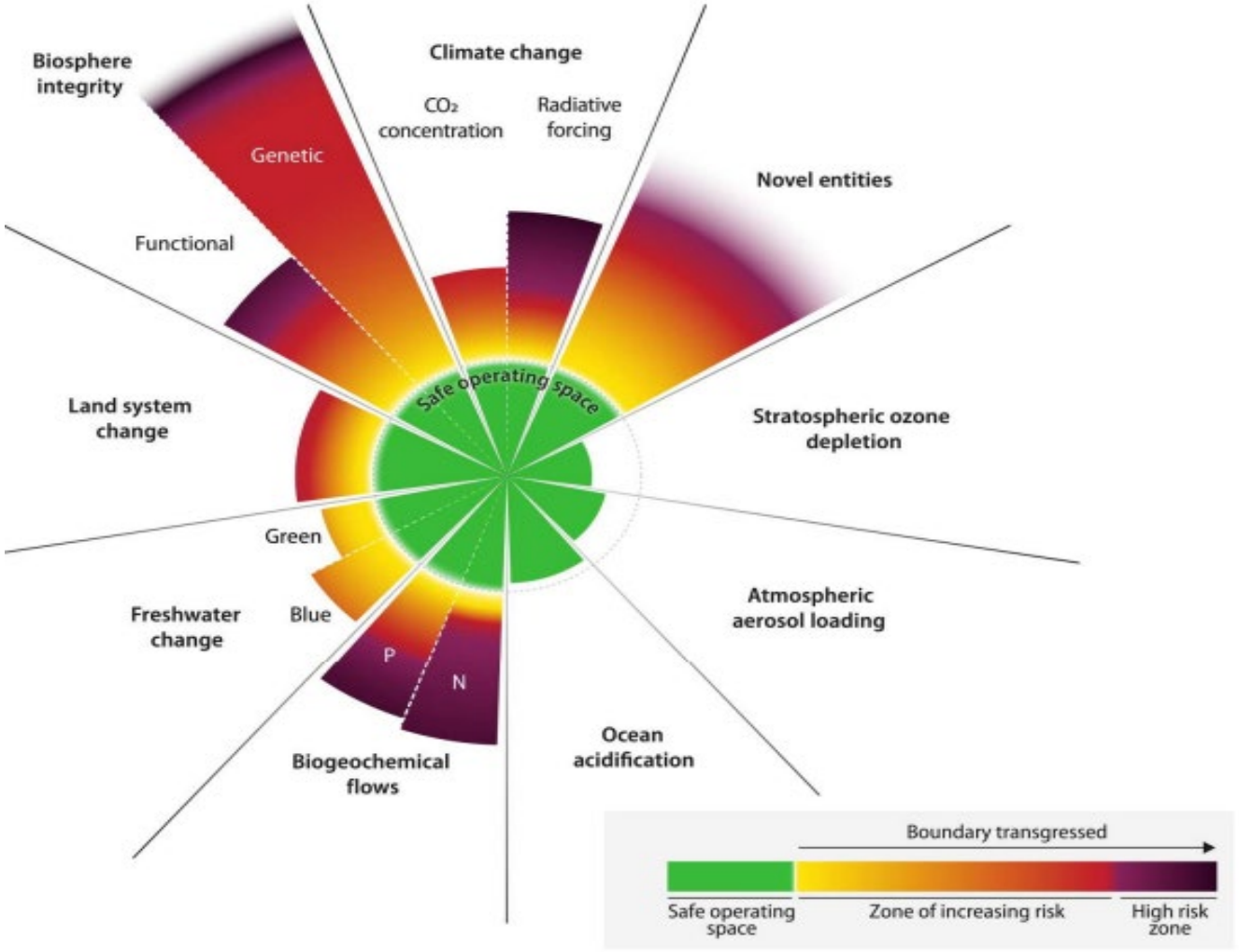
- Describes how planetary ecosystems and human health are intertwined, each interdependent on one another (Whitmee et al., 2015).

- The **Rockefeller Foundation–Lancet Commission on Planetary Health** defined this concept as:

  "*the achievement of the highest attainable standard of health, wellbeing, and equity worldwide through judicious attention to the human systems—political, economic, and social—that shape the future of humanity and the Earth's natural systems that define the safe environmental limits within which humanity can flourish*" (Whitmee et al., 2015; Prescott and Logan, 2019; Oladanjoye et al., 2022).



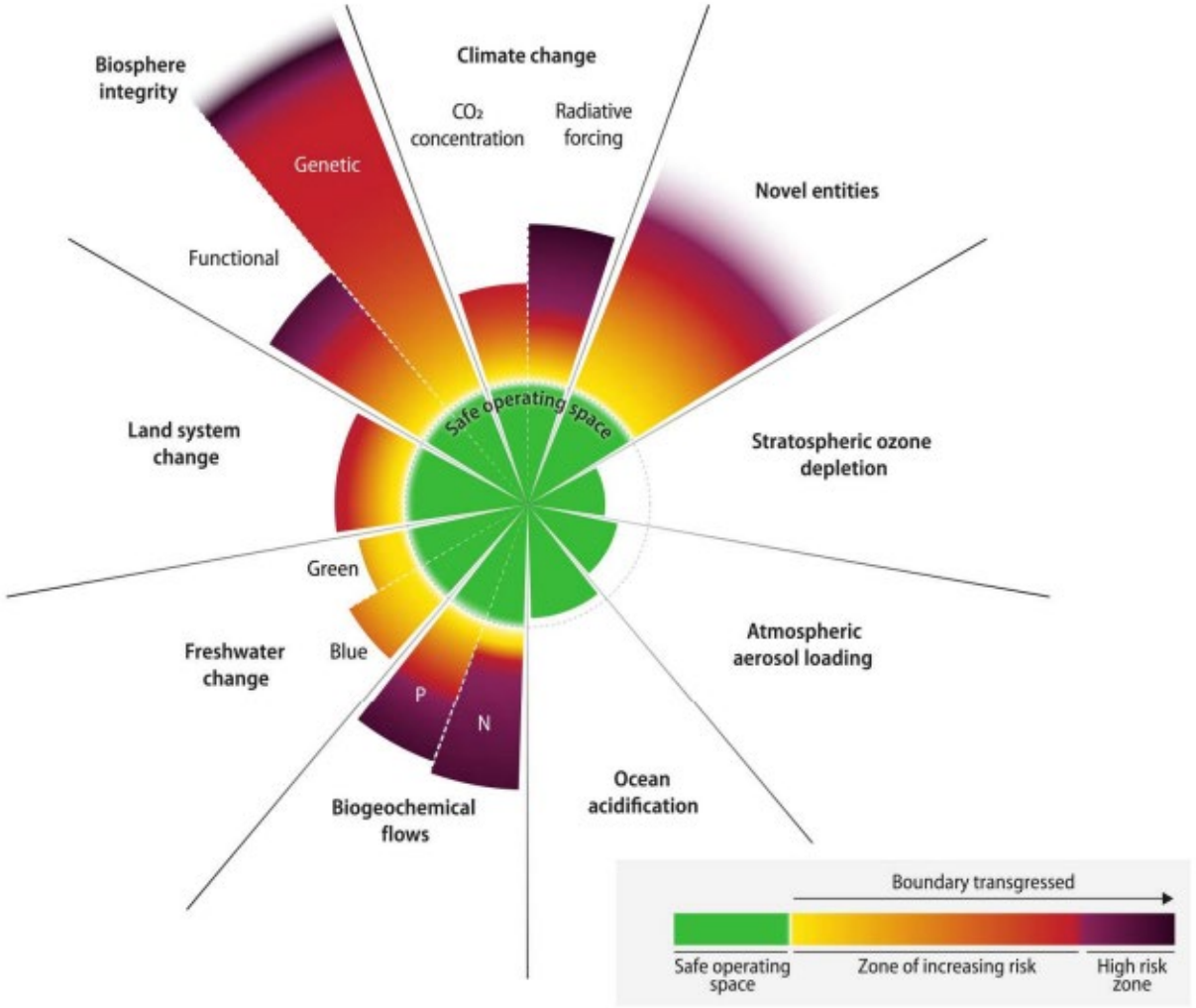
Planetary Health and Planetary Boundaries



- Human pressures may have already pushed the Earth system beyond the safe operating space for humanity, as demarcated by the nine planetary boundaries describing critical Earth system processes (Chrysafi et al., 2022)
- Beyond these boundaries, the risk of abrupt or irreversible global environmental change increases, with the potential to push the Earth system out of its stable Holocene condition, thus threatening the capacity of humanity to develop and thrive (Cyrsafi et al., 2022)

Source: Richardson K, Steffen W, Lucht W et al. Earth beyond six of nine planetary boundaries. *Science Advances*. 2023; 9(37):eadh2458.

Nine Planetary Boundaries



Blue water = sourced from surface water or groundwater, e.g., water in freshwater lakes, rivers, and aquifers

Green water = from precipitation, which is stored in the soil & evaporated, transpired or incorporated by plants

Grey water = the amount of fresh water required to assimilate pollutants to meet water quality standards.

Source: Kotze, P. Freshwater planetary boundary "considerably" transgressed: New research. *Mongabay News*. April 27, 2022 https://news.mongabay.com/2022/04/freshwater-planetary-boundary-considerably-transgressed-new-research/

Source: Richardson K, Steffen W, Lucht W et al. Earth beyond six of nine planetary boundaries. *Science Advances*. 2023; 9(37): eadh2458.

Planetary Health Check (September 24, 2024)

- The launch of the **Planetary Health Check** is based on the publication of the inaugural **Planetary Health Check Report**, which represents a crucial step in collective efforts to understand and protect the stability and resilience of Earth. The report will be published annually in recognition of the importance of regular updates on Earth's health, representing a significant advancement in providing consistent insights for stakeholders globally.

- **The overall diagnostic is that the patient, Planet Earth, is in critical condition**.

- **Six of nine Planetary Boundaries are transgressed**. "*Seven planetary boundary processes show a trend of increasing pressure so that we will soon see the majority of the Planetary Health Check parameters in the high-risk zone*," Johan Rockström adds.

Source: Potsdam Institute for Climate Impact Research. Earth exceeds safe limits: First Planetary Health Check issues red alert. September 24, 2024. https://www.pik-potsdam.de/en/news/latest-news/earth-exceed-safe-limits-first-planetary-health-check-issues-red-alert

Source: **Planetary Health Check 2024. Our planet's vital signs are flashing red. September 24, 2024**. https://www.planetaryhealthcheck.org/

Polycrisis Threatens Planetary Health

Polycrisis:

- Climate Change
- Pollution
- Biodiversity Loss

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- and Human Health

Cattle in the Brazilian Amazon. Ranching and the construction of roads are key drivers of deforestation. This loss of habitat and expanding pasture also comes with the risk of creating hotspots for the spread of zoonotic disease. Image by Kate Evans/CIFOR via Flickr (CC BY-NC-ND 2.0).

Photo: *Mongabay News,* August 8, 2024

Sources: *Navigating New Horizons: A global foresight report on planetary health and human wellbeing*. (2024). United Nations Environment Programme (UNEP). Available at: https://wedocs.unep.org/handle/20.500.11822/45890 and Mowbray S. 'Polycrisis' threatens planetary health: UN calls for innovative solutions. *Mongabay News*. August 8, 2024. https://news.mongabay.com/2024/08/polycrisis-threatens-planetary-health-un-calls-for-innovative-solutions/#:~:text=Rapidly%20converging%20environmental%2C%20technological%20and,health%2C%20according%20to%20the%20authors.

Polycrisis Threatens Planetary Health

Polycrisis:

- Climate Change
- Pollution
- Biodiversity Loss

…

- and Human Health

Plastic pollution is changing entire Earth system, scientists find

Pollution is affecting the climate, biodiversity, ecosystems, ocean acidification and human health, according to analysis

Vultures flying over plastic waste on a beach in Panama. Photograph: Luis Acosta/AFP/Getty Images

Stockholm Resilience Centre | Stockholm University

PLASTICS

New study: Plastic pollution worsens the impacts of all planetary boundaries

Over 500 million tons of plastics are produced annually, yet only nine percent are recycled worldwide. Photo by welcomia/Canva.

Sources: United Nations Environment Programme (UNEP). *Navigating New Horizons: A global foresight report on planetary health and human wellbeing*. (2024). United Nations Environment Programme (UNEP). Available at: https://wedocs.unep.org/handle/20.500.11822/45890 and Laville S. Plastic pollution is changing entire Earth system, scientists find. *The Guardian*. November 7, 2024. https://www.theguardian.com/environment/2024/nov/07/plastic-pollution-is-changing-entire-earth-system-scientists-find and Villarrubia-Gómez P, Carney Almroth B., Eriksen, M et al. Plastics pollution exacerbates the impacts of all planetary boundaries. *One Earth*. 2024; https://doi.org/10.1016/j.oneear.2024.10.017 and Stockholm Resilience Center. New study: Plastic pollution worsens the impacts of all the planetary boundaries. November 8, 2024. https://www.stockholmresilience.org/research/research-stories/2024-11-08-new-study-plastic-pollution-worsens-the-impacts-of-all-planetary-boundaries.html

Planetary Health: Unsustainable Human Activity is Now the Driver Behind Biophsyical Changes to Our Planet

- Unsustainable human activity is now the driver behind biophysical changes to our planet
  - Resulting in environmental degradation and compromising human health and well-being (Pathak & McKinney, 2021; Myers & Frumkin, 2020).
- Climate change, air pollution, loss of biodiversity, changes in land use and land cover, and depletion of resources (Murphy, 2022).
- These rapidly changing environmental conditions have increased exposure to infectious diseases and natural disasters such as fires, droughts, and other extreme weather events (Myers & Frumkin, 2020).
- Human activity and lifestyle behaviors are driving many environmental problems we are experiencing.

News | Climate

Ecuador declares 60-day state of emergency to help battle wildfires

State of emergency to allow government to send more money, people to help bring blazes under control, minister says.

Fires burn in a forested area in a suburb of Quito, Ecuador's capital [File: Carlos Noriega/AP Photo]

18 Nov 2024

In Colombia, Amazon River's Extreme Drought Falls Hard on Indigenous Communities

The severe drought of the Amazon River has caused Indigenous communities who live beside it to struggle for food, water and simply getting from one place to another

IVAN VALENCIA

People walk through a part of the Amazon River that shows signs of drought in Santa Sofia, on the outskirts of Leticia, Colombia, Sunday, Oct. 20, 2024. (AP Photo/Ivan Valencia)

Sources: Ecuador declares 60-day state of emergency to help battle wildfires. *Aljazeera*. November 18, 2024. Available at: https://www.aljazeera.com/news/2024/11/18/ecuador-declares-60-day-state-of-emergency-to-help-battle-wildfires and Grattan S. In Colombia, Amazon river's extreme drought falls hard on Indigenous communities. Associated Press. October 24, 2024. https://apnews.com/article/amazon-river-drought-indigenous-water-aid-colombia-a3a5cfacf4099c7372e52b30ab7e86d5

Planetary Health, The Food System, and Human Health

- Biodiversity loss is deforestation driven by diets high in animal products particularly beef (Pathak & McKinney, 2021).

- "While cattle production is the single largest direct cause of deforestation, animal agriculture is also a major indirect cause of deforestation. Soy production is the third largest driver of deforestation and is mostly used for animal feed."
  - (77% of soy production is used for animal feed) (Harwatt et al., 2022).
- Deforestation also incurs social costs including documented cases of cattle ranches using slave labor. Cattle farming in the Brazilian Amazon often involves displacement of Indigenous peoples & local communities (Global Canopy, 2023; Forest 500, 2022).
- Palm oil plantations uses forced labor. Child labor is also common on palm oil plantations (Forest 500, 2022)

Sources: Forest 500. Investing in protecting human rights. Forest 500, a project of Global Canopy. September 8, 2022. https://forest500.org/blog/2022/09/08/investing-protecting-human-rights/

Field A. Beef companies failing to protect human rights. *Global Canopy.* July 19, 2023. https://globalcanopy.org/insights/insight/beef-companies-failing-to-protect-human-rights

Brazilian state law overturns soy moratorium that helped curb Amazon deforestation**.** Associated Press (AP). November 1, 2024. https://apnews.com/article/brazil-amazon-deforestation-soy-mato-grosso-f14106503c0130d0865fc054dac95cc2

FOOD POLYCRISIS: AN APOCALYPTIC VISION OF AGRICULTURE

WILLAGRI × 19 AUGUST 2024

Source: Willagri. *Food Polycrisis: An Apocalyptic Vision of Agriculture.* August 18, 2024. Available at: https://www.willagri.com/2024/08/19/food-polycrisis-an-apocalyptic-vision-of-agriculture/?lang=en

What is the Food Polycrisis?

The term "food polycrisis," introduced by American economist Chris Barrett, is spreading and sparking debate in global agricultural circles. It challenges the optimism surrounding global food security, often based on agroecological theories and faith in technological progress (robotics, satellite monitoring of crops, sensors, etc.). While the general Western public remains unconcerned due to the abundance and variety of quality foods, wars, epidemics, and climate change cast doubt on the sustainability of this abundance. Polycrisis refers to a series of independent crises that exacerbate each other and call into question the effectiveness of various solutions. Although some believe that technology and agroecology could save us, the reality is darker: hunger is increasing, and our food system is under immense strain.

Several factors contribute to the formation of the food polycrisis. Climate change, biodiversity loss, soil pollution, and population growth all play a role in this phenomenon. Polycrisis refers to interconnected crises that worsen each other. These crises, initially independent, intertwine, creating a particularly complex and unstable situation for global food security. The world has become more unstable and unpredictable. The concept of polycrisis invites us to stop thinking in silos and to relate complex phenomena of diverse origins.

Source: Willagri. *Food Polycrisis: An Apocalyptic Vision of Agriculture.* August 18, 2024. Available at: https://www.willagri.com/2024/08/19/food-polycrisis-an-apocalyptic-vision-of-agriculture/?lang=en

OPINION 20 JUNE 2024

The global food crisis in the age of catastrophe

By Jennifer Clapp, originally published by Rosa Luxemburg Foundation

EQUITY & HEALTH FOOD SECURITY LOCAL FOOD SYSTEMS

Source: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

The contemporary food system is not built to withstand our age of polycrisis

We are now in the midst of a major worldwide food crisis characterized by rising hunger in a context of increasing ecological fragility. This crisis in food must be considered as one part of a wider polycrisis, in which the climate emergency interlaces with an economic and debt crisis, a health crisis, and a geopolitical crisis. That these different crises cannot be easily separated speaks to the interlinked and overlapping nature of contemporary economic, ecological, health and geopolitical systems.

