"SDG 12.3.1.a Food Loss Index"

Understanding and building the indicator
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Outline

1. SDG indicator 12.3.1 - Boundaries and definitions
2. Focus the evidence base and set data collection prioritie
3. Status of knowledge on Food Loss
4. Food Loss Index (FLI) :Structure, interpretation, compilation
5. Available Resources and way forward

FOOD POST-HARVEST LOSSES

"By 2030 halve per capita global food waste at the retail and consumer level, and reduce food losses along production and supply chains including post-harvest losses"

SDG TARGET 12.3

State of Play: 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, …

12.3

2.3.1 | **Food Loss**

"…reduce food losses along production and supply chains, including post-harvest losses."

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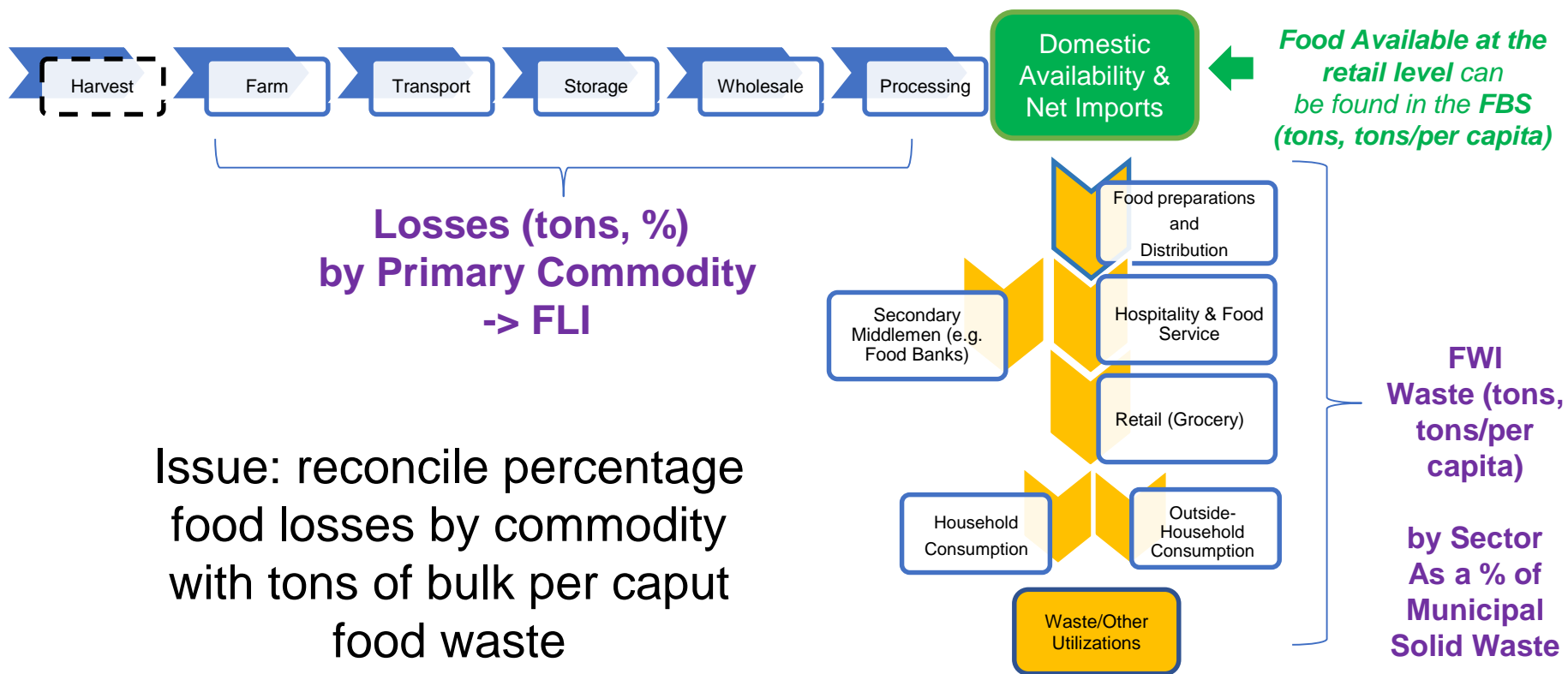Focuses on retail and consumer sectors and improving the efficiency on the *demand* side of the supply chain

12.3.2 | **Food Waste**

"…halve per capita global food waste at the retail and consumer levels."

