



Food and Agriculture Organization
of the United Nations



>> FAO Statistics Division

Towards reporting on SDG 12.3 - Food Loss Index

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>> FAO Statistics Division



Outline

- Overview of the SDG 12.3.1a – Food Loss Index
- Data availability on Loss and Waste in EU member States and sources
- FLI conceptual framework
- Options to compiling the FLI

SDG Target 12.3 and Sub- Indicators 12.3.1a and 12.3.1b



Target 12.3: “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”

“By 2030...reduce food losses along production and supply chains, including post-harvest losses.”



“By 2030...halve per capita global food waste at the retail and consumer levels.”

12.3.1.a Food Loss Index

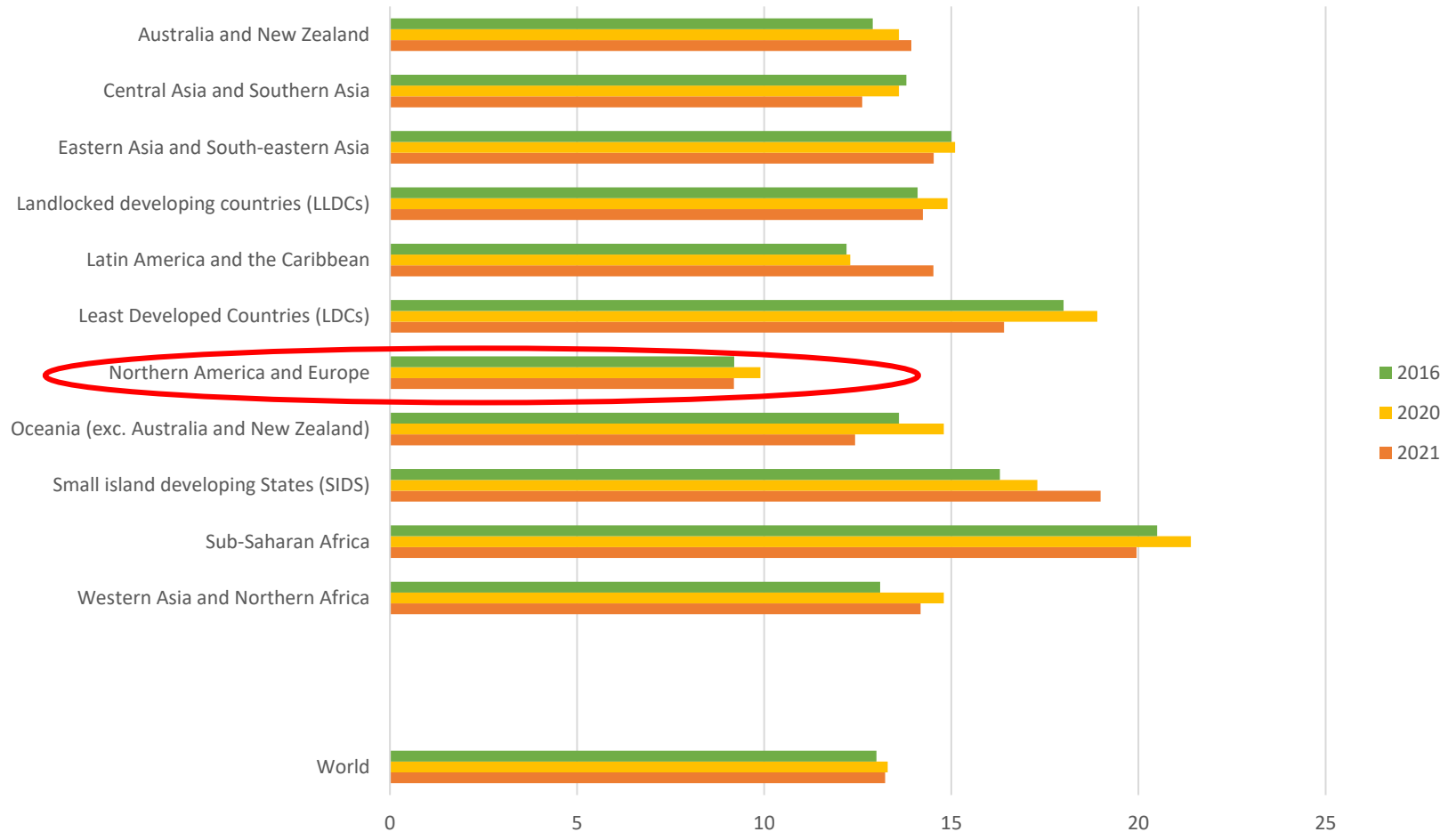
Supply side from harvest up to but not including retail

