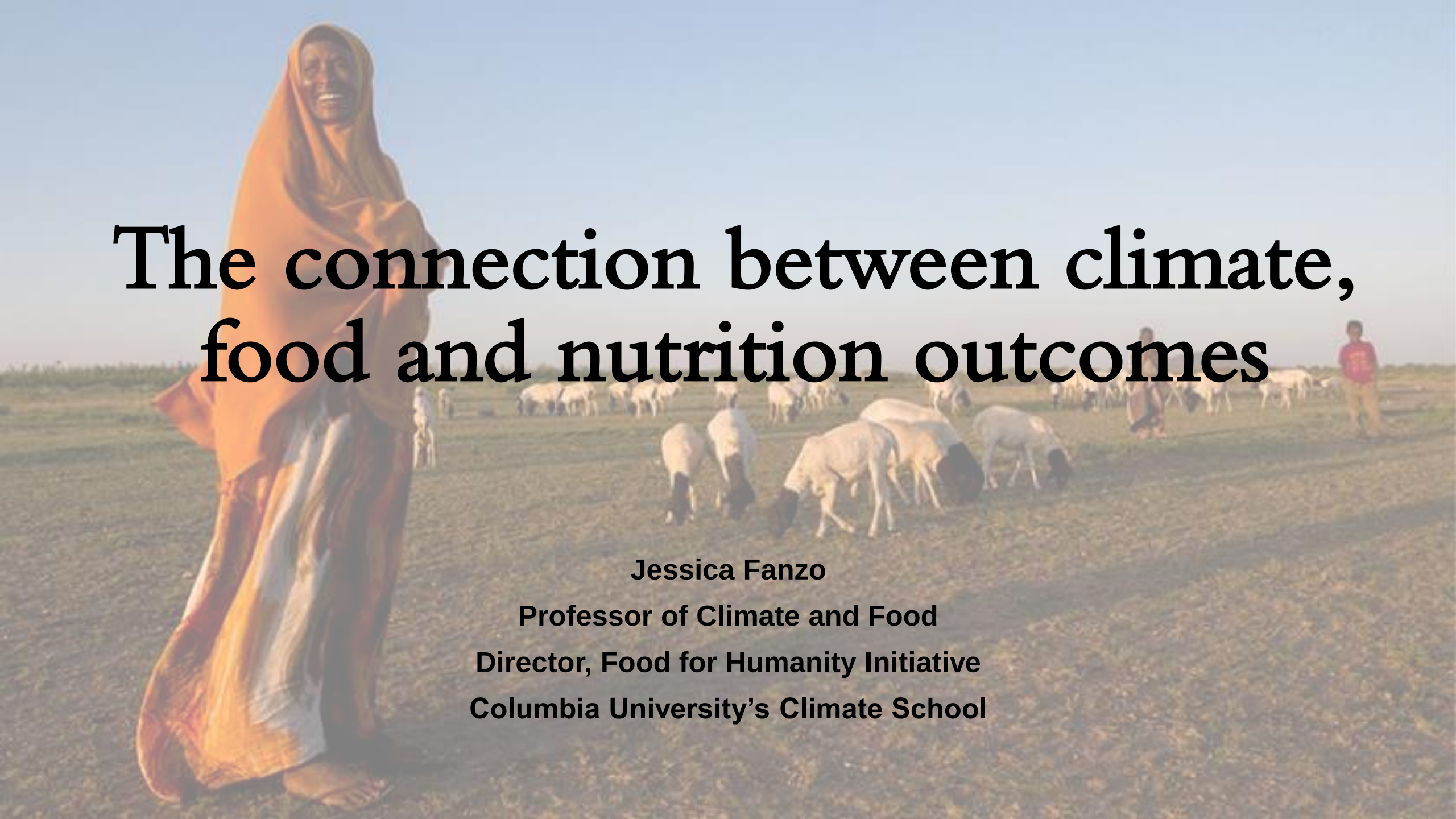


A woman wearing a bright orange headscarf and a long, flowing orange dress stands in the foreground on the left side of the image. She is smiling and looking towards the camera. In the background, a large flock of white sheep is grazing in a dry, open field. Two other people are visible in the distance on the right side of the field. The sky is clear and blue.

