FACULTY OF
BIOSCIENCE ENGINEERING

DEPARTMENT OF AGRICULTURAL ECONOMICS
DIVISION OF AGRI-FOOD MARKETING AND CHAIN MANAGEMENT

INTEGRATING VALUE STREAM MAPPING WITH THE FOOD LOSS AND WASTE PROTOCOL TO ASSESS FOOD LOSSES IN THE DAIRY VALUE CHAIN

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815 million people around the world are food insecure.

2 ZERO HUNGER

Source: FAO infographic

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

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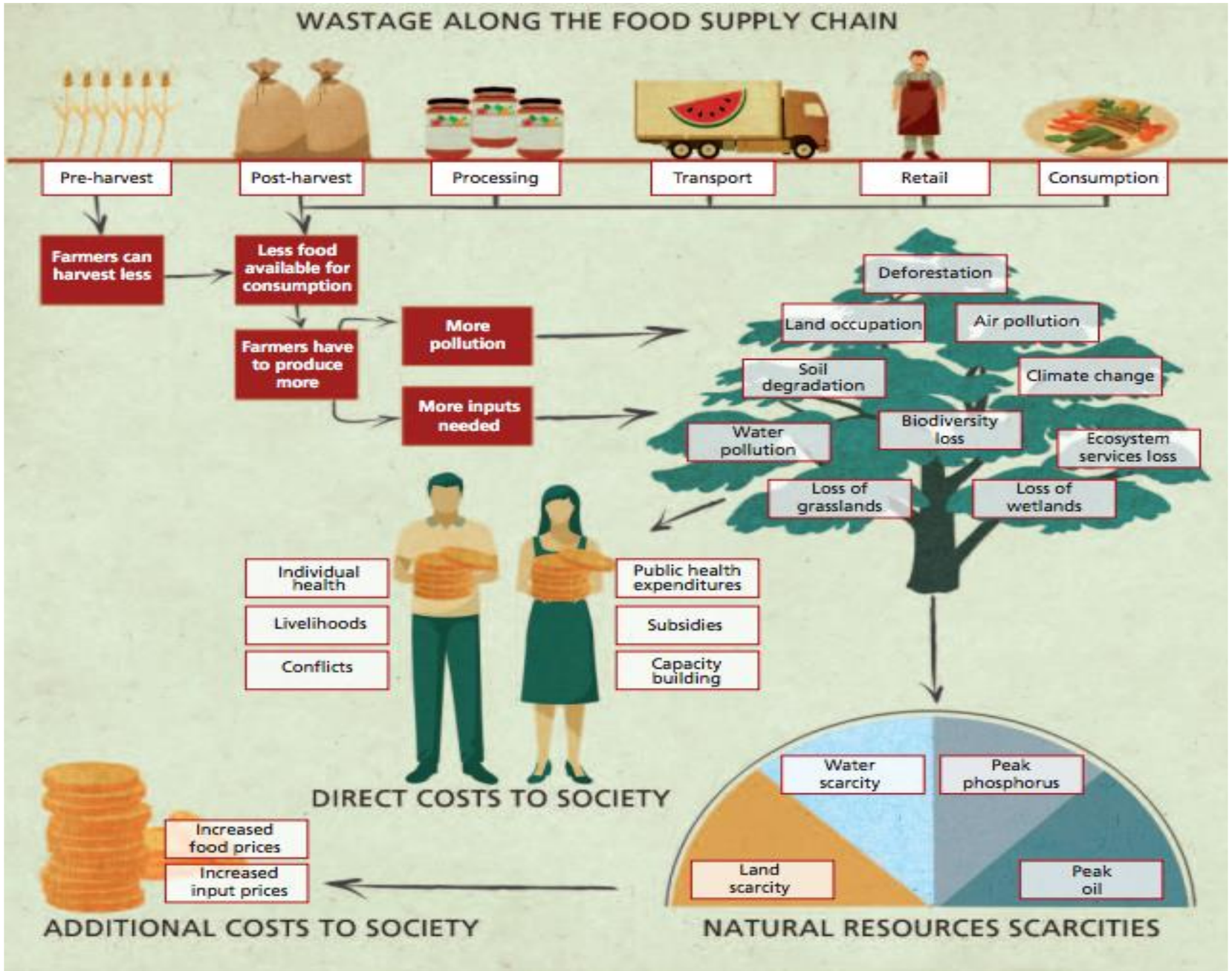
How much food is lost or wasted?

