



# ASSESSING THE ENVIRONMENTAL IMPACT OF DIETS BASED ON INDIVIDUAL DIETARY DATA: NEW INFOGRAPHICS FOR THE FAO/WHO GIFT PLATFORM

Victoria Padula de Quadros

Food and Agriculture Organization of the United Nations

International Conference on Diet and Activity Methods (ICDAM)

29<sup>th</sup> June 2023





# FAO/WHO Global Individual Food consumption data Tool (FAO/WHO GIFT)



## FAO/WHO GIFT | Global Individual Food consumption data Tool

About Data Methodology Resources



Better data, better policies, better diets

FAO/WHO GIFT is a platform that makes **existing individual quantitative dietary data** from different countries around the world publicly available



[www.fao.org/gift-individual-food-consumption/en/](http://www.fao.org/gift-individual-food-consumption/en/)



# FAO/WHO Global Individual Food consumption data Tool (FAO/WHO GIFT)





# FAO/WHO Global Individual Food consumption data Tool (FAO/WHO GIFT)

Food Consumption

Food Safety

Nutrition

Dietary Diversity

Environmental Impacts

Advanced Analysis

## DIETARY PATTERN

Grams per person

Percentage as g per 100g

Calories per person

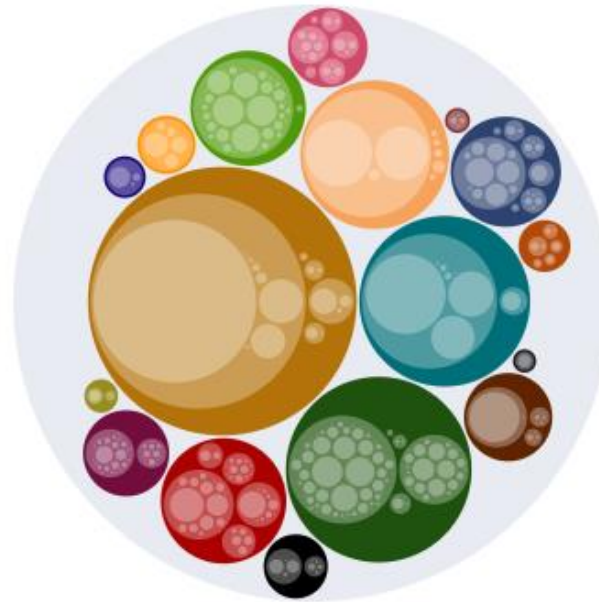


Daily diet: Average food consumption  
(in grams per person per day)

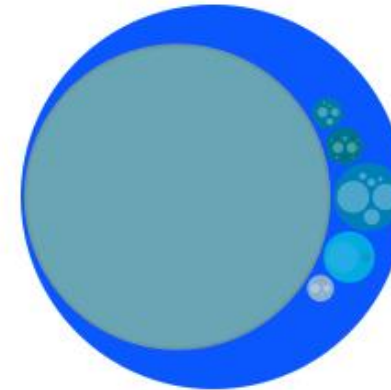
[Read more](#)

Daily diet: grams per person per day

Foods



Beverages







## Assessment of the environmental impact of individual food consumption

- Consumers have a powerful lever for changing how food systems impact the environment
- Information about the environmental effects of individual food consumption and food choices are lacking, and are important to inform consumers and policymakers
- Objective: to assess the environmental impact of diets by matching the **individual food consumption data from the datasets shared through FAO/WHO GIFT** to **data on the environmental impact of foods**, in order to offer evidence to support policies for sustainable and healthy diets
- Background work to investigate literature, data sources, data availability and methods (Conference paper, Quadros et al 2019) - decision to have one global database of environmental impact that could be used to assess the environmental impact of all datasets shared in FAO/WHO GIFT
- Close collaboration with researchers from City University, London (UK), Brunel University (UK), University of York (UK), University of São Paulo (Brazil) and CREA (Italy)

## Data harmonization with FoodEx2 system

- FoodEx2 is a food classification and description system developed by the European Food Safety Authority (EFSA). It can be used to describe foods from different types of data (food consumption, food composition, chemical occurrence, environmental footprint, etc) and from different countries
- All individual food consumption datasets available in FAO/WHO GIFT are codified with the FoodEx2 system

