



# **SDG INDICATOR 12.3.1: GLOBAL FOOD LOSS INDEX**

**SUBMITTED FOR TIER RECLASSIFICATION  
TO THE 8<sup>TH</sup> MEETING OF IAEG-SDG**

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# SDG INDICATOR 12.3.1

**Target 12.3** - *By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.*

**Indicator 12.3.1 – Global Food Loss Index:** *measures changes over time in the percentage of food production that it is lost up to the retail stage at the country, regional and global levels.*

- Target 12.3 separates the supply side of the food chain from the retail and consumption stages, and sets different objectives: a decrease of food losses and a 50% reduction of food waste.
- The measurement methods differ greatly for the production and consumption stages and methodological development has taken two separate paths accordingly.
- **FAO and UNEP recommend that the target be monitored with two separate sub-indicators 12.3.1.a Food Loss Index and 12.3.1.b Food Waste Index and that these be considered for upgrade separately. Proposal in line with the proposal for indicator refinement.**
- Indicator 12.3.1.a presented here covers the first component of target 12.3 (supply-side of the food chain)

# INTERNATIONAL DEFINITION OF FOOD LOSS

*Food losses are all the crop and livestock human-edible commodity quantities that, directly or indirectly, completely exit the post-harvest/slaughter production/supply chain by being discarded, incinerated or otherwise, and do not re-enter in any other utilization (such as animal feed, industrial use, etc.), up to, and excluding, the retail level. Losses that occur during storage, transportation and processing, also of imported quantities, are therefore all included. Losses include the commodity as a whole with its non-edible parts.*

- “Definitional Framework on Food Losses and Waste” developed in an inclusive consultative process over three years; Food Loss definition measurable and has been field tested.
- Boundaries between the Food Loss Index and the Food Waste set consistently with the SDG target formulation (supply side versus retail & consumption).
- Boundaries necessary for operational purposes to enable measurement along the whole food chain
- Boundaries consistent with the FAO’s definition of agriculture production and Food Balance Sheets framework, the only global source of available official food loss data.

# THE FOOD LOSS INDEX METHODOLOGY

The Food Loss Index (FLI) is a fixed-base weighted index (Laspeyres-type) widely used in official statistics.

$$FLI_{it} = \frac{FLP_{it}}{FLP_{it_0}} * 100 = \frac{\sum_j l_{ijt} * (q_0 * p_0)}{\sum_j l_{ijt=0} * (q_0 * p_0)} * 100$$

- The FLI measures trends in percentage losses over time, comparing a national average Food Loss Percentage (FLP) in the current year to the same percentage in the base year.
- A FLI < 100 means that a country has met the SDG target 12.3

The base year for SDG monitoring should ideally be 2015.

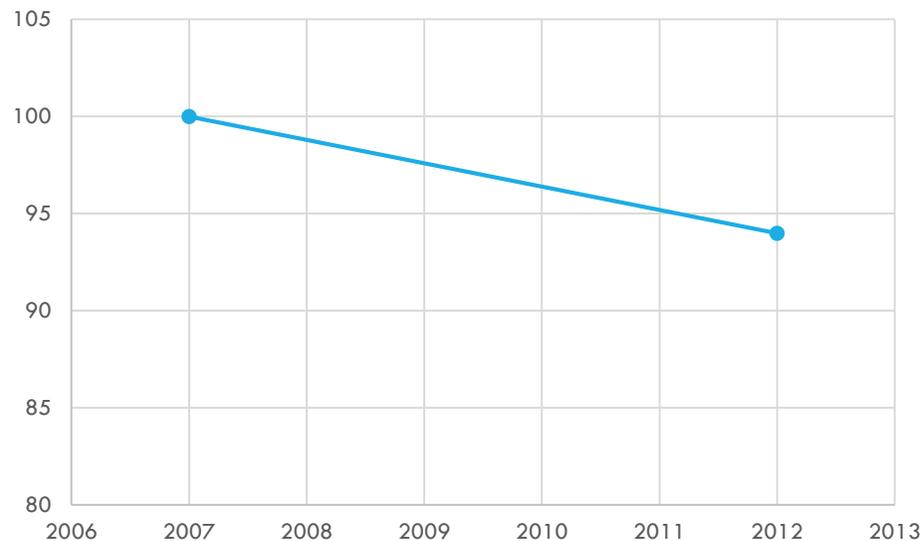
- The benchmark at country level can be based on the first survey period (variable year).
- A harmonized base period will have to be set to produce regional and global aggregates.
- The Food Loss Index can be compiled for all countries and aggregated into SDG regions using Loss data from the Food Balance Sheets (data for 60 countries for at least 1 commodity) and modelled estimates by FAO.