Each year **one third** of **global food production** for human consumption never finds its way onto plates and is lost or wasted

This is equivalent to **1.3 billion tonnes** of edible food

FOOD LOSS & WASTE IMPACT



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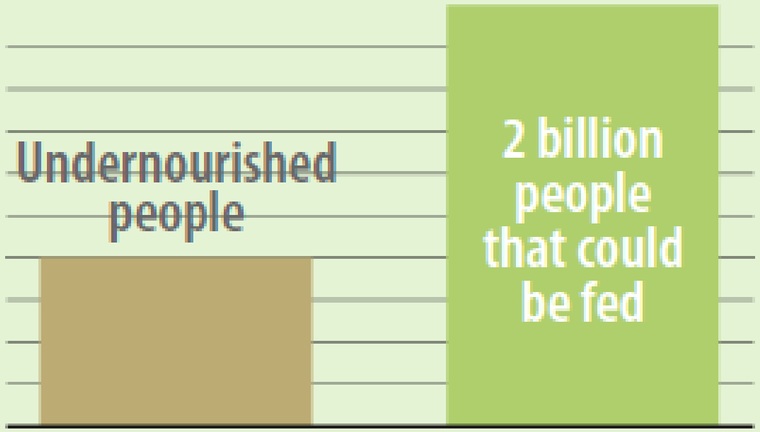
Source: FAO infographic

Cutting food loss and waste

reduces **poverty** and **hunger** and fights **climate change**



Safe and nutritious food that is lost, discarded and wasted can feed some **2 billion people**, or more than double the number of undernourished in the world

If we save **one fourth** of the food currently lost or wasted, we can feed **870 million hungry people**

Source: FAO infographic

LIMITATION: IDENTIFICATION, MEASUREMENT & REPORTING

Target 12.3

By 2030, -halve per capita global food waste at the retail and consumer levels

-reduce food losses along production and supply chains, including post-harvest losses

Indicator

Global food loss index

DIFFERENT MEASUREMENT & REPORTING ACROSS COUNTRIES

Chaboud & Daviron (2017)
Redlingshöfer et al (2017)
Xue et al (2017)

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REPORTING

Food Loss + Waste PROTOCOL

Source: WRI

IDENTIFICATION & MEASUREMENT

Waste Management 58 (2016) 359–368

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Waste Management

journal homepage: www.elsevier.com/locate/wasman

Applying Value Stream Mapping to reduce food losses and wastes in supply chains: A systematic review

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AIM

Apply VSM analysis at the chain level, considering FLW protocol to:

1) Map hotspots

2) Identify & quantify losses

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CASE STUDY

Location- Uganda

Study unit- Dairy value chain

1. Farmer
2. Processor
3. Distribution

Methods- VSM + FLW protocol guidelines

1. Interviews 2. Observations	Scope Timeframe – August 2017 Type of material – Milk products Boundaries – 3 supply chain stages, 1 dairy company Destinations of losses

