

# The global effort on food loss and waste (FLW) reduction

## Food Loss & Food Waste Reduction and Recovery Conference

27th, 28th February and 1st March 2018

Burrenchobay Lecture Theatre (RBLT), University of Mauritius

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*"Mainstreaming food loss reduction initiatives for smallholders in food deficit areas"*

Nutrition and Food Systems Division (ESN), FAO

# Context

- ✓ **Estimated number of undernourished people**
  - 777 million in 2015 - 815 million in 2016 (FAO, IFAD, WFP and UNICEF, 2017)
- ✓ **Malnutrition** (under-nutrition, over-nutrition and micronutrient deficiency) and associated non-communicable diseases
- ✓ **Currently: enough food production for all**

## Challenges...

- Physical/socio-economic access
- **Estimated 1/3 of food produced wasted or lost - COMPLEX ISSUES and CAUSES**
  - Economic, social, environmental impact

*...Opportunities! For actions to reduce FLW  
for improving food security, resilience, revenues of smallholders  
for business for Value Chain actors (private sector)*

- 
- ✓ **Sustainable Development Goal SDG 12:** ensuring sustainable consumption and production patterns

SDG 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**”

- ✓ **African Heads of States’ Commitment to Ending Hunger in Africa by 2025, Malabo Declaration** “ ...to **halve the current levels of postharvest losses by the year 2025** ”

- **Measurement frameworks** at national, regional, global levels  
**to assess levels of FLW, to prioritize actions, FLW reduction policies, track progress**

Global Food Loss Index Indicator 12.3.1 (GFLI)

AU framework on PHL

FAO food loss analysis

Others incl.: Postharvest Losses Information System [www.aphlis.net](http://www.aphlis.net)

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## **FLW reduction and PHM is not a goal in itself...**

*Essential part of the creation of **efficient value chains**, which are the core of **sustainable food systems** which contribute to **food and nutrition security, economic growth and climate change mitigation**.*

*FLW Reduction requires*

***Integrated multi-disciplinary approaches and programmes***

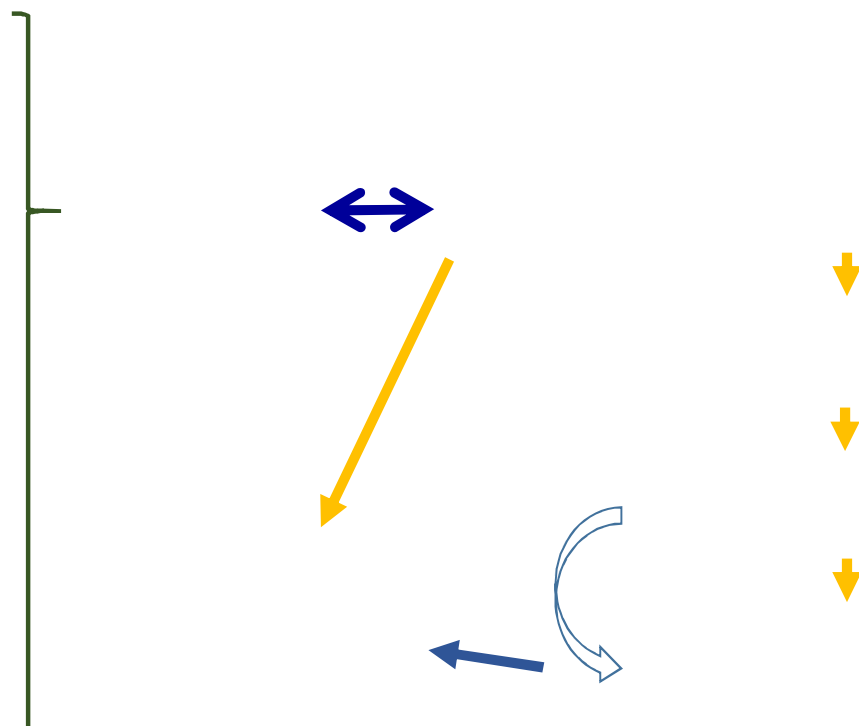
***technology, economics, environment & climate change, sociology, nutrition***

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## **Pillars**

- **Awareness raising and advocacy**
- **Partnerships, collaboration and coordination – *Public & Private***
- **Policy, strategy and programme development**
- **Capacity-building and technical support to investment programmes and projects**