# THE FOOD LOSS INDEX METHODOLOGY

- FLI covers the 2 key commodities (Central Product Classification - CPC Rev. 2.1 Ext.) for each of the 5 food groups (10 in total), selected on the basis of their share on total value of production.
  - Sustainable costs and efforts, data relevance
- At global level, losses are weighted with the commodity' value of production
  - They capture the key economic considerations (economic importance, inefficiencies of the food system that result in higher costs, input costs, ..)
  - National indexes can use different -policy related- criteria: e.g. Nutrition parameters or environmental footprints (GHG, water use)

# PILOT STUDIES

- FLI tested for all countries, but with high % of modelled-based data (FAO estimates)
- Several countries were contacted to pilot test the index with their own data (India, Russia, Turkey, Saudi Arabia, USA) but most of them eventually withdrew mainly because of the lack of reliable data.
- The Food Loss Index compilation was tested on India's data. India is the only country that has carried out two nation-wide sample surveys on food losses along the entire supply chain for 45 commodities.



Food Loss Index for India 2007-2012 (2007=100)

**NB.** The main challenge is not in the calculation the FLI, rather the availability of loss factors along the various stages of the supply chain for the key food commodities.

# Addressing data gaps: guidelines for data collection

- The loss data collection and estimation methodology is described in a set of Guidelines for the Measurement of Harvest and Post-harvest Losses, that draw from an extensive review of the literature and best practices, field tests in countries, and final peer reviews.
- The Guidelines provide recommendations on the measurement of percentage losses for:
  - The various stages of the food supply chain: Farm, Transport, Storage, Processing, Packaging, Wholesale.
  - The main commodity groups: Grain & Pulses; Fruits & Vegetables; Animal products & Milk; Fish
  - The selection of the critical loss point (different across products and countries) => value chain analysis

# TESTING THE GUIDELINES

- Tested in 5 countries and implemented in 3, by NSOs &/or Ministries of Agriculture.
- Validation of the guidelines: harvest and postharvest losses can be measured and aggregated into a total PHL percentage.

Commodity Group	Test Country	Full Implementation
Grains and Pulses	Ghana MINAGRI & Malawi NSO	Malawi, Namibia, Zimbabwe
Fruits and Vegetables	Mexico INEGI	
Animal products	Zambia NSO	
Fish	Finland NRI (LUKE)	

- Test in Malawi and experience in India showed that farmer’s declarations lead to systematic underestimation in comparison with objective measures (recommended).



# CONSULTATIONS: 17 EVENTS, 53 COUNTRIES

- The methodology has been presented to national official statisticians and experts, international experts and academia in 17 regional or international events since October 2016

## Formal consultations:

- FAO's external consultation on SDG indicator 12.3.1 in September 2017: **European Union**, Germany, India, Malaysia, Mexico, Trinidad and Tobago, USA, United Kingdom, Zimbabwe.
- Webinar with the IAEG-SDG on 5 July 2018, in which FAO received feedback from Canada, Germany and India