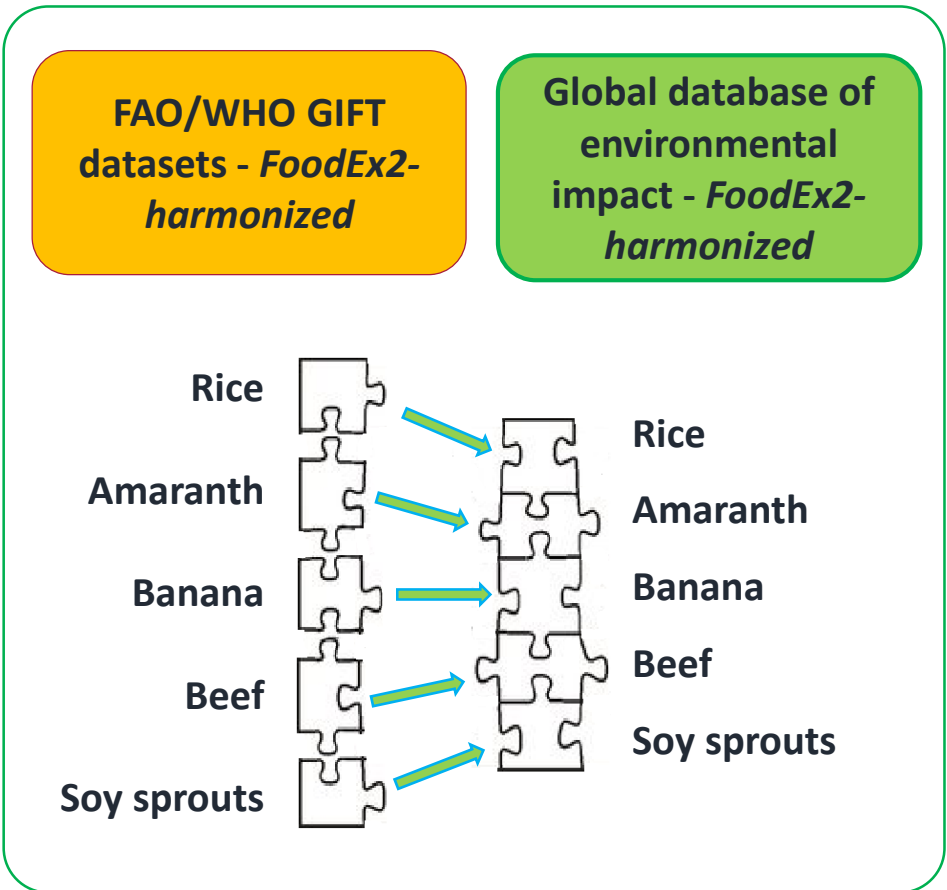
Denmark:  
"Kaki"



**FoodEx2:**  
**=**  
**A01HQ**  
**(Kaki)**

USA:

"Japanese Persimmon"

