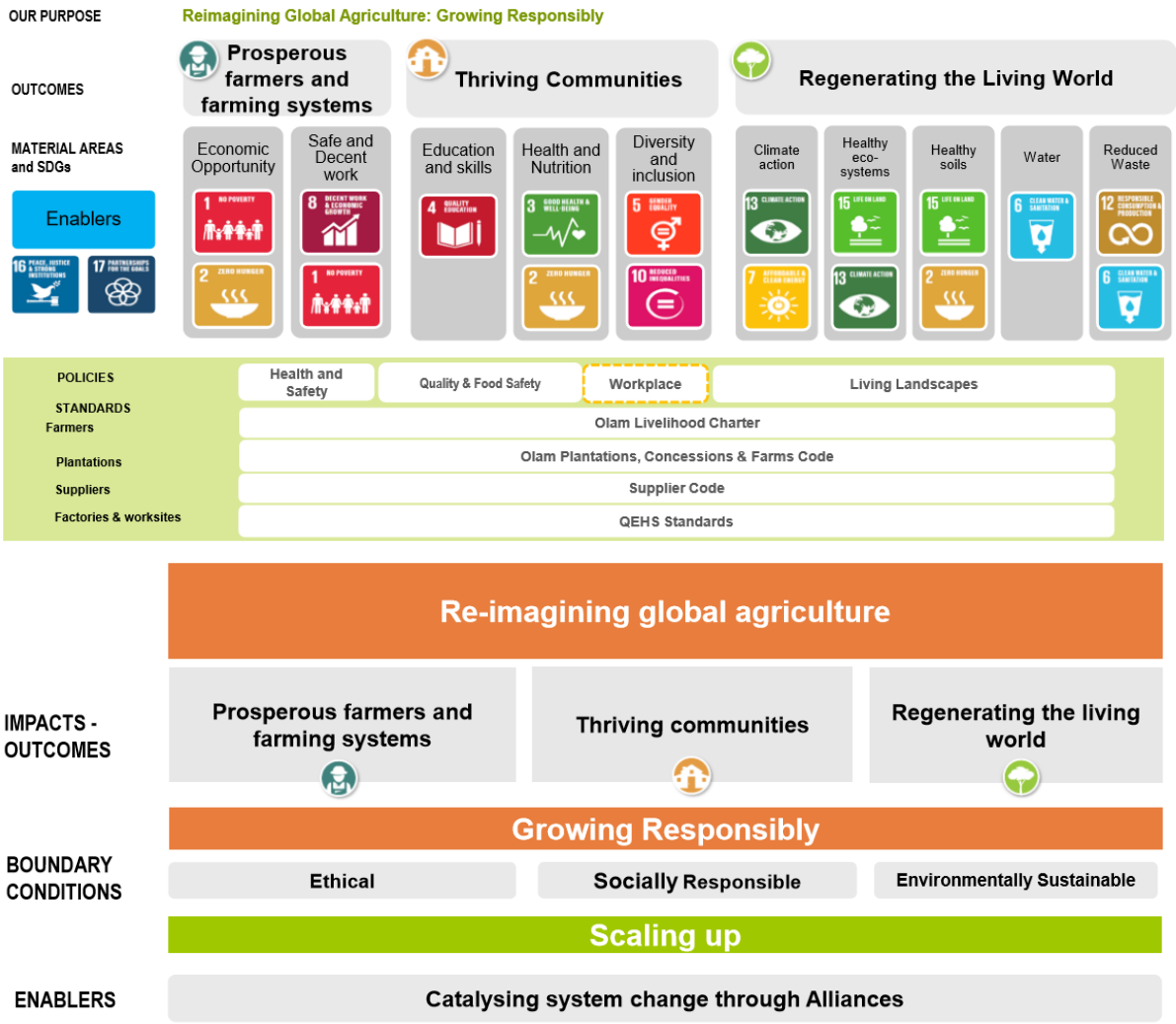
Olam

Reducing Post-Harvest Losses in Olam's Rice Value Chain

Pilot Study: Nigeria Rice Outgrower Initiative

Food loss as a business case for Olam: Core purpose and “Waste” as a new material area



According to the FAO, a third of the food currently produced never reaches our plates. This equates to 1.3 billion tonnes of food waste, a £470 billion economic loss and 3.3 billion tonnes of CO_2 emissions globally every year.

