



Developing the Cost and Affordability of a Healthy Diet indicator and national applications

May 18, 2023

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Co-Director, Food Prices for Nutrition

#FoodPricesforNutrition
sites.tufts.edu/foodpricesfornutrition
worldbank.org/foodpricesfornutrition
[faostat/en/#data/CAHD/](https://faostat.fao.org/en/#data/CAHD/)

Food
Prices for
Nutrition



Food Prices for Nutrition

Project purpose: Scale up monitoring and analysis of food prices, to guide agricultural production and food markets for improved nutrition

Support use of new metrics in high-priority countries

Build a global system to monitor change in food prices for nutrition

Analyze change in cost and affordability of healthy diets

Actively disseminate tools and results on food prices, diet costs, and affordability



Gerald J. and Dorothy R.
Friedman School of
Nutrition Science and Policy



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Food Prices for
Nutrition 

The logo graphic for "Food Prices for Nutrition" features a stylized group of people in various colors (blue, green, orange, red) standing in a line, representing a diverse population.



Friedman School
of Nutrition Science
and Policy



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 - Timothy Sulser, Senior Research Fellow

Food Prices for Nutrition



Funded by:

BILL & MELINDA
GATES foundation



Foreign, Commonwealth
& Development Office



In collaboration
with:



Vision: Food price measurement to match this aspiration

Food security is...

*when all people, at all times, have physical and economic access to sufficient, safe, **nutritious food to meet dietary needs** and food preferences for an active and healthy life.*

- World Food Summit, 1996



Cost and Affordability of a Healthy Diet: indicators to understand food access

Used in the UN State of Food Security and Nutrition in the World (2020, 2021, 2022), joining other food security metrics



Herforth, A., Bai, Y., Venkat, A., Mahrt, K., Ebel, A. & Masters, W.A. 2020.
<https://doi.org/10.4060/cb2431en>

Herforth, A., Venkat, A., Bai, Y., Costlow, L., Holleman, C. & Masters, W.A. 2022.
<https://doi.org/10.4060/cc1169en>






<https://www.fao.org/faostat/en/#data/CAHD/>

Food Prices for Nutrition

faostat/en/#data

Data

DOMAINS DOMAINS TABLE

- ▶ Production
- ▶ Food Security and Nutrition 
- ▶ Food Balances
- ▶ Trade
- ▶ Prices
- ▶ Land, Inputs and Sustainability
- ▶ **Cost and Affordability of a Healthy Diet**
- ▶ Population and Employment
- ▶ Investment 
- ▶ Macro-Economic Indicators
- ▶ Food Value Chain
- ▶ Climate Change: Agrifood systems emissions
- ▶ Forestry
- ▶ SDG Indicators 
- ▶ World Census of Agriculture

faostat/en/#data/CAHD/

Food and Agriculture Organization of the United Nations

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FAOSTAT

Cost and Affordability of a Healthy Diet (CoAHD)

DOWNLOAD DATA VISUALIZE DATA METADATA

COUNTRIES REGIONS SPECIAL GROUPS M49

Filter results e.g. albania

- Albania
- Algeria
- Angola

ELEMENTS

Filter results e.g. value

- Value

Cost and Affordability of a Healthy Diet (CoAHD)

Indicators on the cost and affordability of a healthy diet are estimated in each country and show the population's physical and...

databank.worldbank.org/source/food-prices-for-nutrition

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DataBank | Food Prices for Nutrition

Variables Layout Styles Save Share Embed

Database	Available	85	Selected	1
Country	Available	186	Selected	186
Classification	Available	2	Selected	1
Series	Available	34	Selected	4

Enter Keywords for

- Cost of an energy sufficient diet
- Cost of a nutrient adequate diet
- Cost of a healthy diet
- Cost of a healthy diet relative to the cost of sufficient energy from starchy staples
- Cost of fruits
- Cost of vegetables

<https://www.fao.org/faostat/en/#data/CAHD/>

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WHO WE ARE WHAT WE DO WHERE WE WORK UNDERSTANDING POVERTY WORK WITH US COVID-19

International Comparison Program (ICP) / Briefs

Food Prices for Nutrition DataHub: global statistics on the cost and affordability of healthy diets

<https://www.worldbank.org/foodpricesfornutrition>

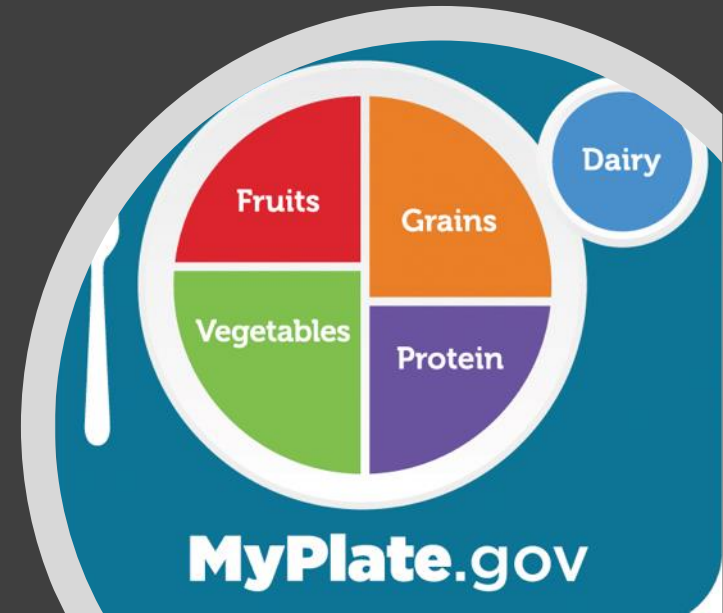
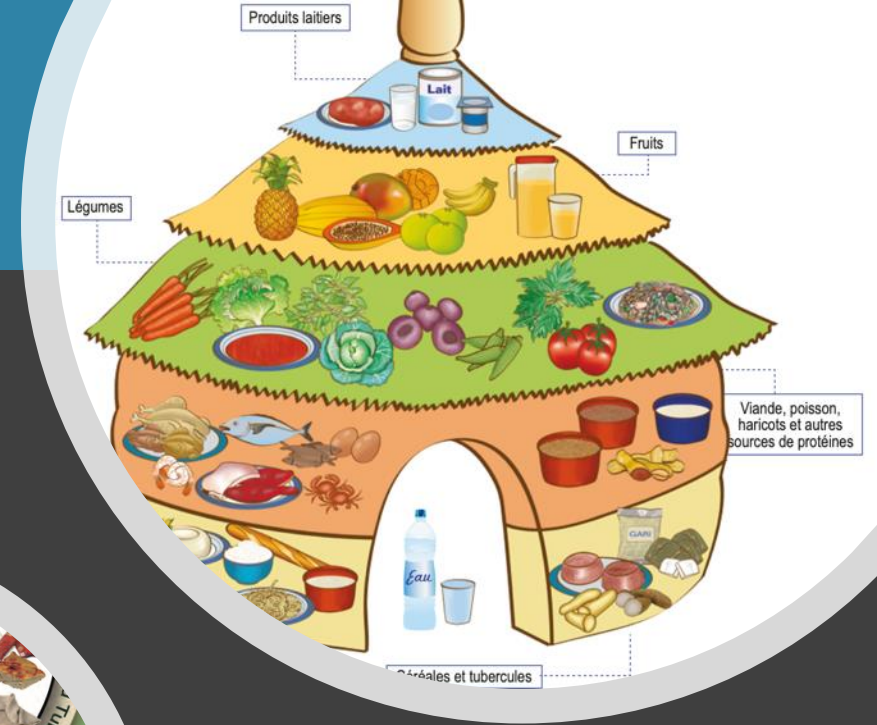
Data are available in FAOSTAT and World Bank DataBank

