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New framework for the Food Balance Sheet (FBS) and Supply-Utilization Accounts (SUA)

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Outline

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- ✓ **Principles guiding FBS revisions**
- ✓ **FBS foundations**
- ✓ **New methodologies to estimate utilization**
 - **Livestock feed demand**
 - **Food losses**
 - **Food (human consumption)**
 - **Industrial use and seed**
- ✓ **Recommendations for discussion**

Food Balance Sheets (FBS) Overview, 1934 - present

FBS Content

- comprehensive pattern of country's food supply and utilization
- Measures: national aggregate, per caput, and caloric value (protein, fat content)

Key Users & Uses

- Users: Development agencies, public health agencies, researchers
- Uses: food & nutrition insecurity estimates (Prevalence of Undernourishment), and food security trends

Revision drivers

- **Demand side:** changing consumer food preferences; new crop demands for bio-fuels & livestock feeding; environmental concerns; price shocks/transmissions
- **Supply side:** technology transformed food inputs and outputs (feed, seed, fertilizers and food products); globalization and global value chains
- **ICT growth:** new tools for data collection, development, dissemination
- **Other policy drivers:** increased demand for strong evidence base; data specialization in international organizations

Principles guiding FBS revisions

Simple

- Commodity accounts include ≈ 60 primary commodities covering 99% of global caloric intake with good data coverage in most countries; exclude ≈ 600 processed commodities with sparse/missing data

Plausible

- Imputed country-level commodity accounts for missing countries based on tested hypotheses; updated with new data

Empirical

- Use *all* available information and information sources to impute missing trade and production data and commodity utilization

Modernized

- Better exploit technology, automate processes not requiring human intervention

Transparent

Base FBS balancing on clear rules of physiological, economic and historical bounds of utilization

Timely

- Rapidly compile/ minimize time lag/ timelier food security monitoring

FBS Foundations

Core Data

- Improve data on
 - Production, with data harvesting and use of other information
- Trade, through use of UNSD Comtrade and MOUs

Classifications

- Adopt CPC Ver.2 and HS 2012 in place of FCL to
 - reduce country response burden
 - reduce conversion workload
 - increase international comparability

Commodities

- Restrict food accounts
 - To include ≈ 60 primary commodities making up 99% of total caloric intake.
 - To exclude ≈ 600 processed commodity accounts with sparse production data.

New methodologies - livestock feed demand

Step 1- estimate feed demand from energy & protein requirements of herd

- Total feed needs expressed in terms of Grain Consuming Animal Units (GCAU) & High Protein Consuming Animal Units (HPCAU).
- 6 types of livestock : cattle, pigs, poultry, sheep /goats, aquaculture, and horses /camels/others).
- GCAU = weighted aggregate of # of all livestock, weights (W) adjusted over time to reflect changes in yields (Y),

$$CGAU_t = \sum_{i=1}^6 N_{it} * W_{it} * I_{it} * E_{it} * \frac{Y_{it}}{Y_{it-1}}$$

Step 2 - allocate feedstuffs to match requirements

- Estimated total feed needs mapped against requirements and allocated to different livestock, based on prior information of typical, country-specific feeding practices.

New methodologies – food losses

Old Approach

- Losses calculated based on fixed ratios, with many not updated since 1960s.
- *Total food loss = (Total production + Imports + stock variation) x Loss ratio*

New Approach

- Impute loss ratios where data is sparse using determinants of food losses.
- Estimate impact of determinants using regression models.
- Use regression parameters to predict national loss ratios by commodity and country characteristics.
- Conduct expert review of estimated ratios.

New methodologies – food (human consumption)

Old Approach

- Sparse or missing basic data used to estimate food available for human consumption
- food utilization often derived as residual in FBS balance

New Approach (under development)

- Use other information, such as Nationally representative Household Surveys (NHS), for food consumption patterns, quantities and waste.
- Develop methodology to use NHS for food estimates based on prior research, lit review, and expert guidance

New methodologies – industrial use & seed

Industrial Use

- feedstock for liquid fuels (e.g. ethanol, biofuels), chemicals and advanced materials & composites; use of enzymes, fermentation, organisms for processes/ products in other industries (e.g. energy chemical, pharmaceutical, textile, pulp & paper).
- generalized model to estimate usage = f (income, level of industrialization, policy mandates, etc.); with other/new data (Aglink-Cosimo framework of OECD/FAO for data on bio-energy production by feedstock, USDA data on starch production).

Seed

- Deterministic model
 - *Seed demand = f (plant density, establishment %age, seed weight)*
 - *Seed use = seed demand * area planted + stochastic /other factors*
- Stochastic factors include agro-climatic differentials, seed size, germination, timing, varieties, etc); other factors include certified seed use by commercial farmers, seed retention.

Recommendations for discussion

- 1. Member countries are encouraged to collect and disseminate timely and reliable data on food supplies in conformity with international classification schemes such as CPC ver.2.1 for production and HS 2012 for trade.**

- 2. Member countries produce their own FBS to provide reliable and detailed information on food utilization, while FAO FBS activities focus on:**
 - a. assisting in FBS compilation process;**
 - b. Adopting most recent methodological improvements; *and***
 - c. helping create necessary statistical capacity at country level.**



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Thank you

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