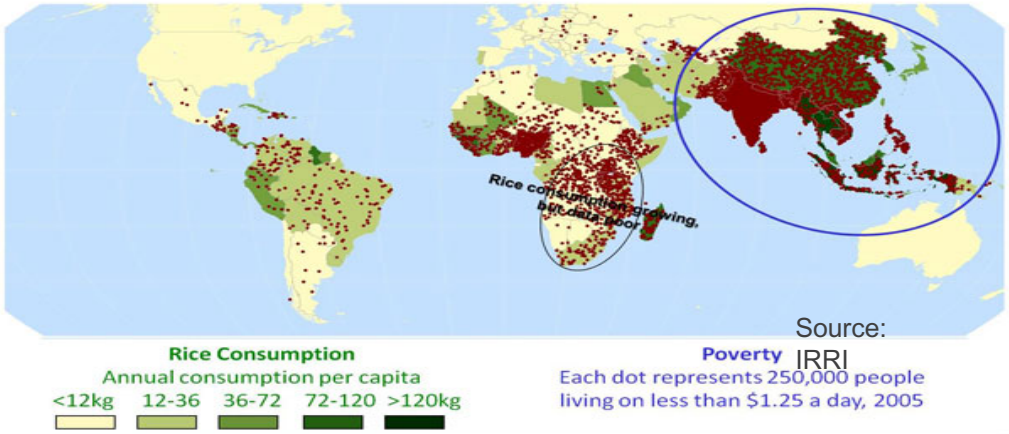
Waste recently launched as a new Olam Material Area

“Minimising food loss and waste to improve global food security and reduce emissions”

Focus areas for Olam

- **Crop and product losses**
- **Natural resource utilisation**
- Operational Waste

The potential of rice, the world's most produced staple crop



Rice feeds half of humanity: it is a staple food crop for more than 50% of the world's population and has **a 90% correlation with poverty**, where almost all rice production is grown on smallholder farms of 0.5 – 3 ha.

Today, in smallholder rice value chains, **losses are "accepted"** as part of the process. Nearly **30% of cereal and legume crops (milled rice included) are lost through to breakage, spillage, as well as attacks from rodents, insects, mould and bacteria.**

Production is where most loss happens, but **poor processing, transportation and storage** also results in rice being spilled or spoiled before getting to consumers.

Rice paddies are the largest man-made source of methane. It is the world's most polluting crop by emissions, from the biomass (leaves, stalks) that decomposes in fields.

For every 1% reduction in PHL in rice value chains, by conservative estimates, **we can mitigate 5MMTCO$_2$eq every year,** contributing to a Zero Carbon world by 2050.

Targets to reduce post-harvest losses are being set at national level and by global business partnerships.

SUSTAINABLE DEVELOPMENT GOALS

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

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.

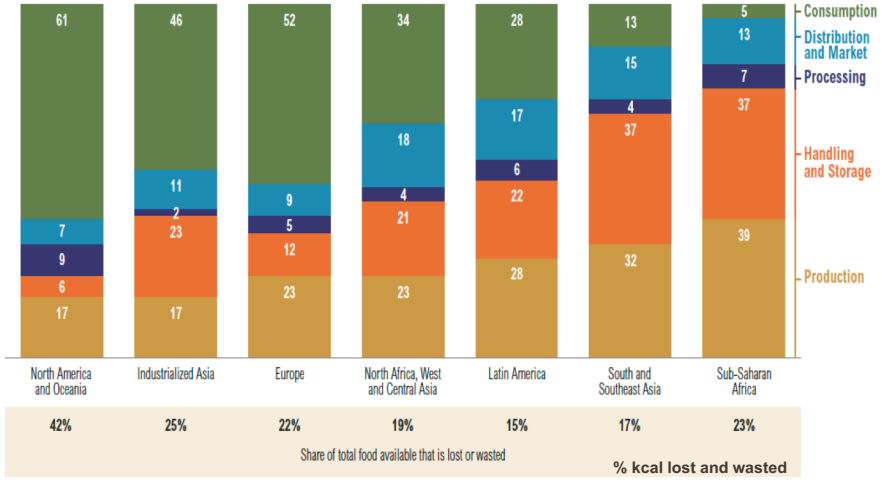
GAA Global Agri-business Alliance

Food Loss Resolution (2017)

Prevent and reduce food loss by 50% within our own operations by 2030 versus a 2018 baseline.