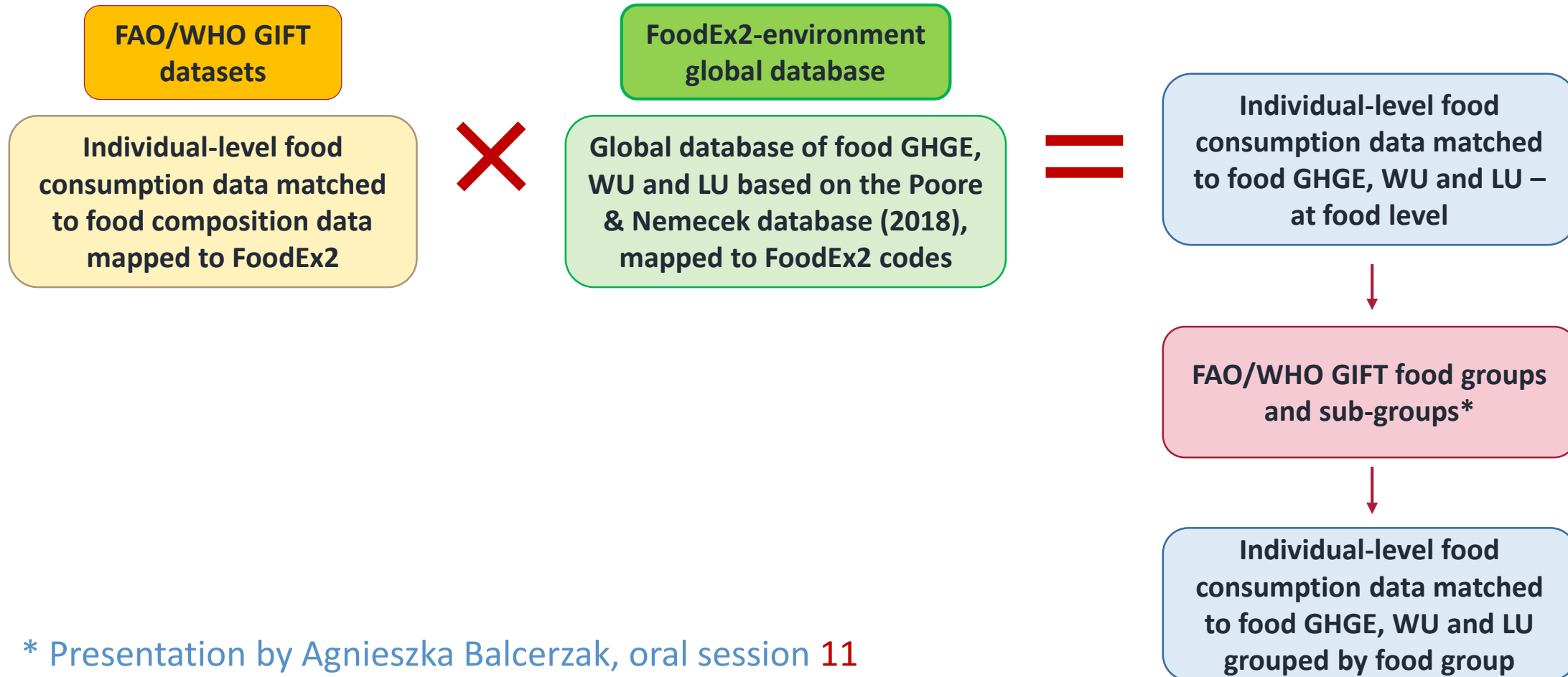




## FoodEx2-environment database

- Global database of food environmental impact harmonized with FoodEx2 was developed by City, University of London and revised in collaboration with FAO
- Contains Greenhouse Gas Emissions (GHGE), water use (WU) and land use (LU) estimates for all FoodEx2 codes (Exposure hierarchy) using values from Poore and Nemecek (2018) with edible portion adjustments considering Bryian et al (2019)
- Poore and Nemecek (2018) is a **globally reconciled and methodologically harmonised** database that presents information on the environmental impact of foods for important environmental indicators and their **global variation in percentiles**:
  - provides environmental impacts of food production in ~38,000 farms from 119 countries, including **LMICs** (other sources focus on European and other high-income countries)
  - impacts for 43 food categories that represent ~90% of global protein and calorie consumption
  - provides **global average** values for each food category, and also **5th, 10th, 50th, 90th and 95th percentiles**
- The variation of the impacts (percentiles) represents production methods that can be more or less sustainable, and allows to communicate the uncertainty around the global average and demonstrate how impacts can change based on the production methods used

## Overview of steps






\* Presentation by Agnieszka Balcerzak, oral session 11



# New environment infographics for FAO/WHO GIFT

Select environmental impact:

-  Greenhouse gas emissions
-  Water use
-  Land use

-  Meat and meat products
-  Fish, Shellfish and thier products
-  Milk and milk products
-  Composite dishes
-  Beverages
-  Sweets and sugars
-  Cereals and their products
-  Fruit and their products
-  Spices and condiments
-  Fats and oils

