Food and Agriculture Organization
of the United Nations

FAO Statistics Working Paper Series / 18-13

METHODOLOGICAL PROPOSAL FOR MONITORING SDG TARGET 12.3.1 SUB-INDICATOR 12.3.1.A

THE FOOD LOSS INDEX DESIGN, DATA COLLECTION METHODS AND CHALLENGES

Working Paper Series
ESS / 18-13

METHODOLOGICAL PROPOSAL FOR MONITORING SDG TARGET 12.3. SUB-INDICATOR 12.3.1.A

THE FOOD LOSS INDEX DESIGN, DATA COLLECTION METHODS AND CHALLENGES

Carola Fabi and Alicia English

Food and Agriculture Organization of the United Nations
Rome, 2019

Fabi, C. and English, A. 2019. *Methodological Proposal for Monitoring SDG Target 12.3. Sub-Indicator 12.3.1.a The Food Loss Index Design, Data Collection Methods and Challenges.* FAO. 60 pp.

Contents

1. Overview of the SDG Target 12.3 1
   1.1. Policy environment to estimating food losses for SDG monitoring 3
   1.2. Approach to estimating food losses for SDG monitoring 4
2. Concepts and definitions 5
   2.1. Supply chain and index boundaries 7
   2.2. Selection of commodities 10
      2.2.1. Changes in the basket over time 12
      2.2.2. Comparability 12
3. Global Food Loss Index (GFLI) 13
   3.1. Food Loss Index (FLI) and Food Loss Percentage at country level 14
      3.1.1. Step 1: Compile percentage losses of each commodity lijt 15
      3.1.2. Step 2: Compile the Food Loss Percentage of a country (FLP) 15
      3.1.3. Step 3: Compile the FLI as the ratio between two Food Loss Percentages 16
   3.2. Global Food Loss Index formula and compilation: aggregating countries' FLI 16
      3.2.1. Aggregating losses along the supply chain 17
      3.2.2. Accounting for Imports and Exports 18
   3.3. Interpretation 18
   3.4. Representing losses along the supply chain 19
   3.5. Weights 21
   3.6. Compiling loss percentages 22
   3.7. Modifications on the Index 22
   3.8. Two-Pronged Approach to Estimating Losses 23
      3.8.1. Collecting nationally representative loss data 24
      3.8.2. Model-based loss estimates 26
      3.8.3. Loss estimates from Supply Utilization Accounts or Commodity Balance Sheets 27
4. Global Food Loss Index preliminary results 29
5. Monitoring and Reporting 30
6. Developed approaches to overcome obstacles and critiques in measuring Food Losses 31
7. Conclusion 34
8. Glossary 35
9. Resources 37
10. References 34

Annexes

Annex 1: Losses defined by stage and commodity group 41
Annex 2: FLI Commodity Baskets and corresponding CPC codes 45
Annex 3: List of the commodities appearing in the basket of at least one country's FLI 48

Tables

Table 1. Aggregation of Maize Loss percentages along the supply chain 18
Table 2. Recommended measurement tools by stage of the value chain 25
Table 3. Loss percentages from the Food Balance Sheets, median and quartile values 28
Table 4. Loss percentages from the Literature, median and quartile values 29

Figures

Figure 1. Boundaries of the food supply chain in the operational definition of the GFLI 7
Figure 2. The Food Loss Percentage (FLP) and the Food Loss Index (FLI) 19
Figure 3. General Supply Chain 20
Figure 4. Food Loss Stages by type of commodity within the commodity baskets, for an example country for one year 20
Figure 5. Food Loss index from the Food Loss Percentages 21
Figure 6. Wheat production and losses estimated applying constant losses of 15% factor 22
Figure 7. Global Food Loss Index (2005 = 100), in the period 2005-2015, using country-specific baskets of commodities (see list in Annex 2). 30

Abbreviations

APHLIS	African Post-Harvest Loss Information System
CoP	Community of Practice Website
CPC	Central Product Classification
FAO	Food and Agriculture Organization of the United Nations
FLI/FLP	Food Loss Index / Food Loss Percentage
FLW	Food Losses and Waste
FSC	Food Supply Chain
GFLI/GFLP	Global Food Loss Index/Global Food Loss Percentage
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
GSARS	Global Strategy to Improve Agriculture and Rural Statistics
IAEG-SDG	Inter-Agency and Expert Group on SDG indicators
IFPRI	International Food and Policy Research Institute
NRI	Natural Resource Institute
NSO	National Statistical Offices
PHFLA	Post-harvest Food Loss Assessments
PHL	Post-Harvest Losses
PPP	Purchasing Power Parity
QA	Quality Assurance
QC	Quality Control
SDG	Sustainable Development Goals
SUA/FBS	Supply Utilization Accounts in the Food Balance Sheets
SWS	FAO Corporate Statistical Working System
TSU	Tertiary or final sampling units
UNEP	United Nations Environment Program
UNSD	United Nations Statistics Division

Abstract

The Sustainable Development target 12.3 states “By 2030, to 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.” The defined target distinguishes the supply side of the food chain from the retail and consumption stages, and sets different objectives: an unspecified reduction 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. For these reasons, the custodian agencies, FAO and UNEP, recommend that an additional sub-indicator 12.3.1.b on Food Waste be formally considered for the 2020 comprehensive review of the Global Indicator Framework. By acknowledging that an additional sub-indicator can only be approved in 2020, FAO and UNEP recommend that in the meanwhile 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 up-grade separately.

In this light, the FAO developed a *Food Loss Index* (FLI) monitoring Food Losses on a global level for a basket of key commodities in the food systems, including crops, livestock, and fisheries products. The index focuses on the supply stages of food chains and measures changes in percentage losses over time. The purpose of the index is to allow for policy makers to look at the positive and negative trends in food loss compared to a baseline year, in order to improve the food supply system efficiency against food losses.

This paper delves into the rationale of the index design and then presents the various elements of the methodology. The paper starts with the definitional framework and scope of the index, it illustrates the rationale for estimating losses as the percentage of food quantities removed from the supply chain. It illustrates the commodities basket, their selection criteria, the compilation of the index weights and the steps for calculating the index. The final section of the paper summarizes FAO’s two pronged approach to food loss data. The long-term