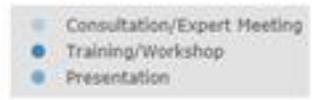
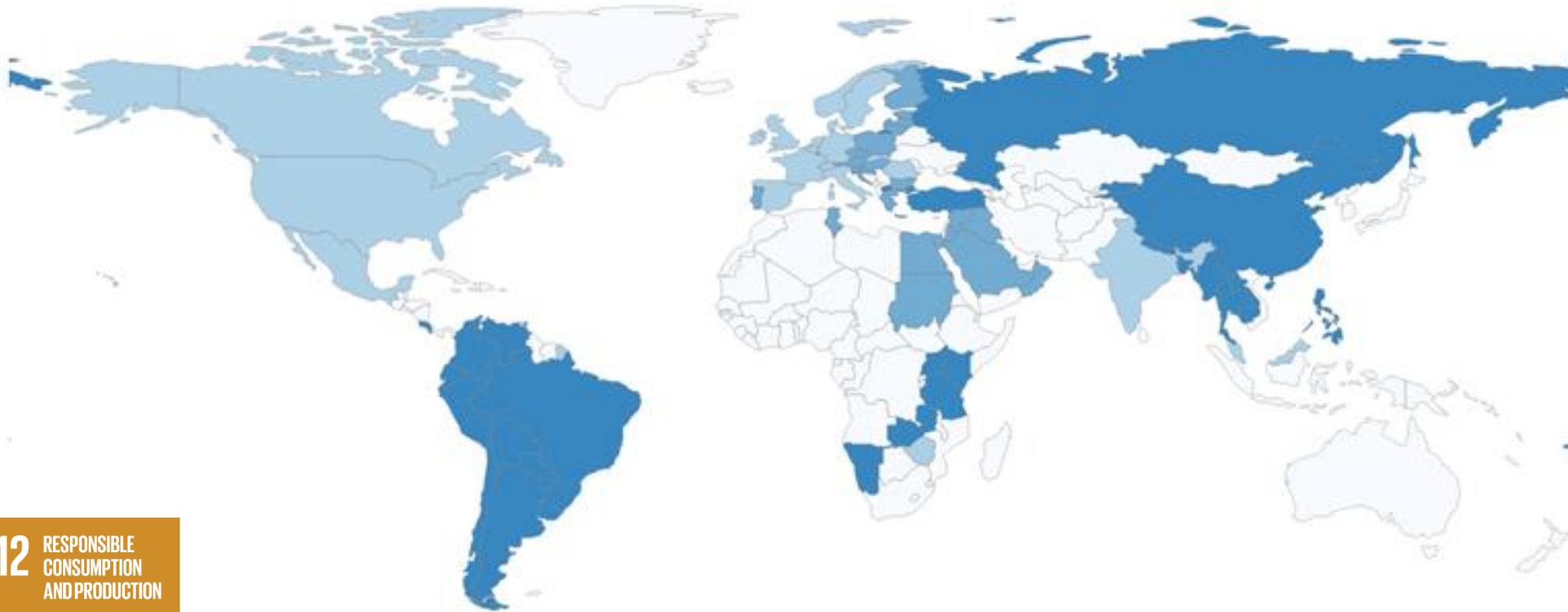
## Workshops on SDG 12.3 with in-depth discussions (53 countries and organizations)

- Argentina, **African Union**, Bolivia, Brazil, Burkina Faso, Canada, **CARICOM**, Chile, China, Colombia, Costa Rica, Ecuador, Egypt, **European Union**, Germany, India, Indonesia, Iraq, Italy, Jordan, Kyrgyzstan, Lao , FYR Macedonia, Malawi, Malaysia, Mauritius, Mexico, Myanmar, Namibia, Nepal, Norway, Oman, Palestine, Paraguay, Peru, Qatar, Russia, Samoa, Saudi Arabia, Sudan, Switzerland, Syria, Thailand, The Netherlands, Tunisia, Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, Zambia, and Zimbabwe.

**Presentations to Regional Commissions on Agricultural Statistics** (127 countries in AFCAS, APCAS, IICA) and international conferences (ICAE, ICAS-VII)



# CONSULTATIONS: 17 EVENTS, 53 COUNTRIES



# IMPROVEMENTS TO THE INDICATOR BASED ON PREVIOUS FEEDBACK

31 comments after the IAEG-SDG Webinar in July 2018 (detailed replies in the documentation)

- No data to compile the base year in 2015
  - Each country will have its own base year related to the start of the data collection. A harmonized base year will be estimated to compile regional and global aggregates.
- Inclusion of imports in the reference quantities
  - The denominator in the loss percentage formula is adjusted for import dependent countries.
  - Rule applied if  $\frac{loss}{production} - \frac{loss}{production+imports} > 10\%$
  - The international FLI weights however do not change to avoid double-counting of traded quantities

# IMPROVEMENTS TO THE INDICATOR BASED ON PREVIOUS FEEDBACK

31 comments after the IAEG-SDG Webinar in July 2018 (detailed replies in the documentation)

