



Food and Agriculture Organization
of the United Nations

State-of-play on the Global Food Loss Index to monitor SDG target 12.3

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- SDG target 12.3 and indicators
- Definitions
- Country Food Loss Index (FLI) and Global Food Loss Index (GFLI)
- Building the Food Loss Index
- Measuring losses at country level – a two-pronged approach
- Reporting and FAO country support



SDG 12.3 target and indicators

Food Loss Index
 Focuses on the *supply* side of the market and decreasing losses in the supply chain

“By 2030, ...



Waste Index
 Focuses on retail and consumer sectors and improving the efficiency on the *demand* side of the supply chain



“...reduce **food losses** along **production and supply chains**, including post-harvest losses.”



“...halve per capita global **food waste** at the **retail and consumer levels**.”



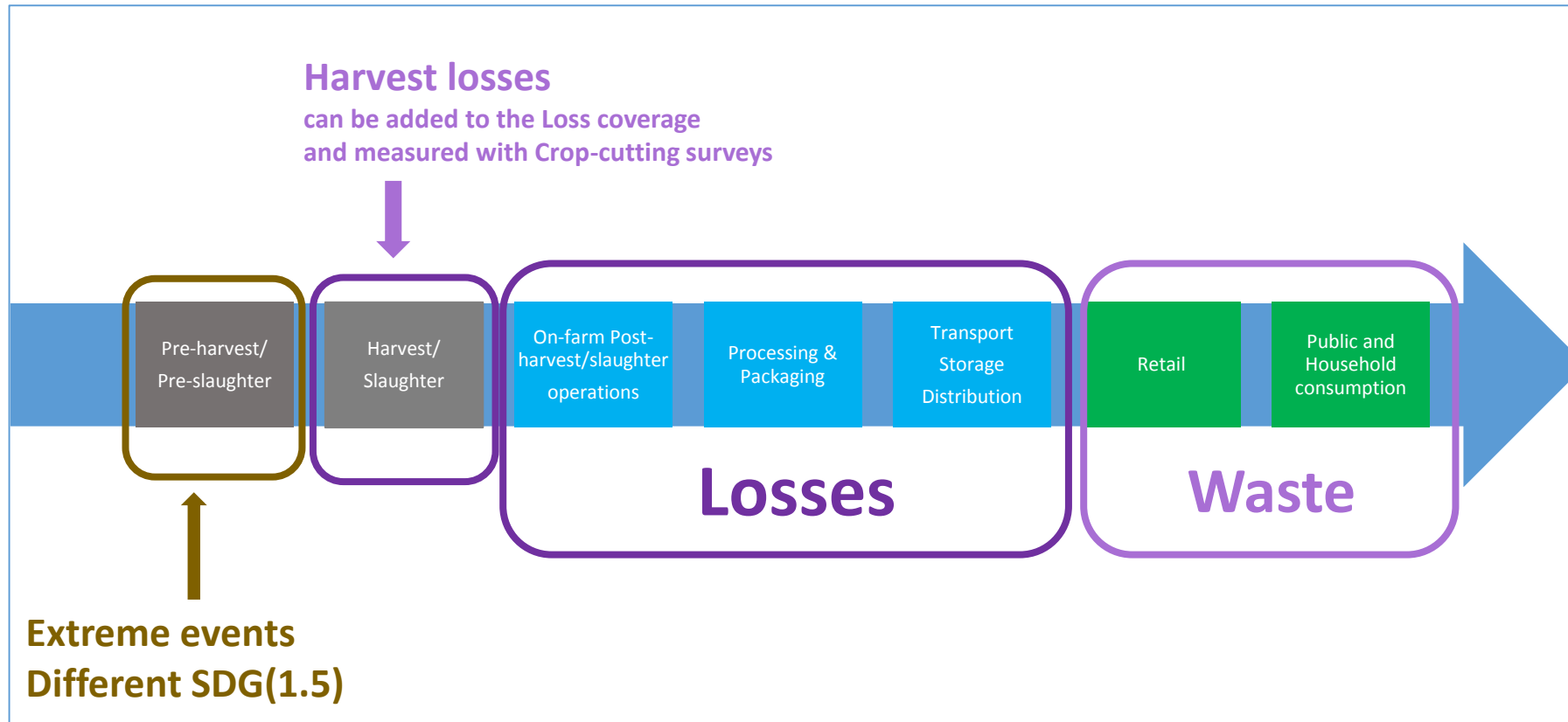
Food Loss in agricultural statistics (FBS)