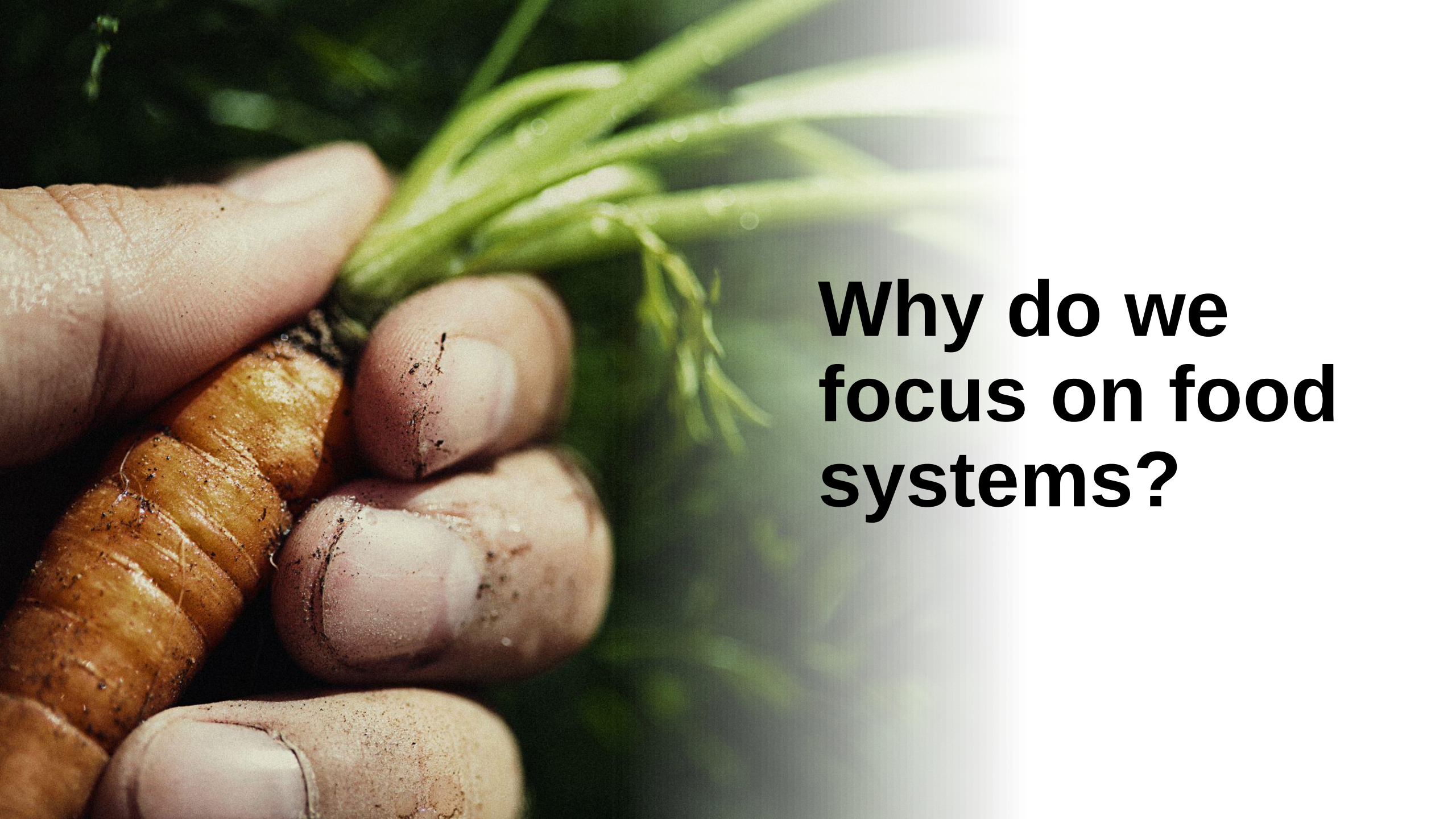
The connection between climate, food and nutrition outcomes