Boundaries between the FLI and the FWI
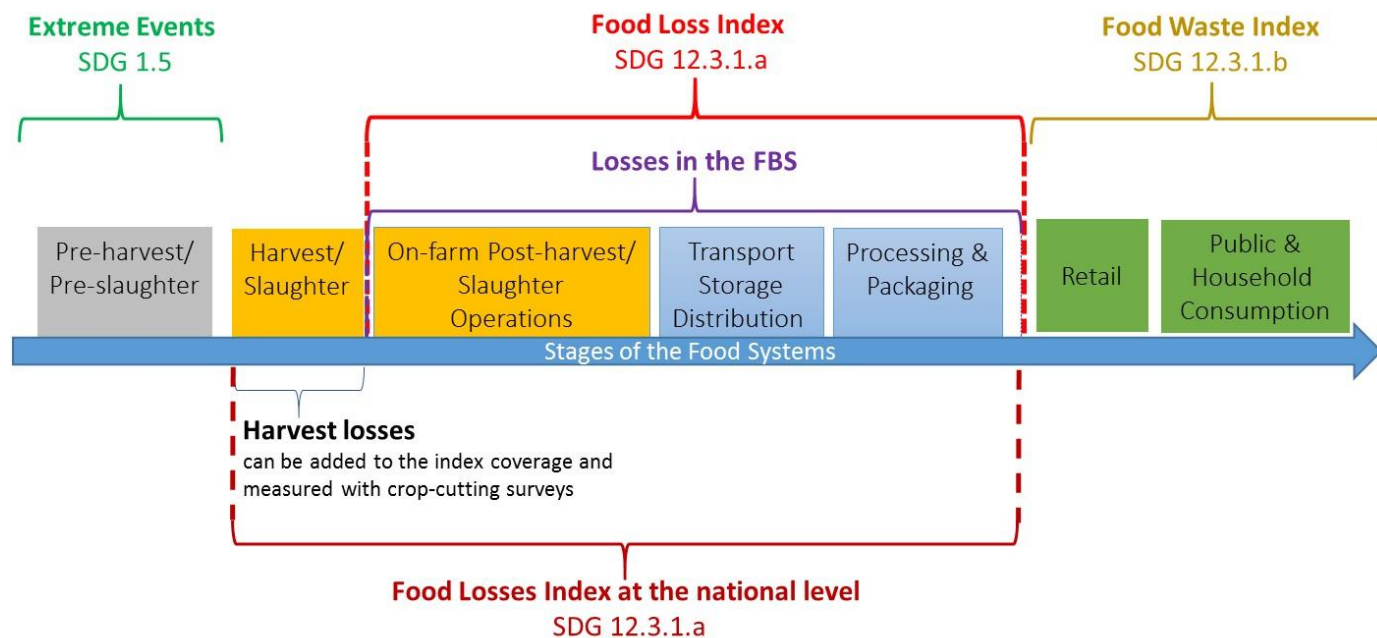
Challenge: Aggregation of Food Losses and Waste

Harvest → Farm → Transport → Storage → Wholesale → Processing

Domestic Availability & Net Imports

Food Available at the retail level can be found in the **FBS** *(tons, tons/per capita)*

Losses (tons, %) by Primary Commodity -> FLI

Food preparations and Distribution

Secondary Middlemen (e.g. Food Banks)

Hospitality & Food Service

Retail (Grocery)

Household Consumption

Outside-Household Consumption

Waste/Other Utilizations

FWI Waste (tons, tons/per capita)

by Sector As a % of Municipal Solid Waste

Issue: reconcile percentage food losses by commodity with tons of bulk per caput food waste

Definitions: Food Losses

FAO AGRICULTURAL STATISTICS

Food losses Crop and livestock product losses cover all <u>quantity losses</u> 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 (<u>including edible and non-edible parts</u>) and losses, direct or indirect, that occur during storage, transportation and processing, also of relevant imported quantities, are therefore all included.

2016 DEFINITIONAL FRAMEWORK

Food loss and waste (FLW): The decrease in quantity or <u>quality</u> of food. **Food losses** in the production to distribution segments of the FSC is mainly caused by the functioning of the food production and supply system or its institutional and legal framework.

Definitions differ for qualitative losses, non-edible parts, value chain boundaries – treatment of pre-harvest and harvest losses

"

FOCUS THE EVIDENCE BASE AND SET DATA COLLECTION PRIORITIES

Policy relevance: Understanding the data needs

The political decision on priorities in food loss reduction might be influenced by :

Contribution to total food losses (in volume, in percentages)
Relevance of the food loss points (e.g. income, number of people involved, poverty and food insecurity, etc.)
Cost-effectiveness of a possible intervention (e.g. opportunities, cost of intervention, number of actors needed to be addressed, etc.)

Loss data must be complemented with other information

Impact of reductions on food security and nutrition

PRICE AND INCOME EFFECTS OF FOOD LOSS AND WASTE REDUCTION ALONG
THE SUPPLY CHAIN
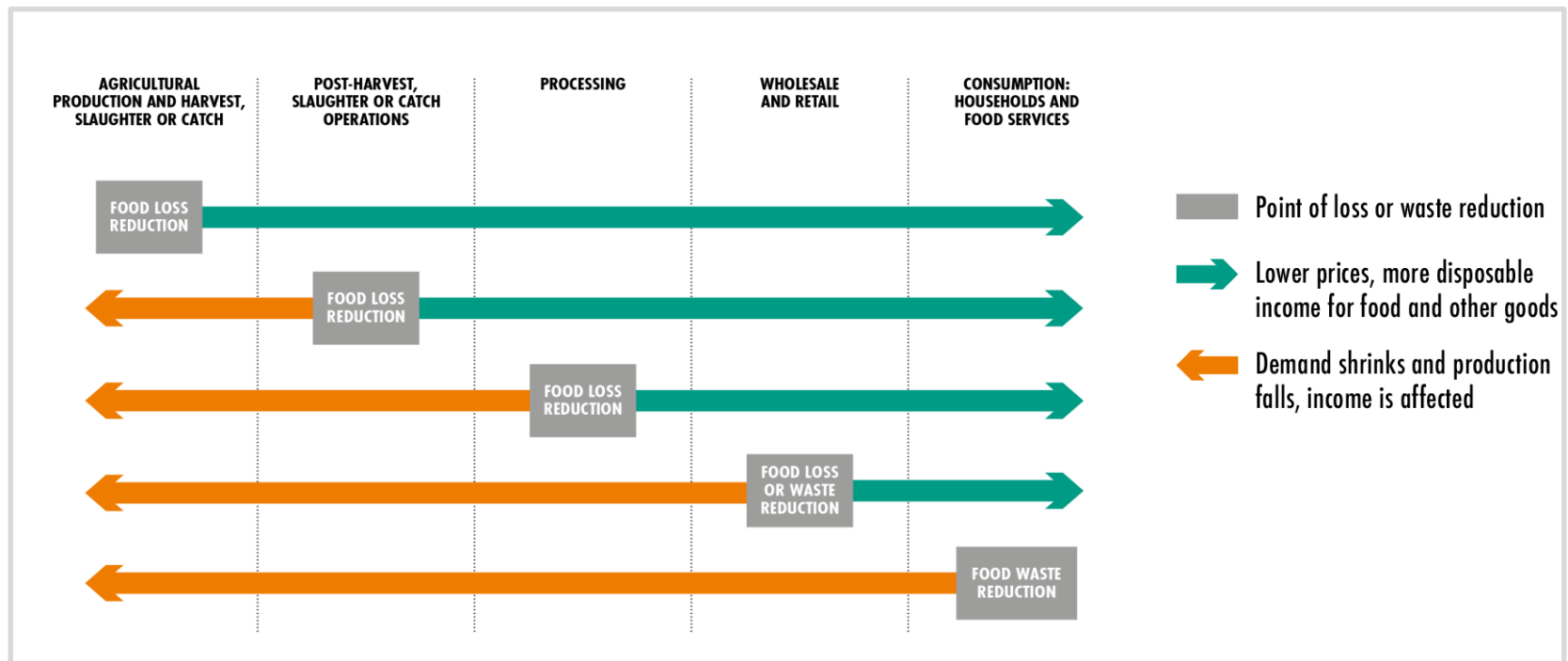
Focus on key Commodities and critical loss points