12.3.1.b Food Waste Index

Demand side from retail up to consumption

Food Loss Estimates by Region (2016-2021)

Food Loss Percentages globally and by region



Globally FLP is at 13.23% - 2021 estimates

Not much change since the first estimates of 2016 (13%)

In the 2021 estimates:

- Lowest losses are in Northern America and Europe at 9.19%
- Highest losses are in SSA at 19.95%

Source : FAO Food Loss Estimates 2023



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Different sources have been used to compile data on food loss and waste as reported by European countries

1. **Eurostat** – Countries report food loss to Eurostat for the compilation of Food Balance Sheets
2. **National Statistical Office/Ministry websites** – reports on national/sub-national food loss data published on National Statistical Office's websites
3. **FAO Annual agricultural Questionnaires** – This are the questionnaires that FAO sends out annually to its member states. The questionnaire has a section on losses
4. **NEW - Eurostat** – Countries report food waste to Eurostat as part of the Waste Framework Directive (2008/98/EC). (not yet considered)

1. Loss Data from Food Balance Sheets(EU-27): 2017 – 2021

	BG	DE	EE	EL	FI	HR	HU	IE	IT	LT	LU	LV	PL	PT	RO	SI	SK
<i>Common wheat and spell</i>	5	3	5	5	5	5	5	5	5*	5	5	5	5	5*	5	5*	5
<i>Durum Wheat</i>	5	3	5	5	5	5	5	5	5*	5	5	5	5	5*	3*	5*	5
<i>Barley</i>	5	3	5	5	5	5	5	5	5*	5	5	5	5	5*	5	5*	5
<i>Grain maize and corn-cob-mix</i>	5	3	5	5	5	5	5	5	5*	5	5	5	5	5*	5	5*	5
<i>Rape and turnip rape seeds</i>	5	3	5	5	5	5	5	5	5*	5	5*	5	5	5*	5	5*	5
<i>Sunflower seed</i>	5	2*	5	5	5	5	5	5	5*	5	5*	5*	5	5*	5	5*	5
<i>Soya</i>	5	2*	5	5	5	5	5	5	5*	5	5	5*	5	5*	5	5*	4

17 countries reporting on 6 items in 2 food groups

Notes:

- An asterisk (*) indicates estimated values.
- “Common wheat and spell” and “Durum Wheat” are aggregated in FAOSTAT as “Wheat”.

Source: https://ec.europa.eu/eurostat/databrowser//product/view/APRO_CBS_CER
https://ec.europa.eu/eurostat/databrowser//product/view/APRO_CBS_OIL

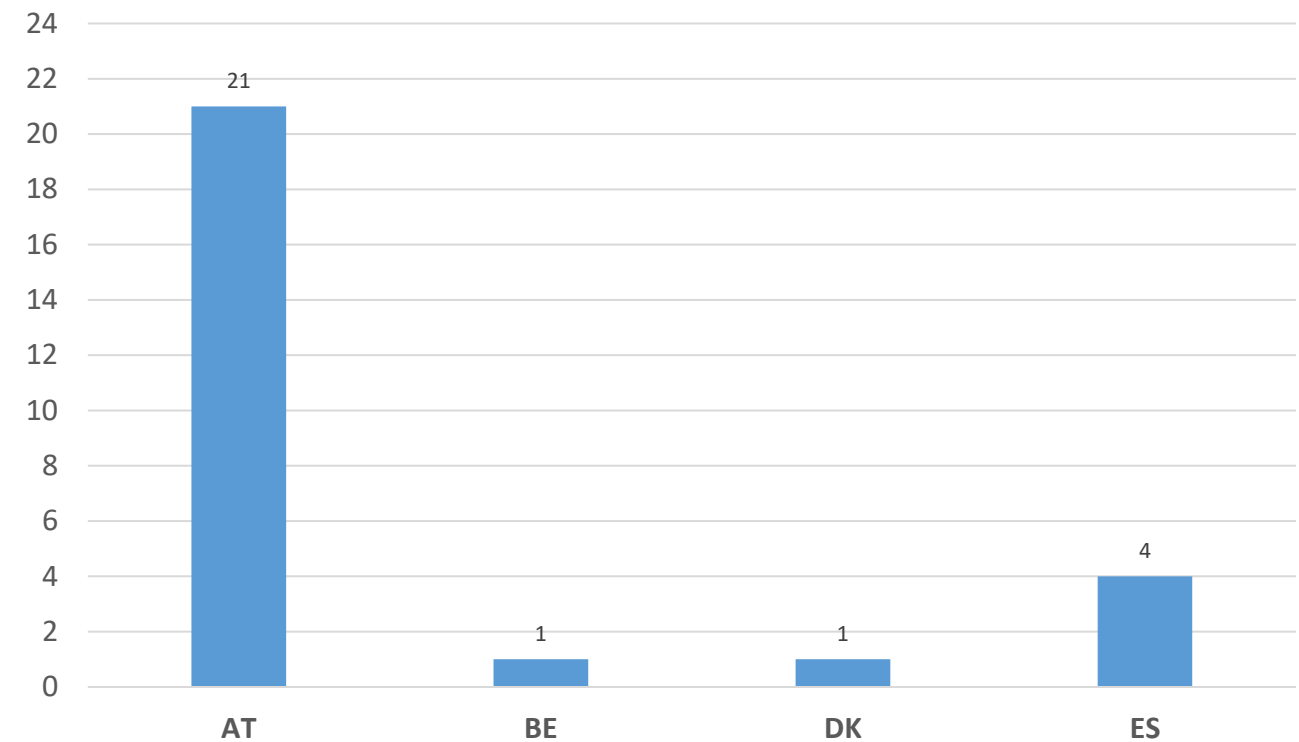
2 and 3. Additional data in FAO questionnaires and national websites

