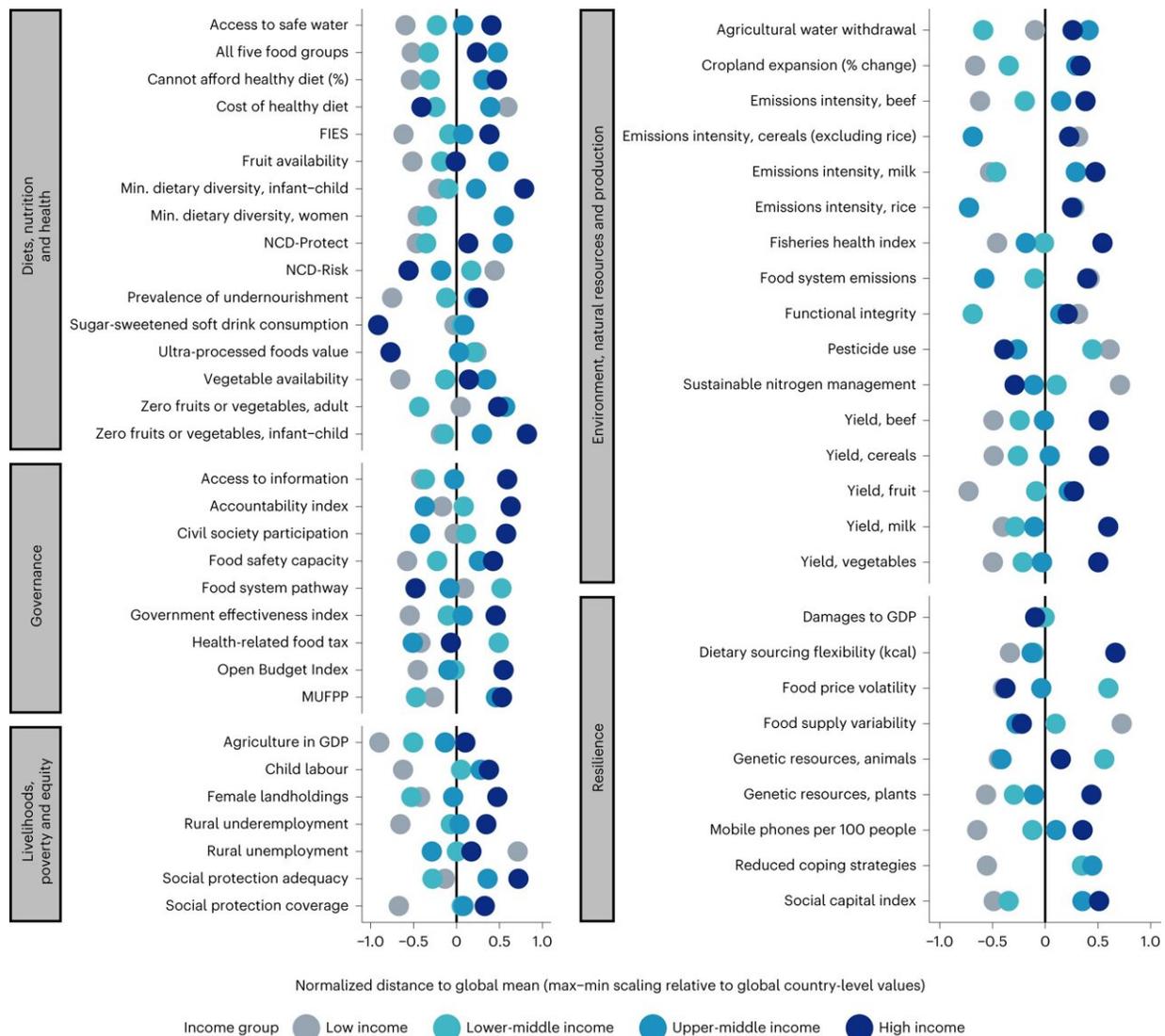


A new system can help global food systems adapt to climate change

December 19 2023, by Francesco Fiondella



Average country ranking per theme, by country income level. Normalized difference between each income group mean value per indicator and the global

mean for that indicator (represented by the black vertical lines). Differences are aligned to the desirable direction of change such that points to the left of the global mean indicate that the indicator mean level is less desirable than the global mean and points to the right indicate values more desirable than the global mean. Credit: *Nature Food* (2023). DOI: 10.1038/s43016-023-00885-9

One critical outcome of COP28 was a declaration, signed by more than 150 heads of state, to support food systems in adapting to climate change. Until recently, the issue of sustainable food systems had never risen very high on the COP agenda, which had been largely focused on the energy sector.

Yet when it comes to the climate crisis, [global food production](#) is both part of the problem and a victim of it. Food production contributes around 30% of total global greenhouse gas emissions. It is also a huge draw on our water resources and an immense contributor to environmental pollution. Agriculture is also one of the most climate-vulnerable sectors, if not the most vulnerable. Extreme events that lead to crop failures and other supply interruptions send [food prices](#)—and [food insecurity](#) and malnutrition—soaring.