- Food Losses Crop and livestock product losses cover all **quantity** losses along the supply chain for all utilizations (food, feed, seed, industrial, other), up to the retail/consumption level. Losses of the commodity as a whole (including edible and non-edible parts) and losses, direct or indirect, that occur during storage, transportation and processing, also of relevant imported quantities, are therefore all included.



Definitions

FAO Operational Food Value Chain Boundaries





SDG Indicator 12.3.1 - Challenges

- Lack of shared and internationally agreed concepts and definitions
- Lack of international guidelines on how to define and collect postharvest losses and waste data
- Reliable nationally representative data on losses are generally not available (4.4% official data reported yearly in FAOSTAT)
 - Mainly case studies based on expert opinions focused on few products or stages of the value chain
- Complexity of measurement: cost, multiple dimensions (stages of the value chain, typologies of actors, product characteristics, value chain length and complexity)
- Reporting both the national and international indicators in a comparable way





Indicator 12.3.1 - Countries' Food Loss Percentages (FLI)

1. Compile the **Food Loss Percentage (FLP)** for a country as the average percentage losses of the 10 key items weighted with their value of production:

$$FLP_{it} = \frac{\sum_j l_{ijt} * (q_{ij2005} * p_{j2005})}{\sum_j (q_{ij2005} * p_{j2005})}$$

- Where:
 - j = commodity
 - 2005 is the base year
 - l_{ijt} is the loss percentage (estimated or observed)
 - q_{ij2005} is the production quantities by country, commodity in the base period
 - p_{j2005} is the average 2004-2006 international price by commodity (at international \$)
- A country's Food Loss Percentage can be interpreted as the average percentage of supply that does not reach the retail stage.





Indicator 12.3.1 - Countries' Food Loss Index (FLI)

2. Compile the country **Food Loss Index** that compares percentage losses over time

$$FLI_{it} = \frac{FLP_{it}}{FLP_{i2005}} * 100$$

- Where:
 - i = country, t = year
 - 2005 is the base year
 - FLP_{it} is the country **Food Loss Percentage**
- The country FLI shows the relative change in percentage food loss in commodities j , for country i over time t , compared to a base period for the 10 commodities.





Indicator 12.3.1 - Interpretation

- The purpose of the index (FLI) is to allow for policy makers to look at the positive and negative trends in the efficiency of the supply chain over time, with a base year of 2005.
- Analysing the trend points to structural improvements of the food supply not short-term variability and fluctuations at a micro-level
- A country's Food Loss Percentage (FLP) can be interpreted as the average percentage of supply that does not reach the retail stage and can be considered in the international context



Indicator 12.3.1 - Global Food Loss Index (GFLI)

Country FLI must be aggregated for SDG monitoring by regions and for the world

Global Food Loss Index

$$GFLI_t = \frac{\sum_{i=1}^G FLI_{it} * w_i}{\sum_{i=1}^G w_i} * 100$$

Regional Food Loss Index

$$RFLI_t = \frac{\sum_{i=1}^R FLI_{it} * w_i}{\sum_{i=1}^R w_i} * 100$$

- Where:
 - i = countries in region R , t = year
 - 2005 is the FLI base year
 - w_i are the country weights equal to the **total agricultural value of production** in the base year



Selecting a common basket of goods for global monitoring

- The commodity coverage is a challenge: the same commodities are not relevant for all countries, nor can loss statistics cover the entire basket
 - The international basket should include 10 key products, based on production value or contribution to food security striving to represent all food groups
 - Trade-off between relevance at country level and comparability across countries
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- For the national objectives the recommendation is that countries focus on the top 10 commodities within the five commodity headings : Cereals & Pulses, Fruits & Vegetables, Roots & Tubers, Other Crops (Oil-Bearing, Sugar, Stimulants, Spices), Animals Products & Fish and Fish Products.