Loss data by Country/Commodity (2017 – 2020)

	AT	BE	DK	ES
Rice				1
Sorghum				1
Rye	4		4	1
Oats	4			1
Millet				
Triticale	4			1
Buckwheat				
Canary seed				
Mixed grain	4			
Asparagus	2			
Spinach	2			
Cucumbers and gherkins	2			
Peas, green	2			
Carrots and turnips	2			
Onions and shallots, dry	2			
Mushrooms and truffles	2			
Linseed	2			
Poppy seed	2			
Potatoes	4			
Beans, dry			1	
Broad beans and horse beans, dry	2			
Peas, dry	2			
Lupins				
Pulses n.e.	2			
Sugar beet				
Processed liquid milk	4			
Raw milk of sheep	2			
Raw milk of goats	2			
Grain mill products		1		
Palm oil				
Coconut oil				
Oil of Linseed				
Oil of Palm Kernel				
Other oil of Vegetable Origin, crude n.e.	2			
Wine	2			4
N. of commodities	21	1	1	4

4 additional countries: Austria, Belgium, Denmark and Spain

Number of products by country:



Source: <https://www.fao.org/faostat/en/#data/FBS>



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- **FLI conceptual framework**
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SDG 12.3.1a - Food Loss Index - Design

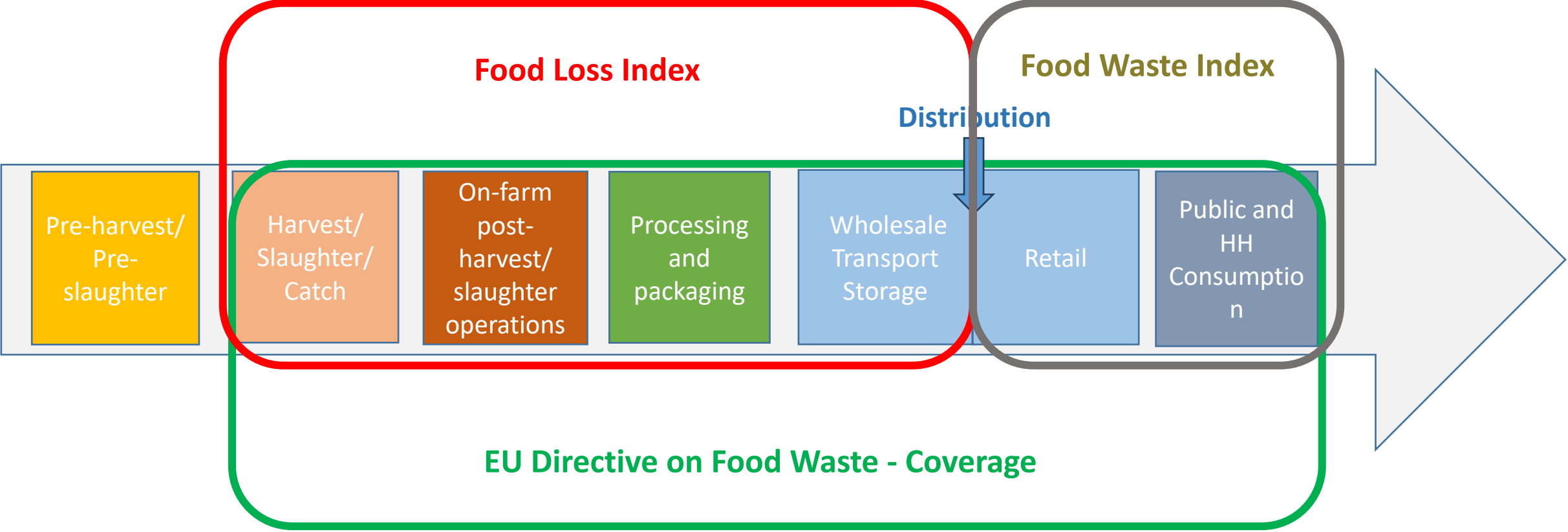
$$\text{Food Loss Index} = \frac{\text{Food Loss Percentage for the current year}}{\text{Food Loss Percentage for the base year}} * 100$$