# FAO Comprehensive Food Loss Analyses (FLA) Methodology - Outputs



**Context-based approach** : local, national, regional, global  
**LEVEL OF DEVELOPMENT OF SELECTED VALUE CHAINS - CATEGORY OF PRODUCTS (Incl. PERISHABLE, NON PERISHABLE) / AGRO-ECOLOGY...**

# Activities to Address FLW

## Resource Mobilization

With donors , private sector, Foundations

## Capacity Development

Implemented through FAO and donor-funded field projects globally

## Methodologies and Tools

- **Food Loss Analysis (FLA) methodology**
- EX-ACT VC tool – for estimation of GHGs
- Measurement and Statistics
- Training resources

## Knowledge sharing

- **Community of Practice on Food Loss**
- G20 Technical Platform on Food Loss and Waste
- **Save Food Network/ Website / e-Newsletter**

## Partnerships and Collaboration

**More than 900 SAVE FOOD PARTNERS**

- Public & Private sector
- Academia & Research Institutions
- Civil society
- Development agencies

## Awareness Raising and Advocacy

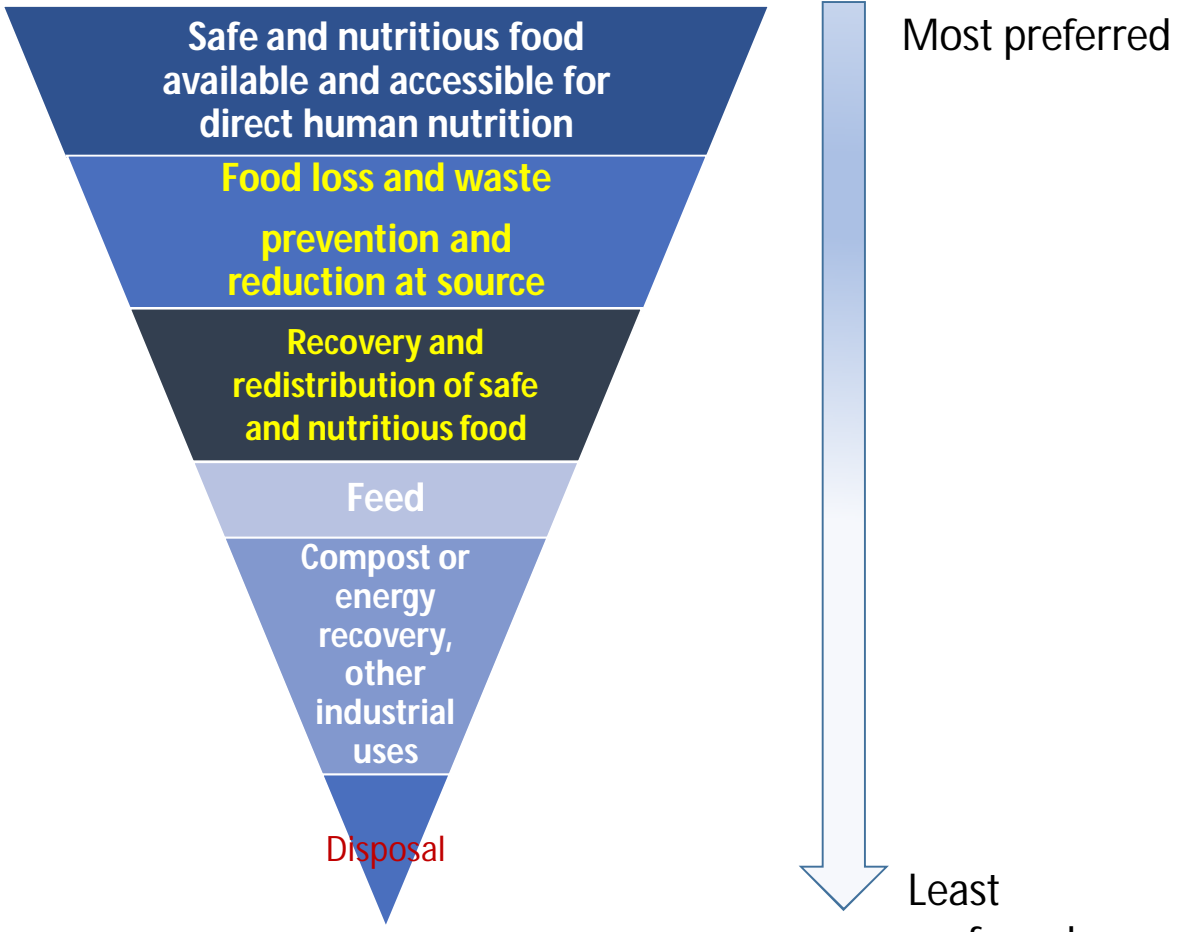
- Save Food Congresses, Exposyums, Exhibits
- **National and regional level awareness-raising campaigns**
- Social media campaigns
- **National Save Food Networks**