What is a healthy diet?

- We build on food-based dietary guidelines (FBDG) represent:
 - a realistic way for regular people to select nutrient-adequate diets
 - diets that protect health against NCDs
 - diets that are dignified and culturally appropriate

In nations where FBDG have been elaborated, they are the official policy standard for what constitutes dietary needs

- social safety nets and nutrition education based on FBDG



MyPlate.gov

Aim

If you went to an average market in any country, how much would it cost to obtain a diet that satisfies dietary guidelines?

How many people could not afford this cost?



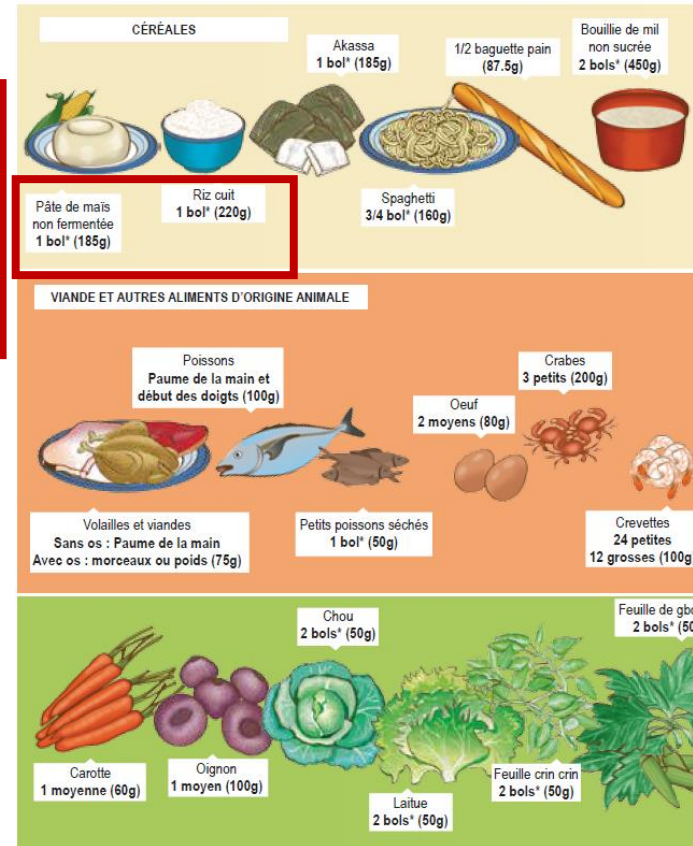
Photo: A Herforth, market in Ethiopia

Benin's quantitative food-based dietary guidelines

PORTIONS À CONSOMMER PAR JOUR

Groupe d'aliments	Enfants		Adolescents		Adultes				
	2-3 ans	4-8 ans	9-13 ans	14-18 ans	19 ans et plus				
	Filles et Garçons		Filles ²	Garçons	Femmes ²	Hommes	Femmes ² allaitantes	Femmes ² enceintes	
Céréales et tubercules	2 à 3	2 à 4	4 à 5	4 à 6	5 à 7	3 à 5	4 à 6	5 à 6	4 à 6
Viande, poisson, haricots et autres aliments riches en protéines	1	1 à 2	1 à 2	2 à 3	2 à 3	2 à 3	2 à 3	2 à 3	2 à 3
Légumes et sauces à base de légumes	2 à 3	3 à 5	4 à 5	4 à 6	5 à 6	4 à 6	4 à 6	4 à 6	4 à 6
Fruits	1	1 à 3	2 à 3	2 à 3	2 à 3	2 à 3	2 à 3	2 à 3	2 à 3
Produits laitiers ¹	1	1	1	1 à 2	2	1 à 2	1 à 2	1 à 2	1 à 2

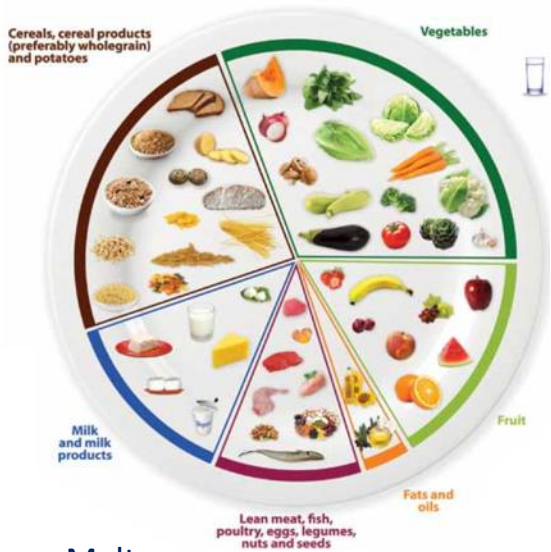
UNE PORTION CORRESPOND À



- Food groups
- Number of portions per day
- Grams or calories per portion

¹ Pour le calcium, consommer aussi des poissons fumés-séchés, crevettes fumées-séchées et carapace de crabe.