$$\text{Example : Global FLI for 2021} = \frac{13.2}{13.8} * 100 = 95.65$$

$$\text{Food Loss Percentage} = \frac{\text{Food Loss Quantity along the supply chain for the current year}}{\text{Production Quantity (*) for the current year}}$$

- The FLI measures changes in percentage losses over time, with respect to a base year.
- A FLI < 100 means that a country has met the SDG target 12.3.1.a

SDG 12.3 Scope – EU Directive, FLI, FWI



Definition and Conceptual Framework

Concepts	Food Loss Index	EU Directive
Food quantities that exit the food chain, no qualitative nor economic losses	✓	✓
Considers edible and inedible parts of food together	✓	✓
Food that re-enters the supply chain with a different utilization is NOT waste	✓	✓
Excluding losses occurring before products are “food” (pre-harvest/slaughter)	✓	✓
Excluding quantities not entering the supply chain for safety reasons		✓
Separates loss and waste at the stage level, not by intentionality	✓	
Tracks quantities that exit the supply chain by product and food group	✓	
Tracks quantities that exit the supply chain in bulk		✓



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Options to compile the SDG Food Loss Index - Overview

- **Option 1:** Use the data that the country reports on [food waste](#) to Eurostat for the EU directive
- **Option 2:** Use data from the countries' [Food Balance Sheets](#), but cover at least 10 commodities and 5 food groups on a regular basis
- **Option 3:** Use [survey data on food loss and waste](#) for decision-making and monitoring of national reduction strategies

Using available to compile the SDG Food Loss Index - Steps

1. Identify definitional differences:

- As shown, difference to the EU food waste definition might be “minor”.
- Mayor differences might need be assessed and detailed.

2. Break-down waste before and after the retail level :

- Stage-level waste data could be used to compile the FLI and FWI separately.
- But boundaries might need to be assessed (*separate wholesale and retail markets*).
- If FBS loss data is used, it is supposed to have the same coverage as the SDG Food Loss Index.

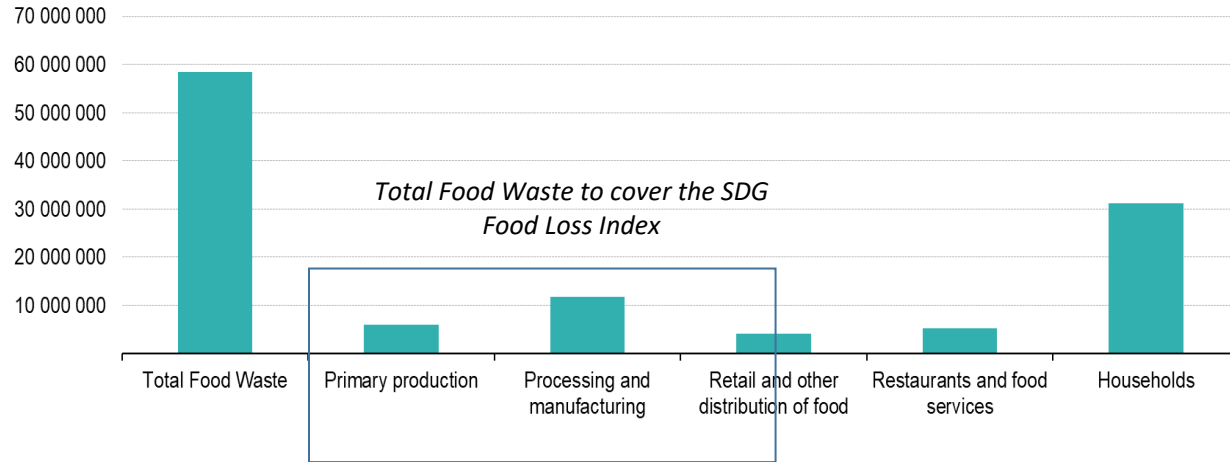
3. Transform waste quantities into percentages along the supply chain:

- Start from Total loss/waste quantities by stage to calculate the loss percentage
- Need to choose and calculate the corresponding denominator (production quantity or quantities handled)
- Use loss/waste quantity for total food if detail by food group or food products is not available

4. Methodology: EU methodologies, FBS, other indirect and/or direct estimations can be used to report on the SDG

Compiling the FLI with Food Waste data – Example (I)

Food waste estimations in the European Union, 2020
(tonnes of fresh mass)



Data are estimated
Source: Eurostat (online data code: env_wasfw)

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	Total food waste	Primary production	Processing and manufacturing	Retail and other distribution of food	Restaurants and food services	Households
EU (*)	58 512 559	6 067 377	11 806 452	4 079 709	5 275 265	31 283 755

1. Definition:

- Includes edible and non-edible parts of the food
- Covers only food removed and not reutilized for any other destination (animal feed), but sent to waste management
- Includes produce that didn't enter the supply chain due to food safety
- Other difference to the SDG definition: _____

2. Total waste before the retail level:

Total food waste quantities =

+ total food waste quantities of **“primary production”**
 + total food waste quantities of **“processing and manufacturing”**
 + total food waste quantities of **“wholesale”** or **0.5* “retail and distribution of food”**

$$= 6\,067\,377 + 11\,806\,452 + 0.5 * 4\,079\,709$$

$$= 19\,913\,683,5$$

Compiling the FLI with Food Waste data – Example (II)

3. Calculate Food Loss Percentages:

$$\text{Food loss percentage} = \frac{\text{Total food loss quantity}}{\text{Corresponding total production quantity}}$$

The denominator ideally corresponds to the loss quantity in terms of commodities and sectors that were covered by the loss measurement.

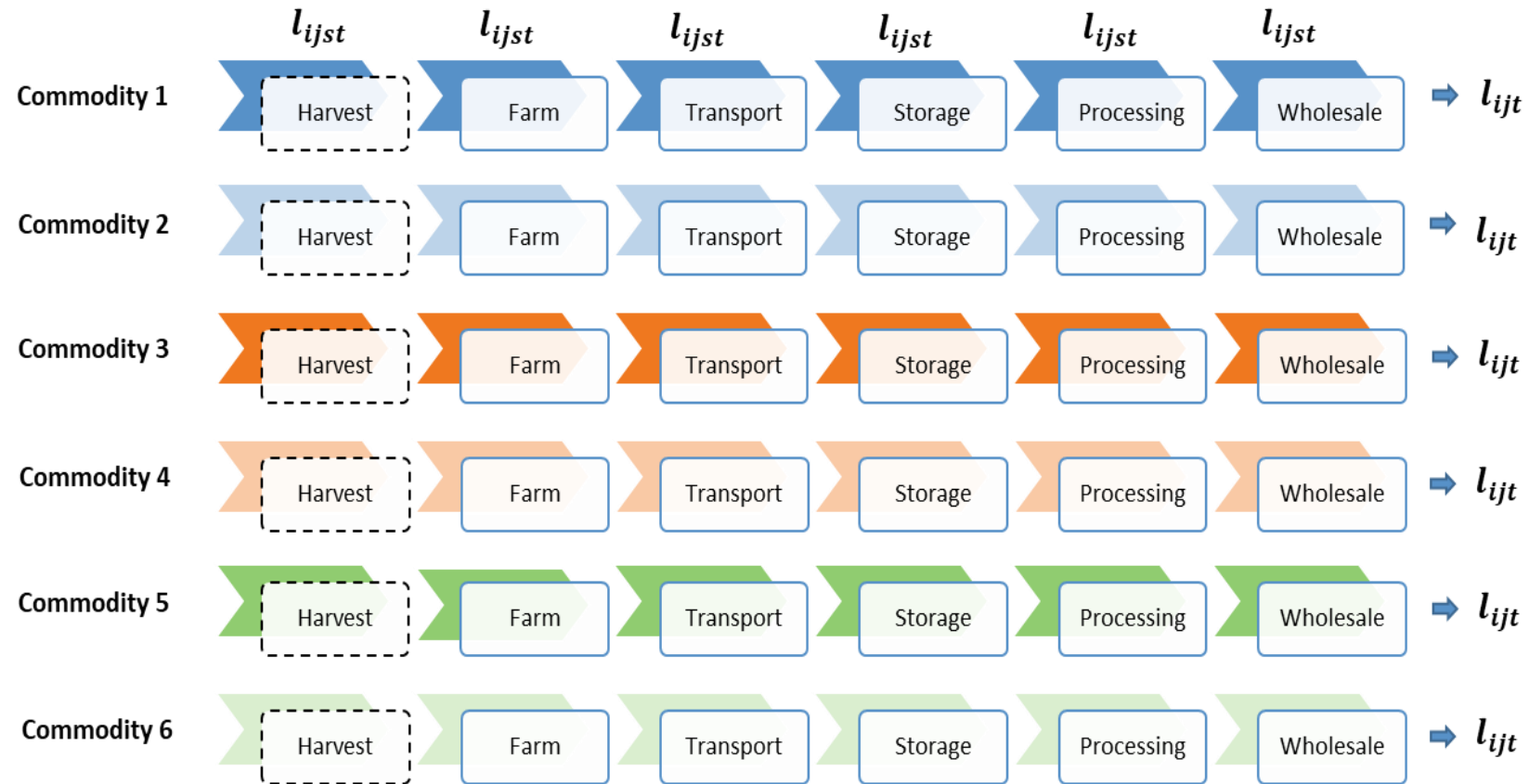
$$\text{Food loss Percentage EU}^* = \frac{19\,913\,683,5}{554\,864\,000,0^*} = 3.43\%$$