## Education

Educational material targeted to students of different ages

## Research for policy development

# Food-use-not-loss-or-waste hierarchy

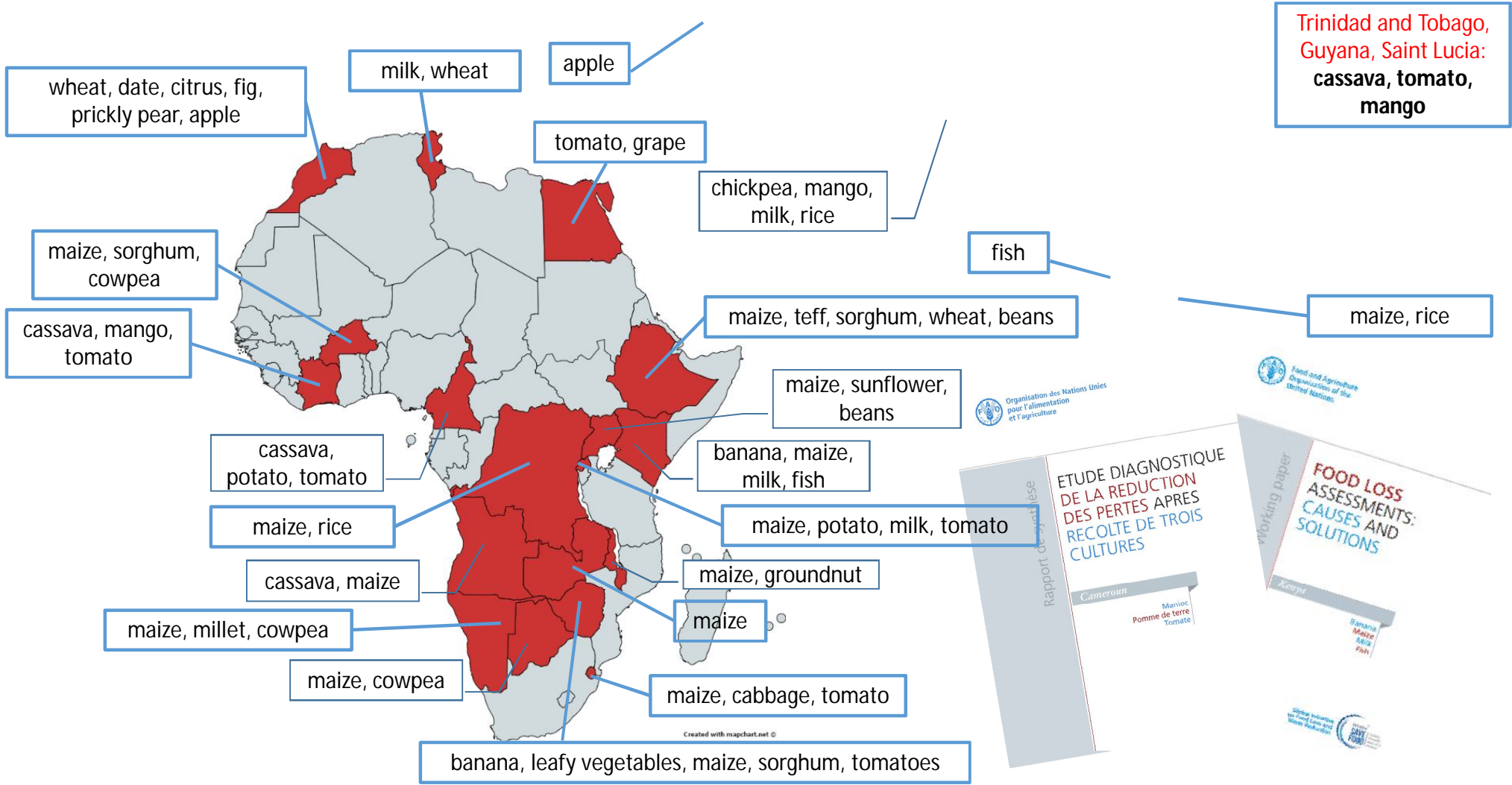


**Recovery** of safe and nutritious food for human consumption is to receive, with or without payment, food (processed, semi-processed or raw) which would otherwise be discarded or wasted from the agricultural, livestock, forestry and fisheries supply chains of the food system.

**Redistribution** of safe and nutritious food for human consumption is the received food pursuant to store or process and then distribute appropriate safety, quality and regulatory frameworks directly or through intermediaries, and with or without payment, to those having access to it for food intake. (FAO, 2015)

Adapted from CFS 41 by Bucatariu, C., 2015

# FLA carried out using FAO Methodology



Trinidad and Tobago, Guyana, Saint Lucia: cassava, tomato, mango

maize, rice



# FLA - Critical Loss Points and Solutions piloted in South Asia

COUNTRY	COMMODITY	CRITICAL LOSS POINT	SOLUTION PILOTED
NEPAL	Cauliflower	Harvest Transportation	Harvest Maturity; Stackable plastic crates for transport
	Mandarin Orange	Harvest Transportation	Harvest Maturity; Veg oil coating; Plastic crates for transport
BANGLADESH	Tomato	Harvest Transportation	Method of harvest; washing; plastic crates for transport
	Mango	Harvest Transportation	Harvest maturity; Method of harvest; harvest tools; hot water treatment; plastic crates for transport
SRI LANKA	Snap Bean	Transportation	Harvest maturity; method of harvest; Plastic crates for transport
	Banana	Harvest Transport	Dehanding; washing and delatexing; plastic crates for transport