Setting a common basket of goods for global monitoring is a challenge:

the same commodities are not relevant for all countries

loss statistics cannot cover the entire basket

Trade-off between relevance at country level and comparability across countries

Comparability

Build the international basket under 5 headings, by selecting two commodities under each:

1. Cereals & Pulses;
2. Fruits And Vegetables;
3. Roots, Tubers & Oil-Bearing Crops;
4. Animals products;
5. Fish and fish products
6. Other crops (stimulants, spices, sugar, etc.)

Relevance

Countries determine the two commodities in each heading

Policy focus
Economic relevance
Food security relevance

CURRENT STATUS ON FOOD LOSS

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FOOD POST-HARVEST LOSSES

Food Losses by Region (SOFA 2019)

From post-harvest to (but excluding) retail stage

Percentage of food loss globally and by region
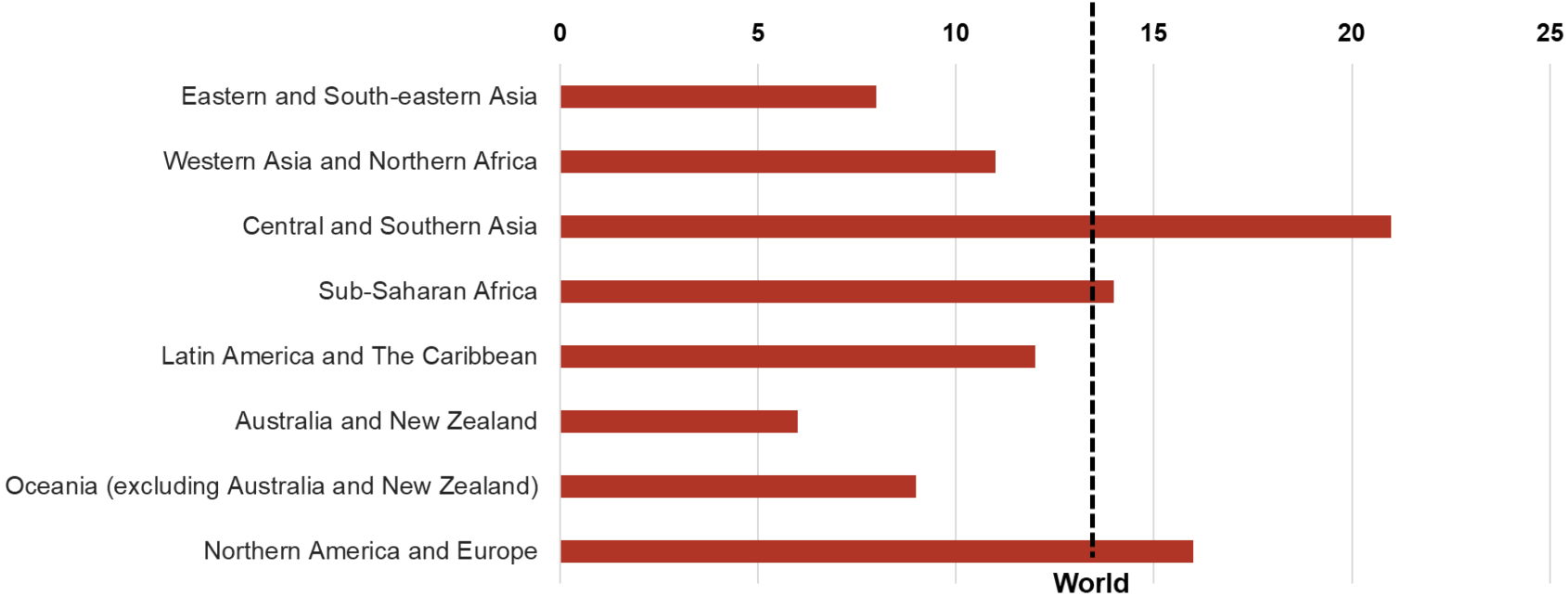
Heatmap of available data- East and South-East Asia