² Les femmes en âge de procréer prendront des suppléments de fer et d'acide folique conformément aux instructions du personnel de santé, car leurs besoins sont difficiles à combler avec l'alimentation seule.



Malta



India



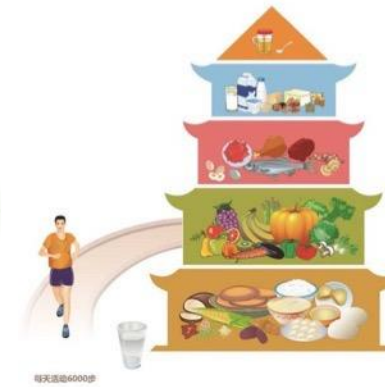
Jamaica



Argentina

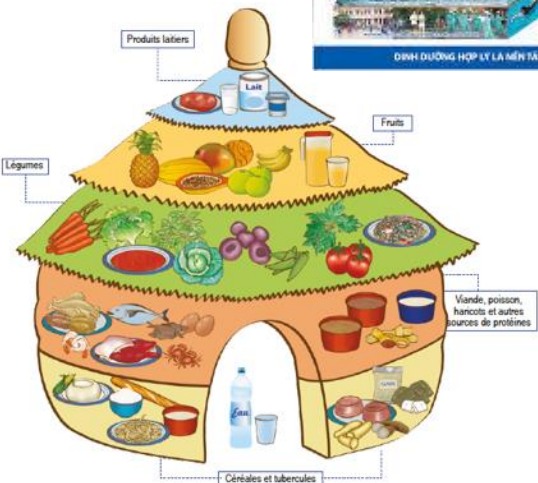


Vietnam

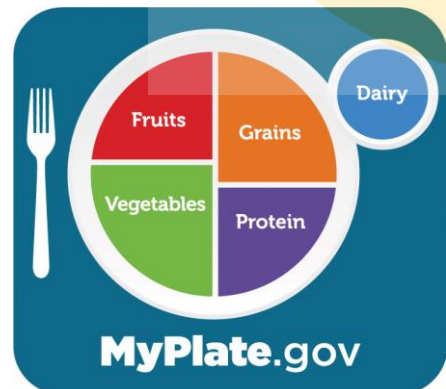


China

盐	<6克
油	25-30克
奶及奶制品	300克
大豆及坚果类	25-35克
畜禽肉	40-75克
水产品	40-75克
蛋类	40-50克
蔬菜类	300-500克
水果类	200-350克
谷薯类	250-400克
谷物和豆类	50-100克
薯类	50-100克
水	1500-1700毫升



Benin



U.S.A.