*Source: FAO field level data 2016*

# Impacts of Improved Bulk Packaging

CROP	LOSS DURING TRANSPORTATION IN TRADITIONAL PACKAGING	LOSS DURING TRANSPORTATION USING PLASTIC CRATES	LEVEL OF LOSS REDUCTION (%)
TOMATO	17	2	98
BANANA	5	2	61
CAULIFLOWER	11	5	60
MANDARIN	7	5	43
SNAP BEAN	18	7.3	60



Source: FAO field level data 2016

# Loss and waste in Fisheries and Aquaculture

## ***Breach to the principles and standards of global instruments***

### ➤ **Code of Conduct for Responsible Fisheries**

- Article 11: *"Post-harvest practices and trade"*
- Art 6.7 stated that: *"The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a manner which will maintain the nutritional value, quality and safety of the products, reduce waste and minimize negative impacts on the environment"*

### ➤ **Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication**

### ➤ **CFS. 2014. Policy recommendations on Sustainable Fisheries and Aquaculture for Food Security and Nutrition**

## Example - FAO Fish Smoking FLA In Cote d'Ivoire

- In developing countries, small-scale fisheries
  - artisanal fish processing
  - characterized by hot smoking and drying processes
- women play an important role in the value chain
- support the living conditions of local communities and contribute significantly to food security.
- Asia and Africa produce 2/3 of the hot-smoked fish production worldwide



Massive use of fuelwood  
/Natural resources depletion



Exposure of processors to  
heat and smoke



Post-harvest losses/ Poor  
safety of products with 'PAHs

### In Cote d'Ivoire

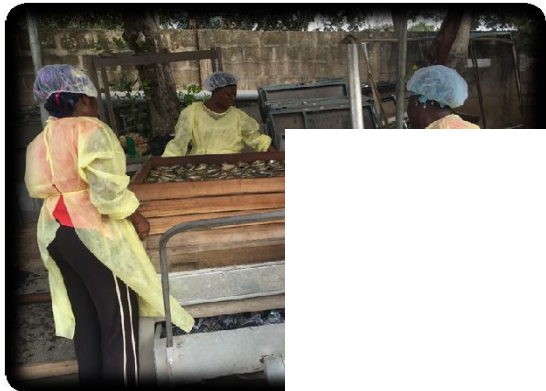
23 317 tonnes of post-harvest  
losses in 2014 = 7 billion CFA  
francs (in \*4 processing sites)