The global interplay of these systems creates complex dynamics with sometimes unpredictable outcomes. This is not the first time we have witnessed a worldwide food crisis that has been entangled within a wider polycrisis; the repeated nature of the polycrisis points to deeper structural features of the global food system that make it especially vulnerable to disasters. In order to combat the food crisis, we must transform our food systems to make them more just and sustainable, and to do this we must understand the dynamics that cause hunger.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

A Food System Approach (FAO, 2018)

Key Definitions:

The food system is composed of sub-systems (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g. energy system, trade system, health system, etc.).

Food systems (FS) encompass the entire range of actors, and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded.

CHANGING FOOD SYSTEMS A food system must be considered in the context of rapid population growth, urbanization, growing wealth, changing consumption patterns, and globalization as well as climate change and the depletion of natural resources.

Source: Food and Agriculture Organization of the United Nations (FAO). *Sustainable food systems. Concept and framework.* Rome, Italy: FAO; 2018. Available at: https://www.fao.org/3/ca2079en/CA2079EN.pdf

Geopolitical crises have further threatened the food system in recent years, most notably the Russian invasion of Ukraine that has been ongoing since early 2022. Both Russia and Ukraine are major exporters of wheat, maize, and oil seeds, meaning that the onset of the war sparked a major panic in global food export markets, which pushed prices even higher than their already-record levels. Countries in Africa and in the Middle East, which are heavily reliant on grain from Russia and Ukraine, suddenly had to seek out other import sources.

To compound this, fears over localized grain shortages sparked speculative financial investment in the grain futures markets, with prices reaching heights that went far beyond what supply and demand conditions warranted. Although food prices started to fall as 2022 progressed, the Russian-Ukraine war contributed to ongoing volatility and elevated prices in global grain markets. In 2023, the Food and Agriculture Organization of the United Nations (FAO) estimated that some 20 to 30 million additional people globally faced hunger as a consequence of the war in Ukraine.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

Finally, there is perhaps the most existential threat to food production — the climate and biodiversity crisis. Already the effects of climate change are wreaking havoc on food production, in both direct and less obvious ways. Take India; in 2022 the country experienced an unprecedented heat wave that meant its wheat yields fell by up to 25 percent. These shortages prompted the government to place an export ban on wheat, which demonstrates the ripple effect that country-specific shortages can quickly have on the global system. A year later, after heavy monsoon rains ravaged its rice crop, India again banned exports, this time on non-basmati rice. India is just one example.

Extreme weather is affecting food production in grain producing regions including North America, Australia, and Southeast Asia. These climate-related ructions on global food markets are only likely to get worse too. The acceleration of climate change makes it nearly inevitable that simultaneous production shocks will occur in multiple regions of the world, including those that produce globally traded staple crops.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

Industrial food production

- **Most food today is produced with industrial farming methods that rely on mechanization, chemical fertilizers, pesticides, and a limited variety of often genetically altered seeds.** This system has encouraged producers to focus on a very narrow base of staple crops that are able to be cultivated in large-scale uniform fields. **At a global scale, this kind of farming drives vulnerability in the food system in multifaceted ways.**

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

- **The extreme dependency on this narrow base of crops means that if the production or trade of any of the four is diminished or disrupted for any reason — be it climate change or geopolitical tensions — global food security is threatened.**
- Concentrated industrial production systems also rely on petroleum products to fuel farm machinery and in production of synthetic nitrogen-based fertilizers and chemical pesticides.
- Fossil fuels are also used in the long-distance transport of grains produced for global markets.
- The industrial farming system's heavy dependency on fossil fuels not only renders it sensitive to oil price changes, but also contributes to climate change. Activities within food systems, from land use changes to food production, to transportation, account for around a third of global greenhouse gas emissions.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

The imbalance between exporters and importers

A very small number of countries produce and export staple crops to a much larger number of countries, which are reliant on these imported crops. This produces an imbalance, in which the food security of much of the world depends on just a handful of countries. **As such, disruptions that undermine production in just one exporting country can threaten food availability in many countries**.

The highly imbalanced nature of the food system can be traced back to the rise of industrial crop production methods from the 19th century.

The countries in the regions where these methods were first established — North America, Australia, South America, and parts of Europe — dominated export markets for staple crops. This is also partly to do with the landscape of a country — notably, monocultural export production was, and still is, only possible in countries with large tracts of arable land.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

The imbalance between exporters and importers (cont'd)

- In the 1990s, the liberalization of agricultural trade cemented these patterns but also opened the door for some new entrants to join the agro-exporting powerhouse club, as we have seen with the rise of soy production in Brazil and Argentina in recent decades. **Today, five countries account for at least 72 percent of the production of wheat, maize, rice, and soy crops**.

- **Seven countries, plus the European Union (EU), account for around 90 percent of the world's wheat exports, while four countries account for over 80 percent of the world's maize exports**. Grain exports are a key source of income for these countries, so they have a vested interest in maintaining this system. As such, export countries tend to influence and shape the global trade rules in ways that reinforce their export power.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

- **The pattern of food import-dependence has intensified over the past half century. Although many countries do produce staple grains for their own consumption, the majority do not produce enough to meet domestic demand**, and therefore rely on global markets to make up the shortfall. This insufficient supply is not through lack of trying on the part of these countries. One key reason that production has declined in these regions is their inability to compete with the highly industrialized farming methods of agro-exporting countries. These methods are also often subsidized in the exporter countries, which further undermine the livelihoods of small-scale food producing countries in the Global South.
- **At the same time, neoliberal programs of structural adjustment imposed by the International Monetary Fund (IMF) and World Bank (WB) in the 1980s and 1990s encouraged countries in the Global South to divest from food production and instead to focus on producing export crops such as coffee, tea and cocoa and purchasing staples on the global marketplace.** Policies like these have meant that many sub-Saharan African countries, for example, developed food import dependencies they did not have 50 years ago.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

Financialized and concentrated markets

- **A handful of powerful transnational firms currently dominate the highly financialized grain markets. The outsized role that a small number of powerful corporate and financial actors have in these markets means that disruptions can lead to enormous price swings.** These dramatic swings have effects on both people's ability to access and buy food and producers' ability to access agricultural inputs such as seeds, pesticides, and fertilizers. Financialized agrifood markets began to dominate the global agrifood system by the mid-1800s, in tandem with the rise of industrial production methods and increased global trade in staple crops.
- **Today, financialized futures markets allow investors to reap huge profits on the trade in grain, but these markets are prone to extreme food price volatility**. As there are relatively few large financial actors speculating on grain, these markets are prone to volatility, especially when those investors flood into commodity futures markets exactly at the point that the food system is most at risk. Recent decades have seen a weakening of rules with respect to financial investment in these markets. The result has been that a growing cast of investors, from asset management companies, to hedge funds, to pension funds, have rushed into agricultural commodity markets just as prices were rising, pushing grain prices up further.

Sources: Clapp J. The global food crisis in the age of catastrophe. IPES Food. June 20, 2024. Available at: https://ipes-food.org/the-global-food-crisis-in-the-age-of-catastrophe/

Fogel B, Urhahn J, Belay M, et al. *Seeds of Sovereignty: Contesting the Politics of Food*. June 2024. Available online at: https://www.rosalux.de/en/publication/id/52207/seeds-of-sovereignty-contesting-the-politics-of-food

Planetary Health, Food Systems and Human Health: Solutions

- Land-use change due to agricultural expansion is a major contributor to greenhouse gas emissions from the global food system. (Crippa et al., 2021; Steenson et al., 2021)
- Reducing the proportion of land used globally for agriculture, through dietary changes (e.g., transition towards more plant-based diets) and improvements in the efficiency of food production (e.g., sustainable intensification), may offer benefits for the protection of natural habitats (and, therefore, biodiversity), as well as climate change mitigation. (Steenson et al., 2021; Harwatt et al., 2022)
- Shifts to more plant-based diets must ensure that target populations have sufficient physical and economic access to a variety of nutrient-dense plant-based foods. (Kim et al., 2020)
- Agricultural systems need to scale up production of fruits, vegetables, and proteins (e.g., nuts, legumes) to meet the nutritional needs of the current population, concurrent with a more equitable redistribution of available food. (Kim et al., 2020; Tuninetti et al., 2022; Wassénius et al., 2023)

Healthy adults eating a diverse diet with at least 8-10 grams soluble fiber a day have fewer antibiotic-resistant microbes ir their guts. Soluble fiber is found in foods such as grains, beans, lentils, nuts, and some fruits and vegetables.

Source: ARS, USDA. Diets high in fiber associated with less antibiotic-resistant bacteria. May 10, 2022. Based on Oliver et al., *mBio* 2022;13(3): e00101-22.

Available at: https://www.ars.usda.gov/news-events/news/research-news/2022/diets-high-in-fiber-associated-with-less-antibiotic-resistance-in-gut-bacteria/

Planetary Health, Food Systems and Human Health: Solutions

- To address the emerging zoonotic disease risks of animal agriculture, a multi-pillared approach has been proposed (Hayek, 2022).
- This approach includes reducing demand for animal-sourced foods through shifts to plant-rich diets, semi-intensification, and direct forest conservation (see Figure 2 in Hayek, 2022).
- Shifting from beef to chicken consumption mitigates climate emissions. However, this dietary strategy neglects zoonotic disease risks as intensive poultry and pig production entails greater antibiotic use, confinement, and animal populations than beef production (Hayek, 2022).
- Preventing zoonotic diseases requires international coordination to reduce the high demand for animal-sourced foods, improvement of forest conservation governance, and selectively intensifying the lowest-producing ruminant animal systems without confinement (Hayek, 2022).

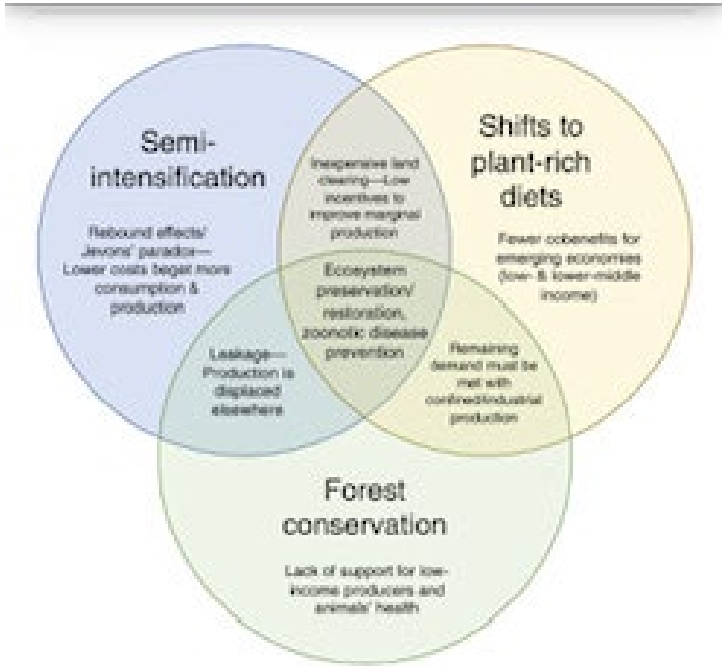

Fig. 2. A three-pillar approach for preventing zoonotic disease emergence and reducing environmental impacts from animal agriculture (center).
Within individual circles and the intersections between the two, limitations of adopting only one or two strategies are described.

Source: Hayek M. The infectious disease trap of animal agriculture (Review). *Sci Adv.* 2022 4; 8(44):eadd6681. doi: 10.1126/sciadv.add6681.

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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,[1] Hugh Montgomery,[2] Tim Benton,[3] Ousmane Badiane,[4] Gonzalo Castro de la Mata,[5] Jessica Fanzo,[6] Ramon R Guinto,[7,8] Jean-François Soussana[9]

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.

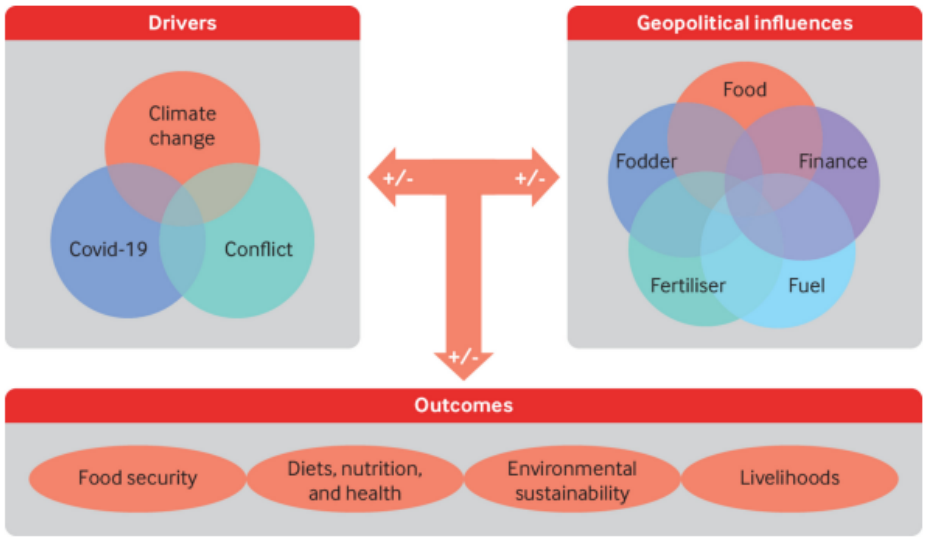


Fig 1 | The "three Cs" and "five Fs" of concern

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.

Solutions for Managing Food Security in a Rapidly Changing Geopolitical Landscape

Key messages

• Climate change impacts on agriculture, such as floods and droughts, pose significant risks to food security, spread globally through interconnected supply chains, leading to food price shocks, reduced food accessibility, and social instability across borders and regions.

• Rising geopolitical tensions and geoeconomic fragmentation increasingly affect global food security. Food trade, a cornerstone of global food security, is being weaponized in geopolitical conflicts, further exacerbating the risks posed by climate change.

Source: Talebian S, Lager F, Harris K. *Solutions for managing food security risks in a rapidly changing geopolitical landscape*. SEI Report. Stockholm Environment Institute; November 2024. https://doi.org/10.51414/sei2024.044

Solutions for Managing Food Security in a Rapidly Changing Geopolitical Landscape

Key messages

• Enhancing domestic capacities for climate-resilient agriculture is crucial for reducing dependency on global food markets and mitigating the transboundary effects of climate impacts.

• Collaboration among small groups of countries with common goals or shared risks emerges as a potential solution to manage transboundary climate risks to food security.

• Transitioning dietary patterns towards more plant-based food and reducing food waste are recommended to reduce environmental impacts, improve resource efficiency, and enhance food availability and security.

Source: Talebian S, Lager F, Harris K. *Solutions for managing food security risks in a rapidly changing geopolitical landscape.* SEI Report. Stockholm Environment Institute; November 2024. https://doi.org/10.51414/sei2024.044

State of Food Security and Nutrition in the World (SOFI) - 2024

- The 2024 edition of the State of Food Security and Nutrition in the World report, known as SOFI, presented by the Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD), the United Nations International Children's Emergency Fund (UNICEF), the World Food Program (WFP) and the World Health Organization (WHO) in Rio de Janeiro, **highlights that Latin America and the Caribbean has the highest cost for a healthy diet compared to other parts of the world, averaging $4.56 per person per day.**

- This figure underscores a deep inequality in access to nutritious food and **raises serious concerns about the feasibility of achieving the Sustainable Development Goal 2: Zero Hunger.**

Sources: Villalba JJ. Latin America and the Caribbean: The region with the most expensive healthy diet in the world. *Latinoamerica21*. August 29, 2024. https://latinoamerica21.com/en/latin-america-and-the-caribbean-the-region-with-the-most-expensive-healthy-diet-in-the-world/ and FAO, IFAD, UNICEF, WFP and WHO. 2024. *The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms*. Rome, Italy; July 2024. https://openknowledge.fao.org/items/d8f47624-8b43-412a-bbc2-18d2d830ad5b

Redefining funding for food security and nutrition

- **The SOFI 2024 report emphasizes the need to redefine and increase funding for food security and nutrition.** Current inconsistencies in estimates complicate the identification of critical areas and effective accountability. A new definition of funding is proposed, encompassing public and private resources aimed at eradicating hunger and all forms of malnutrition. This comprehensive approach considers the availability, access, and utilization of nutritious and safe foods, essential for achieving adequate and sustainable global health.

- **A clearer definition of funding for food security and nutrition is crucial to addressing the current deficit.** A coherent cataloging is required to enable effective resource allocation and ensure that investments target the areas with the greatest need. **Adopting a comprehensive approach could significantly improve the coordination and effectiveness of interventions, ensuring that available resources are optimally used to combat hunger and malnutrition.**

Sources: Villalba JJ. Latin America and the Caribbean: The region with the most expensive healthy diet in the world. *Latinoamerica21*. August 29, 2024.
https://latinoamerica21.com/en/latin-america-and-the-caribbean-the-region-with-the-most-expensive-healthy-diet-in-the-world/

FAO, IFAD, UNICEF, WFP and WHO. 2024. *The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms*. Rome, Italy; July 2024.
https://openknowledge.fao.org/items/d8f47624-8b43-412a-bbc2-18d2d830ad5b

What is a Sustainable Food System?

- "A **sustainable food system (SFS) is a food system** that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised."

- **It is profitable throughout (economic sustainability);**
- **It has broad-based benefits for society (social sustainability)**
- **It has a positive or neutral impact on the natural environment (environmental sustainability).**

- A **sustainable food system** lies at the heart of the **United Nations' Sustainable Development Goals (SDGs).** The SDGs call for major transformations in agriculture and food systems to end hunger, achieve food security and improve nutrition by 2030.

- ***To realize the SDGs, the global food system needs to be reshaped to be more productive, more inclusive of poor and marginalized populations, environmentally sustainable and resilient, and able to deliver healthy and nutritious diets to all***.