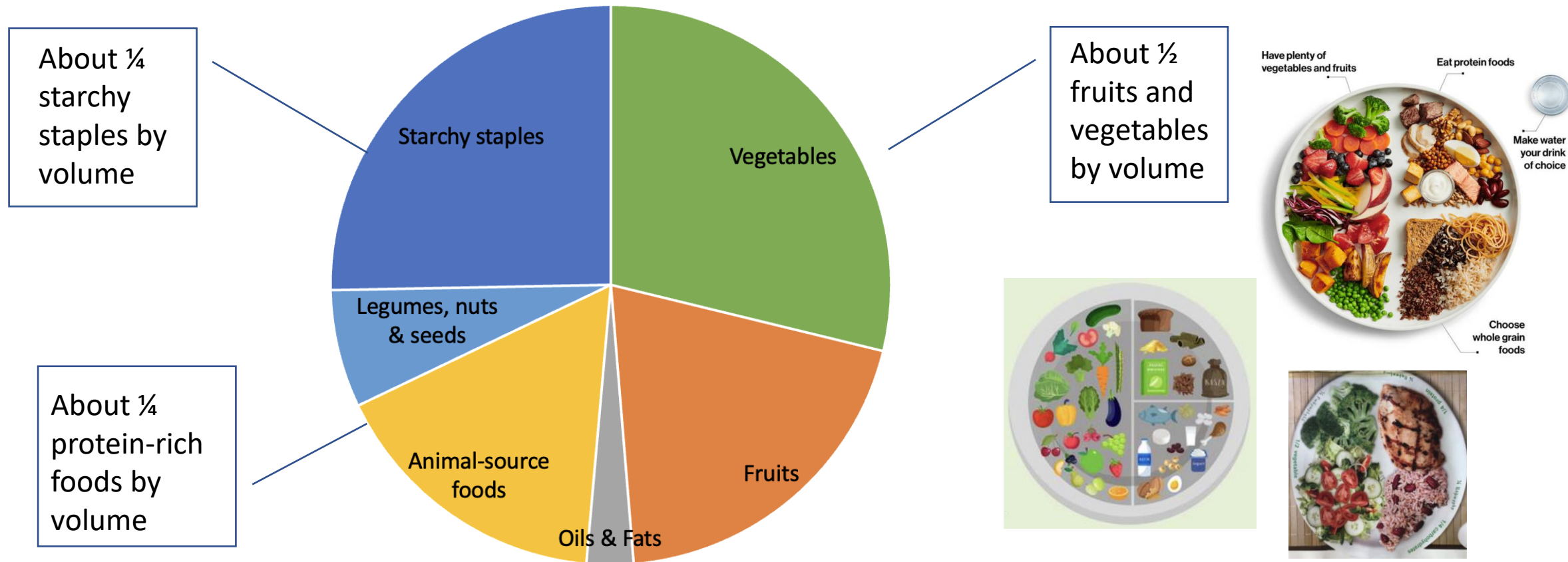


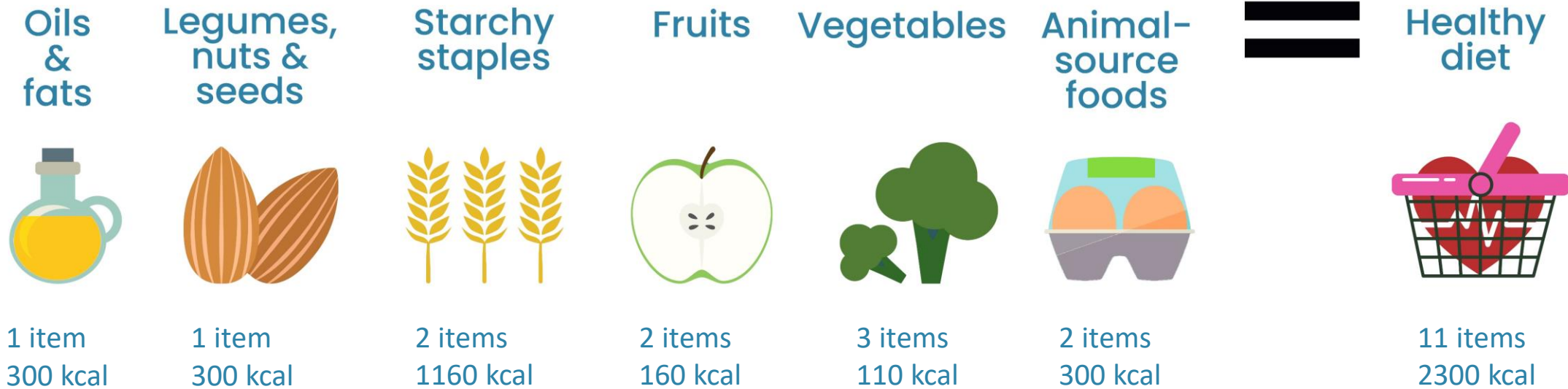
Oman



Netherlands

Healthy Diet Basket reflects the commonalities across guidelines in terms of food group proportions





Healthy Diet Basket

A global standard set of criteria that represents commonalities across most national food based dietary guidelines, created for the purpose of calculating and **comparing the cost and affordability of healthy diets across countries.**

Source: Herforth et al. 2022

What is a least-cost healthy diet?

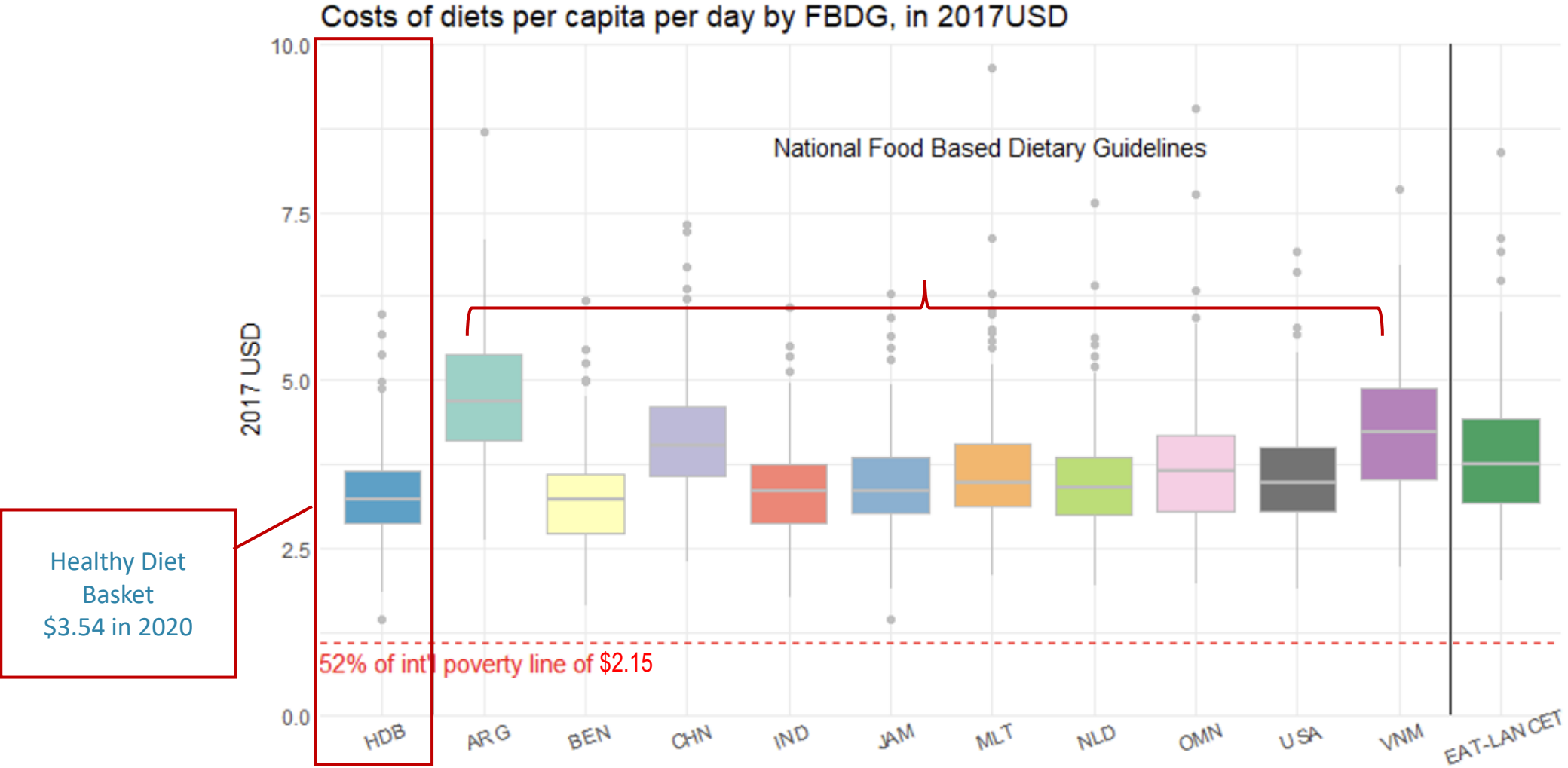
- Food group proportions stay constant (*share of kcal*)
- Food items are substitutable
- *Within food groups, what are the cheapest items?*
 - *The answer varies by season and market.*



Least-cost diets set a lower bound.