Jessica Fanzo

Professor of Climate and Food

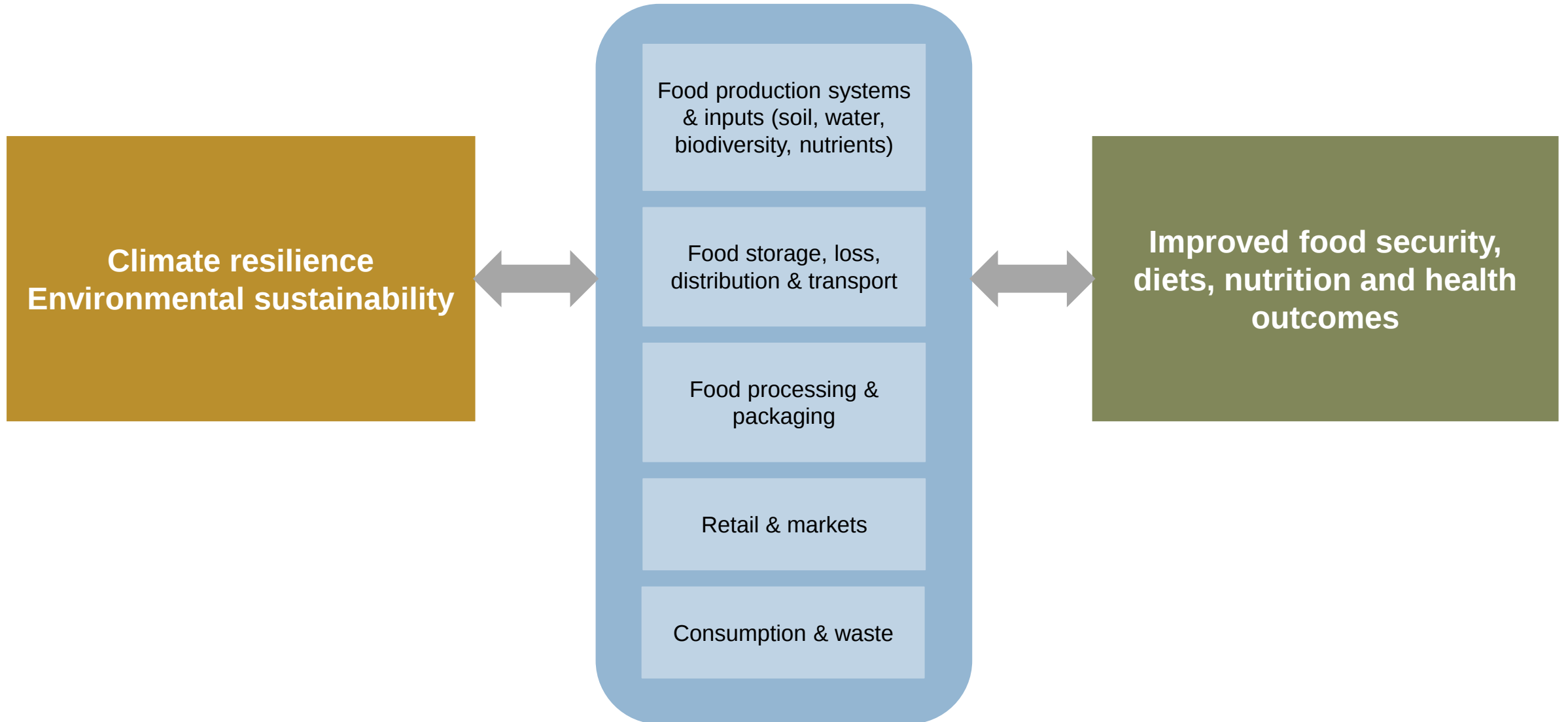
Director, Food for Humanity Initiative

Columbia University's Climate School

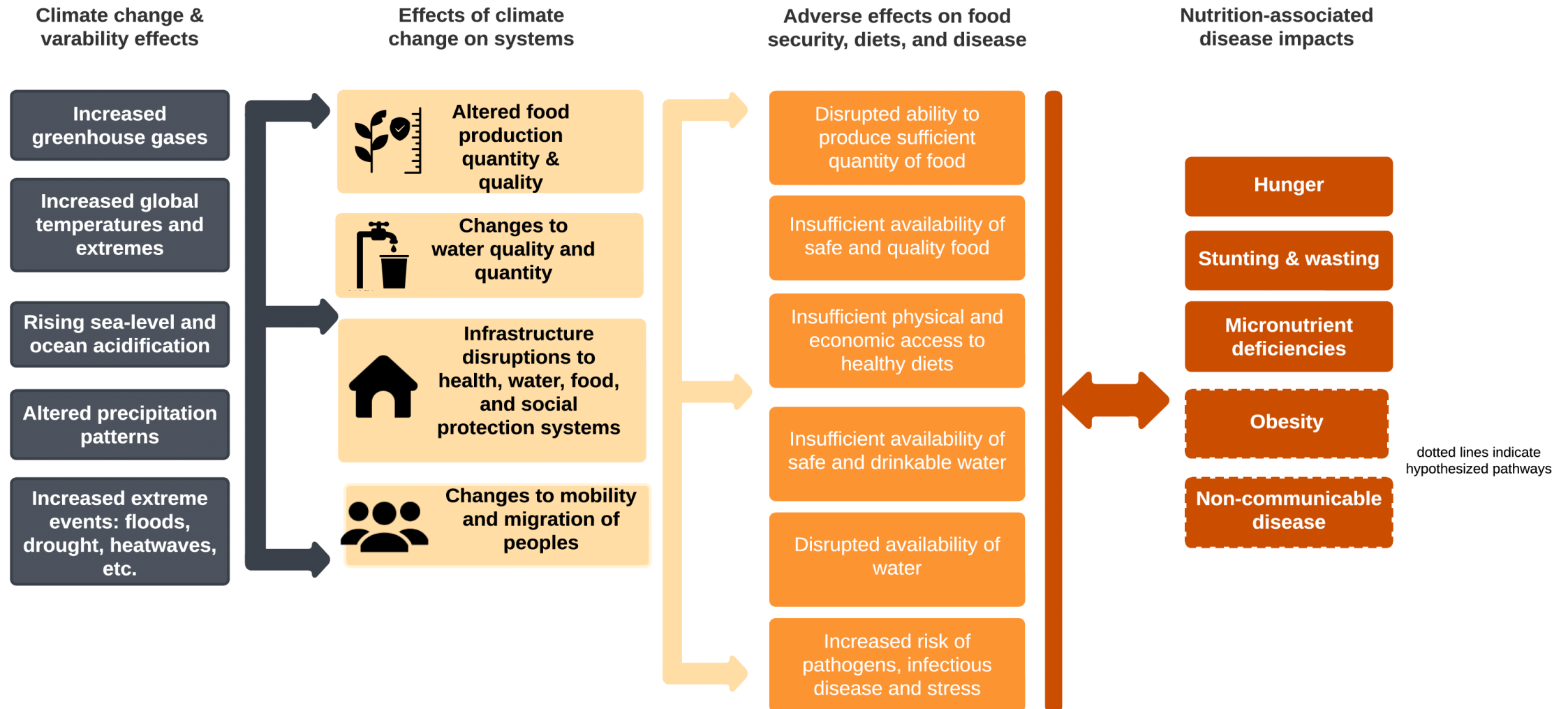
A close-up photograph of a hand holding a bunch of fresh green onions. The hand is positioned on the left side of the frame, with fingers wrapped around the green stalks. The green onions have bright green, feathery tops and thick, yellowish-brown bulbous bases. The background is dark and out of focus, emphasizing the freshness of the produce. The text "Why do we focus on food systems?" is overlaid on the right side of the image in a bold, black, sans-serif font.