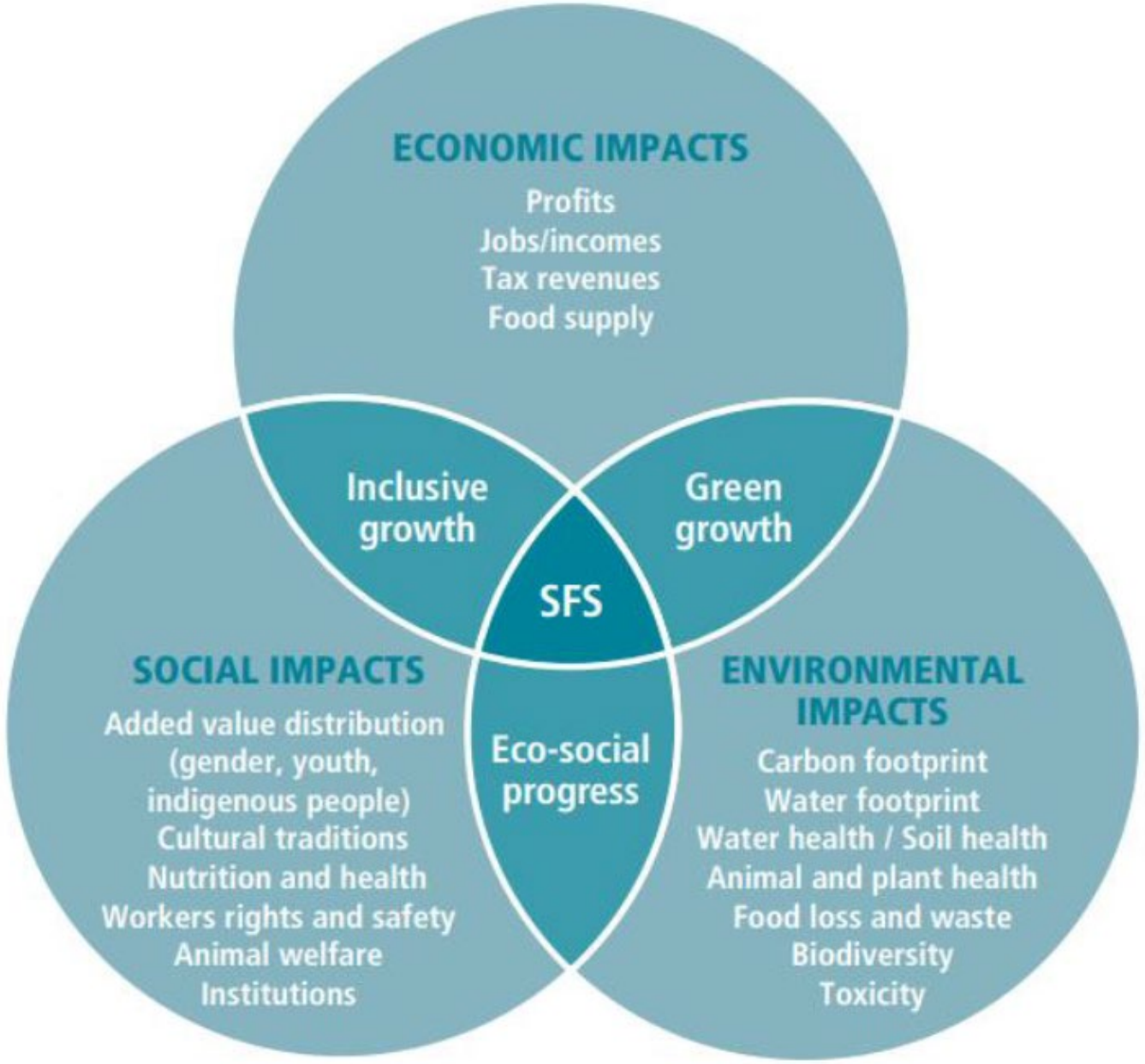
- **"These are complex and systemic challenges that require the combination of interconnected actions at the local, national, regional and global levels."**

Source: Food and Agriculture Organization of the United Nations (FAO). *Sustainable food systems. Concept and framework.* Rome, Italy: FAO; 2018. Available at: https://www.fao.org/3/ca2079en/CA2079EN.pdf

UN Sustainable Development Goals (UN SDGs):

Photo Credit: UN Sustainable Development Goals (SDGs)

- Sustainability in Food Systems (FAO, 2018)



West Palm Beach, FL (June 10, 2024) – In a landmark ruling in the fight for human rights, a US jury found banana giant Chiquita Brands International liable for financing the United Self-Defense Forces of Colombia (AUC), a brutal paramilitary death squad. After 17 years of legal proceedings, the first set of victims and their families have finally obtained justice.

- **Workers' Rights and Safety in the Food System: Colombia**

Source: https://earthrights.org/media_release/colombian-victims-win-historic-verdict-over-chiquita-jury-finds-banana-company-liable-for-financing-death-squads/

After 17 years of litigation, a monumental win for victims of paramilitary violence in Colombia before a court in the United States.

West Palm Beach, FL (June 10, 2024) – In a landmark ruling in the fight for human rights, a jury has found banana giant Chiquita Brands International liable for financing the United Self-Defense Forces of Colombia (AUC), a brutal paramilitary death squad. After 17 years of legal proceedings, the first set of victims and their families have finally obtained justice.

The jury's decision reaffirms what we have long asserted: Chiquita knowingly financed the AUC, a designated terrorist organization, in pursuit of profit, despite the AUC's egregious human rights abuses. By providing over $1.7 million in illegal funding to the AUC from 1997 to 2004, Chiquita contributed to untold suffering and loss in the Colombian regions of Urabá and Magdalena, including the brutal murders of innocent civilians. This historic verdict also means some of the victims and families who suffered as a direct result of Chiquita's actions will finally be compensated.

The victims welcomed this decision as recognition of their suffering and an opportunity for reparation. "It's a triumph of a process that has been going on for almost 17 years, for all of us who have suffered so much during these years. There's a debate about justice and reparation; we've been fighting since 2007. We're not in this process because we want to be; it was Chiquita, with its actions, that dragged us into it. We have a responsibility to our families, and we must fight for them," said one of the victims.

This historic ruling marks the first time that an American jury has held a major U.S. corporation liable for complicity in serious human rights abuses in another country, a milestone for justice.

"This verdict sends a powerful message to corporations everywhere: profiting from human rights abuses will not go unpunished. These families, victimized by armed groups and corporations, asserted their power and prevailed in the judicial process," said Marco Simons, EarthRights International General Counsel.

Source: https://earthrights.org/media_release/colombian-victims-win-historic-verdict-over-chiquita-jury-finds-banana-company-liable-for-financing-death-squads/

Colombia

An upper-middle income country of 53 million people (November 2024).

The country is organized into 32 decentralized departments and the Bogotá Capital District (Nation Capital), the seat of the National Government.

Colombia is also divided into **six natural regions** based on their ecosystems and climate:

1) **Amazonian region** (**green**), 2) **Orinoquia region** purple), 3) **Andean region** (**brown**), 4) **Pacific region** (**light blue**), 5) **Caribbean region** (**white**), and 6) **Islands** (Archipelago of San Andres and Providencia in the Caribbean Sea, Malpelo and Gorgona in the Pacific) (**yellow/beige**).

UNHCR The UN Refugee Agency | Global Focus UNHCR Operations Worldwide

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By mid-2024, Colombia recorded almost 7 million internally displaced people, all of whom the Government has recognized as eligible for assistance and reparations.

Countries affected:
Argentina Multi-Country Office | Brazil | Colombia | Ecuador | Panama Multi-Country Office | Peru | Venezuela

Situation plans:
2024 | 2023

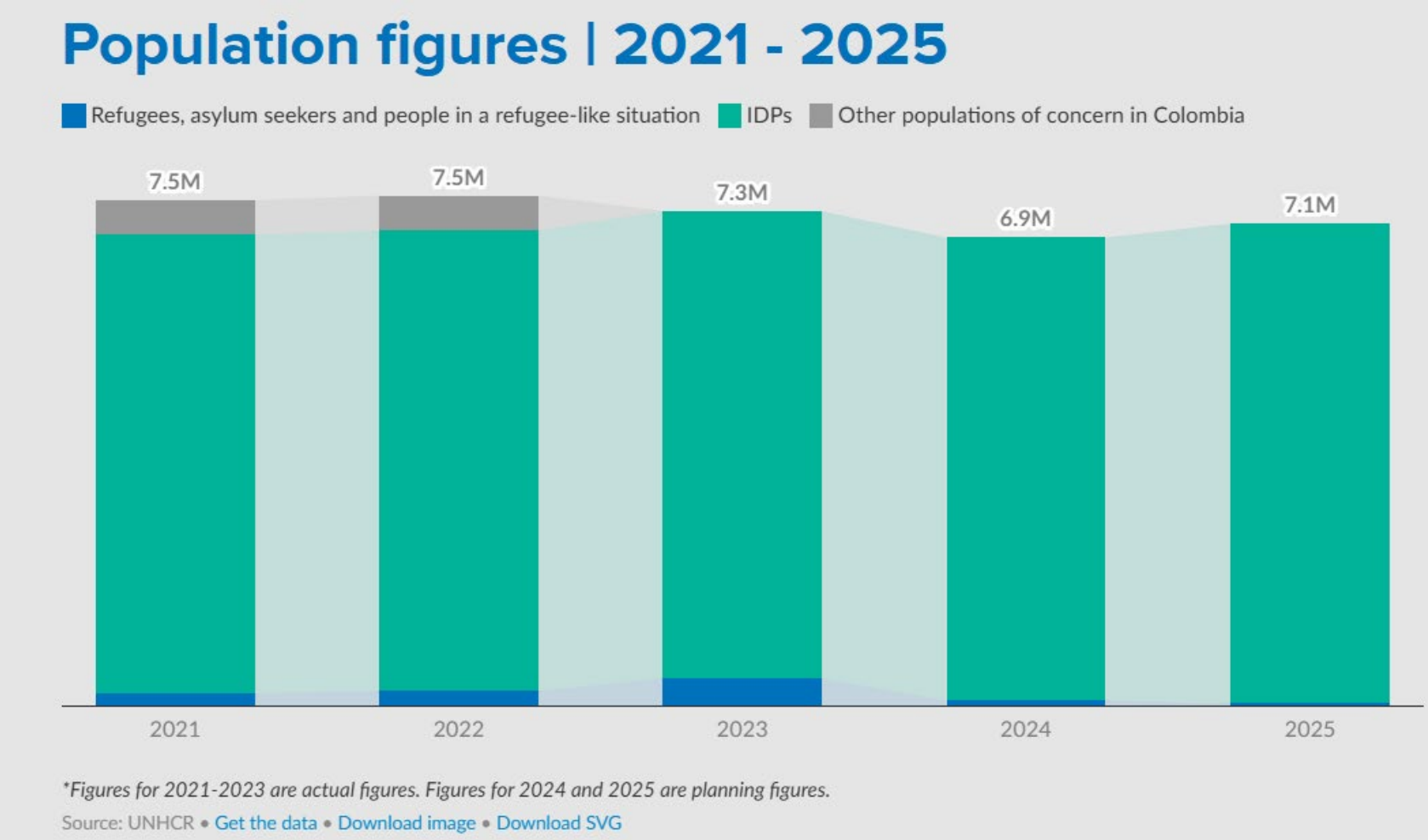
Situation reports:
2023 | 2022 | 2021

Download the 2025 Situation overview

Boats leave the dock in Chocó, Colombia, an ethnically diverse city with many Afro-Colombian and indigenous citizens. Both groups have been affected by conflict and the exploitation of natural resources, and around 20,000 people were affected by confinements in 2024. © UNHCR/Luisa De la Espriella

https://reporting.unhcr.org/operational/situations/colombia-situation

Colombia: Refugees, asylum seekers and people in a refugee-like situation and IDPs (internally-displaced people)



https://reporting.unhcr.org/operational/situations/colombia-situation

Colombia Situation (2024)

UNHCR The UN Refugee Agency | Global Focus UNHCR Operations Worldwide

2025 situation overview

By mid-2024, Colombia recorded **almost 7 million internally displaced people** (IDPs), all of whom the Government has recognized as eligible for assistance and reparations. According to UNHCR's 2024 Mid-Year Trends report, forced displacement continues to affect Colombia, with one of the largest numbers of IDPs and increasing new asylum applications filed by its nationals abroad.

Since the signing of the 2016 Peace Agreement, over 1.4 million new displacements have been registered within Colombia as of August 2024, an annual average of 180,000 new IDPs. In 2023, more than 278,000 people were displaced, while in the first half of 2024, more than 95,000 people were affected by violence, large-scale displacements, and confinements. The Government's Total Peace initiative, a key pillar of its agenda, is now at a delicate juncture with the announcement in September 2024 of a pause in the peace talks with the National Liberation Army (ELN) following an attack on a military base in Arauca. Meanwhile, armed clashes among non-state armed groups who compete for territorial and social control continue to affect vulnerable communities, leading to displacement and confinement in regions such as Nariño and Cauca. This escalation, which has begun affecting new areas, underscores the urgent need for peace negotiations with various groups to translate into protection space for civilians.

The internal situation in Colombia has **spillover effects in neighbouring countries such as Ecuador**, facing its own deteriorating security situation and spiralling violence, and where Colombians have steadily sought asylum over the years. The United States of America and Spain have been the primary recipients of Colombian asylum applications in 2023 and 2024. In 2023 and 2024, UNHCR has observed an increasing trend in asylum claims from Colombians. As of mid-2024, 116,800 new asylum claims had been submitted, an increase of 18% compared to the first half of 2023,

Sources: UNHCR. Colombia - Global Focus, Colombia Situation. 2024. https://reporting.unhcr.org/operational/situations/colombia-situation
UNHCR. Colombia – Global Appeal, 2025 – Situation overview. November 2024. https://reporting.unhcr.org/sites/default/files/2024-11/Colombia%20Situation%20Overview.pdf

El Niño and climate change impacts slam Latin America and Caribbean in 2023

PRESS RELEASE

08 May 2024

A double-whammy of El Niño and long-term climate change hit Latin America and the Caribbean in 2023, according to a new report from the World Meteorological Organization (WMO). Drought, heat, wildfires, extreme rainfall and a record-breaking hurricane had major impacts on health, food and energy security and economic development.

Key messages

- Warmest year on record
- Drought, heatwaves, rainfall and floods undermine economic development
- Sea level rise threatens coastal areas and glacier retreat accelerates
- LAC region lags in providing weather and climate services
- Integrated climate and health strategies making progress

https://wmo.int/news/media-centre/el-nino-and-climate-change-impacts-slam-latin-america-and-caribbean-2023

National Disasters Affect Food and Water Systems in Colombia: Recent Examples (2024)

1) El Niño: Drought – Precipitation Deficits (National Disaster Declared: January 27, 2024)

- On 27 January 2024, by Decree No. 037, the Government of Colombia declared a National Disaster Situation for a period of 12 months, due to the impact of the "El Niño" phenomenon.

- The "El Niño" phenomenon has had evident effects throughout the national territory. During December 2023, precipitation was below normal with a complete absence of rainfall in a large part of the Caribbean region and some areas of the Andean region. Under influence of the "El Niño" phenomenon 2023-2024, it is indicated that excess and deficit of precipitation may occur depending on the territory, generating water shortages for aqueducts, mass movements, water shortages for crops, floods, water shortages for animals, gales, forest fires, torrential floods, frosts, river erosion, among others.

- In April 2024, water rationing was declared in Bogota, the country's capital city – a city of 11,685,000 people, due to drought.

2) Severe Flooding/Landslides (National Disaster Declared: November 10, 2024)

- Colombian President Gustavo Petro declared state of disaster across Colombia on November 10, 2024.

Sources: https://go.ifrc.org/emergencies/6864/details and *Relief Web*. February 10, 2024. https://reliefweb.int/report/colombia/colombia-droughts-dref-operation-appeal-mdrco025 Emblin R. Strict water rationing for Bogotá as drought persists across central Colombia. September 21, 2024. *The City Paper, Bogotá*. https://thecitypaperbogota.com/bogota/strict-water-rationing-for-bogota-as-drought-persists-across-central-colombia/
Colombia: Nationwide state of disaster declared due to flooding affecting many parts of the country as of Nov. 12. *Crisis24*. November 12, 2024. Available at: https://crisis24.garda.com/alerts/2024/11/colombia-nationwide-state-of-disaster-declared-due-to-flooding-affecting-many-parts-of-the-country-as-of-nov-12

- Torrential rainfall across Colombia's Pacific coast and Andean regions has displaced more than 90,000 people, leaving dozens of communities submerged under rising floodwaters.

- The extreme weather, exacerbated by the start of La Niña, has led to widespread flooding, landslides, and infrastructure damage, with no immediate relief in sight as forecasters warn the severe weather pattern is expected to intensify throughout November.

Source: Colombia declares State of Emergency amid torrential rains and extreme weather. *The City Paper, Bogota.* November 12, 2024. Available at: https://thecitypaperbogota.com/news/colombia-declares-state-of-emergency-amid-torrential-rains-and-extreme-weather/#:~:text=Colombia%20declares%20State%20of%20Emergency%20amid%20torrential%20rains%20and%20extreme%20weather,-By&text=Torrential%20rainfall%20across%20Colombia's%20Pacific,communities%20submerged%20under%20rising%20floodwaters.

Severe Flooding in Colombia (November 2024)

As heavy rains cause rivers to break their banks, Colombia's westernmost department of Chocó has been especially hard hit, with the lower Río Atrato inundating entire communities of indigenous and Afro-Colombian peoples. In the San Juan basin and Upper Atrato, the National Liberation Army (ELN) guerrilla group has declared an "armed strike," effectively prohibiting all riverine transportation. This declaration by the ELN is hampering humanitarian relief operations for those affected by the severe flooding.

Medellín, the departmental capital of Antioquia, is also facing challenges as heavy rains have increased the risk of landslides and flash floods. With road closures and landslide threats in the western parts of the department, officials in Antioquia are mobilizing efforts to prevent further casualties. The departments of Boyacá, Santander, and Norte de Santander are also experiencing extreme weather conditions, with hailstorms damaging local agriculture.

Amid these crises across Colombia, President Gustavo Petro declared a nationwide state of emergency over the weekend. The government has prioritized Bogotá, La Guajira, and Chocó for emergency relief, citing the severe impact of the floods on these areas. The declaration followed a high-level Unified Command Post (PMU) meeting, in which Petro called for an urgent response to support vulnerable communities facing climate-driven disasters. "The increasing climate variability is exposing our most vulnerable regions to greater risk," Petro said, adding that the emergency measures aim to facilitate quicker aid

Sources: https://thecitypaperbogota.com/news/colombia-declares-state-of-emergency-amid-torrential-rains-and-extreme-weather/
https://crisis24.garda.com/alerts/2024/11/colombia-nationwide-state-of-disaster-declared-due-to-flooding-affecting-many-parts-of-the-country-as-of-nov-12

Severe Flooding in Colombia (November 2024)

In Chocó, a region with high poverty rates and fragile infrastructure, the impact has been devastating. Official reports estimate that flooding has affected 85% of the department, displacing more than 50,000 families across 25 municipalities. Nubia Carolina Córdoba, Chocó's governor, declared a six-month state of calamity in response to the widespread devastation, warning that the region lacks adequate resources to withstand a crisis of this scale. In an appeal for humanitarian assistance, the head of Colombia's National Disaster Risk Management Unit (UNGRD), Carlos Carrillo, urged the ELN guerrilla group to lift restrictions in Chocó to allow aid deliveries. "We ask for a minimum of compassion from the ELN," Carrillo said, emphasizing the urgency of transporting relief supplies to isolated communities.