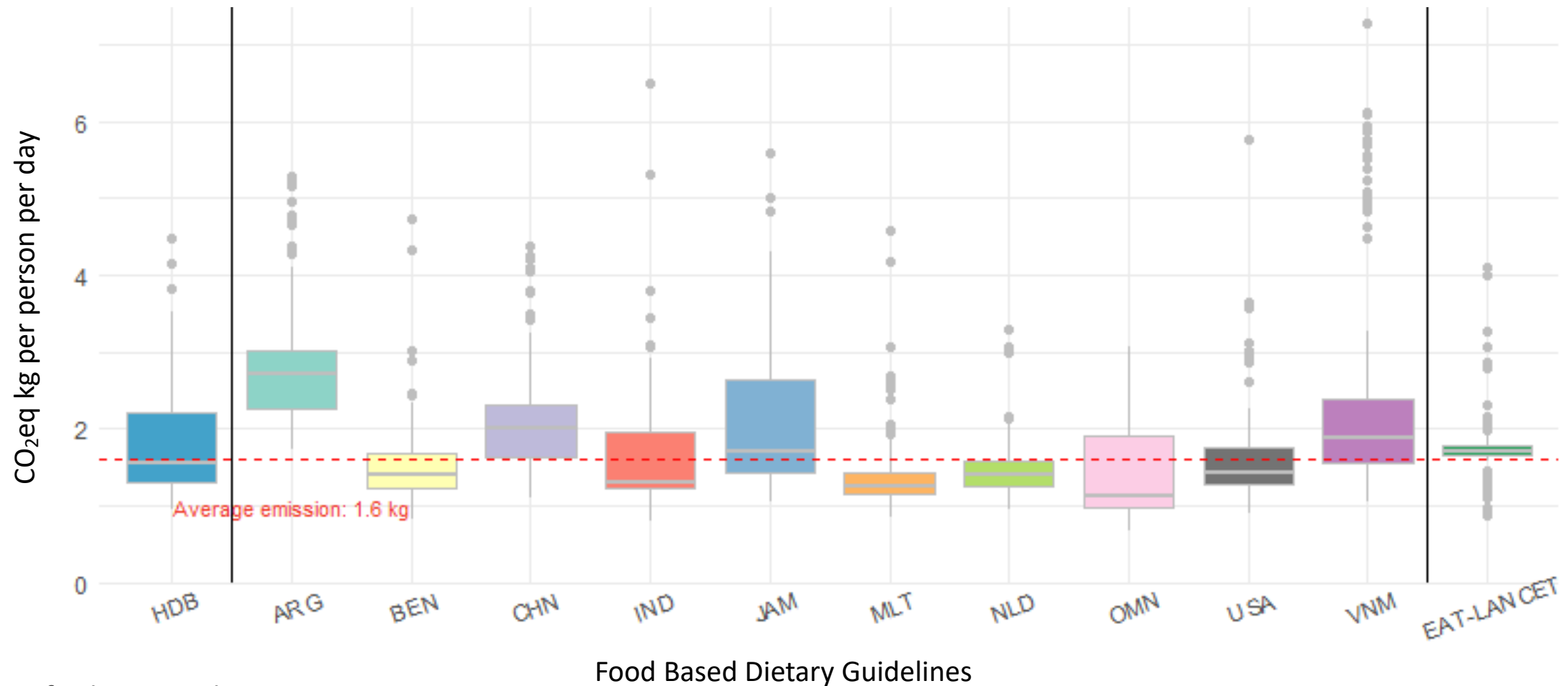
Taste, preferences, and convenience add to the cost, and would raise the number of people who cannot afford the diet.

Healthy diets, by any definition, cost more than the extreme poverty line



Source: Herforth et al. 2022

Least-cost diets following the HDB have about the same environmental footprint as the EAT-Lancet diet



Source: Herforth, Bai, and Masters, in preparation

How many people cannot afford healthy diets?

In low-income countries, people spend an average of 52% of expenditures on food

- Calculated from national accounts data compiled by the World Bank ICP

So, we compare the cost of each diet to 52% of income

- Using World Bank estimated 2018 income distributions across 164 countries

Incidentally:

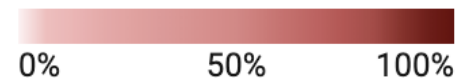
- *\$3.54 is 52% of the \$6.85 international poverty line*