**Why do we
focus on food
systems?**

Food systems are the *lifeline* between climate, food security, and nutrition



Climate is impacting food systems and other systems relevant for food security, nutrition and health



Food systems are not doing their job: diet and nutrition outcomes are not optimal

733 million (9%)

of the world's population are undernourished

148 million (23%)

children under five years of age are stunted

45 million (7%)

children under five years of age are wasted

37 million (5.5%)

children under five years of age are overweight

2.5 billion

adults are overweight or obese

2.8 billion (35%)

of the world cannot afford a healthy diet

28% (average)

increase in food inflation globally since the pandemic

82% (34 out of 41 countries - 2/3 of the world)

do not consume the 5 recommended healthy food groups

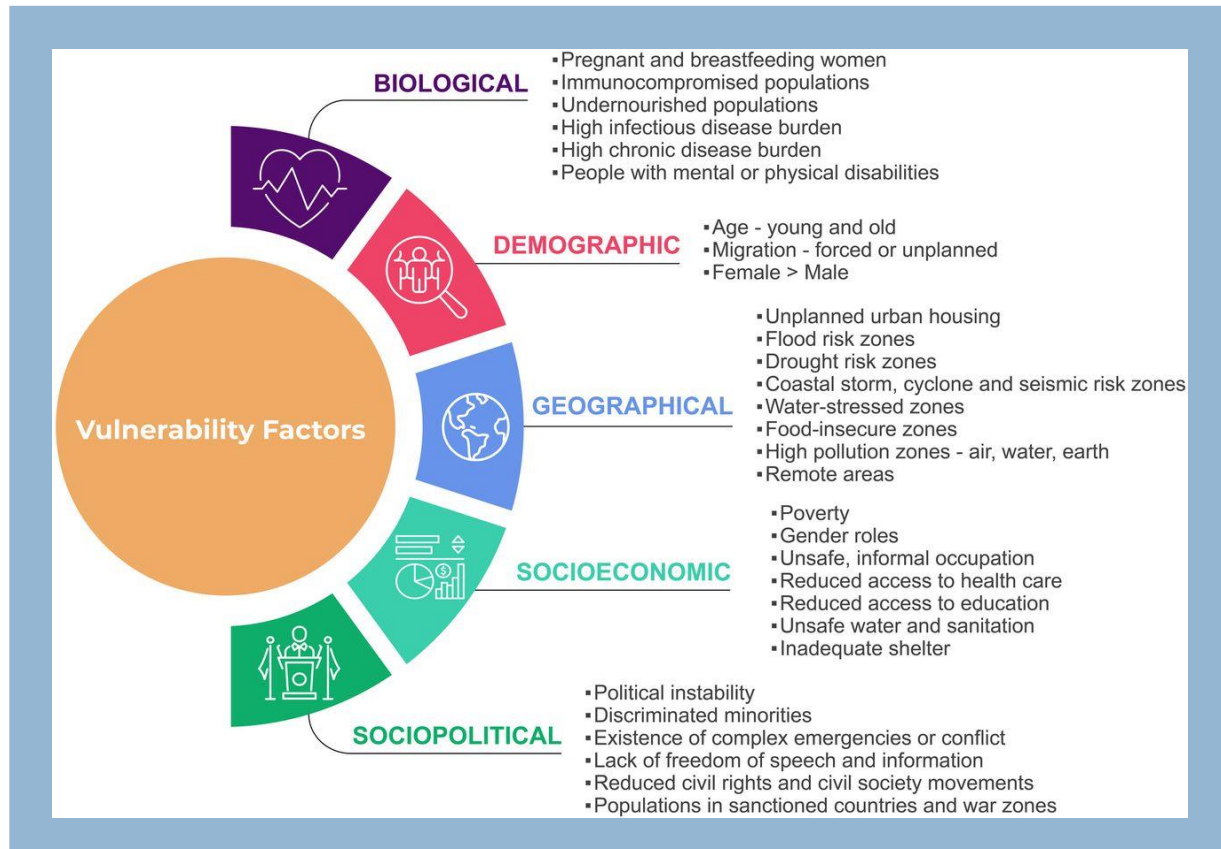
11 million deaths annually (20%)

