## FBSs and SUAs, underlying data, sources, measurement and imputation

### FBSs and SUAs

This sourcebook provides a description of the methodologies, the processes, and the practical steps to construct a Food Balance Sheet (FBS). FBS compilers will realize that all compilation steps to arrive at a final FBS actually refer to much more disaggregated balances of primary and processed products, here referred to as Supply-Utilization Accounts (SUAs). It is only the final step of aggregation, the so-called “standardization” (see chapter 2.3 for the methodology and Chapter 3 for practical examples) that eventually creates the more aggregate and standardized template, known as FBS. While almost all compilation steps refer to the finely disaggregated SUAs, the many hundreds of individual balances they contain are hardly useful for policy makers and, indeed, not even for analysts. They are therefore not disseminated by FAO. Also, national FBS compilers may need to carefully weigh the pros and cons of making these detailed SUA balances available[[1]](#footnote-1).

### Overview and basic description of FBS/SUA variables

FBSs and SUAs consist of a set of variables describing the various forms of supply and utilization of food. All variables used and presented in the FBSs are also included in the SUAs. In addition, the compilation of SUA information requires a multitude of auxiliary variables such as conversion factors, shares and ratios and, importantly, information of how the various processed products relate to their primary product equivalents. The relationships between processed and primary products is encapsulated in the so-called commodity trees. These trees provide the basic roadmap for consistent commodity aggregation, the so-called standardization. The conversion factors, ratios and shares, as well as the trees and the logic of standardization, will be presented later in this section. Before delving into these details, it is important to define and delineate the basic SUA/FBS variables.

Both FBS and SUA present simple balances between supply and utilization. They include production, imports and stock withdrawals on the supply side and exports, food (of the resident population), tourist consumption, feed, seed, waste and losses, industrial use as well as stock additions on the utilization side. The various variables are defined as follows.

* Production

Production refers to the total amount of food produced in a country. As FBSs aim at providing food security information, production not only includes commercial and marketed products, but also non-commercial food production, subsistence farming, including foods from orchards and home gardens. Production of primary crops is reported at the farm level, excluding harvesting losses. Output for all crops products is expressed in metric tonnes. The same holds for livestock products, whereby meat production is defined in terms of carcass weight. For processed and derived commodities, production refers to the total amount of output at the manufacturing level.

* Trade

Trade refers to all transboundary flows of food items destined for, or originating from, a given country. At the stage of data collection, exports and imports of processed and primary products are often reported in their initial units of measurement. These can be in heads, pieces, or measures of volumes such as litres, hectolitres, bushels, barrels, bales, etc., and in any other unit of measurement. The FBS/SUA system requires all variables be expressed in metric tonnes. FBS compilers must therefore ensure that all trade data are converted into metric tonnes. They may want to refer to relevant conversion factors provided by UNSD or use FAO trade data instead.

* Food

Food in the FBS definition refers to the amounts of edible product available for human consumption during the reference period of a calendar year. It presents the amounts of food reaching the retail level and is therefore inclusive of all waste and losses that occur at or after the retail level. FBS food amounts are therefore typically higher than the amounts of food reported by other measurement methods, such as Household Income and Expenditure Surveys (HIES) or, and and even more so, by nutrition surveys. Both are exclusive of certain amounts of waste. FBS food by contrast includes all waste of edible products occurring in shops, supermarkets or household, e.g. during storage, in preparation and cooking, as plate-waste, or quantities fed to domestic animals and pets, or is simply thrown away. It also includes food consumed in collective households/consumption, i.e. in hospitals, schools, restaurants, military, prisons, etc.

* Feed

Feed represents the quantity of edible products available for livestock production, both domestically produced and imported. It therefore excludes all feeds that are not foodstuffs or not destined for human consumption, such as roughages, or by products such as oilcakes, Distiller’s Dried Grains with Solubles (DDGS), dregs, etc. These feedstuffs are taken into account in the calculation of total feed use, but excluded in the FBS calculations and presentation.