This is based on literature review of openly available food loss data and published on the FAO's FLW database which can be accessed through the link below:
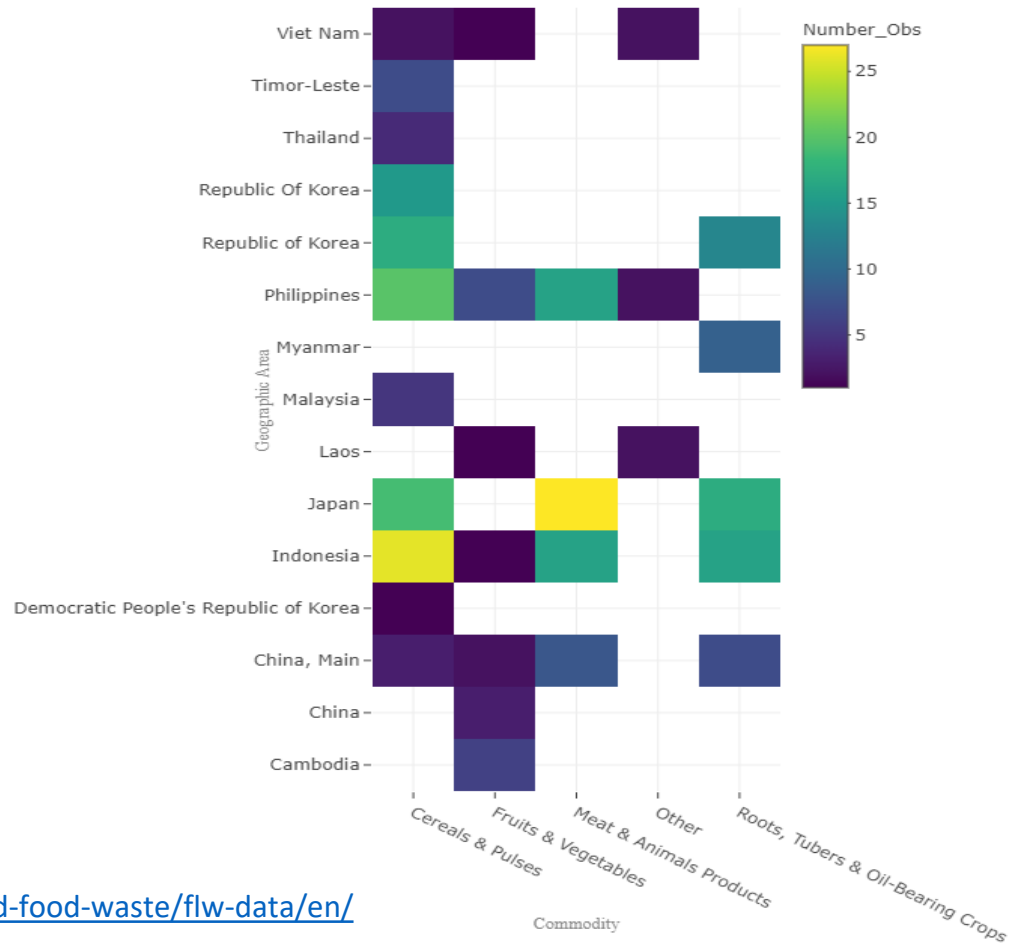
http://www.fao.org/food-loss-and-food-waste/flw-data/en/

Source: http://www.fao.org/food-loss-and-food-waste/flw-data/en/

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FOOD POST-HARVEST LOSSES

Losses for Fruits and Vegetables by stages – East and SE Asia

This shows the level and variability of losses at each stage and therefore inform targeted intervention measures along the value chain.

NB: Graph based on information from available literature.
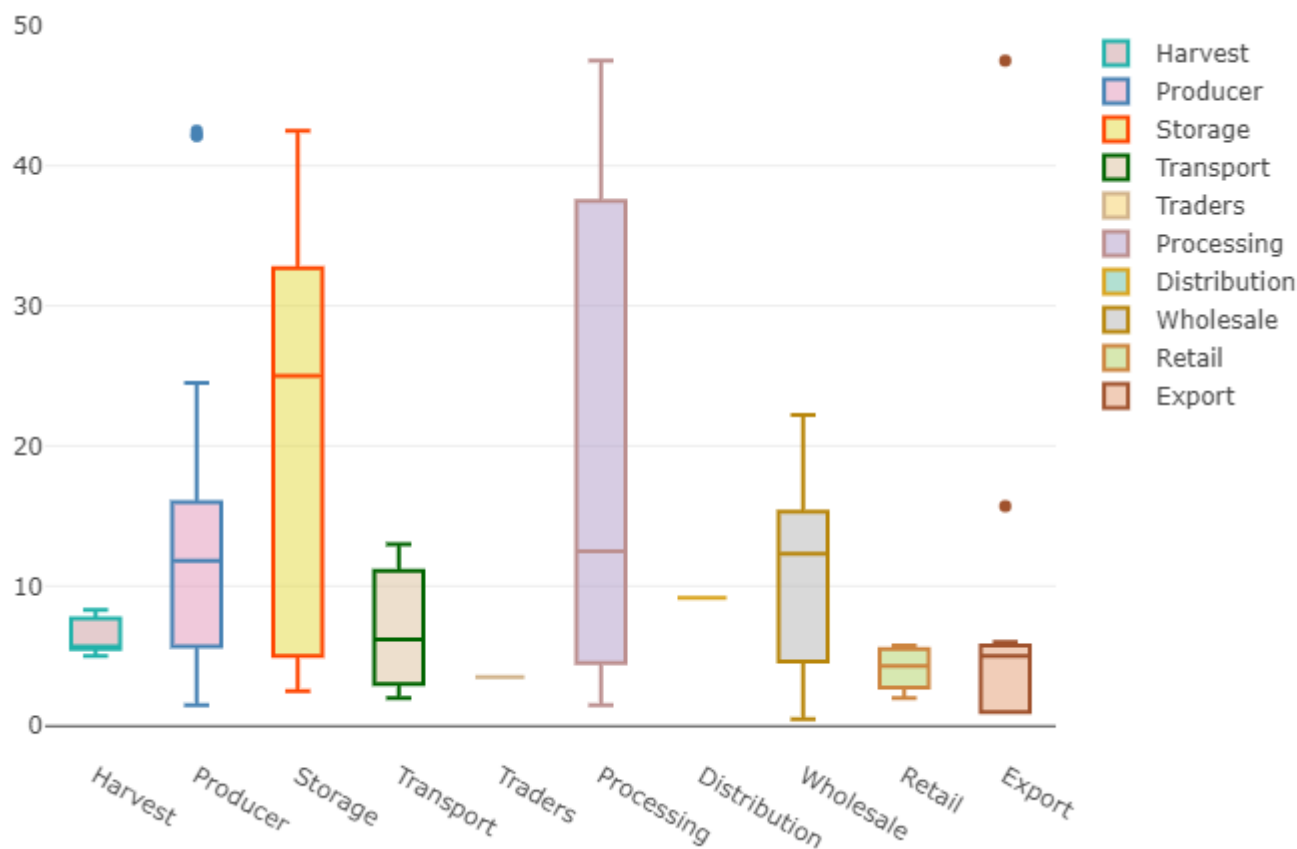
Source: http://www.fao.org/food-loss-and-food-waste/flw-data/en/