*FAOSTAT food balance sheets 2020, using production for corresponding “Grand Total” (all commodities, but excluding alcoholic beverages, commodities with no production and mainly imported directly for consumption stages, excluding food produced mainly for feed) and excluding Romania because of no waste data reported to Eurostat;

4. Compile the Food Loss Index:

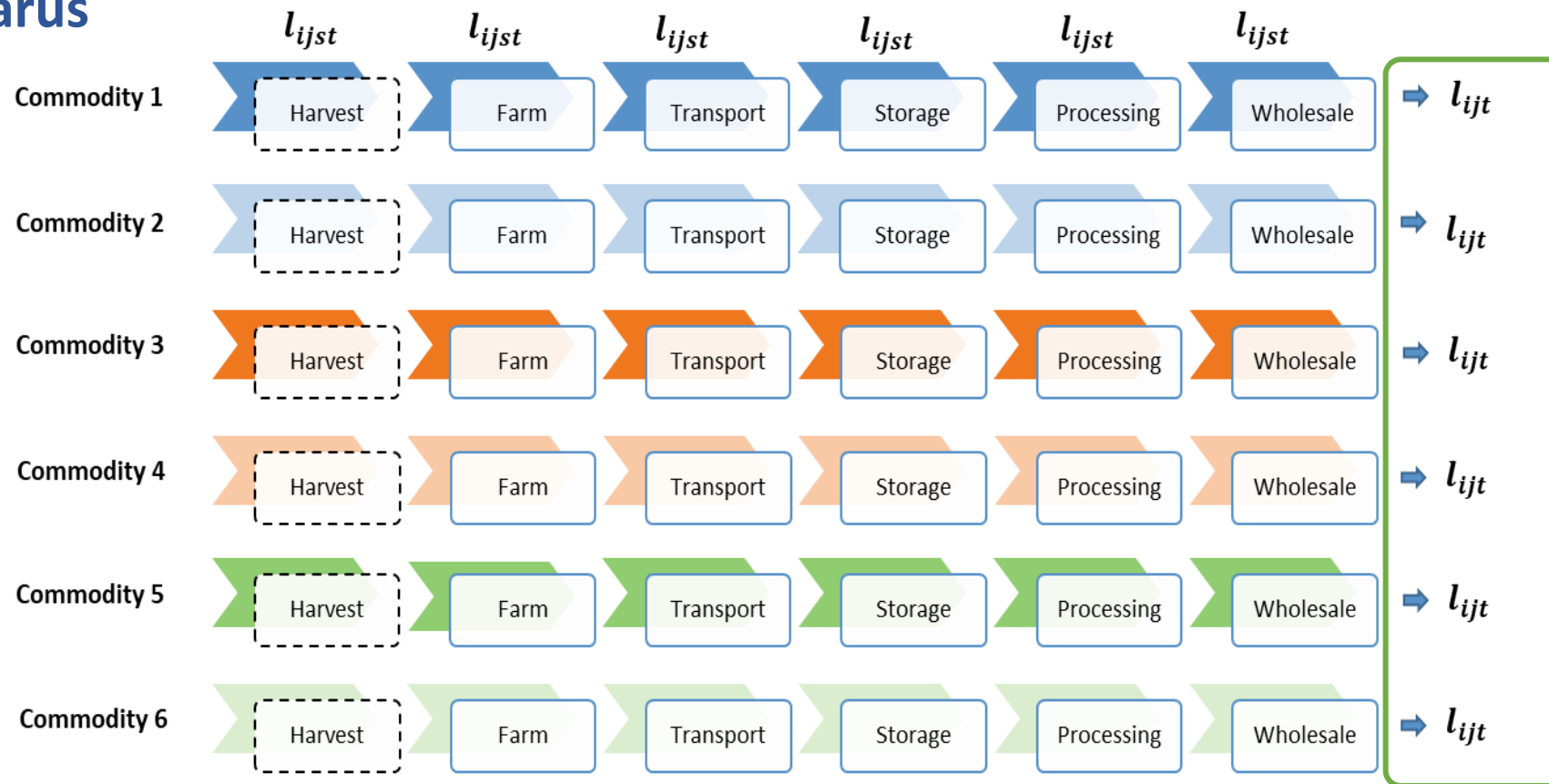
$$\text{Food loss Index} = \frac{\text{Food loss percentage year } j}{\text{Food loss percentage } \textit{base year 2020}} * 100 = \frac{x\%}{3.43\%} * 100$$