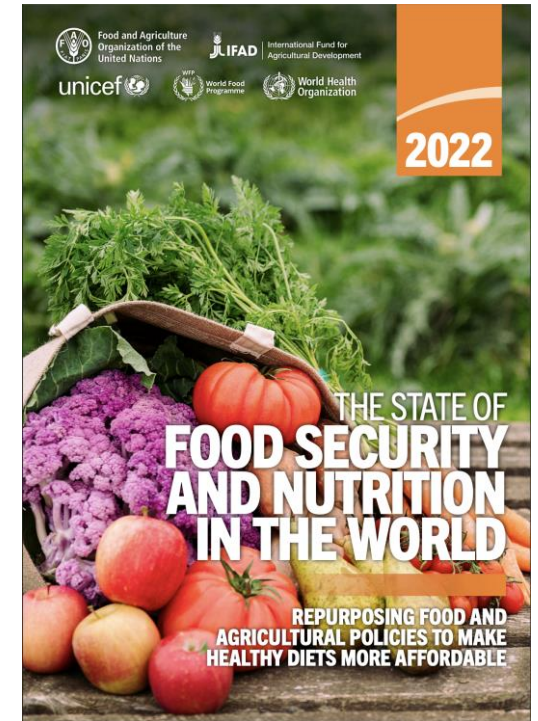
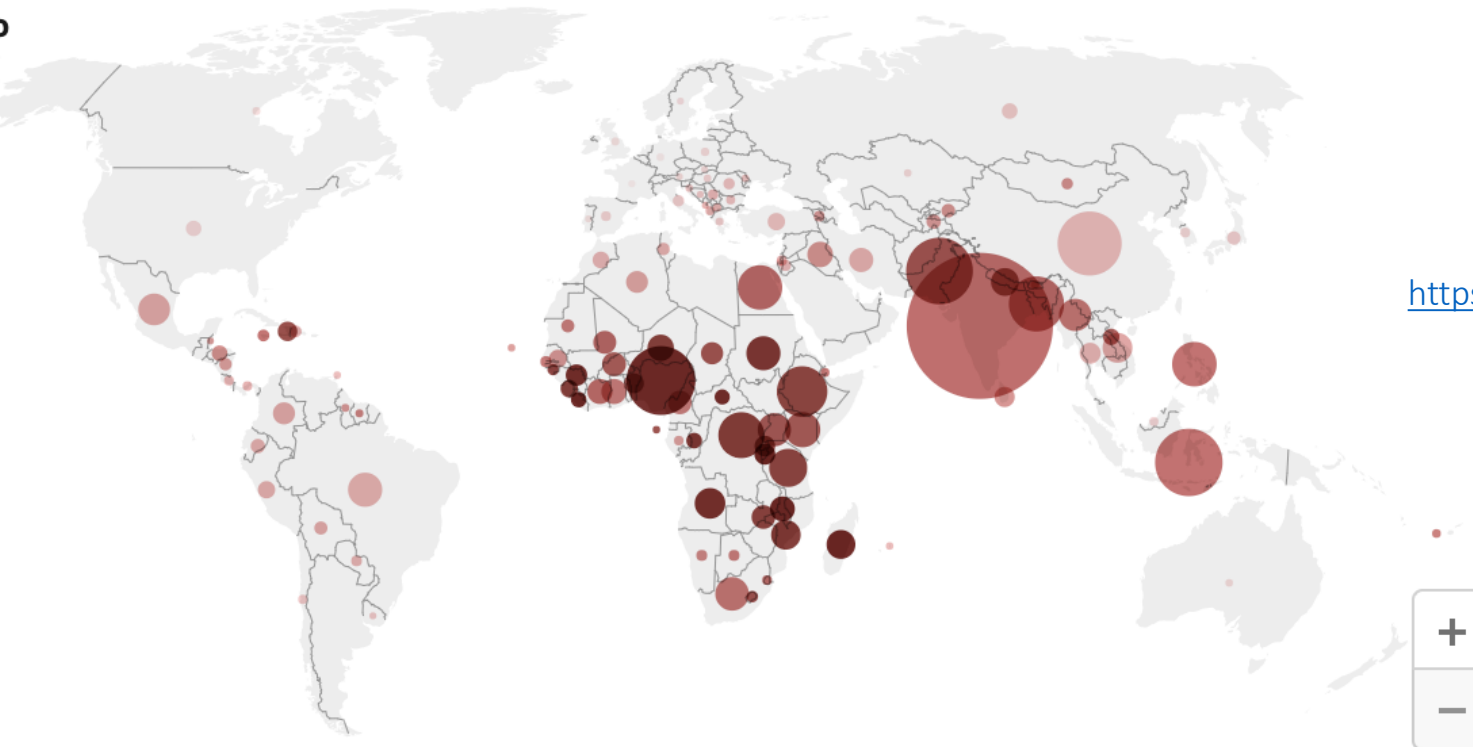
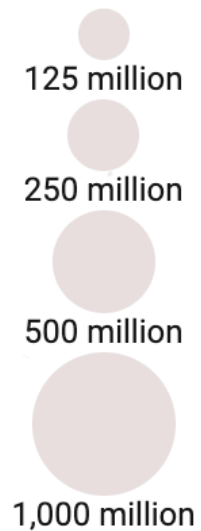
Around **3 billion** people could not afford a healthy diet in 2020

Hover over interactive chart to see country data

Share of population who cannot afford a healthy diet



Population who cannot afford a healthy diet



<https://www.fao.org/faostat/en/#data/CAHD/>

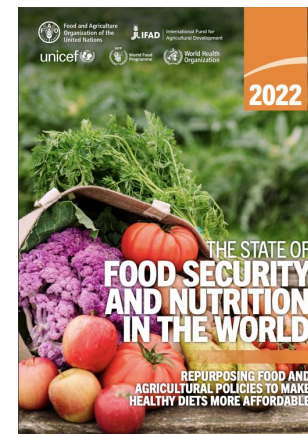
Cost of a Healthy Diet can be calculated in two ways

National: adherence to national FBDG

- Meets specific countries' guidelines, to achieve **policy coherence** within countries.
- Purpose is to inform, *“What actions in the food system and agriculture need to be taken to improve access to healthy diets, as defined by our own national FBDG?”*

Global: Healthy Diet Basket

- Meets commonalities among national guidelines, to **enable global comparability**.
- Used for annual updates to *The State of Food Security and Nutrition in the World* reports, as a standard of *“access to nutritious food to meet dietary needs.”*



Food price data

- For global analysis, we have used the World Bank's International Comparison Program (ICP) dataset from 2017
 - Unique dataset of retail prices
 - Global and regional lists for 2017 include 680 foods & non-alcoholic beverages in 173 countries
- Can use other **retail** food price data
 - Consumer Price Index data
 - Market information system data



National and global CoAHD comparison

Three differences:

- **The dietary standard**

The cost of national FBDG and HDB have small differences, as we have seen

- **The % of income spent on food**

In many countries the actual % of income spend on food is different than 52%

- **The data used**

Overall, national data are likely to result in lower costs

PAKISTAN

BANGLADESH

BURKINA
FASO

INDIA

GHANA

ETHIOPIA

NIGERIA

TANZANIA

MALAWI

Country Collaborations

Support the regular calculation of CoAHD in countries, using data already collected by national institutions.

Began with partners in Tanzania and Ghana

- 2016: Kickoff meeting
- 2016 MoFA piloted longer food list
 - Institutionalized since July 2017
- 2017, 2018 meetings in Accra -> intention to monitor
- 2022 series of online meetings
- 2023 – in-person training of MoFA focal points; GSS involved on affordability side