FOOD POST-HARVEST LOSSES

Losses for Fruits and Vegetables by stages – East and SE Asia
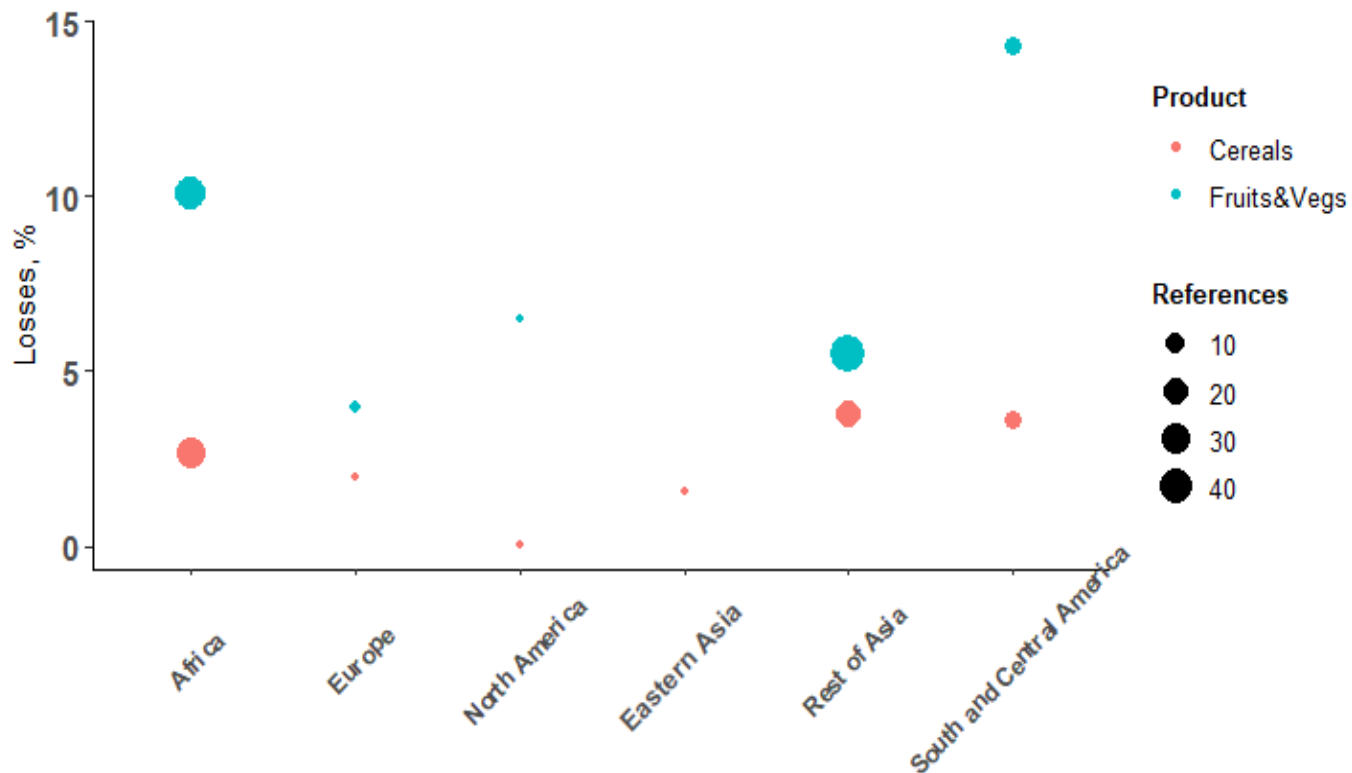
Source: FAO FLW dataset (accessed feb. 2020)

FOOD LOSS INDEX (FLI)
structure, interpretation, compilation

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The Food Loss Index (FLI)

The Food Loss Index (FLI) FLI measures progress towards SDG Target 12.3.

The index starts at 100 in the base period. Losses are reduced if the index moves below 100.

The FLI focuses on food losses that occur from production up to (and not including) the retail level.
It measures the changes in percentage losses for a basket of 10 main commodities by country in comparison with a base period.

FLI interpretations and compilation steps

- A Food Loss Percentage can be interpreted as the percentage of production that does not reach the retail stage.