Data requirements for compiling the FLI for 5 food groups, 10 products



Compiling the FLI with Food Balance Sheet data – Example

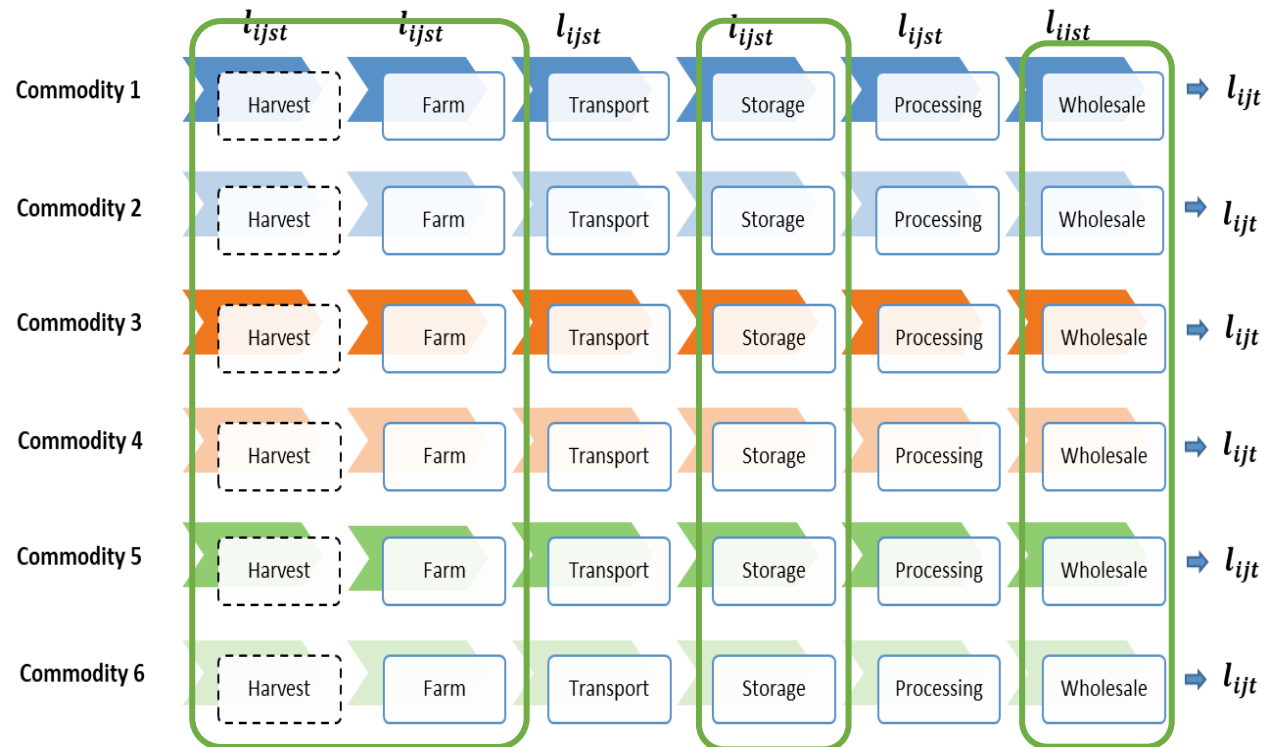
Belarus



Compiling the FLI with Survey data – Example I - India

Third National harvest and post-harvest loss survey

Report on
Assessment of Quantitative Harvest and Post-Harvest
Losses of Major Crops and Commodities in India
Sponsor: Ministry of Food Processing Industries
(Govt. of India)



