



Brief #6: Food systems transformation using the Food Systems Dashboard

March 2023



Purpose and Use

These briefs demonstrate how various stakeholders can use the Food Systems Dashboard to inform their work.

- The purpose of this brief is to show how stakeholders within the climate community can use the Food Systems Dashboard (FSD) to understand the components of food systems and explore how food systems indicators relate to certain environmental outcomes.
- Stakeholders can learn about potential actions within food systems to promote positive outcomes and avoid negative consequences by using data, examining trends, and making comparisons across countries, regions, and food systems types.

The FSD contains over 25 indicators across five environmental dimensions directly relating to food systems:

Pollution

Per capita eutrophication

of food consumption

• Nitrogen fertilizer use per

• Total pesticides per unit

Phosphorous fertilizer use

Management Index (integrated

plant nutrient management)

Sustainable Nitrogen

unit of land

of land

per unit of land

Climate

- Per capita greenhouse gas emissions (GHGe) of food consumption
- GHGe from agriculture
- Total GHGe (with and without LUCF)
- Climate Change Risk Index
- GHGe per food group*

Land use and soil health

- Agricultural land change
- Agricultural land as % of total land area
- Soil organic content
- Soil biodiversity threats index
- Soil biodiversity potential index

Biodiversity

- Per capita biodiversity impact of food consumption
- % agricultural land with tree cover or natural vegetation
- Crop species richness per unit of land
- Fish species richness in major river basins

Water use

- Per capita water use linked to food consumption
- Agricultural water withdrawal as % of total renewable water resources

Aggregated indices that cut across domains

- Environmental Performance Index (EPI) score
- Total ecological footprint of consumption
- Number of Earths required
- Total ecological footprint of production
- Human trophic level*

* Denotes indicator forthcoming

The FSD provides a variety of indicators on environmental outcomes, allowing patterns to be identified across countries and income groups

- This figure from Herforth et al. 2022 shows how FSD indicators can illustrate patterns across countries.
- A food system's environmental outcomes appear to worsen as incomes rise, with high-income countries having potential or likely challenge areas for most environmental outcomes. This is shown by the increasing yellow and red in the column on the right as you move from top to bottom, with the bottom right being primarily red.

Herforth A, Bellows AL, Marshall Q, McLaren R, Beal T, Nordhagen S, Remans R, Estrada Carmona N, Fanzo J. Diagnosing the performance of food systems to increase accountability toward healthy diets and environmental sustainability. PloS one. 2022 Jul 29;17(7):e0270712.





Food Systems Dashboard





The FSD allows comparisons between countries, here looking at greenhouse gas emissions from agriculture





Indicators can be visualized across time and filtered by country. Here you can see greenhouse gas emissions from agriculture in Brazil, China, India, and the United States between 1990 and 2020





The Environmental Performance Index score is one of the aggregated, cross-cutting indices that provides a summary assessment of a country's environmental performance, including environmental health and ecosystem vitality





ood Systems Dashboard





The Number of Earths required is an indicator that calculates the number of Earths needed if the global population lived (produced and consumed) like the average individual of that country

8.8 Earths would be required for everyone to live like someone from Qatar, the highest score for this indicator.

The next highest scoring countries for the number of Earths required to live like their average citizen:

7.9 Earths – Luxemburg5.5 Earths – United Arab Emirates5.3 Earths – Bahrain, Kuwait,and the United States







Key Messages and Recommendations

Key Messages

- The FSD includes indicators across five key environmental domains (climate, land use and soil health, biodiversity, water use, and pollution) as well as cross-cutting aggregated indices, which allows for more nuanced analyses.
- The FSD allows for multiple visualizations, including maps, graphs, and tables to compare country and regional performance on environmental impacts across income groups and food system types. Data can also be downloaded in CSV format for further analysis.

Recommendations

- View indicators from across the food system (drivers, food supply chains, food environments, diets, nutrition, and health outcomes) alongside environmental outcome indicators, as environmental concerns are inextricably linked to food system concerns.
- Use data to identify areas within food systems that impact environment outcomes and warrant further investigation.