Data- Supply chain characteristics, food loss hotspots, nature & magnitude

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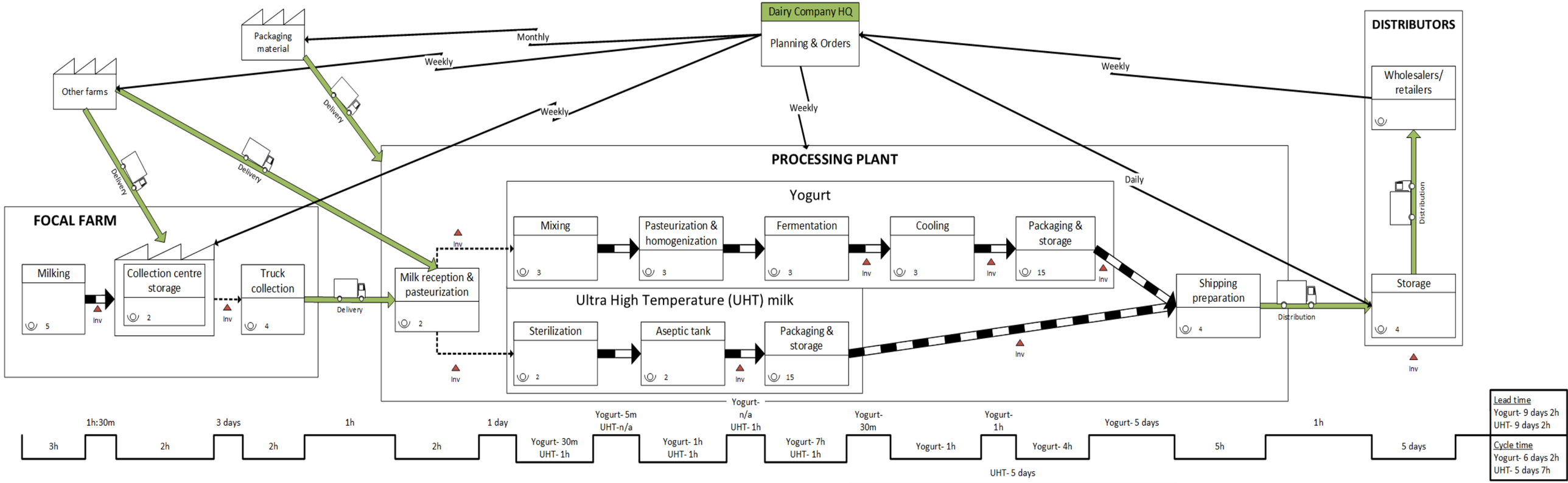
CURRENT STATE MAP OF THE DAIRY VALUE CHAIN



Focal farm+ Centre

-51 cows
-200 L/day
-1400 L/3 days
-15 employees

Processor

Pasteurized milk Storage capacity – 50000 L
Employees - 30

Yogurt

-Max 3000 L/batch
-Plain & Mango flavours

UHT milk

-Max 6000 L/hr

Distributor

-2 trucks
-1 Warehouse
-4 employees

FOOD LOSS HOTSPOTS, NATURE & MAGNITUDE

1. Focal farm & Collection Centre

Nature of losses

1. Milk spillage
2. Poor quality milk due to microbial contamination
3. Uncollected milk

Destinations

1. Discard
2. Used to make ghee
3. Given to employees

FOOD LOSS HOTSPOTS, NATURE & MAGNITUDE

2. Processor

Nature of losses

1. Residue milk in trucks
2. Milk spillage at receiving
3. Unpasteurized milk sent to the drain
4. Poor quality milk rejected
5. Milk-water mixture to drainage
6. Yogurt with sour taste
7. Yogurt drained during batch change
8. Yogurt packages with defects (incorrect weight, damaged cups, seal leaks, mixed flavor, wrong/unclear dates)
9. UHT packages with defects (weak seal, design error, pin hole, no cap, wrong/unclear dates

Destinations

1. Discard
2. Given to employees

Magnitude of loss

Product	Input	Output	Loss
Plain Yogurt	2800	2472.4	**327.8L (13%)**
Mango Yogurt	2800	2645.4	**154.6L (6%)**
UHT Milk	9900	8532	**1368L (14%)**

FOOD LOSS HOTSPOTS, NATURE & MAGNITUDE

3. Distribution

Nature of losses

1. Damaged while loading/unloading
2. Damaged during transportation

Destinations

Discard

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CONCLUSIONS

- VSM & FLW protocol facilitated mapping milk losses
- Processing stage – Major hotspot
- Losses at one stage are initiated at earlier stages
- Actors do not fully acknowledge food loss problem
- Limited awareness & concern among actors of what happens upstream or downstream
- Discard of rejected milk products- Major destination

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KEY MESSAGE

- FLW measurement still a challenge – data collection
- Creating awareness is crucial
- Systematic context diagnosis should be done

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