are linked to poor diets

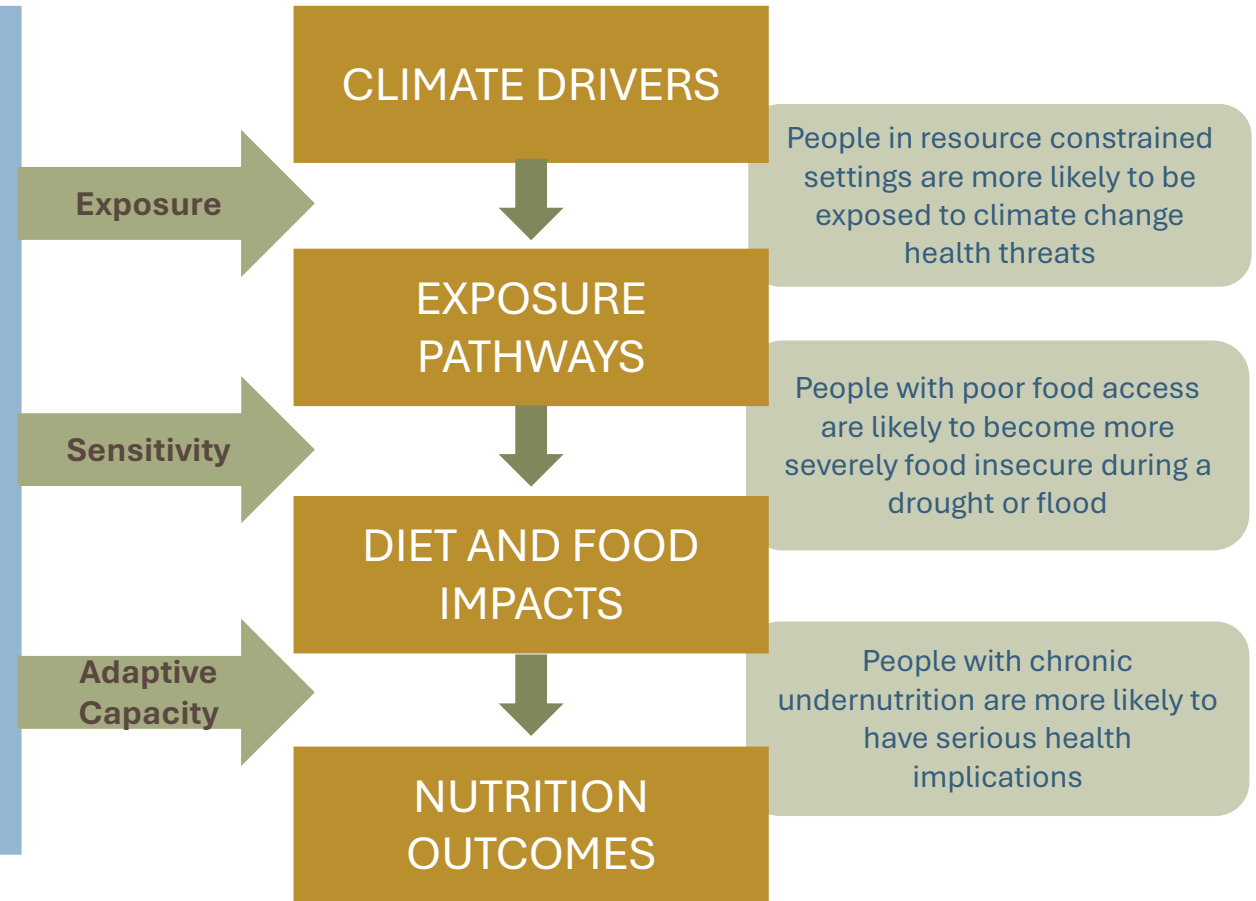
Diets are one of the top risk factors of morbidity and mortality

Many of those with poor nutrition outcomes are the most vulnerable to climate risks

Elements of vulnerability & marginalization interacting with social determinants of health



Casual chain of climate drivers to nutrition outcomes



A woman in traditional white and red clothing is shown in a blurred, dynamic pose, grinding grain on a large stone mill. The scene is set in a rustic kitchen with wooden walls and various kitchen items visible in the background. The text "Why is measuring food systems so critical?" is overlaid on the right side of the image.