16-17
November
2017

Abidjan

AFRICA REGIONAL SYMPOSIUM ON SUSTAINABLE FOOD SYSTEMS FOR HEALTHY DIETS AND IMPROVED NUTRITION

Better Information for decision-making for Nutrition Impact

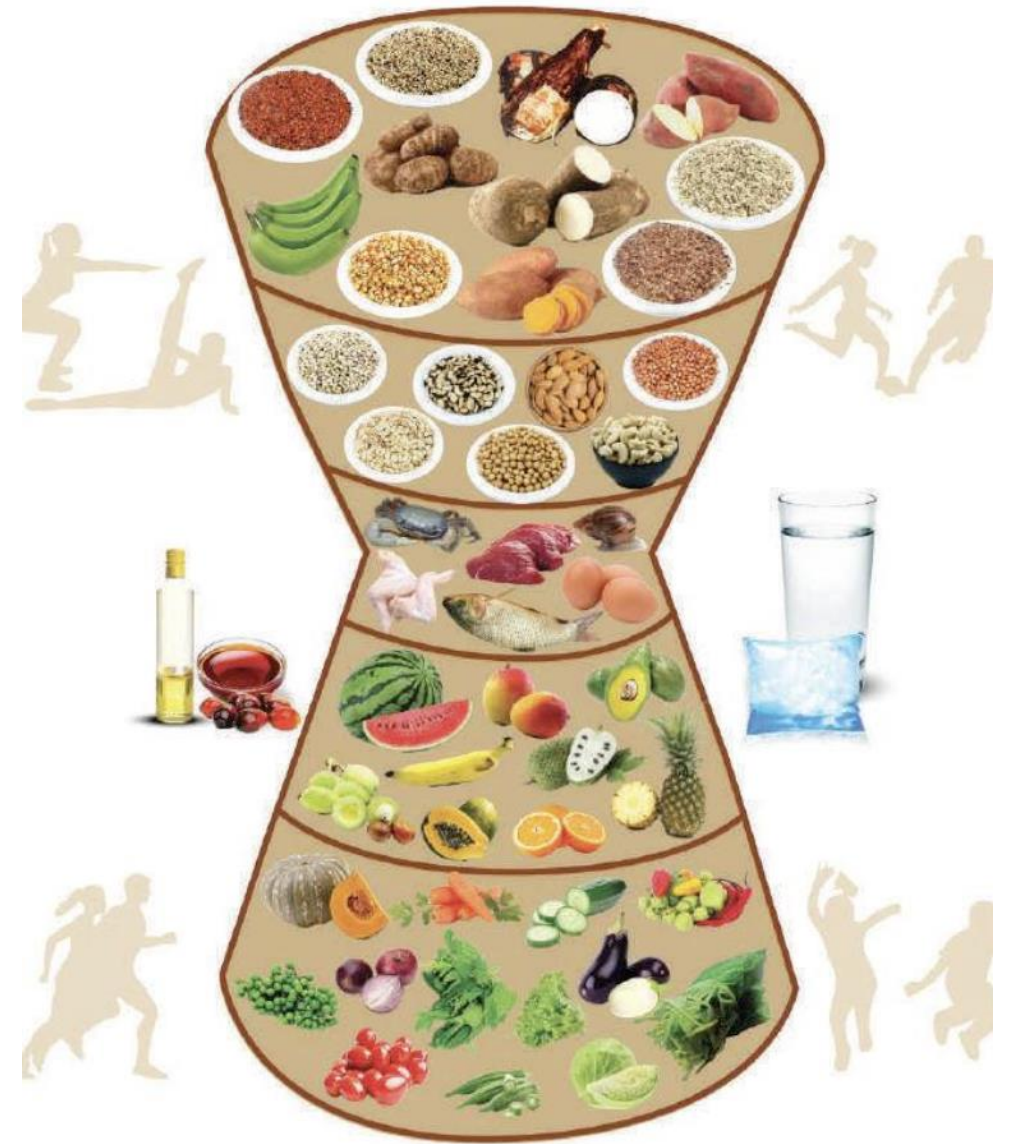
- **MoFA** can use these indicators for decision-making toward a more nutritious food system
 - Could see where, and when, nutritious diets are too expensive
 - MoFA-SRID is continuing to roll out the expanded food list nationwide
- **Ghana Statistical Service** is exploring reporting the new indicators as national statistics



FOOD BASED DIETARY GUIDELINES

Released Feb
2023

- Implementing the use of Ghana FBDG to find the lowest cost in the market of a diet that meets the recommendations



Ethiopia

- Institutional partners
 - Ethiopian Public Health Institute (EPHI)
 - Ethiopian Statistical Service (ESS)
- Workshops:
 - Virtual training, June 2022
 - In-person training, April 2023
- Published work:
 - Monthly bulletin to be published by EPHI and ESS (in progress)



Ethiopia:
Food-Based Dietary Guidelines–2022



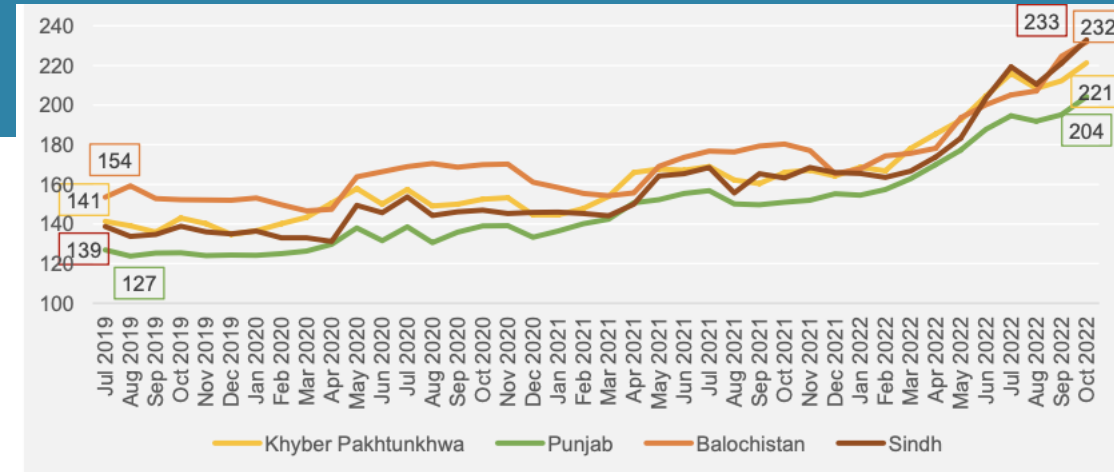
Malawi

- Institutional partners:
 - National Statistical Office (NSO)
 - Currently analyzing food price data from CPI to calculate CoHD
- Workshops: Upcoming
 - ANH Academy Learning Lab in Lilongwe, June 26, 2023
 - Stakeholder workshop in Lilongwe, July 3, 2023
- Published work:
 - Schneider, K., L. Christiaensen, P.J. Webb & W.A. Masters (2022), Assessing the affordability of nutrient-adequate diets, *American Journal of Agricultural Economics*, e12334.
 - Schneider, K.R. (2022). Nationally representative estimates of the cost of adequate diets, nutrient level drivers, and policy options for households in rural Malawi. *Food Policy*, p.102275.
 - Kaiyatsa, S., K. Schneider and W.A. Masters. (2021). How sensitive are cost of living metrics to missing food price data? Evidence from a novel market survey and consumer price data in rural Malawi. Project working paper.
 - Bai, Y., E. Naumova and W.A. Masters (2020). Seasonality in diet costs reveals food system performance in East Africa. *Science Advances*, eabc2162.

