



Meat consumption

Overview

Quantity of meat consumption, estimated based on [Food Balance Sheets](#) [1] (FBS), is a dietary indicator that can be used to understand trends in dietary patterns, dietary quality, and environmental sustainability of national diets. Animal source proteins are more readily used by the human body compared to plant proteins, and provide all the essential amino acids that cannot be synthesized by the body and must be consumed in diets ([Ghosh et al., 2012](#) [2]). Inadequate protein consumption is associated with severe and chronic infections and fatty degeneration of organs, disease burdens for which women and children in developing countries are particularly at risk ([Muller & Krawinkel, 2005](#) [3]). However, from an environmental perspective, meat produces more greenhouse gas per kilogram than plant source proteins ([Scarborough et al., 2014](#) [4]). In addition, from a broader food security perspective, livestock consume about one third of global cereal production and use about 40% of arable land ([Mottet et al., 2017](#) [5]).

It is important to note that different types of meat have various impacts on health, also depending on the quantity consumed. For example, higher consumption of red meat is associated with an increased risk of cardiovascular disease and cancer mortality ([Pan et al., 2012](#) [6]). More generally, animal source proteins are more likely than plant proteins to be highly digestible and more easily utilized by the human body, in addition to having all of the essential amino acids, which cannot be synthesized by the body and must be acquired through the diet ([Ghosh et al., 2012](#) [2]). This indicator does not include other animal source foods such as eggs, fish, or dairy. They are excluded in part because they have a lower impact on greenhouse gas emissions, a primary measurement of a food's environmental impact.

Method of Construction

Currently, the most straightforward way to find data for this indicator is to download the food supply quantity by type of meat directly from the Food and Agriculture Organization (FAO) on the [FAOSTAT](#) [7] website. These data can then be summed across type of meat to come up with the total kilograms per capita. The food supply quantity is based on the following formula:

Food supply = starting stocks + (quantity imported + quantity produced) – (quantity exported + seed + animal feed + waste + other non-food uses) - ending stocks ([FAO, 2001](#) [8])

The food supply quantity is essentially the food available for consumption in a given country.

Uses

This indicator can be used to proxy meat consumption in the 245 countries and territories that FAOSTAT tracks. Meat production (poultry, beef, veal, pork, lamb, mutton, goat, offal, and other) results in more greenhouse gas per kilogram than plant source proteins, and rising meat consumption in a country increases the carbon footprint of food production ([Scarborough et al., 2014](#) [4]). Therefore, tracking the meat supply available at the national level may be important in light of the [Sustainable Development Goals](#) [9], particularly 12 and 13, which focus on responsible consumption, production, and actions to slow climate change. This indicator can illustrate trends in meat

consumption, which may be of increasing importance as countries continue to develop, since higher meat consumption is associated with increasing incomes ([Daniel et al., 2011](#) [10]). The [FBS](#) [1] permits disaggregation by type of meat, but provides supply data only at the national level. For more disaggregated information and sub-group analysis, household- or individual-level survey data are needed, and an analysis based on food groups and meat consumption must be conducted. Indicators such as the [household share of animal protein in total protein consumption](#) [11], [total individual macronutrient intake](#) [12], or [total individual micronutrient intake](#) [13] could also be calculated.

Strengths and Weaknesses

One strength of this indicator is that it is easily constructed using [FBS](#) [1] data, and the data used for the indicator are regularly updated by national governments and are centrally located in [FAOSTAT](#) [7] in a standard format. This approach allows users to filter for various kinds of meat. Different types of meat have varying levels of environmental impact based on its animal source. For example, one kilogram of beef produces greenhouse gas emissions seven times as large as the same quantity of poultry ([Scarborough et al., 2014](#) [4]).

However, a downside of this indicator is that it does not reflect actual meat consumption but meat availability in a given country. In addition, since the indicator is a national-level estimate, it cannot be disaggregated by age, sex, or by any geographic scale smaller than the national level, nor can it detect disparities in protein consumption across population groups or seasons, as is possible with individual-level dietary data. Although the [FBS](#) [1] accounts for food losses incurred at the distribution and processing level, it does not account for plate waste at the household or individual level ([Lele et al., 2016](#) [14]).

Data Sources

The main source of data for this indicator are the [FBS](#) [1] data on the [FAOSTAT](#) [7] website, which disaggregates elements of utilization and supply, and estimates total food available for human consumption. FAO pairs this information with food composition data to produce information on the national supply of energy and macronutrients (per capita/day). In addition, [Household Consumption and Expenditure Surveys](#) [15] (HCES) could be used to calculate a similar indicator, such as the [household share of animal protein in total protein consumption](#) [11]. Alternatively, data from a [24-hour Dietary Recall](#) [16] or [Food Frequency Questionnaire](#) [17] (FFQ) could be used to allow for calculation of individual intake of specific food groups (e.g. animal source foods).

Links to guidelines

- [OECD, 2017. "Meat Consumption"](#) [18]

Links to illustrative analyses

- [European Environmental Agency, \(2017\). "Food consumption - animal based protein"](#) [19]

Food Security Dimensions

- [Quantity](#) [21]
- [Quality](#) [22]
- [Sustainability](#) [23]

Data Collection Levels

- [National](#) [24]

Data Sources and Methods

- [Food Balance Sheets \(FBS\)](#)

Requires Food Composition Database

- [No](#) [25]

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