Steps to compiling the Index if the data exists:
Select Basket of commodities and compile weights
Compile Food Loss Percentages
Compare Food Losses over time ➡️ Food Loss Index
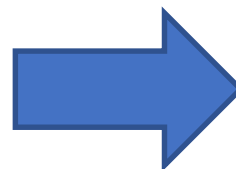
FLI step 1: loss percentages by commodity
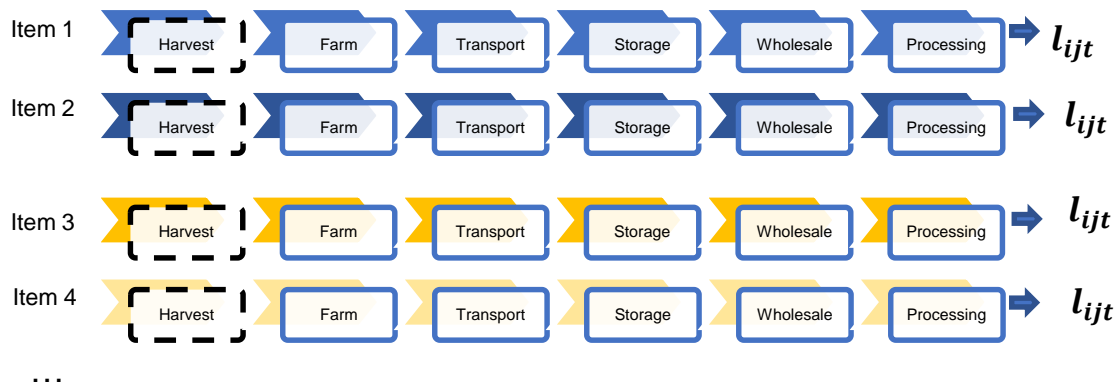
Percentage losses versus total losses

Loss percentages can be observed or survey-based (guidelines for data collection) or estimated (model-based)

l_{ijt} is the loss percentage (Where: j = commodity, i = country, t = year)
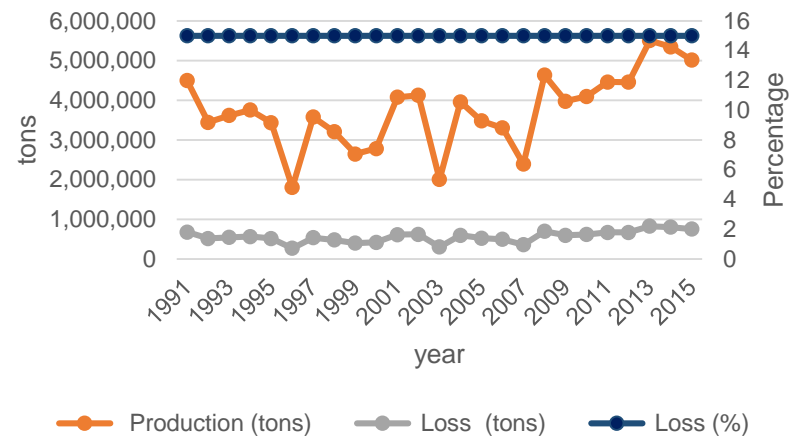
FBS example.
Losses are estimated by the country using a constant factor of 15%. Production and losses in tons fluctuate.
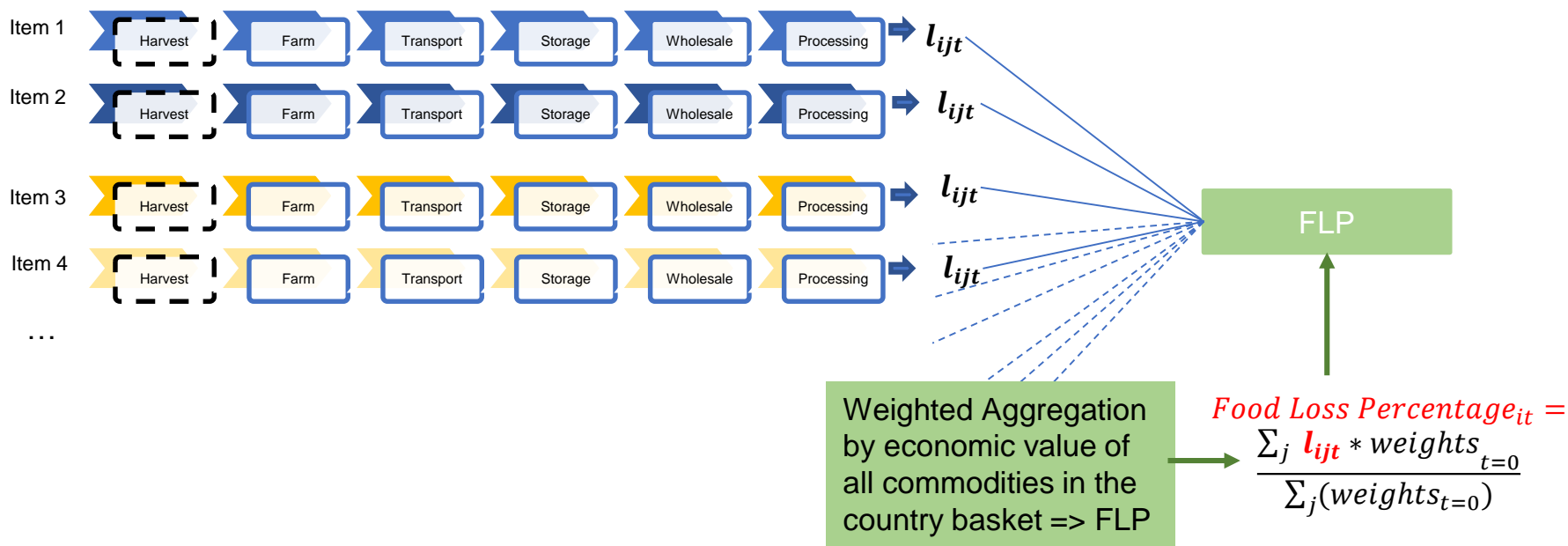
Step 1: measuring the loss percentage of each commodity

Item 1 | Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 2 | Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 3 | Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 4 | Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

…

Nationally Representative Loss percentages (l_{ijt}) by commodity

Losses are estimated in each stage of each commodity's supply chain.
Different methods and tools can be used in the estimation

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Steps 1 and 2: From the loss percentage by commodity to the Food Loss Percentage of a country

Item 1 — Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 2 — Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 3 — Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