**Why is measuring
food systems so
critical?**

Monitoring food systems contributes to accountability and action

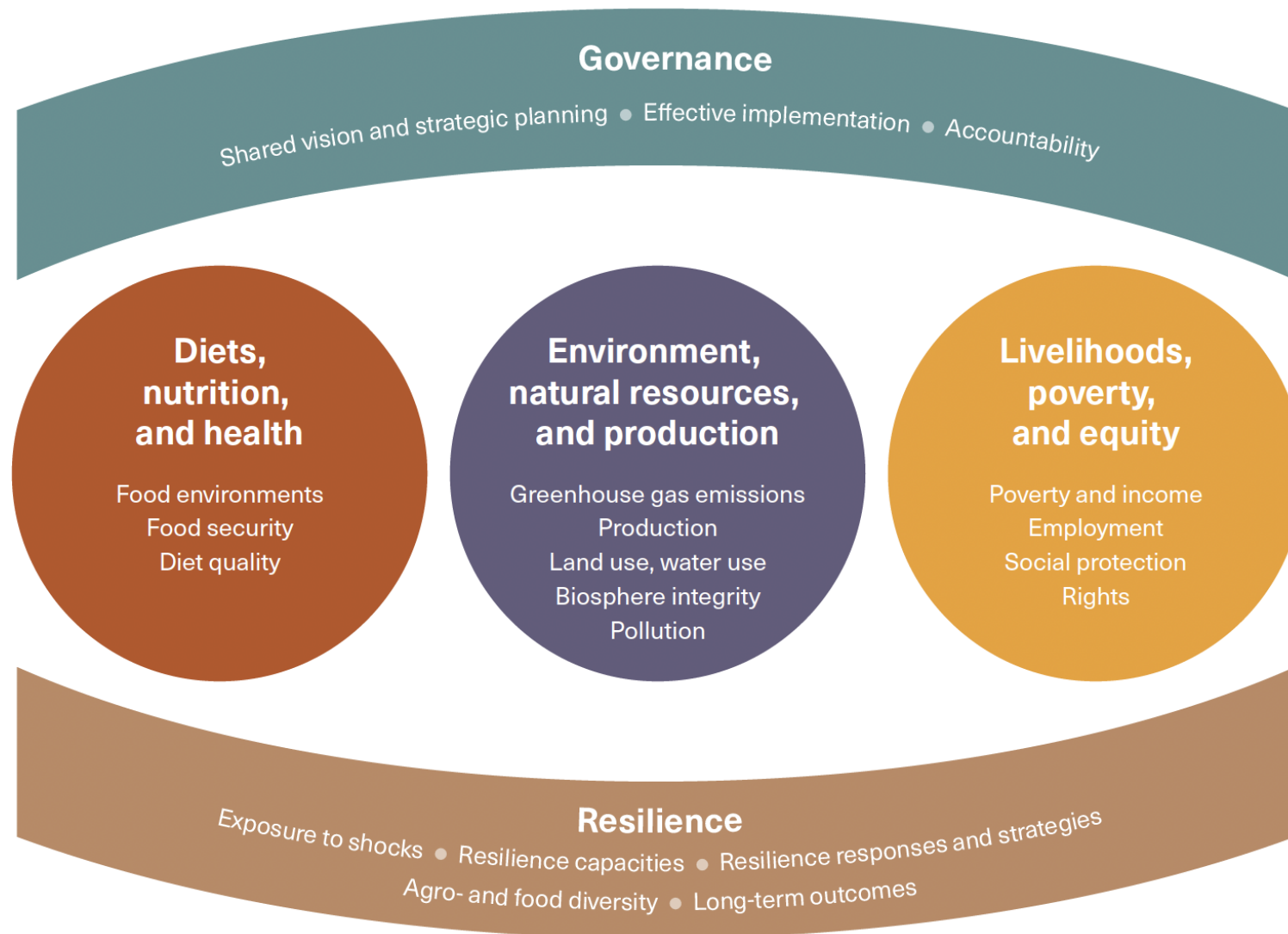


Food Systems
Countdown
Initiative

foodcountdown.org

- Food system transformation is urgent, requiring rigorous, science-based monitoring to guide public and private decisions and support those who hold decision-makers to account. Yet, policymakers are often in the dark about how food systems perform, potential near- and long-term risks, and where to intervene.
- **The Food Systems Countdown Initiative** is a collaborative effort to monitor food system change and performance over the next 8 years.
- Such monitoring can help align decision-makers around critical priorities, incentivize action, hold stakeholders accountable, sustain commitment by demonstrating progress, and enable course corrections.
- The FSCI is an interdisciplinary collaboration of 65 scientists representing every region of the world from 32 organizations -- Civil Society, Academia, and the UN that emerged from the 2021 United Nations Food Systems Summit.