- The FLI does not seem to refer to the SEEA framework (Germany)
  - Linking the FLI to the material flow accounts would require an exhaustive approach to loss measurement which is not sustainable nor feasible. The FLI focuses on few key commodities for cost-effectiveness and on the supply chain efficiency (economic policies). The environmental impact can be modelled on the results.
  - This comment is more relevant for the Food Waste Index that should support environmental policies on the impact of food waste.
- FLI is not sufficiently harmonized with the EU methodology (Germany)
  - On definitions: the definitions are equivalent except that the FLI uses exclusively the term **losses** along the supply chain and that the EU uses the term **waste** along the whole food chain (from farm to fork)
  - On the stages: the EU has identified 5 stages for the whole food chain, the FAO 5 stages only for the supply stages that can be aggregated to match EU standards. N.B. The EU does not consider storage losses that are a critical loss point for many low-income countries and must be singled-out.

# IMPROVEMENTS TO THE INDICATOR BASED ON PREVIOUS FEEDBACK

Feedback from the field tests have been incorporated in the guidelines, e.g.:

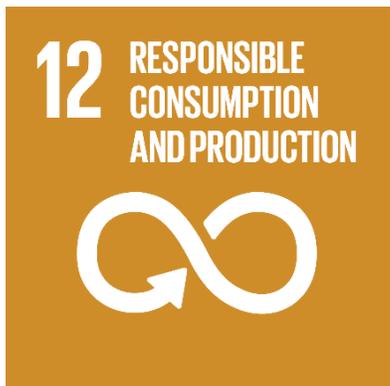
- Simplification of recommended sampling design in the orchards for feasibility reasons (Mexico – fruits).
- Revision of questionnaires to incorporate policy relevant additional questions (e.g. product destinations)
- Allow for flexibility as the supply chains are not always linear and the stage order may change.

Feedback from Asian countries (October 2018 workshop):

- The methodology is simple and feasible to apply.
- The existence of an internationally agreed methodology for SDG 12.3.1 will help countries raise funding to fill data gaps and improve existing surveys
- Countries need the policy push that really only the SDG can provide in order to organize and collect the data

# THANK YOU

<http://www.fao.org/sustainable-development-goals/en/>



# IMPROVEMENTS TO THE INDICATOR BASED ON PREVIOUS FEEDBACK

- **Methodology not sufficiently developed and tested (IAEG-SDG 2017)**
  - *Guidelines on the Measurement of Harvest and Postharvest losses of Grains* tested and published in April 2018.
  - *Guidelines on Fruits and Vegetables, Milk and Meat, Fish* drafted and tested in 2018.
  - *Food Loss Index* calculated on India's survey-based data.
  - Training material developed and first trainings delivered in Africa, Asia, Latin America and internationally.
- **Not clear how the FLI would cover food waste (IAEG-SDG 2017)**
  - The FLI does not cover waste. FAO and UNEP recommend using two separate sub-indicators a Food Loss Index and a Food Waste Index.
- **Boundaries of the FLI (countries and IAEG-SDG 2017)**
  - Pre-harvest losses are covered by SDG target 1.5 on extreme events and natural disasters.
  - Treatment of Harvest losses. The international FLI does not include harvest losses (consistency with agriculture production). They can be included at the national level. NB The guidelines cover harvest losses as well.
  - Retail markets are excluded from the FLI but will be covered by the Food Waste Index.

# PROTECTED LOSS ESTIMATES – ADJUSTING FOR IMPORT DEPENDENT COUNTRIES

One adjustment that was made for import dependent countries was to apply losses to production plus imports (105 unique country/commodities)

Rule applied:

- This was done if the  $\frac{loss}{production} - \frac{loss}{production+imports} > 10\%$
- This was not done for all countries – as it deflates loss percentages, exacerbating the low loss levels in the system.
- These loss percentages including imports are only used for the specific country and commodity cluster and not used in the global dataset.

# COMPARING FLI AND EU DEFINITIONS OF FOOD LOSSES AND FOOD WASTE

## FAO

Losses = quantities that leave the supply chain for any reason

Includes inedible parts

Excludes: pre-harvest losses, feed, industrial utilizations

Includes milk (implicitly includes wine juices beer etc.)

No reference to intentionality in the definition

## EU

Waste = food that has become waste

Includes inedible parts

Excludes: pre-harvest losses, feed, industrial utilizations

Includes milk and beverages

No reference to intentionality in the definition