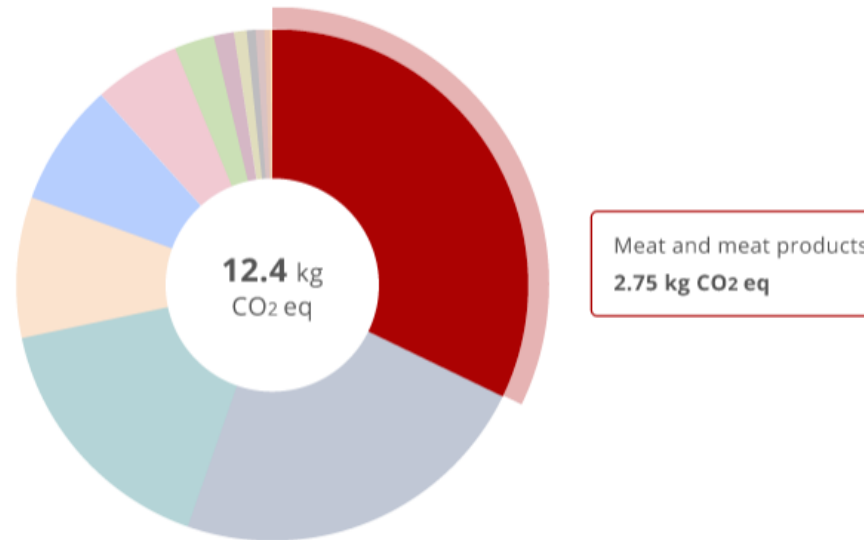
▼ 1/2 ▲



Daily GHGE (kg CO<sub>2</sub> eq) from different food groups, subgroups, and items.

[Read more](#)

Daily **GREENHOUSE GAS EMISSIONS** from different food groups, subgroups, and items



See **hypothetical environmental impact scenarios** according to food production practices



# New environment infographics for FAO/WHO GIFT

Select environmental impact:

- Greenhouse gas emissions
- Water use
- Land use

- Meat and meat products
- Fish, Shellfish and thier products
- Milk and milk products
- Composite dishes
- Beverages
- Sweets and sugars
- Cereals and their products
- Fruit and their products
- Spices and condiments
- Fats and oils

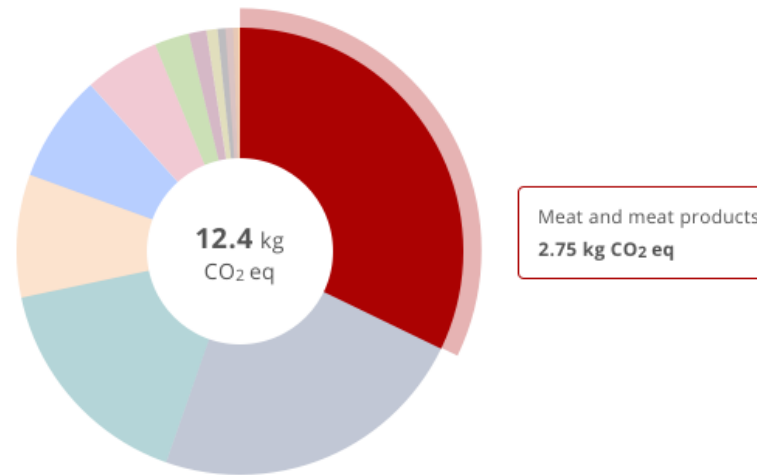
▼ 1/2 ▲



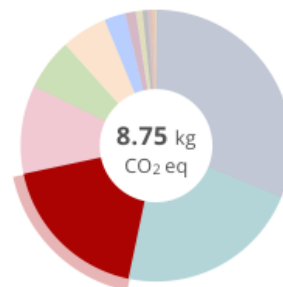
Daily GHGE (kg CO<sub>2</sub> eq) from different food groups, subgroups, and items.

[Read more](#)

Daily **GREENHOUSE GAS EMISSIONS** from different food groups, subgroups, and items



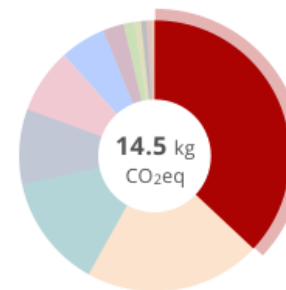
See **hypothetical environmental impact scenarios** according to food production practices



**LOW-IMPACT SCENARIO**

If all foods were to be produced using **more sustainable practices**

Meat and meat products  
**0,75 kg CO<sub>2</sub> eq**



**HIGH-IMPACT SCENARIO**

If all foods were to be produced using **less sustainable practices**

Meat and meat products  
**4.23 kg CO<sub>2</sub> eq**



# New environment infographics for FAO/WHO GIFT

Select impacts per:

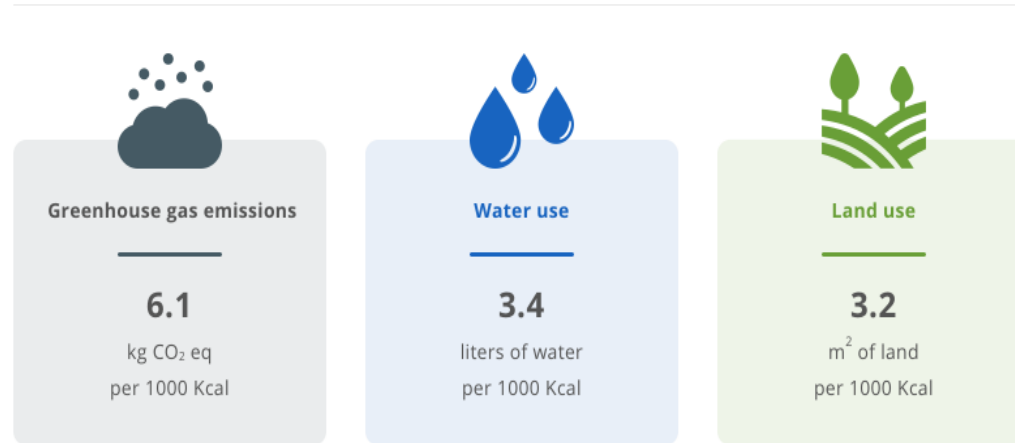
- 1000 Kcal consumed
- 10 g protein consumed



Daily GHGE (kg CO<sub>2</sub> eq), WF (litres) and LU (m<sup>2</sup>) per 1000 kcal consumed.

[Read more](#)

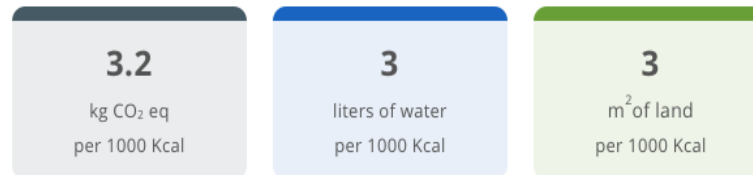
Daily environmental impacts per **1000 Kcal** consumed



See **hypothetical environmental impact scenarios** according to food production practices

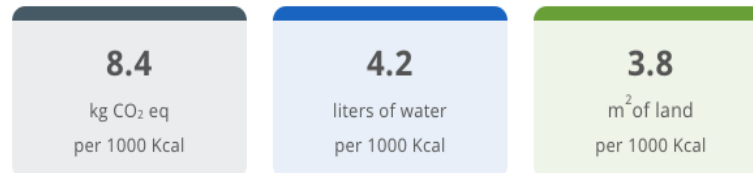
## LOW-IMPACT SCENARIO

If all foods were to be produced using **more sustainable practices**



## HIGH-IMPACT SCENARIO

If all foods were to be produced using **less sustainable practices**



*Functional units are under discussion, as well as list of nutrients*



## Co-authors and acknowledgments

- **Jacqueline Tereza da Silva, FAO\*** - contributed equally to this work as main author
- Agnieszka Balcerzak, FAO
- Teresa Bevere, FAO
- Pauline Allemand, FAO
- Valeria Scrilatti, FAO
- Giovanni Luca Abblasio, FAO
- Rita Ferreira de Sousa, FAO
- Catherine Leclercq, Council for Agricultural Research and Economics, Rome, Italy
- Marika Ferrari, Council for Agricultural Research and Economics, Rome, Italy
- Ximena Schmidt Rivera, Brunel University London, London, United Kingdom
- Sarah Bridle, University of York, York, United Kingdom
- Christian Reynolds, City, University of London, London, UK
- Bridget Holmes, FAO

**Other acknowledgments:** FAO colleagues from the Nutrition Assessment team and from the Food and Nutrition Division and Statistics Division



Thank you!

Contact info:  
[victoria.paduladequadros@fao.org](mailto:victoria.paduladequadros@fao.org)  
[fao-who-gift@fao.org](mailto:fao-who-gift@fao.org)