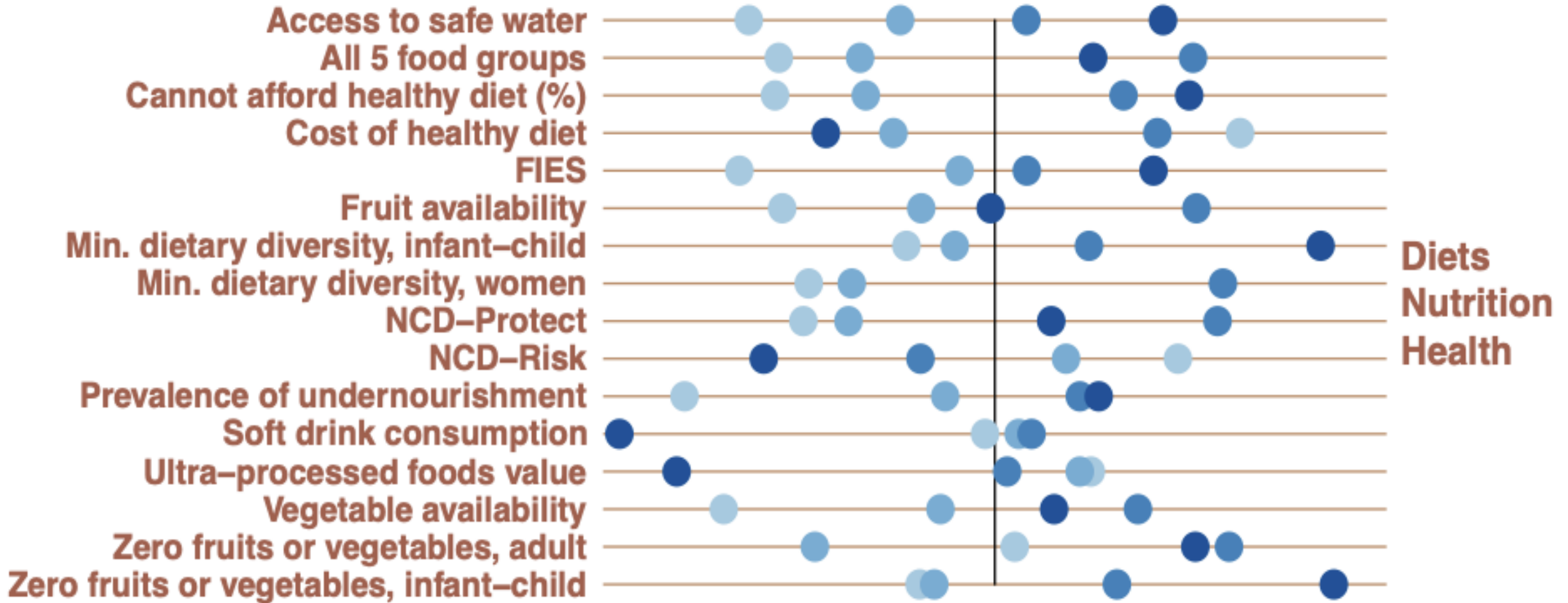
How the FSCI is organized



Global average

Less desirable ←

→ More desirable



● Low-income ● Lower middle-income ● Upper middle-income ● High-income

Lessons from the *national* food systems science level

- No single region of the world has a monopoly on food systems successes or on food systems challenges. Every region has significant room for improvement and countries can learn from each other.
- Without a monitoring system that shows strengths and weaknesses at the national level, country attempts to transform their food systems will lose their bearings and lose their way.
- There are critical data gaps that are preventing to effectively monitor progress of food systems transformation in different dimensions. Efforts and investments should be made in the near term to fill existing data gaps.
- Researchers should ensure these indicators and their data are useful and interpretable by policymakers and other food actors in ways that are relevant for food system decisions and action.