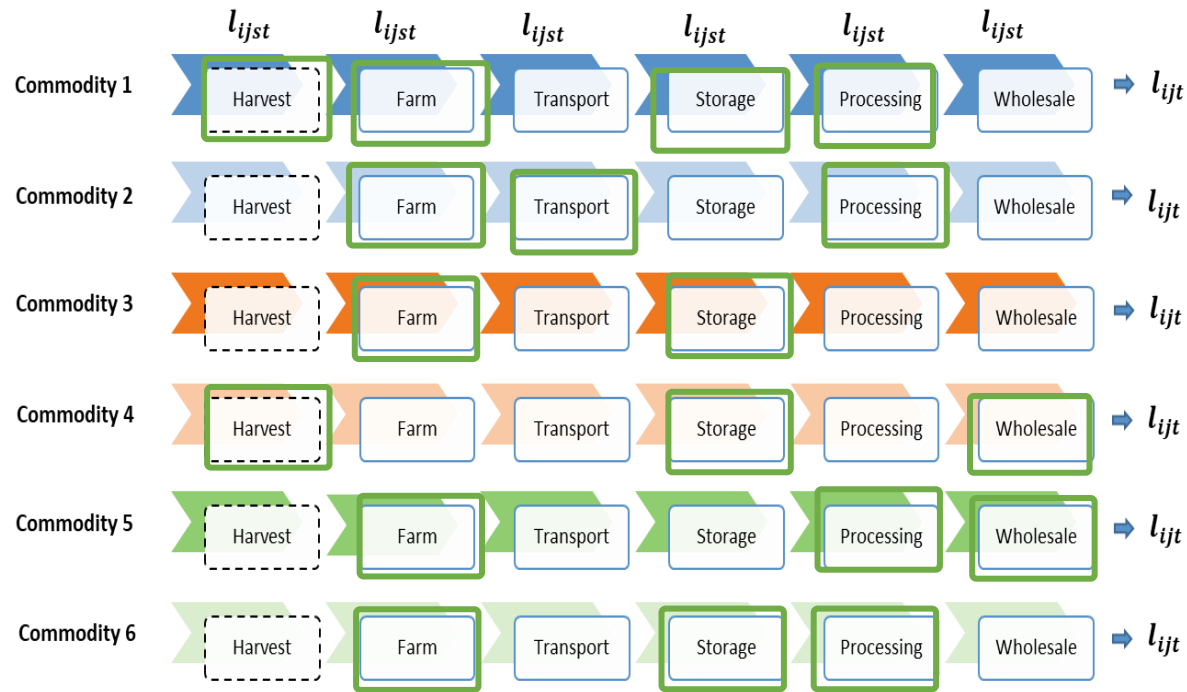
Institutional framework:

- Ministry of Food Processing Industries
- Established the data collection: sampling, methods and instruments
- Launches the survey with certain frequency

Data collection strategy:

- Stand-alone sample survey: declarations and physical measurement
- National coverage of 47 products (production, storage, transport, market stages)

Compiling the FLI with Survey data – Example IV - Sweden



Institutional framework:

- Government with the Swedish Board of Agriculture are conducting a study to develop measurement strategy and methodology

Data collection strategy:

- Use of administrative data on specific food loss points
- Extrapolation to the national level
- Complemented with surveys where no data is available

PILOT study for a "food loss information system": Administrative data + specific surveys and studies where no administrative data is available

- Engage with platform members especially member States case with a scoping exercise on existing data collection efforts and options for the compilation of the Food Loss Index
Since the FLI methodology does not match with the reporting in the EU directive, we would like to work together to find an acceptable convergence point that allows the country to report on FLI and to the EU without increasing the burden to the country. Are some members willing to work together on this?
- FAO can offer **knowledge transfer** in all aspects of data collection and in compiling and reporting on FLI. We may consider a workshop with subgroup members or statistical offices and line ministries on the data requirements under SDG Sub-Indicator 12.3.1a.
- Pilot **questionnaire for countries to report data towards SDG 12.3.1 Food Loss Index** is planned to be send out by FAO the second half of this year