Item 4 — Harvest | Farm | Transport | Storage | Wholesale | Processing → l_{ijt}

…

FLP

Weighted Aggregation by economic value of all commodities in the country basket => FLP

$$Food\ Loss\ Percentage_{it} = \frac{\sum_j l_{ijt} * weights_{t=0}}{\sum_j (weights_{t=0})}$$

FLI step 3: Countries' Food Loss Index (FLI)

Step 3 : Calculate the country **Food Loss Index**

$$FLI_{it} = \frac{FLP_{it}}{FLP_{it_0}} * 100$$

Where:

i = country, t = year

t_0 is the base year (set at 2005 for the moment)

FLP_{it} is the country Food Loss Percentage

The country FLI shows the change in the Food Loss Percentage over time (compared to a base period)

AVAILABLE RESOURCES AND WAY FORWARD

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The FLW Database

- online collection of data
- on food loss and food waste
- causes of FLW reported in the literature
- data from openly accessible reports / studies and FAOSTAT
- all food categories, stages of the value chain, and geographical areas.

Data can be interactively queried, downloaded, and plotted.

http://www.fao.org/food-loss-and-food-waste/flw-data/en/

SDG methodology, measurement Guidelines, pilot survey report and data collection tools

E.g. Published harvest and post harvest loss measurement guideline for cereals and pulses

Published: http://www.fao.org/3/CA2640EN/ca2640en.pdf
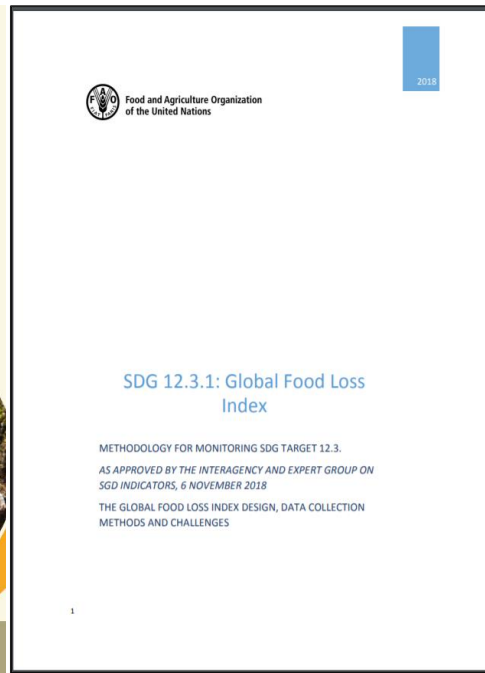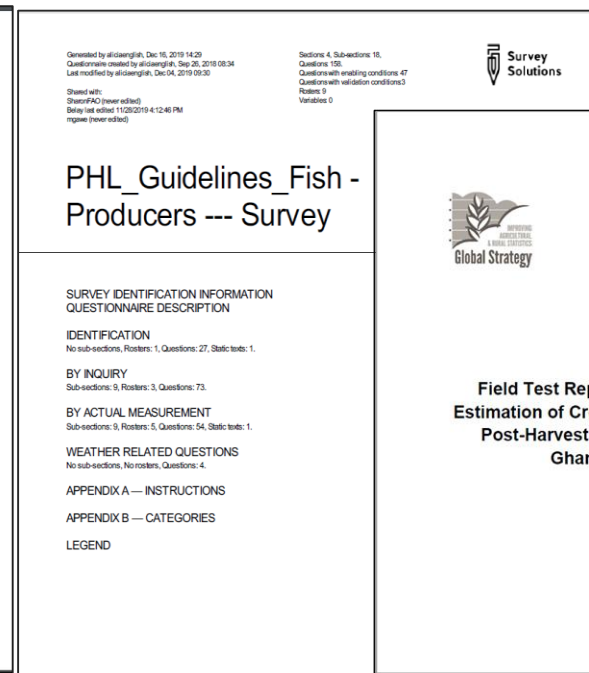
E.g. Fish Survey questionnaires

Published: http://gsars.org/wp-content/uploads/2017/11/TR-14.11.2017-Field-test-Report-on-the-Estimation-of-Crop-Yields.pdf
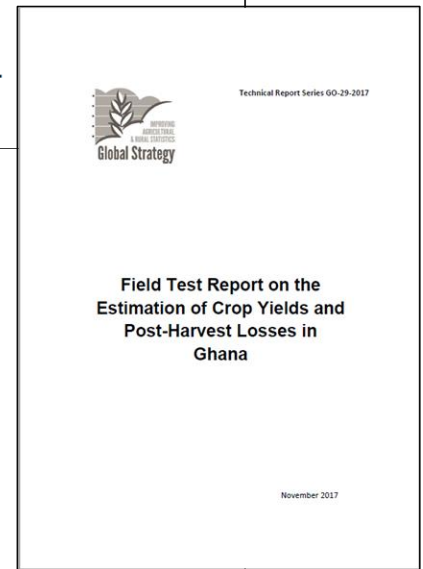
E-Learning Course on FLI (Available soon)

An online course on compiling the FLI has been created and will be available soon. The course comprises of five modules as follows:

Lesson 1: Overview of target 12.3

Lesson 2: How the indicator monitors the supply side of target 12.3

Lesson 3: How to collect nationally representative data and link to the Food Loss Assessment methodology

Lesson 4: Overview of the modelled estimates to compile the FLI in the absence of survey based data

