


Overview: Innovating to save on Losses & Wastages in Agri- value chains: Global and Indian Experience

Ashok Gulati
Infosys Chair Prof. for Agriculture,
Indian Council for Research on International Economic Relations(ICRIER),

Crawford Fund Conference:
‘Waste not, Want Not: The Circular Economy to Food Security’
August 29–30, Canberra, Australia

Why bother about food loss and wastage (FL&W)?

- ▶ **1 / 3rd (1.3 bn tonnes)** of food produced for human consumption globally gets lost or wasted every year (FAO, 2011)
 - ▶ **Economic value** of FL&W: **USD 680 bn** (industrialized countries) and **USD 310 bn** in (developing countries) (FAO, 2011)
 - ▶ **If only ¼ of this is saved, enough to feed 870 m hungry people** on this planet, and save precious resources (Land, water, energy) and environment
 - ▶ **Savings can give higher prices to farmers and lower prices to consumers**
- 

FL&W in the world

- ▶ **Food Loss:** food spilled or spoilt before reaching retail (accidental)
- ▶ **Food Waste:** food left to spoil or discarded by retailers or consumers (intentional)
- ▶ **Developing countries:** >40% food losses at post-harvest and processing levels
- ▶ **Industrialized countries:** >40% food wastages at retail/consumer levels

Source: FAO, 2011



Food Loss/Wastage: Estimates for South & SE Asia

Estimated/assumed waste percentages for each commodity group in each step of the FSC for South and Southeast Asia

	<i>Agricultural production</i>	<i>Postharvest handling and storage</i>	<i>Processing and packaging</i>	<i>Distribution</i>	<i>Consumption</i>
Cereals	6%	7%	3.50%	2%	3%
roots & tubers	6%	19%	10%	11%	3%
oilseeds and pulses	7%	12%	8%	2%	1%
fruits and vegetables	15%	9%	25%	10%	7%
Meat	5.1%	0.3%	5%	7%	4%
fish and seafood	8.2%	6%	9%	15%	2%
milk	3.5%	6%	2%	10%	1%

Source: FAO, 2011

Food Loss/Wastage: Estimates for North America & Oceania

Estimated/assumed waste percentages for each commodity group in each step of the FSC for North America and Oceania.


	<i>Agricultural production</i>	<i>Postharvest handling and storage</i>	<i>Processing and packaging</i>	<i>Distribution: Supermarket Retail</i>	<i>Consumption</i>
cereals	2%	2%	0.5%, 10%	2%	27%
roots and tubers	20%	10%	15%	7%	30%
oilseeds and pulses	12%	0%	5%	1%	4%
fruits and vegetables	20%	4%	2%	12%	28%
meat	3.50%	1.00%	5%	4%	11%
fish and seafood	12%	0.50%	6%	9%	33%
milk	3.50%	0.50%	1.20%	0.50%	15%

Source: FAO, 2011

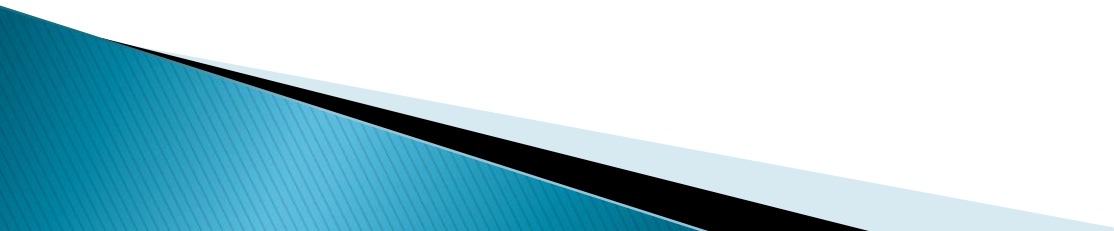
Food Losses: Estimates for India (2013–14)

- ▶ Cereals – 4.65% to 5.99% ; Pulses – 6.36% to 8.41%
 - ▶ Oilseeds – 3.08% to 9.96%
 - ▶ **Fruits – 6.7% to 15.88%; Vegetables – 4.58% to 12.44%**
 - ▶ Livestock produce – 0.92% to 10.52%
-
- ▶ Economic value of these losses Rs 92651 crore (about \$15 billion)
 - ▶ Much of the losses occur in farm operations, storage and distribution channels, and processing

Source: ICAR–CIPHET, 2015



Causes of FL&W – Developing (Low-Income) Countries

- ▶ Lack of proper farm equipment (harvestors, threshers, etc.)
 - ▶ Packaging minimal or absent at farm before transportation
 - ▶ Lack of proper storage infrastructure:
 - Absence of warehousing facilities
 - Absence of cold storages, cold chains
 - Inadequate storage at the processing, wholesale and retail levels
 - ▶ Low Levels of Processing
 - ▶ Food wastages at consumer end very little due to large poverty
- 

Causes of FL&W – Industrialized (High-Income) Countries

- ▶ **Production > demand** – in anticipation of pest attacks or bad weather – surplus sold unprofitably to processors or as animal feed at lower prices
- ▶ **High ‘appearance quality standards’** for fresh products – “wrong” weight, size, shape or appearance
- ▶ **Failure to comply with food safety standards**
- ▶ **Rigid/misunderstood date marking rules** – food that is still fit for human consumption is thrown because of misleading/misunderstood “best-before” or “use by” dates

Proper Packaging Can Reduce Losses in Transportation and Storage Channels



Better Transportation Can Save Losses and Wastages



Better push carts for Retail can reduce Losses



Innovating to Prevent FL&W:

Developing Countries (Small holder economies like India)

- ▶ **UBER/Ola style Farm Machinery services** on demand (M&M just started);
- ▶ **Aggregation, grading, packaging, bar coding at farm level**
- ▶ **Solar powered** cold storages in rural areas, retail shops for Fruits and veggies, and even push-carts
- ▶ **Innovations in Policy:** FPOs, coops for aggregating small farmers' produce
 - allowing direct procurement from farmers – incentive for private investment in backend infrastructure Changing APMC Act, ECA.
 - Incentivizing investment in backend infrastructure (fiscal and financial benefits)

Preventing FL&W: Industrialized Countries

- ▶ Communication and cooperation among farmers to prevent risk of excess production
- ▶ De-emphasizing 'appearance quality standards'
 - Conducting consumer surveys to destroy apprehensions about consumer preferences against heterogeneous appearance of commodities
 - Getting sales closer to the consumers to avoid multiple quality and standards check
- ▶ Adherence to food safety and standards to avoid risk of rejection
- ▶ Improving accuracy of date marking rules (best-before and use-by dates), clarifying its meaning to the consumer