* Seed

Seed includes amounts of a commodity set aside for sowing or planting (or generally for reproduction purposes) during the year. Usually, the average amount of seed needed per hectare planted in any given country, does not greatly vary from year to year.

* Food losses and waste (FLW)

FLW refer to the amounts of all food products lost at any stage of the supply chain from the farm up to, but excluding the retail level. Also excluded are all losses during the pre-harvest and harvesting stages, technical losses occurring during the transformation of the primary commodities into processed products. The latter are captured, and taken account separately, in the standardization process through appropriate extraction rates/conversion factors reflecting processing losses.

* Industrial Utilization

Covers the quantities of the commodity used during the year for non-food purposes such as bio-fuels, paints, detergents, cosmetics, etc.

* Tourist Consumption

Includes the food consumed by non-resident visitors during their stay at the country of destination.

* Stocks

Refer to amounts of food allocated to, or taken from, storage to be used at later stages. They include stocks held at all levels of the supply chain, from production to retail.

* Nutrient estimates

Based on SUA quantities, population estimates and nutrient conversion factors, the FBS also feature country-wide averages for calorie, protein and fat availability. Arguably the most important output of the FBS table is the sum of all calories available for human consumption, known as the Dietary Energy Supply, or short DES. In addition, FBS tables also provide fat and protein availability by product as well as the sums for all products. Nutrient estimates are calculated in the SUA process and, apart from nutrient conversion factors, do not require any separate inputs.

### Auxiliary Variables

To produce additional indicators such as per capita use or to facilitate standardization, additional variables need to be collected by FBS compilers. They include:

* Population

Estimates for the resident population are available from the UN Population Division (UNPD). It is highly recommended that all FBS compilers use UNPD population estimates, even if alternative national sources are available. UNPD estimates are derived through a globally consistent methodology and serve as the basis of all per capita estimates for all UN agencies. Importantly, they have been used as the common denominator for all per-capita Millennium Development Goal (MDG) indicators and will be the common denominator of all Sustainable Development Goal (SDG) indicators, targets and goals.

* Activity and productivity variables

FBS tables display only quantities of supply and use, but FBS compilers will need to collect information about these variables to arrive at variables displayed in the FBS. Typically, these include the underlying activity and productivity indicators. For primary products, activity indicators include area harvested and area sown in the case of crops, and the number of animals[[2]](#footnote-2) in the case of livestock. Productivity indicators are yields and cropping intensity for crops, slaughter weights and take-off rates for livestock. To calculate the amounts of processed products requires inputs into processing and corresponding extraction rates (flour to wheat, etc.). Also required are nutrient conversion factors that provide information about the nutrient content (calories, protein, and fat) per kg of food. All relevant FBS variables are summarized in Table 1 below.

Table 1: Basic and auxiliary variables to produce FBSs and SUAs

|  |  |
| --- | --- |
| Production | Basic variables of SUA/FBS account |
| Import |
| Export |
| Food |
| Feed |
| Seed |
| Loss |
| Industrial Utilization |
| Tourist Consumption |
| Other Uses |
| Stock changes |
| Population | Auxiliary SUA/FBS variables |
| Food: total calories equivalent |
| Calories/caput/day |
| Food: total protein equivalent |
| Proteins/caput/day |
| Food: total fats equivalent |
| Fats/caput/day |
| Area sown |
| Area harvested |
| Yield |
| Processed |
| Stock |
| Slaughtered |
| Carcass weight |
| Input |
| Extraction rate |

1. In fact, the detailed SUAs are not even published by FAO, not least because their proper use requires the full knowledge of the various compilation steps, which is seldom available to policy makers and analysts. What is more, past experience with published SUAs suggests that many analysts misinterpreted the information in the underlying SUA balances and drew (policy) inferences that are supported by the information contained in these balances. [↑](#footnote-ref-1)
2. This includes any animals grown either for draft proposes or for meat and dairy production or kept for breeding. The unit of measurement is expressed in number of heads or 1000 of heads (poultry, rabbits, other rodents). [↑](#footnote-ref-2)