Lesson 5: Tools to monitor and report on losses

FOOD POST-HARVEST LOSSES

A cost-effective mix of measurement and estimation methods
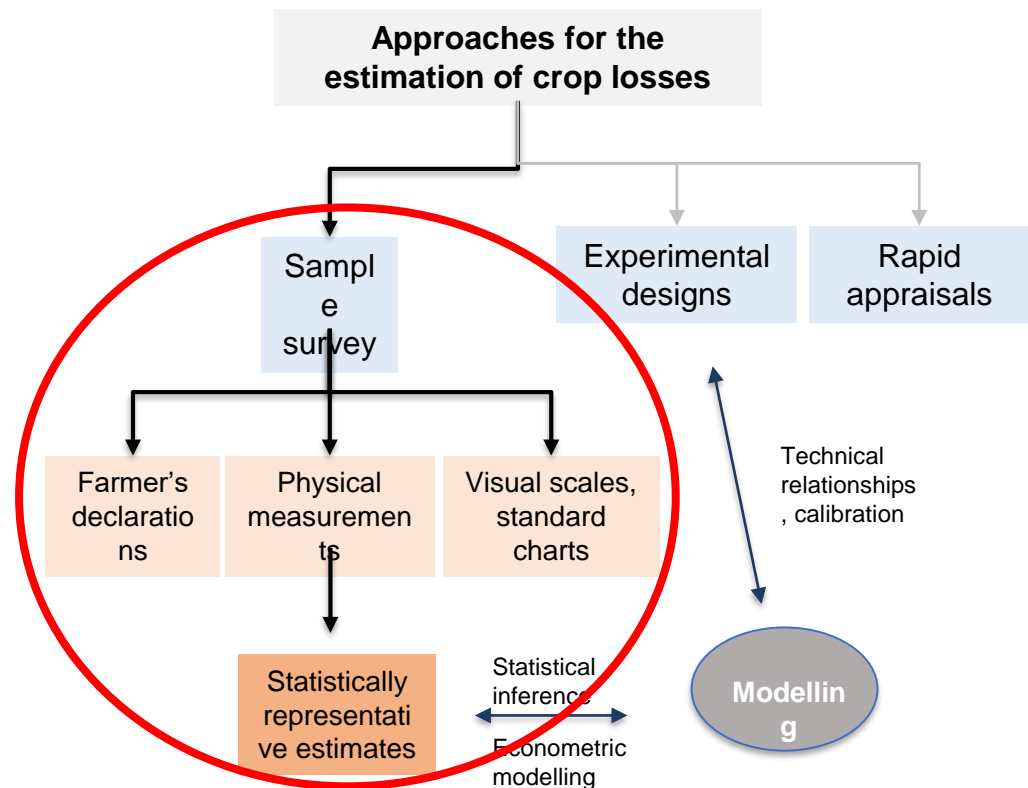
Measurement methods: objective vs subjective
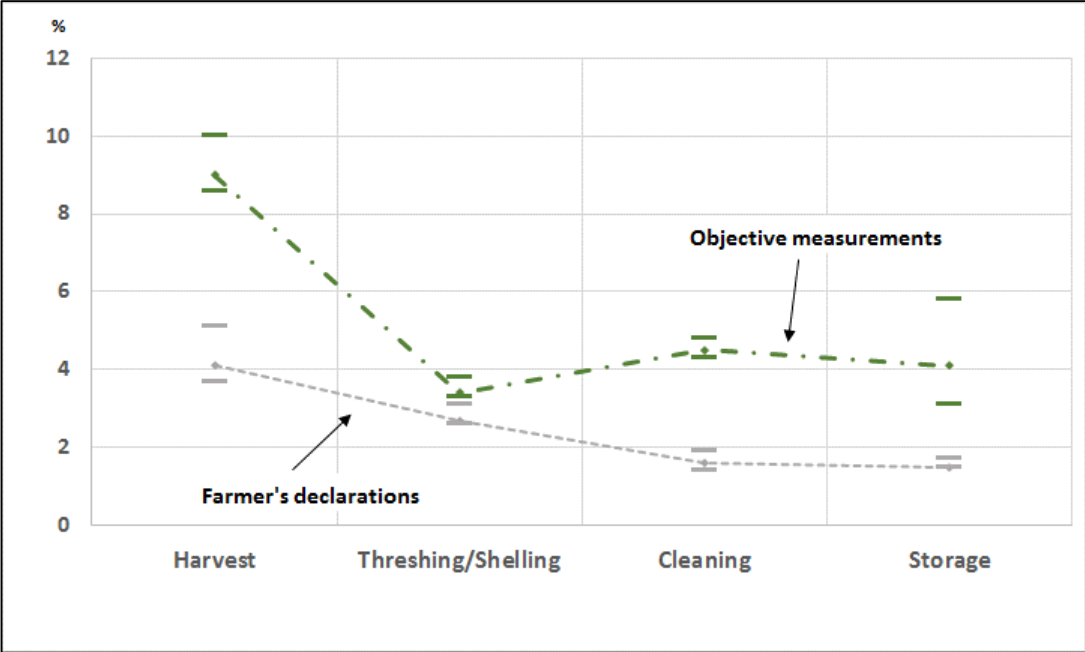
Farmer's declarations < Objective measurements

A two-pronged and collaborative approach to data collection

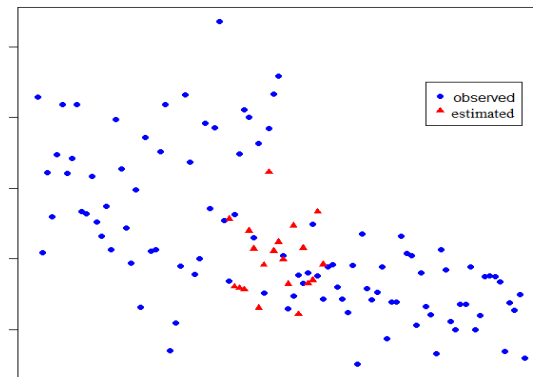**assist countries in collecting food loss data**

assist countries in estimating losses

- All efforts should be part of a wider data collection strategy
- Consistency and comparability
- Partnerships at all levels

Thank you