As floods and landslides threaten to devastate vulnerable departments, in Santander, the Las Cruces stream led to a flash flood on Monday night near San Vicente de Chucurí, resulting in one death and leaving two people missing. In La Guajira, Colombia's northernmost department, an estimated 10,000 families have been affected by rare flooding. Local officials fear that infrastructure damage could worsen food scarcity in impoverished regions.

Sources: https://thecitypaperbogota.com/news/colombia-declares-state-of-emergency-amid-torrential-rains-and-extreme-weather/
https://crisis24.garda.com/alerts/2024/11/colombia-nationwide-state-of-disaster-declared-due-to-flooding-affecting-many-parts-of-the-country-as-of-nov-12

Chocó, Colombia

Severe Flooding in Chocó, Colombia

*Heavy rainfall provoked floods across **Colombia**, affecting thousands of families, particularly in the Choco department. Credit: **Courtesy of Nercy Cordoba Martinez***

*Floods have wiped out thousands of homes in Colombia's Choco department. Credit: **Courtesy of Nercy Cordoba Martinez***

Source: https://colombiaone.com/2024/11/10/colombia-floods-choco/

Severe Flooding in Choco, Colombia (November 2024)

The department of Choco, on the Pacific coast, is one of the most affected by the floods. Over 100,000 people have been impacted, with homes, crops, schools, livestock and plants destroyed or swept away by the waters.

Nubia Carolina Cordoa-Curi, governor of the department of Choco, stated on social media that the recent floods represent the worst climate crisis the region has had to face.

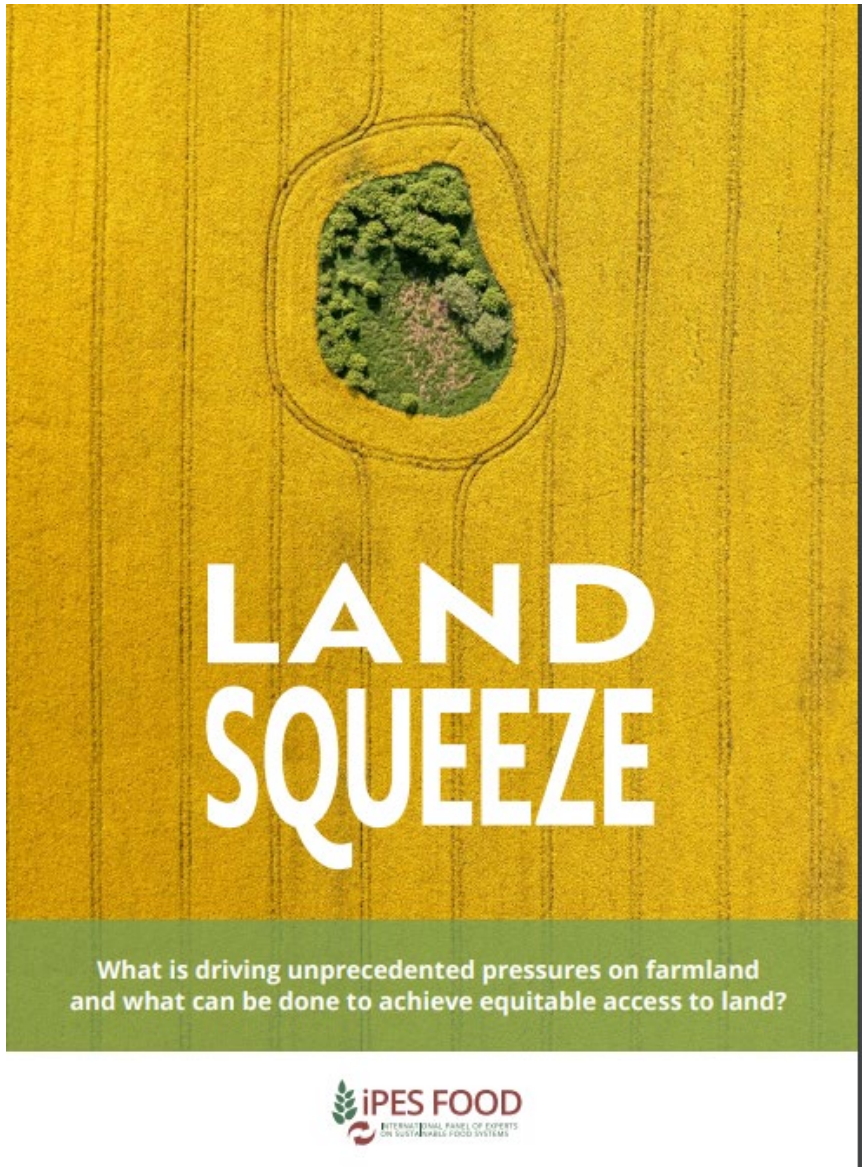
"This is the most severe emergency we have had to face as a department. It has affected all our river basins and our coastline, leaving thousands of families with nothing, destroying the crops that ensure food security, and necessarily calls for the urgent implementation of coordinated response measures," she said.

The intense rains and floods have affected around 70% of the department, one of the poorest and least developed in Colombia. Due to weak infrastructure, heavy rainfall often causes disproportionately high damage.

Carrillo affirmed that the first 10,000 humanitarian aid packages will begin to arrive soon.

Source: https://colombiaone.com/2024/11/10/colombia-floods-choco/

Land Concentration, Land Inequality, and Farmland in Colombia



- **Land concentration is exceptionally high in countries in Latin America, with 80% of all farmland in Colombia being controlled by 1% of the population. (IPES Food, 2024)**

- **Land inequality is a well-documented phenomenon in Colombia, with Indigenous Peoples and Afro-Colombians disproportionately affected. (Vasquez, 2023 & IDMC, 2024)**

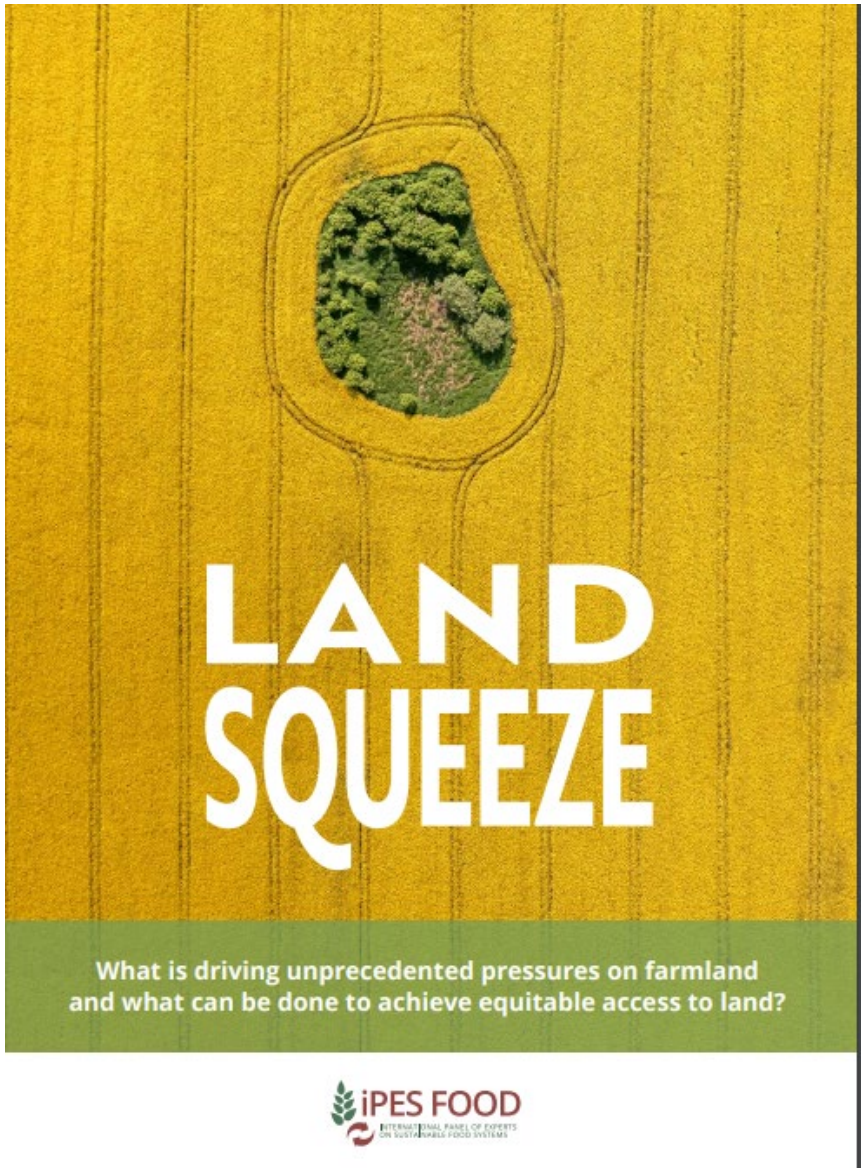
Sources:

Land Squeeze. IPES Food. May 2024. Page 8. Available at: https://ipes-food.org/wp content/uploads/2024/05/LandSqueeze.pdf

Silva Vásquez MS. *Land Inequality, Agrarian Development and Peace in Colombia: A Political Ecology View.* Stockholm, Sweden: KTH Royal Institute of Technology, Department of Sustainable Development, Environmental Sciences and Engineering; June 2023. https://kth.diva-portal.org/smash/get/diva2:1789325/FULLTEXT01.pdf

Internal Displacement Monitoring Centre (IDMC). *Colombia - Changing conflict dynamics still disproportionately affect most vulnerable.* May 14, 2024. https://www.internal-displacement.org/spotlights/colombia-changing-conflict-dynamics-still-disproportionately-affect-most-vulnerable/

Global Land Use, Farmland, and 'Land Grabs' (Large-Scale Land Acquisitions)



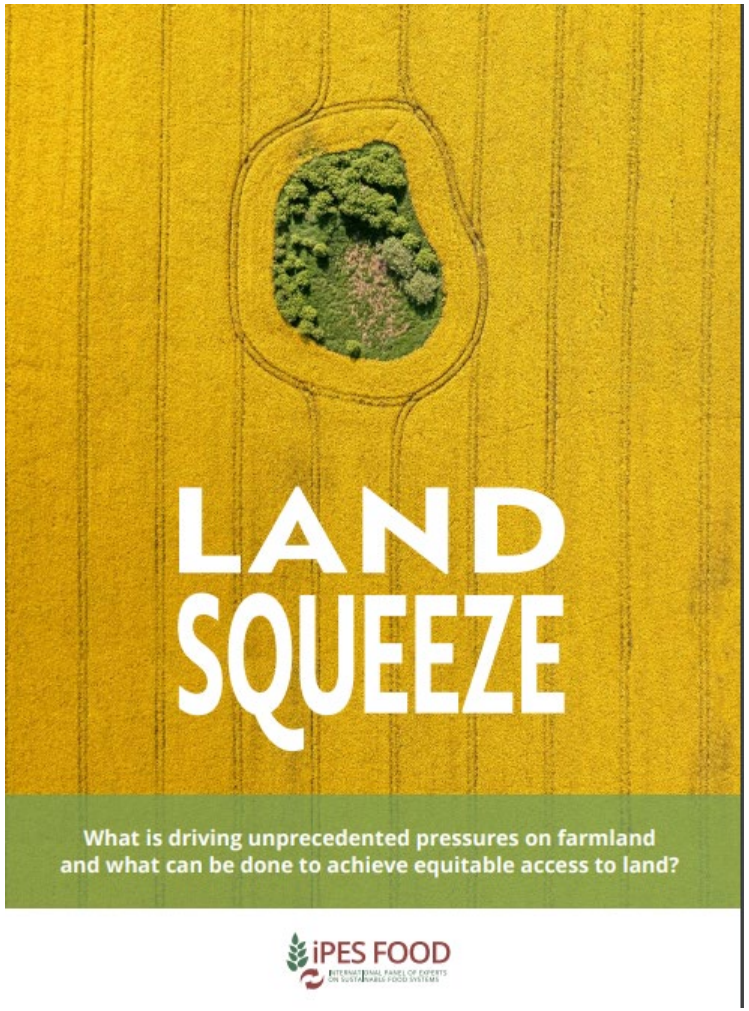
- Land is critical to the lives, livelihoods, and food security of millions of people across the world. But a series of unprecedented pressures on global farmland are now accelerating and converging.

- This land squeeze is driving a surge in land inequality, rural poverty, and food insecurity – and risking a tipping point for smallholder agriculture. Access to and control over land has been shaped by long-standing processes of discrimination, oppression, and dispossession.

- Today, farmers, pastoralists, Indigenous Peoples, and marginalized groups are facing renewed threats as the pressures on land evolve and multiply, while new generations face huge barriers to accessing land and entering agriculture. (IPES Food, 2024)

Source: *Land Squeeze*. IPES Food. May 2024. Available at: https://ipes-food.org/wp-content/uploads/2024/05/LandSqueeze.pdf

Quest for Food Sovereignty and Land Sovereignty



BOX 3.

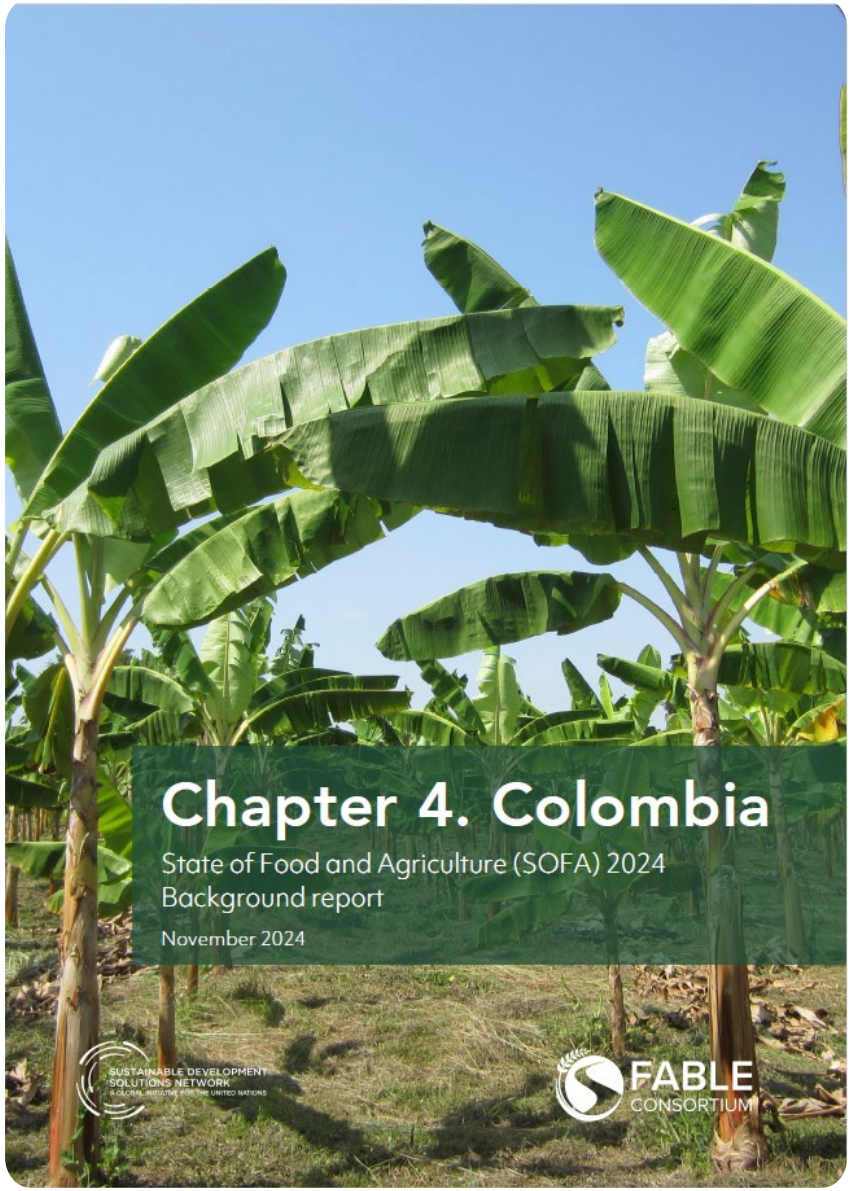
Food sovereignty and land sovereignty

Food sovereignty is defined by social movements as "the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems". The vision of food sovereignty was elaborated by a diverse range of social movements uniting farmers, Indigenous Peoples, women's collectives, urban gardeners, fishers, pastoralists, and others at the Nyéléni 2007 Global Food Sovereignty Forum in Mali. Since then, food sovereignty has become a unifying framework for food systems transformation, built around seven principles: 1) focuses on quality food for people; 2) values food providers; 3) localizes food systems; 4) puts control locally; 5) builds knowledge and skills; 6) works with nature; 7) and, added by Indigenous Peoples movements, food is sacred.[53]

Access to land and territories has been an essential component of the food sovereignty movement since its inception, as it grappled with the questions of who controls the essential resources for food production, for what purposes they are put to use, and who decides what is grown (or not), how, where and for whom. Food Sovereignty thus rests on placing "control over territory, land, grazing, water, seeds, livestock and fish populations on local food providers" and respecting their rights to use and share these resources in socially and ecologically sustainable ways.[54]

In today's context, with increasingly complex pressures on land, scholars and activists have warned that calls for improving land tenure security are insufficient to achieve food sovereignty. As an alternative frame – and as a call to action – Borras and Franco put forward the concept of land sovereignty, defined as "the right of working peoples to have effective access to, use of, and control over land and the benefits of its use and occupation, where land is understood as resource, territory, and landscape."[55] This definition of land sovereignty can be seen as a pillar of food sovereignty and the right to food.[56]

Source: *Land Squeeze*. IPES Food, May 2024, p. 20. Available at: https://ipes-food.org/wp-content/uploads/2024/05/LandSqueeze.pdf



Colombia's Food System: Addressing Hidden Costs of the Agri-Food System (Main Factors)

- The main factors necessary to target for reducing the hidden costs of the Colombian agrifood system include:.