Building the Food Loss Index (FLI) - Setting the Commodities Basket, Globally

HEADING	Top 10 World Commodities by Gross Production Value (2005, Int'l \$)	Top 10 India Commodities by Gross Production Value (2005, Int'l \$)
Cereals & Pulses	Rice	Rice
	Maize	Wheat
Fruits & Vegetables	Tomatoes	Mangoes
	Vegetable fresh, nes	Bananas
Roots & Tubers	Potatoes	Potatoes
Other Crops	Sugar cane	Sugar cane
		Groundnuts
Animals Products & Fish and Fish Products	Cow milk	Buffalo milk
	Cattle meat	Cow milk

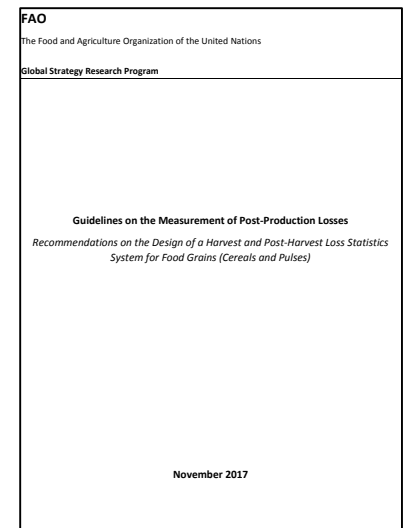




FLI Data Sources – long-term approach

First best solution: develop sample surveys to measure and monitor losses for along the supply chain

- Identify the critical loss points and target surveys where most losses occur
 - Using FAO's "Food Loss Analysis: Causes and Solutions" or other rapid appraisal methods
- Guidelines on "Cost-effective methods for estimating postharvest losses" and its Annexes on Fruits and Vegetables, Livestock products and Fish products to set cost-effective sample surveys and sample-based estimates
 - Guidelines will be publicly available in the first quarter 2018





FLI Data Sources – short-term approach

Second best solution: Model-based estimates

International model estimating losses by country and commodity using available Loss information and 200+ explanatory variables,

Country-specific models developed by FAO can be turned into national models (where data is available) with some technical assistance

- Improve the predictive power of the independent variables by selecting an appropriate set of variables at the supply stage connected to policies and preliminary findings (e.g. focusing on road quality indicators and petrol prices if transport losses are significant) – At the moment, not enough data



FLI Reporting Framework

Food Balance Sheets conceptual framework

- The FBS is a time-referenced food accounting framework whereby supply equals utilisation (in quantities):

$$\textit{Total Supply} = \textit{Total Utilization}$$

- *Total Supply* = Production + Imports – Δ Stock
- *Total Utilization* = Food + Feed + Seed + **Loss** + Industrial Use + Tourist Consumption + Residual Other Use + Imports
- Why work in the FBS framework?
 - Data collection tool: FAO annual production questionnaire. No additional country burden.
 - Only currently available framework capable of implicitly validating loss data (balancing process)
 - Synergy: FBS will be strengthened by improving the Loss component



FAO country support

- Regional workshops and e-learning course to transfer knowledge to regional and national partners on the recommended methods, as well as on SDG 12.3 reporting and monitoring
- Support countries in the implementation of the recommended PHL survey guidelines and estimation methods through capacity development projects
- Strengthen the data-driven component of other FAO or international partners projects





Thank you