Learning objectives

At the end of this session, the audience will:

a) Know the **historical background** of the FBS framework

b) Understand the basic **SUA/FBS equation**

c) Be informed about some of the **potential uses** of FBS

d) Be aware of the major **caution on FBS interpretation** and of the fundamental principles of FBS construction
1. Overview

Global recognition that statistically sound, reliable data on food and agriculture is needed

e.g. to understand the current situation of agriculture and food supplies within any given country, track progress against established development goals, and inform future evidence-based policy decisions.

Goal of this training: provide developing countries with the methodological framework and tools to compile high-quality food balance sheets (FBS) for crop and livestock products.
2. History

• World War I: first attempts at preparing FBS

• 1936: preparation of a systematic international comparison of food consumption data (requested by the League of Nations Mixed Committee on the Problem of Nutrition - Sub-Committee on Nutritional Statistics)

• 1942-43: 1st intensive use of FBS to analyze the food security situation after the World War II

• 1948: FAO Conference encouraged governments to develop their own FBS with FAO assistance
2. History

- 1949: printing of the *Handbook for the Preparation of Food Balance Sheets*
  - FBS were published for 41 countries and since then it’s regularly prepared and published

- 1957: for methodological reasons, it was decided to publish three-year average FBS (instead of annual)

- 1977: food balance sheets for 162 countries
  - Table of per caput food supplies showed [cal., prot., fat] the supply by food groups of selected minerals and vitamins
2. History

≈ 2015: intensive focus of finalizing the revised FBS methodology.

- Same overall framework, but important innovations.
  **Main changes:**
  
a) Updating the overall approach solve the balance (more refined)
  
b) Updating/refining the imputation methods of the FBS components – harness links between the various FBS variables/elements and information from outside the FBS
  e.g. the new feed use imputation method (animal number, type of breeding...)
  
c) More accuracy with the various variables
  e.g. other utilization → tourist food, other utilizations
  
d) Less discretion of the compiler
  
e) International classifications adopted (FCL replaced by CPC and HS)
3. Definition of SUA and FBS

The **FBS** is a national accounting/statistical framework, presenting a comprehensive picture of the pattern of a country's food supply during a specified reference period.

SUPPLY = UTILIZATION

\[ P + I - dSt = X + Fo + Fe + Se + T + IU + Lo + ROU \]

(+ food processing)

**Where:**
- \( P \) = production
- \( I \) = imports
- \( dSt \) = Δ stocks
- \( Fo \) = food
- \( Fe \) = feed
- \( Se \) = seed
- \( T \) = tourist food
- \( IU \) = industrial use
- \( Lo \) = loss
- \( Rou \) = residual or other uses
3. Definition of SUA and FBS

**FBSs** are derived from the SUAs

- **SUA**: Supply Utilization Account
- The balance is compiled for every food item consumed within a country

- Commodities are converted in their primary commodity equivalent and aggregated

- Primary commodity equivalent balances are combined into one FBS
3. Definition of SUA and FBS

Per capita:
- Quantity
- Calories
- Proteins
- Fats

Dietary Energy Supply (DES)
3. Definition of SUA and FBS

<table>
<thead>
<tr>
<th>Côte d'Ivoire</th>
<th>Bilans Alimentaires</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Offre interieure</td>
<td>Utilisation domestique</td>
</tr>
<tr>
<td></td>
<td>Prod.</td>
<td>Impo.</td>
</tr>
<tr>
<td>Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total General</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produits Vegetaux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produits Animaux</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Céréales - Excl Bière</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blé</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Riz (Eq Blanchi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maïs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seigle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avoine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Millet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorgho</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. Definition of SUA and FBS

The SUA/FBS is an analytical dataset that:

• shows the sources of supply and its utilization for each food item (SUA) or food group (FBS);

• provides the availability for human consumption;

• shows the changes in the types of food consumed.
3. Definition of SUA and FBS

- Example of a sample blank SUA table for soybeans:

<table>
<thead>
<tr>
<th>Product</th>
<th>Production</th>
<th>Imports</th>
<th>Exports</th>
<th>Stock change</th>
<th>Food</th>
<th>Food processing</th>
<th>Feed</th>
<th>Seed</th>
<th>Net Tourist Cons.</th>
<th>Industrial Use</th>
<th>Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybeans</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oil of soybeans</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cake of soybeans</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Soy sauce</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Margarine &amp; shortening</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydrogenated oils and fats</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
3. Definition of SUA and FBS

The two pillars of the SUA/FBS:

1. Production data (Annual production Questionnaire)
2. Trade data (COMTRADE)

Link on the FAOSTAT webpage:
4. Potential Uses

• Basis for policy analysis aimed at ensuring food security:
  
  o Estimate a country’s overall DES and macronutrient availability (proxy of food consumption)
  o Estimate the food shortages/surpluses
  o Estimate the amount of food aid
  o Determine the availability of a certain class of food
  o Analyze livestock policies (e.g. the degree to which primary food resources are used to produce animal feed)
4. Potential Uses

• Calculation of derived indicators:
  
  o Prevalence of Undernourishment (PoU)
  o Self-sufficiency ratio (SSR)

  $\text{SSR} = \frac{\text{Production}}{\text{Production} + \text{Imports} - \text{Exports} + \Delta \text{Stock}}$

  o Import dependency ratio (IDR)

  $\text{IDR} = \frac{\text{Imports}}{\text{Production} + \text{Imports} - \text{Exports} + \Delta \text{Stock}}$
4. Potential Uses

- **Statistical purposes:**
  - Framework for data reconciliation (≠ sources)
  - Harmonization of data collection efforts
  - Data validation (supply and demand picture) - validate the national statistics
  - Improve National Account estimates (through the agricultural production measurement/estimation)
4. Potential Uses

- FBS data can be used as inputs in economic models
- Means of comparing food availability (from FBS) and food consumption (from HH surveys)
  
  e.g. to cross-check the data on food consumption (and vice versa)
  
  e.g. as a proxy of food consumption in the absence of data.
4. Potential Uses

• Other potential uses:
  o Benchmarking (compare food availability across countries)
  o Comparing food availability across time
  o Track changes in dietary composition & growth of consumption in new products
  o Link to two SDG indicators (2.1.1 & 12.3.1)
5. Caution in interpreting FBS estimates

• "Food availability", not "food consumption"
  - DES is likely to overestimate the amount of food actually consumed

• FBS food availability takes into accounts all consumption within a country (HH, schools, hospitals....)

• Average of food/nutrient availability (distribution among different groups of people is not considered)
5. Caution in interpreting FBS estimates

Commodity Balances ≠ FBS

• **FBS** : only food-related commodities (e.g. rubber is not included)

• **FBS** : the quantity estimates of food must be reported in their caloric equivalent

• **FBS** : contains aggregated estimates of both a primary commodity *and* all of its derived products (expressed at the primary commodity equivalent level)
  - many countries produce commodity balances for primary products, but do not account for goods derived from those primary products → underestimate total consumption
6. Fundamental principles of FBS construction

Three basic principles to ensure that country-level FBS are (i) reproducible, (ii) coherent, and (iii) transparent:

a) Measurement first
   → Countries should invest in improving measurement of input data.

b) Document data and process
   → Compilers should document data sources, applied methodologies and solutions to identified data inconsistencies

c) Feedback and collaboration
   → Validation by multiple actors: opportunity to improve input data
Conclusions

In this chapter we learned the general concepts of SUA and FBS:

• Their potential uses

• Some notes on FBS interpretation

• The 3 fundamental principles of FBS compilation
Reference

- Global Strategy to improve agricultural and rural statistics, 2017. Handbook of Food Balance Sheet, Rome, Italy, chapter 1
Thank You