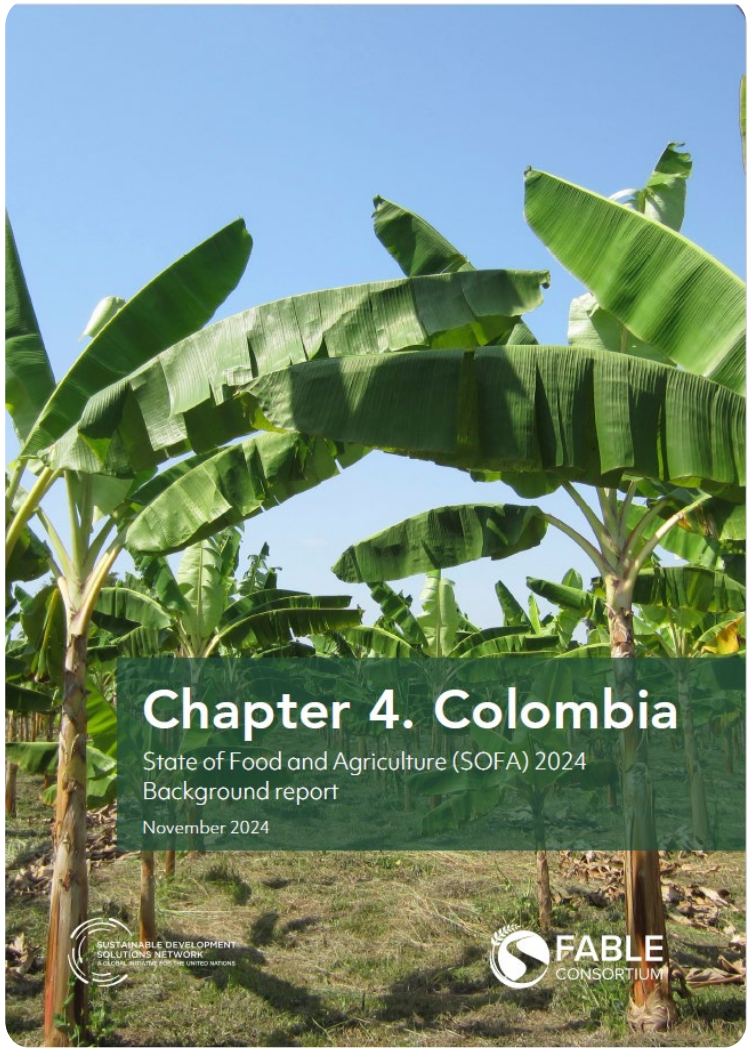
1) **Increased crop productivity**

2) **lower post-harvest agricultural food losses**

3.) **dietary change** including development of **healthy dietary decisions** through a broad ranges of measures including **adequate food labeling** and **health taxes** as well as **education campaigns and programs** starting in primary school.

Source: Arguello R., Chavarro J. Chapter 4: Colombia. In FABLE, *How to reduce agrifood systems' future hidden costs? A multi-country case study - State of the Food and Agriculture (SOFA) 2024 background report.* pp. 106-126. Sustainable Development Solutions Network (SDSN) and FABLE Consortium, November 2024; Paris, France.

In: FAO. 2024. *The State of Food and Agriculture 2024 – Value-driven transformation of agrifood systems*. Rome, Italy: FAO. November 2024. https://openknowledge.fao.org/items/ce07d375-19f3-4658-af12-3a1e1d27e82c

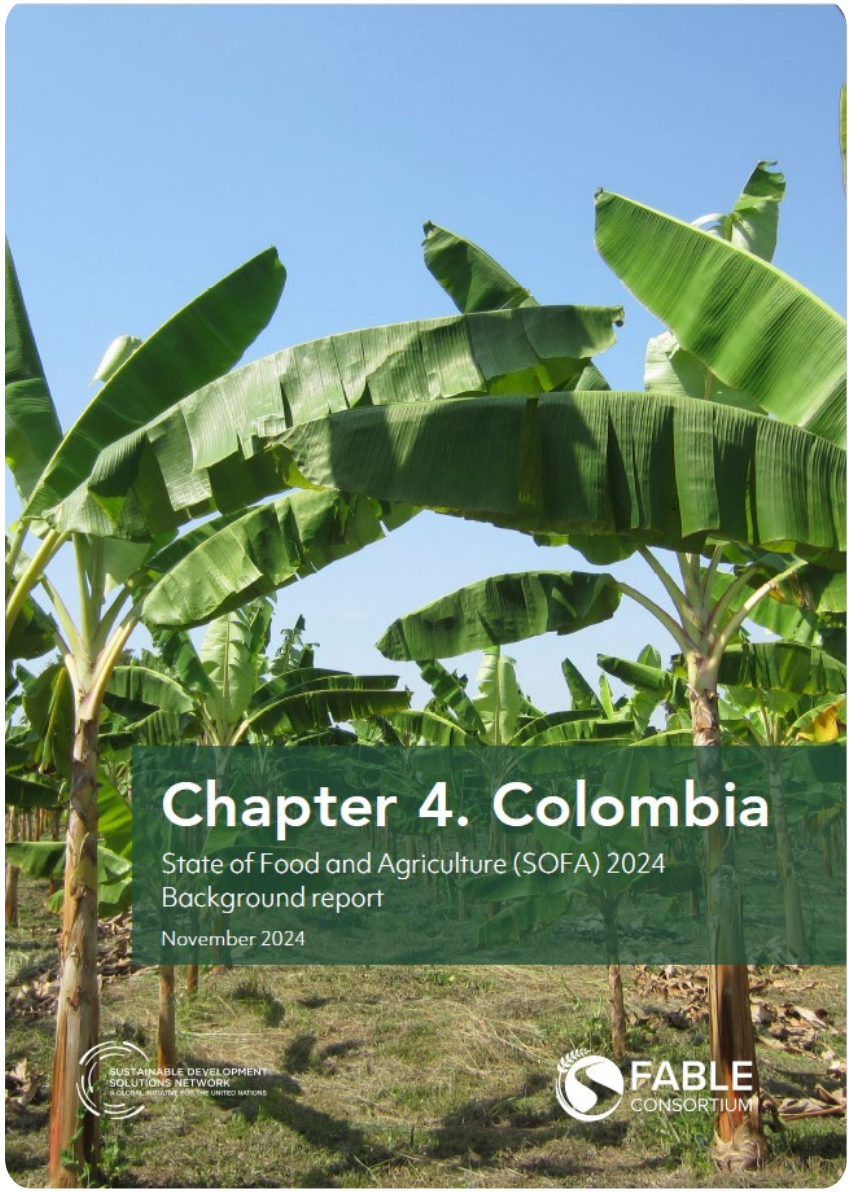


Source: Arguello R., Chavarro J. Chapter 4: Colombia. In FABLE, *How to reduce agrifood systems' future hidden costs? A multi-country case study - State of the Food and Agriculture (SOFA) 2024 background report* (pp. 106-126). Sustainable Development Solutions Network (SDSN) and FABLE Consortium, November 2024; Paris, France.

Colombia's Food System: Addressing Hidden Costs of the Agri-Food System (Main Factors)

4) **There is a need to coordinate these three entry points with the UN Food Systems Coordination Hub**. In the **case of Colombia**, this includes:

- the need for food production diversification;
- the improvement of national food markets and promotion of fair trade for production and consumers;
- the promotion of family agriculture, including through the valuation of farmers' traditional knowledge;
- support for agroecology;
- food security and nutrition; including policies focused on vulnerable groups such as pregnant women and children;
- sectoral plans for adaption to climate change and the reduction of carbon emissions in agriculture;
- strengthening resilience to climate change, pandemics and conflicts; and
- professionalization and digitization of public services for agriculture and agribusiness."



Colombia's Food System: Addressing Hidden Costs of the Agri-Food System (Main Factors)

5) **Improving and Keeping momentum regarding reforestation and afforestation.** Despite significant efforts by the current government to reduce deforestation, Colombia continues to experience high deforestation rates, particularly in the Amazon and Andean regions. This deforestation is driven by agricultural expansion, illegal crops and mining and infrastructure development.

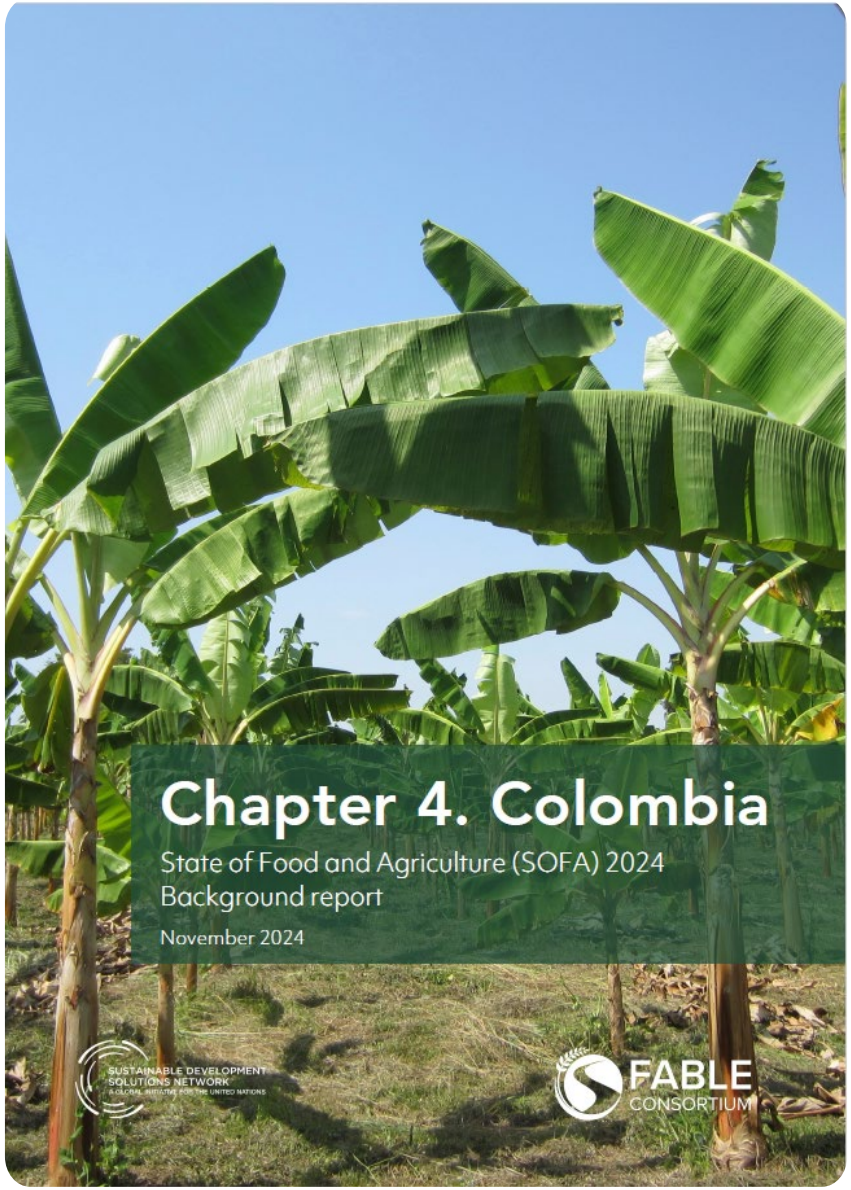
There is a need to:

- Secure adequate funding and resources for large-scale restoration projects.

Sustain implementation of programs such as Forests of Peace, the Adaptation to Climate Change project in High Mountain Ecosystems (Páramos), the REDD+ program and others.

- Foster community engagement including active participation of local communities, Indigenous groups, and other stakeholders.

Source: Arguello R., Chavarro J. Chapter 4: Colombia. In FABLE, *How to reduce agrifood systems' future hidden costs? A multi-country case study - State of the Food and Agriculture (SOFA) 2024 background report* (pp. 106-126). Sustainable Development Solutions Network (SDSN) and FABLE Consortium, November 2024; Paris, France.



Colombia's Food System: Entry Points for Action and Foreseen Implementation Challenges

1) Technical assistance to support producers in the **sustainable intensification of agricultural production** that is required to satisfy increasing demand while also reducing GHG and nitrogen emissions, soil degradation, and water pollution.

- Current efforts including the **sustainable livestock program included in the Colombian Nationally Determined Contribution (NDC)**,

- several **small-scale projects for enhancing agroecological practices**,

- recently proposed (but not approved yet) law for promotion of agroecological practices (AGROECOLOGÍA) Camara de Representantes, n.d.; Documentos Oficiales Contribuciones Nacionalmente Determinadas, n.d.).

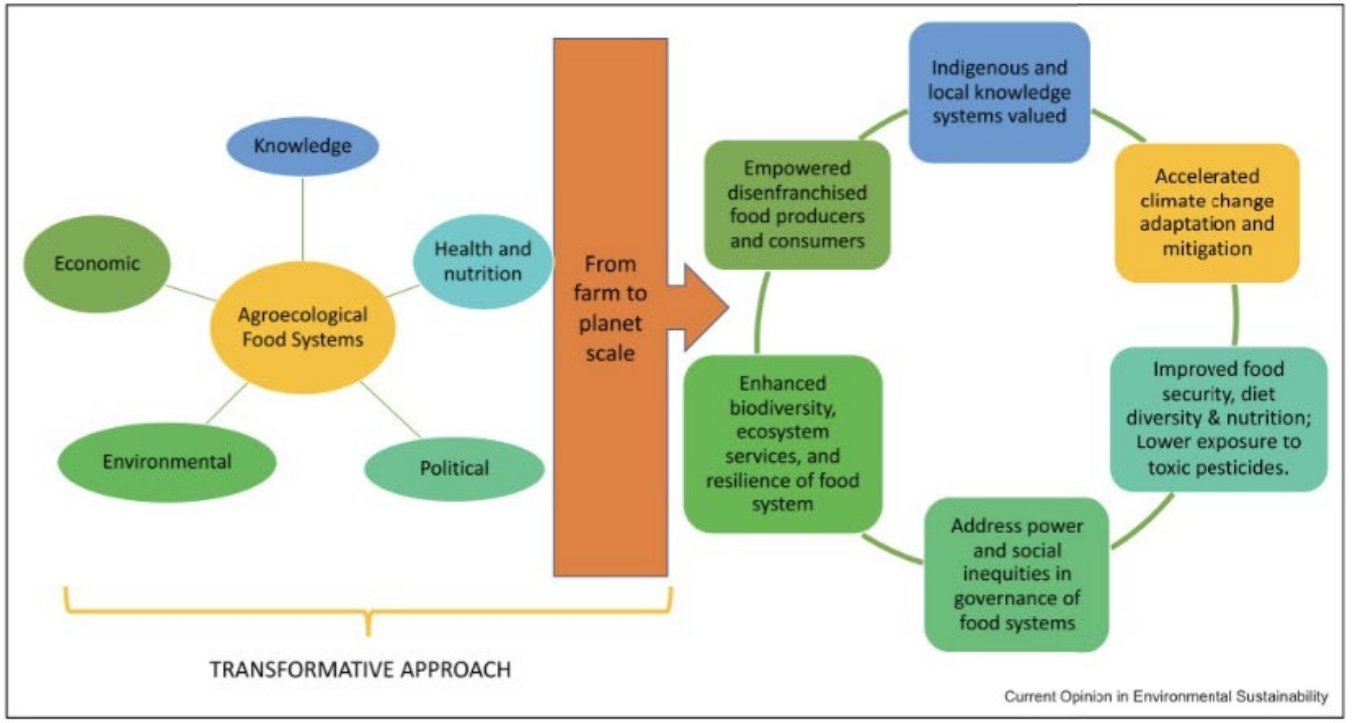
Source: Arguello R., Chavarro J. Chapter 4: Colombia. In FABLE, *How to reduce agrifood systems' future hidden costs? A multi-country case study - State of the Food and Agriculture (SOFA) 2024 background report.* pp. 106-126. Sustainable Development Solutions Network (SDSN) and FABLE Consortium, November 2024; Paris, France.

In: FAO. 2024. *The State of Food and Agriculture 2024 – Value-driven transformation of agrifood systems*. Rome, Italy; November 2024. https://openknowledge.fao.org/items/ce07d375-19f3-4658-af12-3a1e1d27e82c

Agroecology, is aligned with organic agriculture, ecological intensification, and diversified farming approaches, in emphasizing ecological processes to food production to support biodiversity, ecosystems, human health, and well-being for long-term resilience of food systems. And while organic agriculture includes many agroecological practices, agroecology includes more transformative approaches to the broader food system, including attention to political, sociocultural dimensions, markets and dietary change. See Figure 1. (Bezner Kerr et al., 2023)

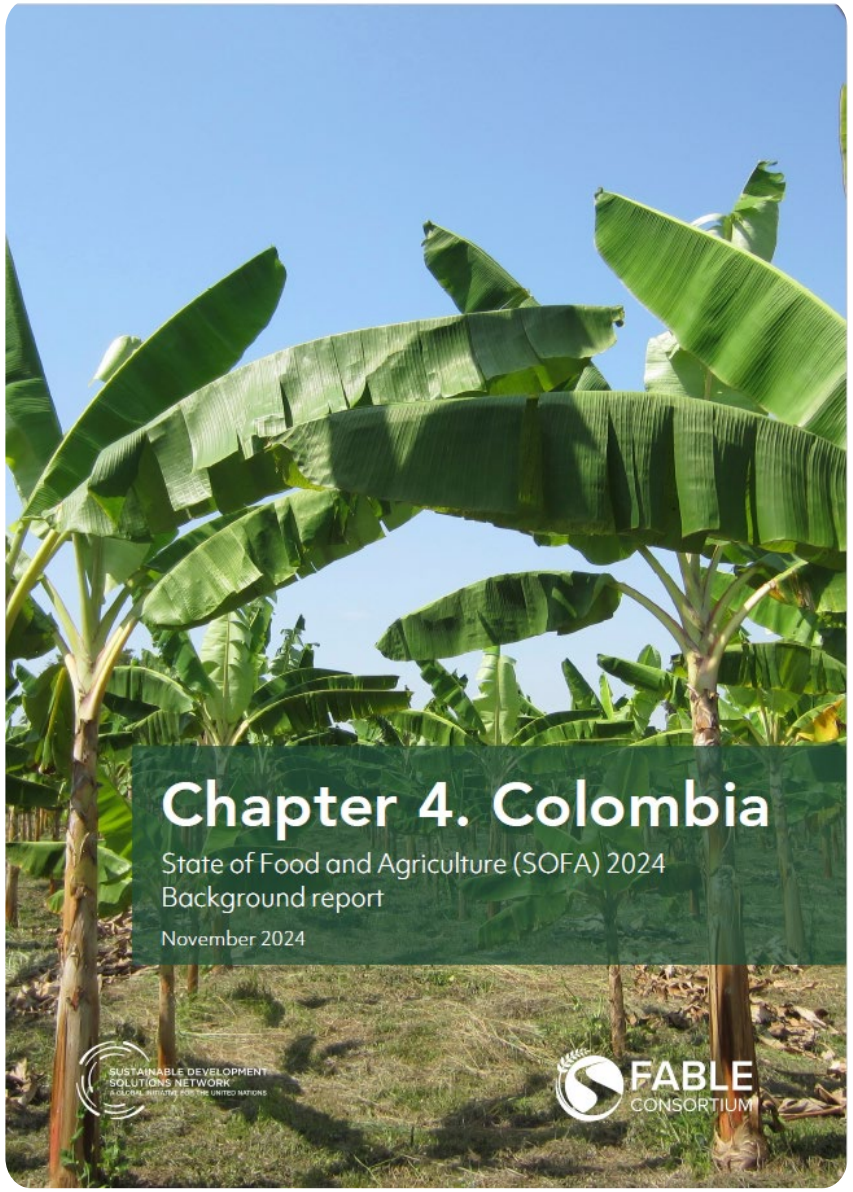
Sources: Bezner Kerr, R, Postigo, JC, Smith, P, et al. Agroecology as a transformative approach to tackle climatic, food, and ecosystemic crises. *Current Opinion in Environmental Sustainability*. 2023; 62:101275.