Mangrove cut of spawning areas:  
112 000 tonnes of wasted wood,  
high CO2 emissions

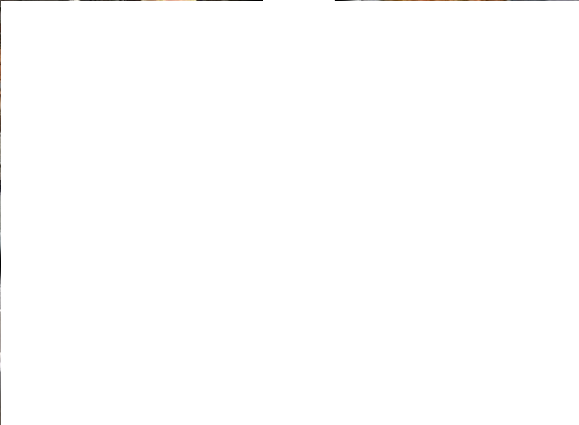
\*Abobo-doumé, Marcory-Anoumabo,  
Grand-lahou and Guessabo

'Polycyclic aromatic hydrocarbons

# Solutions: The FTT-Thiaroye Fish Processing Technology



- Protection against heat and smoke exposure
- Less drudgery, production time
- Safe product regarding polycyclic aromatic hydrocarbons (PAHs)
- Less fuelwood consumption (reduced fuelwood/fish ratio to at least half)
- Possibility to process by-products like oil collected from fat collection trays



Meet the EU limits on PAH4 and benzo(a)pyrene

The FTT-Thiaroye is formally established in Africa (Angola, Burundi, Cameroon, Côte d'Ivoire, DR Congo, The Gambia, Ghana, Guinea, Guinea-Bissau, Senegal, Tanzania, Togo) and Asia (Sri Lanka)

# INPhO - The Information Network on Post-harvest Operations

## INPhO 3D models:

- compatible with 21 software
- available through the 3D Warehouse by Google under the FAO channel

**2017:** INPhO reached 172 countries

**INPhO:** SMEs development and reduction of post-harvest loss



# Climate change – effects Mauritius context?

- ✓ Uneven distribution
- ✓ Increased climatic variability, extreme events, pests and diseases
- ✓ Water scarcity
- ✓ Increase in food loss
- ✓ Impact on food systems' ability to provide adequate nutritious food → increased vulnerability and reduced capacity to cope with climate change



# Climate technologies / solutions that could support food loss prevention - examples



Planning: crops, harvest, markets	Hermetic bags	Solar driers	Evaporative coolers	Improved public infrastructure	Facilities	Food literacy life-long learning
Pests and disease management	Metal silos	Solar threshers	Solar powered cooling	Adequate distance from production – processing – markets – households	Marketing models	Awareness messaging
Early warning systems	Humidity and moisture control	Sustainable bio-sourced packaging materials	Natural refrigerants	Robust crates and business solutions for the utilization and transport (full and empty)	Accessible and fair certification schemes	Recovery and redistribution of safe and nutritious food for human consumption
Good handling practices	Warehouse receipt systems	Sustainable agro-residues fuel	Adequate access to household refrigerators	Adequate and maintained vehicles	Labelling	Waste and loss management: nutrient recovery
Adequate inputs	Pest and rodent management	Adequate packaging machinery	Cooling and refrigeration literacy for all, including consumers		Product and service diversification	

Scale-up on access to (renewable) energy and technologies and improve access to Information and Communication Technologies (ICTs)

Supply side measures



Demand side measures

Adapted from: FAO. 2017. *Save Food for a Better Climate - Converting the food loss and waste challenge into climate action*



## IMPORTANCE OF EDUCATION:

### DO GOOD : SAVE FOOD !

**FAO produced a comprehensive 'education package'**

**Modules for four age groups (5-7, 8-9, 10-13, and 14+ years)**

For educators: highly adaptable lessons and activities

The package will be available in the public domain in 2018

Useful links :

- <http://www.fao.org/resources/infographics/infographics-details/en/c/888007/>
- <http://www.fao.org/3/a-i7059e.pdf>

**International Food Waste Coalition (IFWC): a not-for-profit association comprising seven members:** Sodexo SA, SCA GmbH, Unilever Foodsolutions B.V., Mc Cain Alimentaire SAS, Dujardin Foods NV, Pepsi-Cola International CORK and WWF-UK collaborated for some of the activities.