Governments have been stuck trying to transform their food systems with little data to guide decisions or gauge their impact. But that could soon change.

"The Food Systems Countdown Report 2023: The State of Food Systems Worldwide, [published](#) today (Dec. 19) in the journal *Nature Food*," is what researchers say is the world's first effort to monitor changes in global food systems. Columbia Climate School's Jessca Fanzo is one of the authors of the paper, which also includes leading food experts from the Food and Agriculture Organization, Global Alliance for Improved

Nutrition and Cornell University.

The authors identify 50 indicators to monitor food systems at a global level. Taken together, the indicators offer a way for countries to measure how well their food systems are performing, and they provide an important baseline to guide priorities for investment, research, policymaking, and to assess future progress. Additional information, including a report for policymakers, is available at the Food Systems Countdown Initiative (FSCI) website.

Below, Fanzo gives us more details about the new monitoring system and how it could be used to transform global food into a system that support nutritious diets in sustainable, resilient and equitable ways.

Your paper talks about transforming food systems to make them more sustainable and more resilient to climate change. What exactly are food systems?

A food system is the holistic, dynamic, interconnected system of everything related to food: from the activities on the farm all the way to when people eat the food. That's why you often hear the phrase "from farm to fork." A food system could be the process that a tomato took from growing on a farm in China all the way to the sauce on the pizza you bought in New York City, including all the people and places involved in each step along the way, as well as the policies and regulations governing all of these activities.

Why are food systems critical to addressing the climate crisis?

You can't talk about the climate crisis without considering food systems, and vice versa. Agriculture accounts for up to 30% of greenhouse gas

emissions, which come mainly from fertilizer application, the burning of agricultural waste, methane from cattle digestion, and land-use changes.

Climate change and variability can amplify vulnerabilities in our food systems, impacting how much food we can grow as well as its nutritional quality. But the problems extend beyond agriculture. Many of the people who produce, process and deliver our food are often among the most vulnerable, marginalized and food insecure people in the world.

Food systems offer a powerful lever to address the climate crisis and avert further environmental catastrophes. For example, we can reduce emissions by improving our farming practices. We can reduce food waste. We can adopt plant-dominant diets. Making progress on these important issues in our food system are all ways to address the climate crisis.

The Countdown has [50 indicators](#) that seem to track every aspect of the food we consume. Tell us about the process that went into deciding which indicators to include.

We selected and narrowed down the number of indicators through a long process involving the Food and Agriculture Organization and other major institutions and input from more than 500 experts and governmental officials.

Some indicators are well-established: a country's greenhouse gas emissions, the prevalence of hunger, what people eat, for example. Others are relatively new, and some were even created by the Countdown, such as the share of the urban population living in cities that have signed the [Milan Urban Food Policy Pact](#).

There are indicators specific to food systems, such as crop yields. Others aren't specific to food systems, but are relevant, such as the government

effectiveness index, which describes a government's capacity to undertake necessary measures to support food systems transformation.

The important takeaway here is that these indicators provide by far the most comprehensive depiction of food systems to date.

As this is the first time anyone has attempted to monitor food systems across every country in the world, were there any surprising findings?

We know that food systems are quite complex, and this report shows that no single region has a monopoly on food-system successes or challenges. No country, region or income group has the optimal food system when looking across all 50 indicators.

Rich or poor, all countries have food system challenges, and not everything improves as countries get wealthier. The countries of Africa and South Asia tend to have the biggest challenges on food security and adequate diets. But high-income countries have their own significant problems with unhealthy diets that increase the risk of diabetes and cardiovascular disease.

We also found that all countries can realistically aspire to achieve positive food system transformations no matter where they fall on the income spectrum.

The data also make clear that the world's food systems face many shared challenges. For example, in 54 countries, more than half the population can't afford a healthy diet. This tells us a lot about nutrition, health, equity and access.

We also found some strong regional patterns in the data. Food systems in

sub-Saharan Africa have room to improve their climate resilience compared to other regions, for example. And that Central Asia, Latin America and the Caribbean, Northern Africa, and Western Asia have less agricultural and food diversity according to the set of indicators tracked.

How do you anticipate decision makers will use the food systems data?

At an international level, the data provides for global monitoring of [food systems](#), which allows for prioritizing where action needs to be taken. We hope these data can guide accountability and monitoring in high-level reports or at international meetings such as future COPs.

Donors could use the data for cross-country comparisons when deciding on the allocation of resources. For example, 54 out of 140 low- and middle-income countries can't afford a healthy diet. In some African countries, the share of people who can't afford a healthy diet exceeds 95%. With this understanding, donors could target their investments on supply-chain infrastructure and social protection programs that ensure people can economically access diets in places with extremely high vulnerability.

A number of the indicators are relevant to policy design and actions at a country level. National policymakers may focus on indicators under their control to understand their country's performance, prioritize certain policies and use resources more efficiently. The FSCI provides a powerful means for policymakers to ensure their actions are supporting sustainable agriculture, resilient [food systems](#) and climate action.

More information: Kate R. Schneider et al, The state of food systems worldwide in the countdown to 2030, *Nature Food* (2023). [DOI:](#)

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