Agroecology as a transformative approach to tackle climatic, food, and ecosystem crises: New review. July 21, 2023. Available at: https://sustainable-rdn.com/2023/07/21/agroecology-as-a-transformative-approach-to-tackle-climatic-food-and-ecosystem-crises-new-review/



Agroecological transformations in food systems as holistic approach.

Figure 1: Agroecolocial transformations in food systems as a holistic approach



Colombia's Food System: Entry Points for Action and Foreseen Implementation Challenges

2.) Ensuring **sufficient financing** for establishing production projects that have a strong component in sustainable practices, covering a spectrum of technologies such as **agroecology, agroforestry and sustainable cattle ranching, e.g., silvopastoral systems (SPS).**

3) The development of **healthy dietary decisions** should be prioritized. Broad-based efforts are needed ranging from **adequate food labeling and healthy taxes to education campaigns** and programs starting from primary school.

Source: Arguello R., Chavarro J. Chapter 4: Colombia. In FABLE, *How to reduce agrifood systems' future hidden costs? A multi-country case study - State of the Food and Agriculture (SOFA) 2024 background report* (pp. 106-126). Sustainable Development Solutions Network (SDSN) and FABLE Consortium, November 2024; Paris, France.

FAO. 2024. *The State of Food and Agriculture 2024 – Value-driven transformation of agrifood systems*. Rome. https://openknowledge.fao.org/items/ce07d375-19f3-4658-af12-3a1e1d27e82c

Colombia's Food System: Transitioning to Sustainable Agricultural Production

1. Livestock and agricultural production need to become climate-smart to increase productivity, resilience, and lower emissions

- Agriculture, and livestock in particular, is a major driver of land-use change including deforestation.
- To reduce emissions from agriculture in line with Colombia's climate goals, by 2030, 16.3 million ha of livestock systems would need to be made sustainable, the expansion of pasture areas and herd growth need to decline, and an additional 3.2 million ha of agricultural land would need to be sustainably intensified via adoption of **climate-smart agriculture (CSA).**
- **Agroforestry** and **Silvopastoral Systems (SPS)** are types of CSA that show potential in Colombia.
- Commodities such as beef and dairy, rice, coffee, cocoa, sugar cane and horticulture have the greatest investment potential in CSA because of their prominent role in Colombia's GHG emissions and their climate adaptation benefits.

Photo: Sustainable Cattle Ranching in Colombia https://snappartnership.net/teams/sustainable-cattle-ranching/

Source: World Bank Group. *Colombia Country Climate and Development Report. CCDR Series*; Washington, DC: World Bank; July 2023.

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

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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.

The Lab

SPV FOR SILVOPASTURE SCALING

INSTRUMENT ANALYSIS
SEPTEMBER 2024

The Lab

SPV for Silvopasture Scaling

LAB INSTRUMENT ANALYSIS
September 2024

DESCRIPTION & GOAL

A special purpose vehicle (SPV) that promotes the transition from conventional to sustainable cattle ranching practices in medium-sized farms in Colombia. The vehicle provides ranchers with the necessary capital and technical assistance to implement silvopastoral systems (SPS) and supports the development of a grouped carbon project. It will generate revenue through profit-sharing agreements with ranchers on productivity gains and the sales of high-quality carbon credits.

SECTOR

Land Use/AFOLU; Sustainable Agriculture; Forestry

FINANCE TARGET

Grants: Foundations, Governments

Concessional Investments: Development Finance Institutions, Guarantee Providers

Commercial Investments: Corporates, Impact Investors, Institutional Investors

GEOGRAPHY

Initial phase: Colombia
Potential scalability: Mexico, Brazil

https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/SPV-for-Silvopasture-Scaling_Instrument-Analysis.pdf

Silvopastoral Systems (SPS) in Colombia

CONTEXT

Transitioning to regenerative cattle ranching presents a promising opportunity to abate carbon emissions, restore critical ecosystems, and enhance rural resilience.[2] The SPV for Silvopasture Scaling aims to mainstream this transition in Colombia, where the ranching sector contributes to over a quarter of the country's emissions.

The purpose of the SPV for Silvopasture Scaling is to enable the reduction of land-use emissions from the cattle ranching sector, as well as to promote enhanced resilience in rural communities through the productive restoration of degraded grazing landscapes. This will be achieved by implementing SPS which will lead to productivity gains and higher income for medium-sized ranchers.

The potential for SPS implementation in Latin America is high, with at least 378 million hectares of pastures degraded (El Pais, 2022). Along with eight other countries in the region (e.g., Brazil, Mexico, Costa Rica), Colombia has included sustainable cattle ranching as a key national mitigation strategy in their NDCs.

Colombia has defined the transition to SPS as a prioritized Nationally Appropriate Mitigation Action (NAMA) to accomplish the NDC target of reducing 51% of total emissions by 2030.

https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/SPV-for-Silvopasture-Scaling_Instrument-Analysis.pdf

Silvopastoral Systems (SPS) in Colombia

To address these challenges, The Nature Conservancy (TNC) is designing a special purpose vehicle (SPV) to finance the transition to silvopastoral systems (SPS). SPS encompasses diverse sustainable management practices that integrate native trees and vegetation transforming degraded pastures into productive grazing lands. These systems enhance soil health, increase biodiversity, improve productivity, and capture carbon, making them crucial for climate mitigation and adaptation.

The SPV will finance this transition to SPS through profit participation agreements, reducing the burden of upfront capital costs for ranchers. It will also provide technical assistance, leveraging over a decade of empirical research and experience developing SPS in Colombia through the Mainstreaming Sustainable Cattle Ranching (MSCR) project (World Bank, 2019). Additionally, the SPV will structure an associated carbon project and commercialize the credits, creating an additional revenue stream.

Assessed against the Lab criteria, the SPV is:

- **Innovative**: The vehicle addresses barriers such as lack of access to capital for medium-sized ranchers, ranchers' aversion to debt, and lack of required technical knowledge. It does so by combining profit participation agreements (instead of loans), carbon credit revenue, and long-term technical assistance.
- **Actionable**: The instrument leverages TNC's long-standing experience leading the transition to regenerative agricultural practices in Latin America, as well as its close engagement with local farmers and partner organizations. Additionally, it aligns with national climate priorities.[1]
- **Financially Sustainable**: The instrument proposes a commercially viable return for private investors through the combination of profit-sharing agreements on productivity gains and carbon credit sales. Moreover, the structure includes a guarantee to mitigate downside risk, as well as a concessional layer to adjust the return for different types of investors.
- **Catalytic**: The pilot will leverage grants and concessional capital to demonstrate the viability and financial feasibility of silvopastoral interventions, helping drive private investment and encourage widespread adoption of sustainable agricultural practices across Colombia, with a potential of up to 1.4 million hectares suitable for SPS.

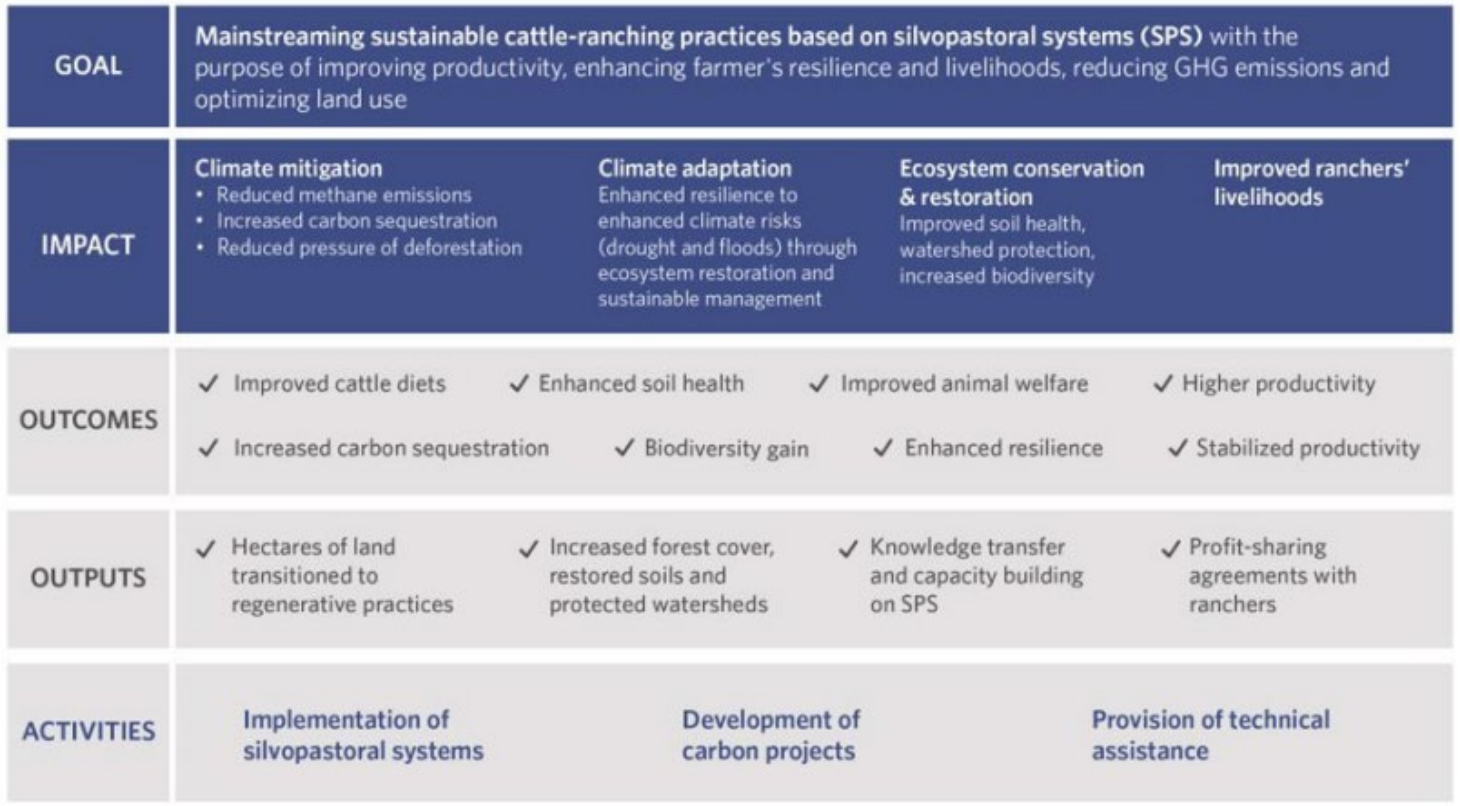
Colombia has defined the transition to SPS as a prioritized Nationally Appropriate Mitigation Action (NAMA) to accomplish the NDC target of reducing 51% of total emissions by 2030.

https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/SPV-for-Silvopasture-Scaling_Instrument-Analysis.pdf

Silvopasotoral Systems: Environmental and Socio-Economic Impacts

Silvopastoral systems are a unique and comprehensive intervention that brings multiple climate, biodiversity, and social impacts. They foster soil and ecosystem restoration, lower cattle-related emissions, enhance climate resilience, and provide additional income for ranchers.

Figure 5: Theory of Change (ToC)



https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/SPV-for-Silvopasture-Scaling_Instrument-Analysis.pdf

Raising awareness about climate change and its impacts is vital to empowering communities to take informed climate action at the local level.

In Colombia, climate change impacts are expected to accelerate the pace of land degradation and impact water quality and agricultural production.

- As part of Colombia's climate adaptation planning, **United Nations Development Program [UNDP]** collaborated with the **National University of Colombia** to assess the impacts of climate change on agrifood systems in **the Moorlands of Guasca** and **Guatavita**.

- To promote climate resilience, **UNDP works closely with native potato producers, supporting them in adopting sustainable practices**. Additionally, **UNDP partnered with Javeriana University** to provide **trainings to communities in the mountainous Andes region on ecological restoration techniques.**

- In the **Sumapaz Paramo region, located in Colombia's Andes**, the partnership with the **National University of Colombia led to the design of a 120-hour course on food sustainability and climate action for leaders of farmer organizations.** By developing the course and providing scholarships to local leaders, the university bridged an awareness gap and enabled communities in the remote, mountainous areas of Colombia to identify context-specific climate adaptation actions.

Source: Kohli R. Why universities play a crucial role in climate adaptation. United Nations Development Programme (UNDP). November 17, 2024. https://climatepromise.undp.org/news-and-stories/why-universities-play-crucial-role-climate-adaptation

2. **Agriculture is the principal economic activity in rural Colombia, but its stagnant performance of the sector is keeping rural communities from improving their income and well-being.**

The livestock sector is key to the livelihoods of many Colombian families.

Occupying 80% of the agricultural land, more than half a million families in Colombia generate income through cattle ranching, guaranteeing a significant share of the national beef and dairy supply.

~ 94% of cattle ranching is done by small and medium-sized farmers.

~ 45% of the 2.7 million farmers in rural Colombia live in poverty and are highly vulnerable to accentuated climate impacts such as intense droughts and floods.

The **SPV for Silvopastoral Scaling index** aims to provide the necessary capital and technical assistance in a way that meets local needs and presents the opportunity of scaling the adoption of SPS in the region.

Source: https://www.climatepolicyinitiative.org/wp-content/uploads/2024/09/SPV-for-Silvopasture-Scaling_Instrument-Analysis.pdf

Colombia's Food System: Transitioning to Sustainable Agricultural Production

2. **Agriculture is the principal economic activity in rural Colombia, but its stagnant performance of the sector is keeping rural communities from improving their income and well-being.**

- Agriculture accounts for 60 percent of employment in rural areas and produces 60% of the total food supply in the country.

- There are challenges such as integrated rural reform to address unequal and informal landholding (as part of the country's peace agreement), improving competitiveness of the rural economy, and establishing a state presence in remote areas to simultaneously advance the deforestation control agenda.

Source: World Bank Group. *Colombia Country Climate and Development Report. CCDR Series*; Washington, DC: World Bank; July 2023. Accessed August 15, 2023.

Improving and Keeping Momentum Regarding Reforestation and Afforestation in Colombia: Current Challenges

Deforestation plunges but environmental threats remain as Colombia hosts COP16

LUCAS BERTI
21 OCT 2024 AMAZON

Comments Share article

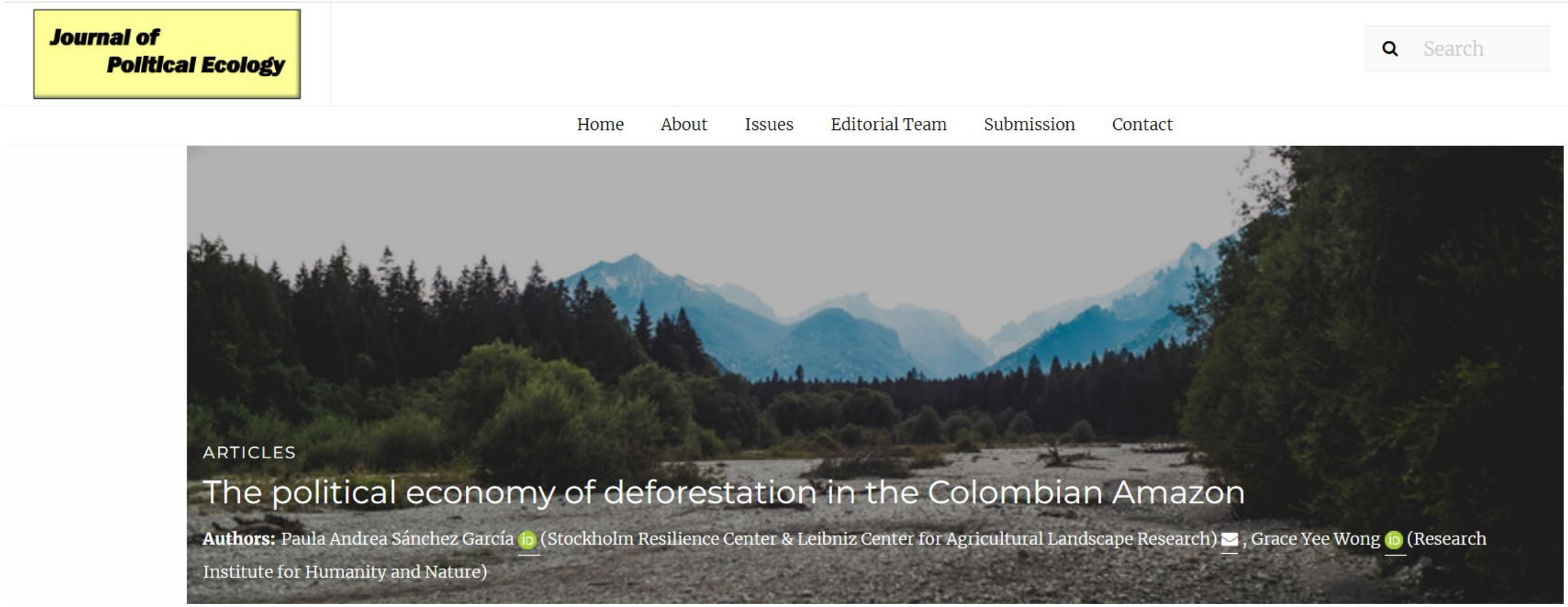
Source: Berti L. Deforestation plunges but environmental threats remain as Colombia hosts COP16. *Mongabay News*. October 21, 2024. https://news.mongabay.com/2024/10/deforestation-plunges-but-environmental-threats-remain-as-colombia-hosts-cop16/#:~:text=Official%20data%20show%20large%20swaths,authorities%20once%20again%20on%20alert.

- Regarding deforestation, it is estimated a 70% reduction trend occurred between January and September 2023, figures that helped Colombia end last year with an all-time overall yearly record drop of 36% compared with the previous year.

- Muhamad celebrated the achievement as an "encouraging figure," but caution also entered the stage, as she said when announcing the positive figures that she didn't want to look "triumphalist" or to "communicate that we are already winning the battle against deforestation."

- A few months later, early 2024 data would prove the minister's remarks to be prudent: In an April report, the Environment Ministry revealed an upward trend in deforestation in the first quarter, with specific incidence in the Colombian Amazon.