# IMPORTANCE OF EDUCATION

## e-Learning course on Food Loss Analysis (Launch in 2018)

The screenshot displays the 'Food Loss Analysis' e-learning course interface. The main content area features a grid of colored buttons with icons and text:

- Start Learning**: An orange button with a white play button icon.
- Course Menu**: A red button with a white hamburger menu icon, displaying '9.2 hours - 0% completed'.
- About**: A green button with a white information icon.
- Resources**: A green button with a white folder icon.
- Glossary**: A brown button with a white book icon.
- Search**: A dark green button with a white magnifying glass icon.
- Help & Support**: A red button with a white question mark icon.

The bottom of the interface includes logos for the Food and Agriculture Organization of the United Nations (FAO), the Swiss Confederation (Schweizerische Eidgenossenschaft, Confédération suisse, Confederazione Svizzera), the World Food Programme (WFP), and LIFAD (Innovation in rural people). It also contains the text 'Legal Information | ©FAO'.

The Windows taskbar at the bottom shows various application icons and a system tray with the date '27/02/2018' and time '04:35'.

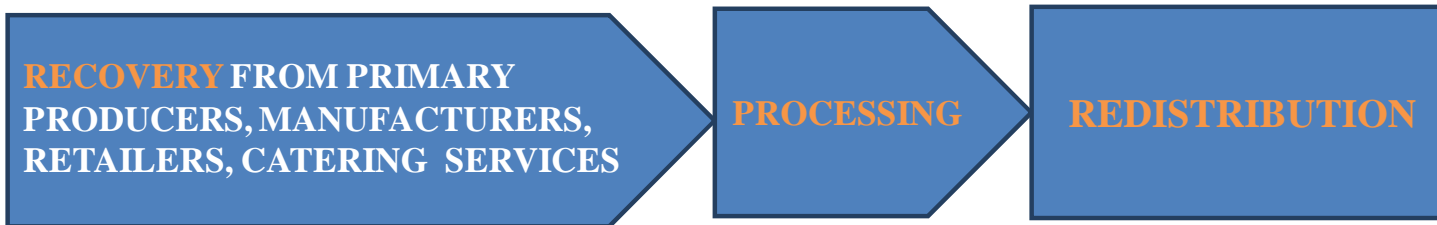
# Recovery and Redistribution (R&R)

FAO is developing **GUIDING PRINCIPLES FOR R&R OF SAFE AND NUTRITIOUS FOOD FOR DIRECT HUMAN CONSUMPTION** addressing...

- **Why should R&R be promoted? What enabling conditions? What main barriers for R&R?**
- **Legislation / Regulatory framework**
- **Operational / Organizational framework for R&R**
  - What can / cannot be recovered and redistributed?
  - Actors involved in R&R operations / Food redistribution organizations
  - R&R operational models
- **Food safety rules in R&R operations**
  - Food safety risk analysis for R&R
  - Risk assessment / Risk management / Risk communication
- **Nutrition considerations as applicable to R&R**
- **Social considerations as applicable to R&R**

# Recovery and Redistribution (R&R)

## EXAMPLE OF MODEL OF R&R



### Handling / Preparation

Transport  
Storage  
Packaging  
Processing/cooking

Incl. :  
Food banks  
Community services  
Soup kitchens



# Recovery and Redistribution (R&R)

## Food safety - Risks - Hazards

Biological hazards	Chemical hazards	Physical hazards
<p><b>Infectious bacteria</b></p> <ul style="list-style-type: none"> <li>• Salmonella</li> <li>• Escherichia coli</li> <li>• Listeria</li> <li>• Vibrio</li> </ul> <p><b>Toxin-producing organisms</b></p> <ul style="list-style-type: none"> <li>• Clostridium botulinum</li> <li>• Staphylococcus aureus</li> <li>• Bacillus Cereus</li> </ul> <p><b>Molds</b></p> <p><b>Parasites</b></p> <p><b>Viruses</b></p>	<ul style="list-style-type: none"> <li>• Naturally occurring toxins (e.g. cyanides in raw cassava and almonds)</li> <li>• Food additives</li> <li>• Pesticide residues</li> <li>• Veterinary drug residues</li> <li>• Toxins of microbial origin (e.g. aflatoxin)</li> <li>• Allergens</li> <li>• Chemical contaminants from packaging</li> <li>• Environmental contaminants</li> </ul>	<ul style="list-style-type: none"> <li>• Glass</li> <li>• Plastic</li> <li>• Metal, machine fillings</li> <li>• Wood</li> <li>• Stones</li> <li>• Bone chips</li> <li>• Personal articles such as jewelry , ear plugs, etc.</li> </ul>