Pakistan

- Institutional partners:
 - Pakistan Bureau of Statistics (PBS)
 - FAO Pakistan
- Workshops:
 - Virtual training, February 2022
 - Technical Committee meetings (2)
- Work in progress:
 - **Pakistan national State of Food and Nutrition Security report (POFI)**
- Published work (World Bank)
 - Dizon, F., A. Herforth and Z. Wang. (2019). The cost of a nutritious diet in Afghanistan, Pakistan and Sri Lanka. *Global Food Security* 21: 38-51.
 - Dizon F and Herforth A. (2018). The cost of nutritious food in South Asia. Policy Research Working Paper Series. Washington, D.C.: The World Bank Group.

Historical trend in CoHD at province level (in PKR)



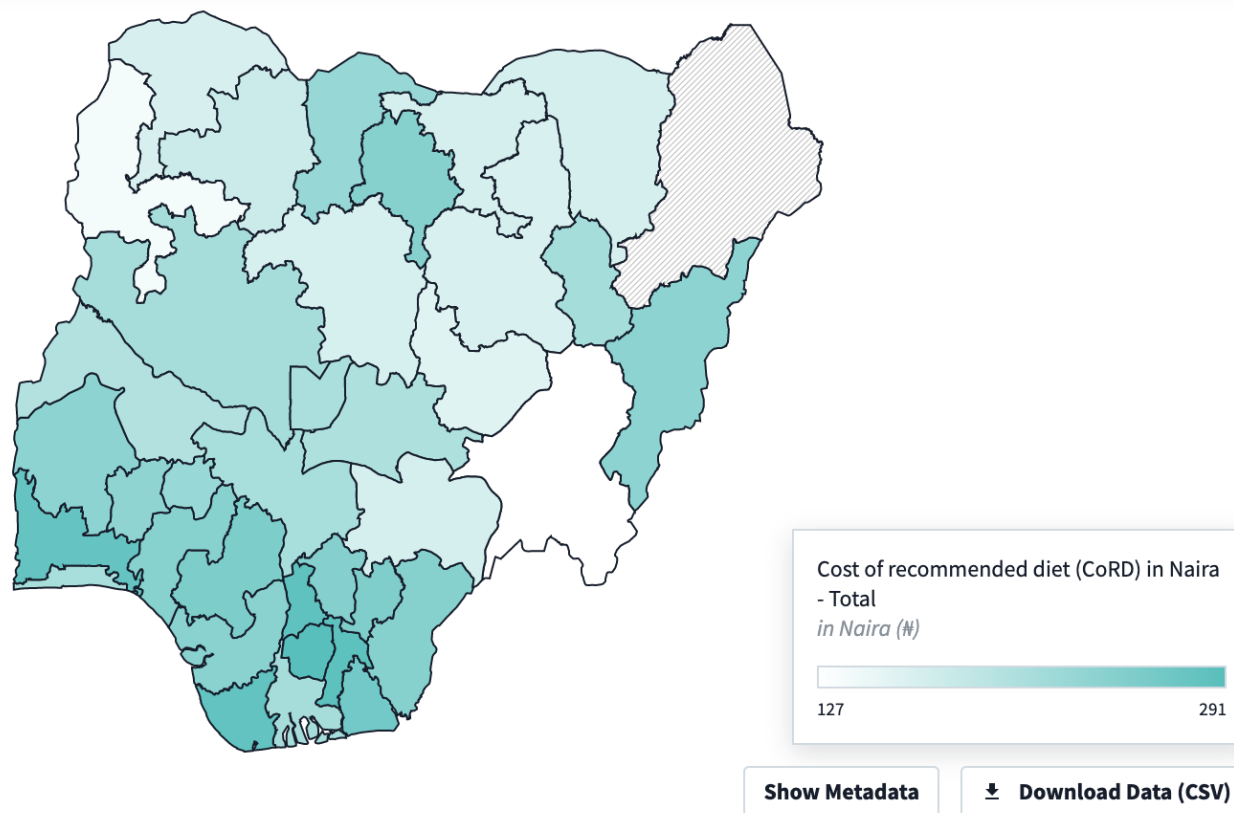
Nigeria



- Institutional partners:
 - National Bureau of Statistics (NBS)
 - Federal Ministry of Agriculture and Rural Development (FMARD)
 - Global Alliance for Improved Nutrition (GAIN)
 - Wageningen University
- Workshops:
 - Preliminary Stakeholder Meeting on Monitoring Nutrition-Sensitive Food Systems Transformation in Nigeria, Aug 2022
 - Focal points appoints by NBS, Feb 2023
 - Current: Monthly data from 2016 to 2021 is being analyzed; next will work with NBS focal points to systematize analysis in NBS
- Published work:
 - Mekonnen, DA, Akerele D, Achterbosch T, de Lange T, Talsma EF. 2021. "Affordability of Healthy and Sustainable Diets in Nigeria." *Frontiers in Sustainable Food Systems* 5: 726773. <https://doi.org/10.3389/fsufs.2021.726773>





Mapping the indicator on the Nigeria Food Systems Dashboard



- Nigeria state-level Food Systems Dashboard (NFSD): tool for ensuring the availability of data to inform current and future agri-food systems policy
 - Cost and Affordability of Healthy Diet indicators were the only food environment indicators for which data is already available
 - crucial linkages between agricultural production data and food security and nutrition outcome data
- Governor's Scorecard

Software tools and templates for calculation

INSTRUCTIONS	Visual protocol on how to use the technical assistance tools for calculating the Cost of a Healthy Diet.
EXCEL WORKBOOK 	Excel Workbook to calculate the Cost of a Healthy Diet.
EXCEL FOOD INFORMATION DATABASE	Excel database of food item information for 400+ common items found in national statistical organization price datasets. Intended to support the food matching step in the Excel Workbook.
STATA CODE 	Stata .do file to calculate the Cost of a Healthy Diet. Imports data from the Excel Workbook and generates output files in a newly created folder named StataResults.
STATA PSEUDODATA	Stata .dta file of example retail food price data that can be used to practice calculating the Cost of a Healthy Diet using Stata. Models file structure users must generate for their own data.

*And...
World Bank
e-learning course
coming soon*

<https://sites.tufts.edu/foodpricesfornutrition/tools/>