Improving and Keeping Momentum Regarding Reforestation and Afforestation in Colombia: Current Challenges



Source: Sánchez García, P. A. & Wong, G. Y. The political economy of deforestation in the Colombian Amazon. *Journal of Political Ecology*. 2024;31(1):178–199. doi: https://doi.org/10.2458/jpe.5230

The Political Economy of Deforestation in the Colombian Amazon

- The Colombian Amazon has experienced rapid forest loss in the past decades due to growing colonization, infrastructure development, and commercial agriculture expansion. While much of the analyses of deforestation in the Amazon have been in Brazil, there is a need to extend to Colombia where forest and land use exploitation are driven by post-conflict social and political dynamics.

- This research contributes to this knowledge gap by unpacking the mechanisms underpinning deforestation on the northwestern side of the Colombian Amazon.

Source: Sánchez García, P. A. & Wong, G. Y. The political economy of deforestation in the Colombian Amazon. *Journal of Political Ecology*. 2024;31(1):178–199. doi: https://doi.org/10.2458/jpe.5230

The Political Economy of Deforestation in the Colombian Amazon

- Findings indicate that the power vacuum resulting from the demobilization of FARC (Fuerzas Armadas Revolucionarias de Colombia), acted as a window of opportunity for peasants, squatters, narco-traffickers, cattle ranchers, landlords, and other investors to access public lands and capitalize from converting forests to coca crops and pastures for cattle ranching.

- Accumulation of land and surplus primarily from cattle ranching and coca production has increased the ability of these actors to reshape the landscape and societal structures.

Source: Sánchez García, P. A. & Wong, G. Y. The political economy of deforestation in the Colombian Amazon. *Journal of Political Ecology*. 2024;31(1):178–199. doi: https://doi.org/10.2458/jpe.5230

The Political Economy of Deforestation in the Colombian Amazon

- Traditional elites and old and emerging narco-bourgeoisie have capitalized on preexisting power asymmetries by disproportionally accumulating land, money, gun power, influence, and prestige seeking to consolidate territorial hegemony, and controlling the means for material reproduction in society.

- Powerful actors use their resources and prestige to displace historically marginalized groups – such as indigenous communities, peasants and squatters – from their means of subsistence and production, resulting in the installation of a capitalist economy based on land rent and drug trafficking, where less powerful and marginalized actors engage in deforestation as means for capital accumulation and subsidizing their peasant and subsistence economies.

Source: Sánchez García, P. A. & Wong, G. Y. The political economy of deforestation in the Colombian Amazon. *Journal of Political Ecology*. 2024;31(1):178–199. doi: https://doi.org/10.2458/jpe.5230

The Political Economy of Deforestation in the Colombian Amazon (cont'd)

- Land-grabbing is the primary factor behind deforestation in the Colombian Amazon, and approximately 61% of the country's total deforestation in 2021.
- **The primary drivers of deforestation are the expansion of the agricultural and livestock frontier, and to a lesser extent illicit drug cultivation, mining, and illegal logging.**
- **The relative importance of each of these varies by region but at the national level, livestock and agriculture are the most important drivers.**

Deforestation Control:

- Achieving transformational deforestation control will require addressing the drivers of deforestation, the most important ones being livestock and agricultural expansion.
- The deforestation effect of peace is exacerbated by land-intensive economic activities but attenuated in municipalities with higher state presence and judicial capacity.

Source: World Bank Group. *Colombia Country Climate and Development Report. CCDR Series*; Washington, DC: World Bank; July 2023. Accessed August 15, 2023.

Global Obesity Epidemic and the Nutrition Transition

Colombia: Nutrition Transition and Alimentary Transition

In Colombia, two transitions are taking place simultaneously: a **nutrition transition** with a '**double burden of malnutrition**' (i.e., coexistence of undernutrition alongside overweight, obesity and diet-related non-communicable diseases), and an **alimentary transition**, where the **traditional diet is being replaced with a Western-type diet** (Herran & Herran-Fonseca, 2022).

Rising Obesity Rates – Globally (World Obesity Atlas, 2024)

Key Statistics*

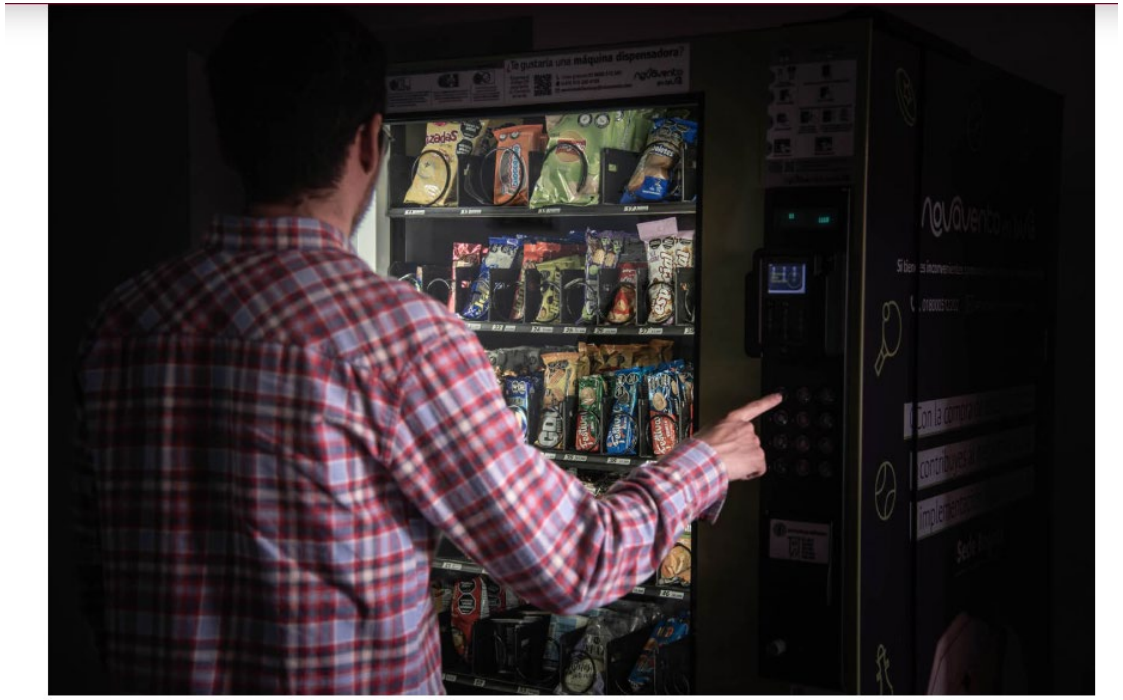
- 79% of adults with overweight and obesity will live in Low- and Middle-Income Countries (LMICs) by 2035.
- 88% of children with overweight and obesity will be living in LMICs by 2035.
- It is projected that the number of adults living with obesity will rise from 0.81 billion in 2020 to 1.53 billion in 2035

Source:* World Obesity Atlas 2024. Rising obesity rates across the world reveal massive gaps in healthcare and nutrition, with poorest populations most adversely affected. *World Obesity Federation*. March 4, 2024. Available at: https://www.worldobesity.org/news/world-obesity-atlas-2024#:~:text=Key%20Statistics%3A,to%201.53%20billion%20in%202035

In Colombia, “malnutrition due to excess” is increasing, is this normalizing obesity?

In general, obesity in humans is linked with genetic, environmental, political, and social factors, the latter due to inequalities and inequities. A precedent for this epidemic to reach its current status in Colombia was the **dietary and nutritional transition**. This phenomenon involved a substitution of traditional (more natural) food for more processed, high-energy (calorie) food. More investment is required for public health actions.

This complex disease is a risk factor for developing several chronic pathologies such as diabetes and high blood pressure. Source: Unimedios archives



The substitution of traditional (more natural) food for more processed, high-energy (calorie) food, coming from an excess of saturated fats is one of the causes of obesity. Source: Nicol Torres, Unimedios

Source: Bajarano Roncancio JJ. In Colombia, “malnutrition due to excess” is increasing, is this normalizing obesity? *Periodico UNAL*. April 15, 2024. https://periodico.unal.edu.co/articulos/aumenta-en-colombia-la-malnutricion-por-exceso-una-normalizacion-de-la-obesidad?lgn=en

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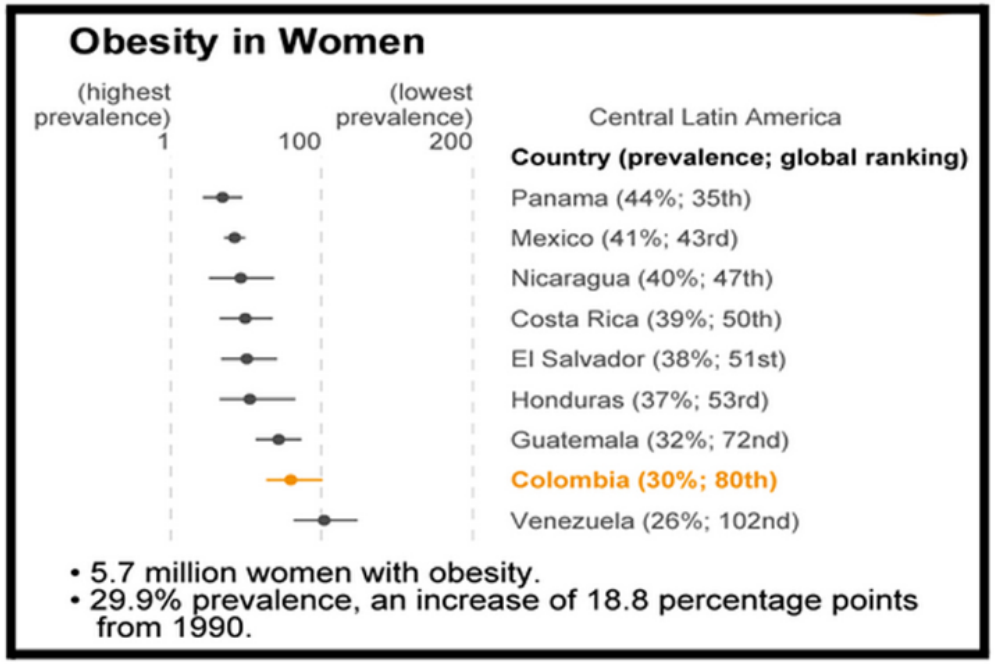


Figura 1.

Figure 1. Obesity in women in some Latin American countries. Source: https://www.ncdrisc.org/country-profile.html

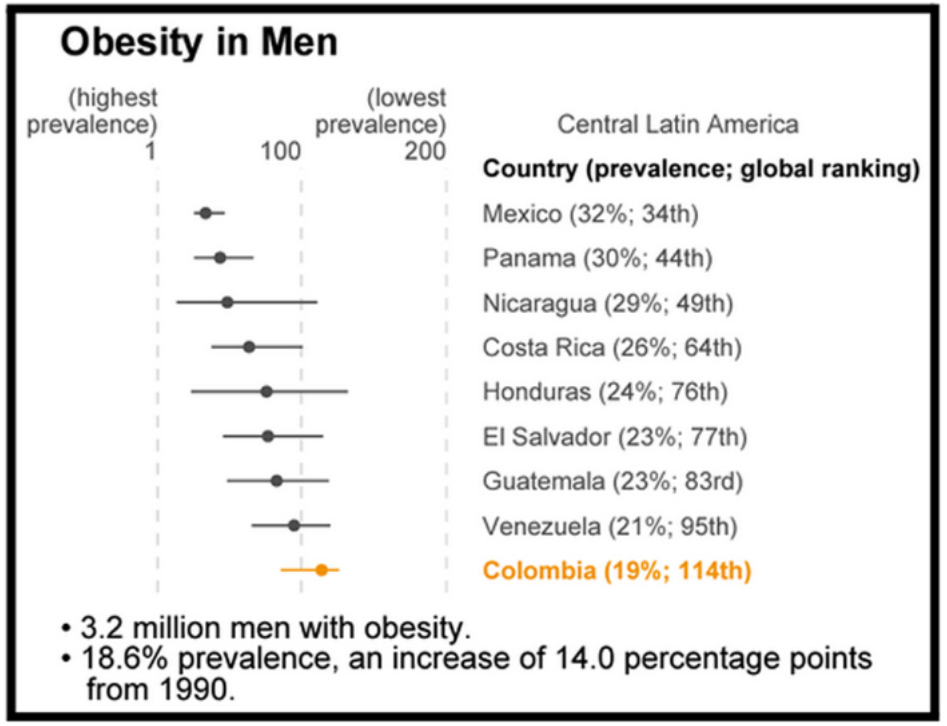


Figura 2.

Figure 2. Obesity in men in some Latin American countries. Source: https://www.ncdrisc.org/country-profile.html

Source: Bajarano Roncancio JJ. In Colombia, “malnutrition due to excess” is increasing, is this normalizing obesity? *Periodico UNAL*. April 15, 2024. Available at: https://periodico.unal.edu.co/articulos/aumenta-en-colombia-la-malnutricion-por-exceso-una-normalizacion-de-la-obesidad?lgn=en

Colombia

In July 2021, the Colombian government passed Ley Comida Chatarra (The Junk Food Law), which mandates front-of-package labeling. With our research partners in Colombia, we conducted experiments to inform the design of these labels. Our research found that octagonal-shaped labels (like those used in Chile, Peru, Mexico, and soon in Argentina and Venezuela) were the most effective, and that warning labels outperformed other label designs (Nutri-Score and Guideline Daily Amounts) among Colombians.

On December 13, 2022, the Colombian Ministry of Health issued Resolution 2492 detailing how the law will be regulated, including final label design (black octagonal warning labels) and the nutrient profiling model to identify which products will be subject to the regulation. Industry has six months to implement the labels.

Also in December, 2022, Colombia passed two fiscal policies: taxes on ultra-processed, sugary beverages and ultra-processed food products (*details below*). Colombia is the first country in the world to specifically target overconsumption of ultra-processed products with a fiscal policy.

Our future evaluations: In collaboration with our research partners in Colombia, we plan to evaluate the adoption and impact of the world's first tax on both sugar-sweetened beverages and ultra-processed foods.

Policy Research

Fiscal Policies | Labeling Regulations

Global Food Research Program, University of North Carolina (UNC) - Chapel Hill. Available at: https://www.globalfoodresearchprogram.org/where-we-work/colombia/

Nutrient thresholds for Colombia's front-of-package warning labels

Colombia's front-of-package warning label regulatory guidelines take into account NOVA classification for degree of food processing as well as thresholds (*below*) for nutrient contents that correspond to the PAHO Nutrient Profile Model. Processed and ultra-processed foods and drinks that exceed the thresholds below or contain added sweeteners must carry a front-of-package warning label corresponding to that nutrient or ingredient.

Nutrient	Solids and semi-solids	Liquids
Sodium	≥1 mg/kcal and/or ≥300 mg/100 g (for packaged, raw meats with added salt/sodium: 300 mg/100 g)	≥ 1 mg/kcal (for non-caloric, non-alcoholic beverages: ≥40 mg/100 mL)
Free sugars	≥10% of total calories	≥10% of total calories
Saturated fats	≥10% of total calories	≥10% of total calories
Trans fats	≥1% of total calories	≥1% of total calories
Sweeteners	Any amount of sweeteners	Any amount of sweeteners

https://www.globalfoodresearchprogram.org/home/nutrient-thresholds-for-colombias-front-of-package-warning-labels/

Octagonal Front of Package (FOP) Nutrient Warning Labels: Colombia

Colombia's ultra-processed product taxes

Tax on ultra-processed, sugary drinks

Beginning November 1, 2023, Colombia will tax all ultra-processed sugary drinks, including carbonated and non-carbonated beverages, malt-based beverages, teas, coffee-type beverages, fruit drinks and nectars, fruit concentrates, energy drinks, sports drinks, flavored waters, and powder mixes. The following beverages are exempt: plain water, 100% fruit or vegetable juices, and infant formula. The tax rate will depend on beverages' added sugar content and will increase yearly in three phases (with more strict sugar thresholds in 2025), and will be updated for inflation automatically, starting in 2026.

Added sugar content per 100 mL	Tax rate per 100mL (Col$ = Colombian pesos) 2023	2024
<6 grams	Col$0	Col$0
≥6 to <10 grams	Col$18 (5%)	Col$28 (9%)
≥10 grams	Col$35 (11%)	Col$55 (17.8%)

Added sugar content per 100 mL	Tax rate per 100mL 2025
<5 grams	Col$0
≥5 to <9 grams	Col$38 (12.3%)
≥9 grams	Col$65 (20%)

Percentages are calculated on a base price at 2022 values. View table as html.

Tax on ultra-processed food products

Beginning November 1, 2023, Colombia will tax ultra-processed foods, defined as edible products formulated from food-derived substances along with additives, that contain added sugars, sodium, and saturated fats and exceed the following thresholds for those nutrients:

- **≥1 mg** of **sodium** per **1 kcal** and/or **≥300 mg** of **sodium** per **100 g**
- **≥10%** of total energy from **free sugars**
- **≥10%** of total energy form **saturated fats**

The tax rates will be **10%** in 2023, **15%** in 2024 and **20%** in 2025.

Ultra-processed food categories subject to taxation will include: milk products added with sugar, sausages and cold cut meats, chocolates and confectionary candies, snacks, bakery products, breakfast cereals, canned fruits and vegetables added with fat, sugar or salt, jams, jellies and marmalades, sauces, condiments, and seasonings. Exempt categories are Colombian traditional foods such as arequipe or dulce de leche (milk caramel), salchichon (sausage), oblea (thin round wafer), bocadillo (guava paste).