**What is the research
to date on linking
climate and
nutrition?**

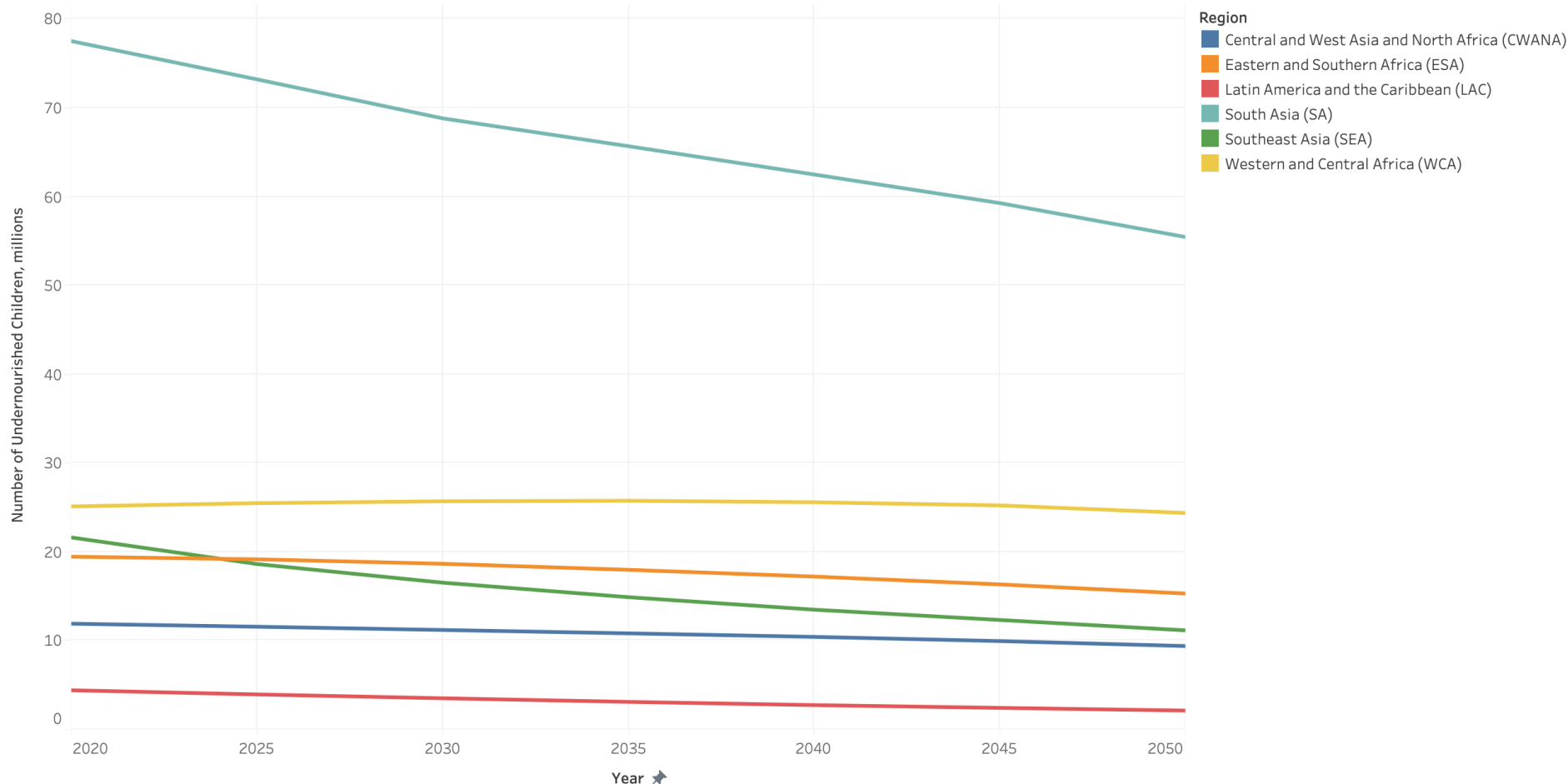


There are different sources of evidence, methods and ways of understanding

- Many types of empirical methods, data and models are used to understand how long-term climate change and extreme weather events are and will impact food security, diets, and nutrition outcomes.
 - **Long-term:** Global Climate Models use probabilistic projections to understand how climate will change under different pathways and scenarios out to 2050 to 2100.
 - **Near-term:** Weather forecasting data (rainfall, temperature, etc.) describes a more detailed picture of expected daily, weekly, or sub-seasonal conditions.
 - **Diets and nutrition:** Data and indicators used to capture food security, diets and nutrition outcomes are often collected and analyzed at different temporal and spatial scales, geographic heterogeneity, and statistical power.
- While bringing together vastly different types of data, variables, statistical methods, and models to understand the relationship between climate and food security, diets and nutritional outcomes is complex, many studies vary in quality, validity, interpretations, and assumptions of associations, causalities, and impacts.

Long-term climate change on nutrition outcomes

Number of Undernourished Children (millions) by Region



Near-term extreme weather events

- Near-term temperature extremes on food security and nutrition outcomes: ***heat and cold waves***
- Near-term precipitation patterns on food security and nutrition outcomes: ***droughts and flooding***
- Compounding and cascading risks for food security and nutrition outcomes
- The challenges of linking climate change with overweight and obesity

Nutrition outcome association	Direct and Indirect Near-term climate hazards					ENSO
	Heat	Cold	Drought	Flooding	Wildfires	
<i>food insecurity</i>						
<i>stunting</i>						
<i>wasting</i>						
<i>anemia</i>						
<i>micronutrient deficiencies</i>						
<i>obesity</i>						
<i>non-communicable diseases</i>						

Research gaps and challenges

- **Causality:** Much of the work to date highlights associations and less on causality of both long-term climate change and short-term climate variability impacts on diets and nutrition.
- **Topical gaps:** (1) Compound and cascading episodes of climate change and extreme events on diets and nutrition (2) relationship between climate change and obesity.
- **Methods:** Need to better understand these temporal and spatial relationships, we need more longitudinal panel data that tracks the nutrition of populations (who are not migrating) and the effects of shocks, compound events, and long-term climate change over time.
- **Who:** Need to understand the distribution of inequities of who will be most impacted by climate change, how, and why, and interventions to prioritize those populations.
- **Integration and collaboration:** Explore more interaction between climate and nutrition research and global policy communities. These two communities rarely engage except for those who more specifically investigate the impacts of climate on agricultural productivity, food security, and diet pathways.

Thank you!

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