# Conclusions

- Approaches to tackling PHL have evolved dramatically over the years  
Innovative, comprehensive food systems approaches, solutions, strategies
- Higher level of country engagement and demand for support to address PHL.
- Collaboration and partnerships are increasingly important for scaling up of successes



## The Global Community of Practice on food loss reduction (CoP)

**A dynamic web-based *global convener and integrator of knowledge which facilitates linkages and information sharing:***

- **Resources from world-wide actors, links** (*publications, reports, video, radio, mapping of PHM and FLR initiatives, etc.*)
- **A network: database of registered members with Save Food global initiative including private sector**
- **Moderated Online forum discussions** - News, Events and Opportunities (including on trainings, etc.;
- **Special sections**

SAVE FOOD: Global Initiative on Food Loss and Waste Reduction

Community of Practice on Food Loss Reduction

Home Forum News Events and Opportunities Resources About the CoP Background View partners View my details Edit my details

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1st All Africa Postharvest Congress & Exhibition and All Africa Postharvest Technologies and Innovations Challenge

Last 17th January, the 1st all Africa Post-harvest congress was officially launched in Nairobi, Kenya. Jane...

In being a member of the **Community of Practice** you will access the Forum, and participate in on-line discussions, get in touch with other practitioners, share and request relevant and updated information, contribute in building up a worldwide community aimed at reducing food losses and achieving food security.

**GET INVOLVED!**

This **Community of Practice on food loss reduction** has been launched in the framework of an UN Food and Agriculture Organization (FAO), the International Fund for Agricultural Development (IFAD) and World Food Programme (WFP) joint project "Mainstreaming food loss reduction initiatives for smallholders in food deficit areas" funded by the Swiss Government ([more](#)).

CoP members' projects

Help us to complete this map!





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SAVE FOOD: Global Initiative on Food Loss and Waste Reduction

Community of Practice on Food Loss Reduction



- Home Forum News Events and Opportunities Resources About the CoP Background Register Login

- Multimedia Grain Storage Technologies Map

Grain Storage Technologies for Smallholders and Farmers' Groups

Central to any effort to reduce losses is the adoption of better postharvest practice. This is fundamental for smallholders who want to improve their household food security and for those wishing to make better livelihoods from grain sales.

This section was developed in collaboration with the Postharvest Loss Reduction Centre at the Natural Resources Institute (NRI). NRI, as partner of the CoP on Food Loss Reduction, contributes by sharing its expertise and by helping to connect experts.

In the framework of the Rome-based UN agencies joint project, the development of this section was supported by the Swiss Agency for Development and Co-operation (SDC). Based on a survey of over 30 postharvest technologists, the NRI team developed an interactive catalogue of storage technologies for easy consultation. In addition, they have provided a simple 'app' to help users appreciate the main factors influencing smallholders' choice of a grain store.







Food and Agriculture  
Organization of the  
United Nations



World Food  
Programme

**Near 1000 registered members, average 1500 hits per month**

Re

2015

**Global Initiative on Food Loss and Waste Reduction**

<http://www.fao.org/save-food/en/>

**Community of Practice on Food Loss Reduction**

<http://www.fao.org/food-loss-reduction/en/>

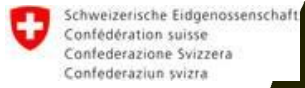
**Technical Platform on the Measurement and Reduction of Food Loss and Waste**

<http://www.fao.org/platform-food-loss-waste/it/>

**Information Network on Post harvest Operations (INPhO)**

<http://www.fao.org/in-action/inpho/home/en/>

# Global Partners



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# **FAO Policy Series: Food Loss & Food Waste**

<https://youtu.be/pxoz88-GXyk>

Thank you!

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