Read law in Spanish | English (translation of Title V: Health Taxes).

https://www.globalfoodresearchprogram.org/where-we-work/colombia/


12
PAQUETES INDIVIDUALES
CON 4 GALLETAS
NINTENDO SWITCH
PROMOCIÓN
PARTICIPA POR
¡UN NINTENDO SWITCH DIARIO!
CONOCE MÁS EN
OREOPROMO.COM
EXCESO EN SODIO
MINSALUD
EXCESO EN AZÚCARES
MINSALUD
EXCESO EN GRASAS SATURADAS
MINSALUD
ORIGINAL
LA GALLETA FAVORITA DE LA LECHE
OREO
SUPER MARIO BROS.™ WONDER
ble galleta de chocolate
12 porciones Contenido neto: 432 g


EDICIÓN LIMITADA
Kellogg's
ZUCARITAS
MIX
EXCESO EN AZÚCARES
MINSALUD
PACK
PORCIONES*
MÁS CONTENIDO A UN MENOR PRECIO**
EXCESO EN AZÚCARES
MINSALUD
Kellogg's
choco KRISPIS
DELICIOSO SABOR CHOCOLATOSO
1 GRANO DE ARROZ
1 CHOCO KRISPIS®
MELVIN®


EDICIÓN LIMITADA
EXCESO EN AZÚCARES
MINSALUD
Kellogg's
HOT WHEELS
DELICIOSO
SABOR A FRUTAS
MEZCLA DE CEREAL DE MAÍZ, TRIGO Y AVENA CON SABORES A FRUTAS, CON VITAMINAS Y MINERALES
CONTENIDO NETO: 135 g
PORCIONES POR ENVASE: 4.5
Edición Limitada
EXCESO EN AZÚCARES
MINSALUD
Kellogg's
Barbie
SABOR FRESIDELICIOSO
Sabor artificial
MEZCLA DE CEREAL DE MAÍZ, TRIGO Y AVENA CON SABOR A FRESA, CON VITAMINAS Y MINERALES
CONTENIDO NETO: 135 g
PORCIONES POR ENVASE: 4.5


Alpina
alpinito MAX
X4
Unidades 90 g c/u
OTROS
VITAMINAS D3 Y B12
ÁCIDO FÓLICO
HIERRO
ZINC
EXCESO EN AZÚCARES
MINSALUD
EXCESO EN GRASAS SATURADAS
MINSALUD
Información Nutricional (100 g): Calorías 113, Grasa 3.9 g, Grasa sat. 3 g, Grasa trans 0 mg, Carb. total 13 g, Fibra 0 g, Azúcares totales 9.5 g, Azúcares añadidos 8.2 g, Proteína 6.4 g, Sodio 67 mg, Vit. A 60 µg ER, Calcio 101 mg, Hierro 11 mg, Vit. D 5.1 µg, Ácido Fólico 207 µg, Vit. B12 1.5 µg, Zinc 9.7 mg.
MORA
CONT. NETO 360 g
4 porciones
Alpina
alpinito MAX
X4
Unidades 90 g c/u
OTROS
EXP 07DIC24
VITAMINAS D3 Y B12
ÁCIDO FÓLICO
HIERRO
ZINC
EXCESO EN AZÚCARES
MINSALUD
EXCESO EN GRASAS SATURADAS
MINSALUD
Información Nutricional (100 g): Calorías 113, Grasa 3.9 g, Grasa sat. 3 g, Grasa trans 0 mg, Carb. total 13 g, Fibra 0 g, Azúcares totales 9.5 g, Azúcares añadidos 8.2 g, Proteína 6.4 g, Sodio 67 mg, Vit. A 60 µg ER, Calcio 101 mg, Hierro 11 mg, Vit. D 5.1 µg, Ácido Fólico 207 µg, Vit. B12 1.5 µg, Zinc 9.7 mg.
FRESA
CONT. NETO 360 g
4 porciones


B·GETAL
CON PROTEÍNA 100% VEGETAL
BURGER
Producto a base de proteína vegetal, Imitación hamburguesa
con LENTEJA, GARBANZO y ARVEJA
Sin CONSERVANTES ARTIFICIALES
Sin SABORES ARTIFICIALES
Proteína 15g
EXCESO EN SODIO
MINSALUD
PESO NETO 400 g
4 PORCIONES
4 UNIDADES


Pietrán
VEGGIE NUGGETS
Producto a base de Soya
EXCESO EN SODIO
MINSALUD
SIN CONSERVANTES ADICIONADOS
CON AVENA Y SEMILLAS DE CHIA


BIMBO
PAN HAMBURGUESA
con ajonjolí
EXCESO EN SODIO
MINSALUD
4 Unidades


POMONA
EXCESO EN SODIO
MINSALUD
Chorizo
parrillero
EXCESO EN GRASAS SATURADAS
MINSALUD
Chorizo crudo mixto de cerdo y res
Contenido Neto 500 g. 14 porciones Aprox. 7 Unidades
Información Nutricional (100 g): Calorías 314 Kcal, Grasa total 28 g, Grasa saturada 10 g, Grasa trans 0 mg, Carbohidratos totales 0.6 g, Fibra dietaria 0 g, Azúcares totales 0 g, Azúcares añadidos 0 g, Proteína 15 g, Sodio 656 mg, Vitamina A 0.82 µg ER, Vitamina D 0 µg, Hierro 0.99 mg, Calcio 6.9 mg y Zinc 2.3 mg.
Información Nutricional (porción): Tamaño de la porción: 1/2 unidad (35 g) Número de porciones por envase: Aprox. 14 porciones Calorías 110 Kcal, Grasa total 9.8 g, Grasa saturada 3.6 g, Grasa trans 0 mg, Carbohidratos totales 0.2 g, Fibra dietaria 0 g, Azúcares totales 0 g, Azúcares añadidos 0 g, Proteína 5.2 g, Sodio 230 mg, Vitamina A 0.29 µg ER,Vitamina D 0 µg, Hierro 0.35 mg, Calcio 2.4 mg y Zinc 0.81 mg.
INSTRUCCIONES DE USO: Producto crudo. Cocínelo con el método de su preferencia. Acompañar al gusto. INGREDIENTES: Carne de cerdo, carne de res, grasa de cerdo, agua; mezcla para condimentar, vinagre blanco, sal yodada, estabilizante (tripolifosfato de sodio), fibra de colágeno, conservantes (ácido sórbico, nisina), reguladores de acidez (ácido cítrico, ácido láctico), antioxidante (eritorbato de sodio). Puede contener trazas de huevo, soya, gluten y mostaza. CONSERVACIÓN: Consérvese bien cerrado a temperatura de refrigeración entre 0°C y 4°C. Después de abierto consúmase en el menor tiempo posible. Recuerde verificar al momento de la compra que el envase se encuentre en perfecto estado. Fabricado por Almacenes Éxito S.A. Autopista Medellín Kilómetro 3.4, Costado Norte/ Vereda La Punta /Tenjo / Cundinamarca. Registro Sanitario No. RSA-0028749-2023 INDUSTRIA COLOMBIANA. Almacenes Éxito S.A. realiza un proceso de aseguramiento de calidad de los productos marca propia. Para cualquier sugerencia por favor relacionar lote y fecha de vencimiento impresos en el envase y contactarnos al servicio de atención al consumidor: 01 8000 428 800 - www.exito.com
OTROS
7 701002 046920


4
PACK
269 mL
CONTIENE
EDULCORANTES
MINSALUD
EDICIÓN LIMITADA
OREO
Coca-Cola
ZERO
4 LATAS DE 269 mL
APROX. 1.5 PORCIONES
POR ENVASE INDIVIDUAL
BEBIDA GASEOSA
BESTIES PARA SIEMPRE
POR TIEMPO LIMITADO
OREO
CREATIONS


CONTIENE
EDULCORANTES
MINSALUD
Coca-Cola
CON
CAFÉ
235 mL
1 PORCIÓN


EXCESO EN AZÚCARES
CONTIENE EDULCORANTES
MINSALUD
LIMONADA POSTOBÓN
EXCESO EN SODIO
SABOR ORIGINAL
QUATRO
KOLA ROMAN
LA DE SIEMPRE
BEBIDA GASEOSA
Coca-Cola
SABOR ORIGINAL


CONTIENE EDULCORANTES
MINSALUD
HATSU
tea
BEBIDA CON TÉ BLANCO
con sabor a flor de cerezo
EXCESO EN AZÚCARES
MINSALUD
CONTIENE EDULCORANTES
MINSALUD
Hit
Naranja Piña
SIN SABORES ARTIFICIALES
SIN CONSERVANTES
CONT. NETO 1 L (33.38 OZ.)
PORCIONES: 5
EXCESO EN AZÚCARES
MINSALUD
PREMIUM
CRANBERRY
CONT. NETO 1 L
PORCIONES 5

Source: Tacha Gutiérrez V. *Water conflicts caused by the industry of ultra-processed beverages and food. Case study: Postobón company.* Colectivo de Abogados José Alvear Restrepo – CAJAR. First edition in Colombia, Bogotá D.C., May 2022. Available a https://www.colectivodeabogados.org/wp-content/uploads/2023/01/ebook_TACO-CONFLICTO-AGUA-ingles_nov21.pdf

Contenido

Source: Tacha Gutiérrez V. *Water conflicts caused by the industry of ultra-processed beverages and food. Case study: Postobón company.* Colectivo de Abogados José Alvear Restrepo – CAJAR. First edition in Colombia, Bogotá D.C., May 2022. Available at: https://www.colectivodeabogados.org/wp-content/uploads/2023/01/ebook_TACO-CONFLICTO-AGUA-ingles_nov21.pdf

The Right to Food in Colombia

- The **right to food** is one of the key transformations outlined in the **Colombia Development Plan (PND) 2022-2026 -** However, delays persist in ensuring this right.
- Professor María Victoria Rojas Porras, a member of the **UNal Observatory of Food and Nutritional Sovereignty and Security** (OBSSAN, its Spanish acronym) notes that "the Plan has many goals that align with the demands of Colombia's Indigenous Social Movement, but we need to speed up the implementation of these actions because, unfortunately, we are witnessing a failure to meet these agreements, which is very concerning."
- To ensure the **right to food**, there must be **coordination between the national government and communities**, *so that they can take control of their own food systems*, **exercising their rights to food security, autonomy, and sovereignty.**

Source: Bahamón Méndez T. In Colombia, 7 out of 10 Households Face Food Insecurity. *Periodico UNAL.* September 16, 2024**.** https://periodico.unal.edu.co/articulos/en-colombia-7-de-cada-10-hogares-enfrentan-inseguridad-alimentaria?lgn=en

Land-Use Planning Around Water and Environmental Justice - Colombia

- "It’s essential to integrate the transformations outlined in the PND **[Colombia Development Plan (PND) 2022-2026],** such as land-use planning around water and environmental justice, which aims to guarantee equitable and sustainable access to water for all Colombians. This would also fully ensure the right to food, meaning that everyone has access to enough food to meet their needs. This ensures that today’s and future generations have food, and we should also aim to fulfill the productive transformation actions to establish more sustainable models," said Rojas.

Source: Bahamón Méndez T. In Colombia, 7 out of 10 Households Face Food Insecurity. *Periodico UNAL.* September 16, 2024**.** https://periodico.unal.edu.co/articulos/en-colombia-7-de-cada-10-hogares-enfrentan-inseguridad-alimentaria?lgn=en

What You Can Do To Make a Difference:

1. Support FairTrade International – e.g., bananas, cocoa (chocolate), coffee, flowers

https://www.fairtrade.net/en/products/Fairtrade_products/Bananas/living-wage-solution-for-the-banana-sector.html

https://www.fairtrade.net/en/get-involved/news/fairtrade-s-banana-offer-creates-resilient-supply-chains.html

What You Can Do To Make a Difference:

Organic Guatemalan French Roast Coffee, 5lb whole bean

Organic Colombian Coffee, 5lb whole bean

★★★★★ 50 reviews

Organic Ethiopian Coffee, 5lb whole bean

★★★★★ 118 reviews

Organic Nicaraguan Medium Roast Coffee, 5lb whole bean

2. Support Organic Agriculture: 4 Pillars – Health, Ecology, Fairness, and Care (e.g., Equal Exchange)

Source: IFOAM https://www.ifoam.bio/our-work/how/regulation-policy/global-policy-toolkit

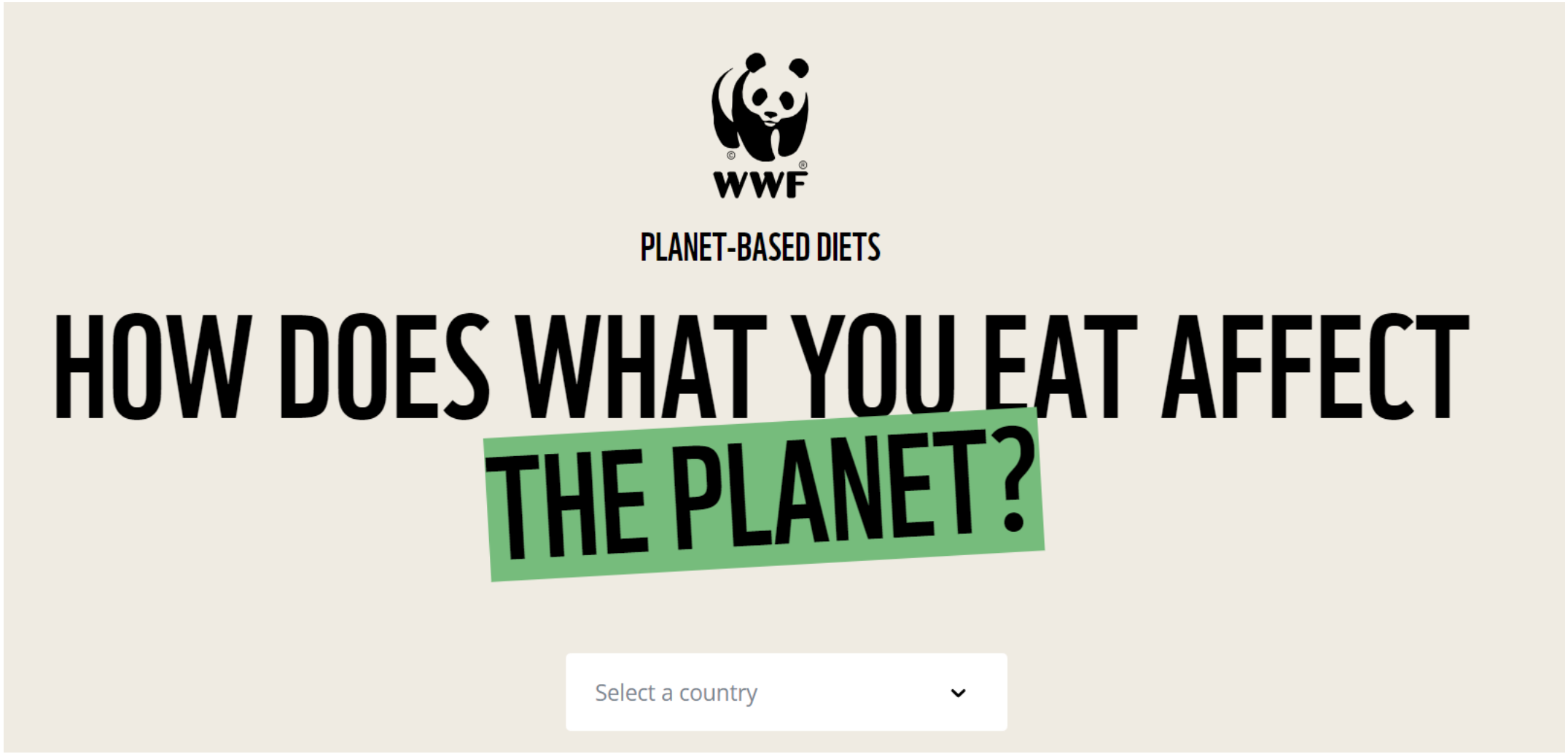
What You Can Do To Make a Difference:

3. Follow a **plant-based diet** (e.g., vegan, vegetarian, or flexitarian diet such as the *EAT-Lancet* planetary health diet) that is good for your personal health and the planet – use the **World Wildlife Fund (WWF) planet-based diet calculator**.

4. **Grow your own food** (e.g., start an herb balcony garden or grow vegetable plants on your balcony)

Not only this but having your very own balcony herb garden can save you from popping back to the shops for fresh herbs. Whether you are an avid home cook or green thumb enthusiast, we've created a comprehensive guide on how to start a herb garden on your balcony.

Source: Pearce M. How to start an herb balcony garden. June 1, 2022. https://www.garden-products.co.uk/news/annes-garden-blog/how-to-start-a-balcony-herb-garden/



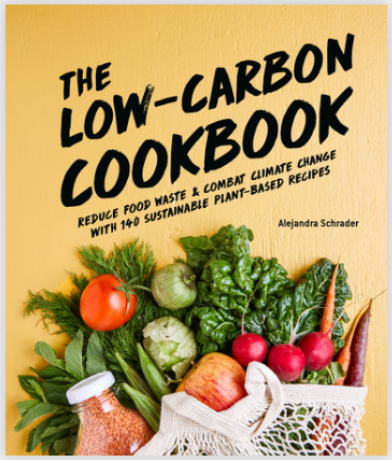
World Wildlife Fund (WWF). Planet-Based Diets. Planet-Based Diets Calculator. April 2023.
Available at: https://planetbaseddiets.panda.org/impacts-action-calculator

What You Can Do To Make a Difference:

5. Join a **community supported agriculture (CSA) farm and shop at farmers' markets**

https://www.localharvest.org/csa/

https://www.ams.usda.gov/local-food-directories/csas



Add to Bookshelf

The Low-Carbon Cookbook & Action Plan

REDUCE FOOD WASTE AND COMBAT CLIMATE CHANGE WITH 140 SUSTAINABLE PLANT-BASED

By **Alejandra Schrader**

Foreword by Dr. Gunhild Stordalen

Category: Cooking Methods | Science & Technology | Dietary Cookbook Nutrition & Dietary Needs

Ebook

Ebook

Jun 08, 2021 | ISBN 9780744048780

6. Make a conscious effort to **reduce food waste – you will save money too!**

- **Reducing food waste in the household: Simple tips that generate win-wins for people and the planet (FAO)**
- https://www.fao.org/platform-food-loss-waste/food-waste/food-waste-reduction/how-to-reduce-your-food-waste/en

Source: https://www.penguinrandomhouse.com/books/669159/the-low-carbon-cookbook-and-action-plan-by-alejandra-schrader/

- Food Tank. *Cookbooks Helping Us Cut Food Waste – And Save the Planet – Starting with Our Next Meal*. August 10, 2024. https://foodtank.com/news/2024/08/10-cookbooks-helping-us-cut-food-waste-and-save-the-planet-starting-with-our-next-meal/

7. Advocate for the right to adequate food and water and sanitation

a. ***Advocate for the right to adequate food –***

UN Human Rights, Office of the High Commissioner for Human Rights and FAO. ***The Right to Adequate Food – Fact Sheet No. 34.*** Available at: https://www.ohchr.org/sites/default/files/Documents/Publications/FactSheet34en.pdf

b. ***Advocate for the right to water and sanitation –***

- UN Human Rights Office of the Commissioner for Human Rights, UN Habitat, and World Health Organization (WHO). ***The Right to Water.*** **Fact Sheet No. 35**. https://www.ohchr.org/sites/default/files/Documents/Publications/FactSheet35en.pdf

UN: Human Rights to Water and Sanitation

https://www.unwater.org/water-facts/human-rights-water-and-sanitation

Access to water and sanitation are recognized by the United Nations as human rights – fundamental to everyone's health, dignity and prosperity. However, billions of people are still living without safely managed water and sanitation.

Marginalized groups are often overlooked, and sometimes face discrimination, as they try to access the water and sanitation services they need. Governments must take a human rights-based approach (HRBA) to water and sanitation improvements, so that no one gets left behind.

The right to water entitles everyone to have access to sufficient, safe, acceptable, physically accessible, and affordable water for personal and domestic use.

The right to sanitation entitles everyone to have physical and affordable access to sanitation, in all spheres of life, that is safe, hygienic, secure, and socially and culturally acceptable and that provides privacy and ensures dignity.

THANK YOU!

Questions?