Food Loss: Occurrences and Prevention

Food loss at the production stage is more prevalent in developing regions



Note: Numbers may not sum to 100 due to rounding.

Source: WRI analysis based on FAO 2011.

In Sub-Saharan Africa, 39% of losses occur during the production stages.

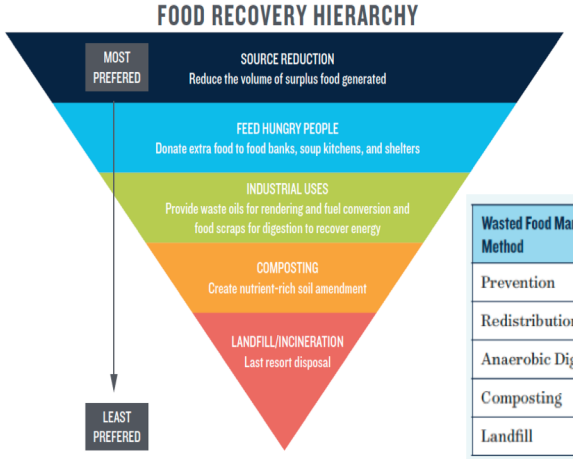
Losses during threshing

Losses during re-bagging

Losses through prolonged exposure to sunlight

The most effective actions for addressing food loss and waste is prevention (or "source reduction" strategies).

Preventing food from being lost or wasted in the first place avoids the use of water, agricultural chemicals, energy, and other resources for food production, processing, transportation, packaging and disposal.



Wasted Food Management Method	Metric Tons of CO_2e Avoided Per 100 Tons of Food Wasted
Prevention	420
Redistribution to People	43
Anaerobic Digestion	61
Composting	72
Landfill	-54

Assessing Corporate Performance on Food Waste Reduction: A Strategic Guide for Investors. April 2017

PHL interventions ensure that returns are maximized on the production investments that SHFs make.

Pilot study on post-harvest losses in Olam rice value chain, Nigeria

Supported by The Rockefeller Foundation's YieldWise Food Loss Program working with global business to measure food loss in supply chains.

***Food loss** (**FL**) is the decrease in quantity or quality of food during harvesting, post harvest handling, storage, distribution and consumption (FAO).*

Food Loss solutions in rice value chains can contribute to :

- **National Agenda**, Improving Nigeria's rice self-sufficiency and reducing reliance on imports, whilst increasing food security, income and food availability
- **GHG Mitigation / Adaptation Agenda** methane emissions from rice will increase as Nigeria's growing population demand for rice increases
- **The Sustainable Rice Platform Standard**

Value Chain in observation

OUTGROWER FARM

16,723 farmers on 18,722 Hectares

On farm storage → Transport → Olam Warehouse

OLAM MILL

Milling capacity of 195,000Mts

How do losses in Olam smallholder rice value chains compare with rice losses observed in FAO and IFAD study?

Harvest • Non-observance of the agricultural calendar (early harvest), presence of birds and rodents in the field
Drying • Panicles dried in the village in a rudimentary way, often on the ground, without protection against poultry or humid weather
Threshing/winnowing • Poor drying affects the effectiveness of shelling and promotes insect and mold infestation
On-farm storage • Between 1 to 7 months in the farmers' storage structures before their evacuation leading to 4 to 5% qualitative losses: (mold: 3-4%, empty husks: 0.04-2%, insects: 0.2%).
Husking • Level of broken rice : up to 80% (which reduces greatly the market value)

A 3-day delay in threshing grain after proper moisture level is achieved can lead to 50% loss due to increased breakage (FAO).

Kick-off Workshop: 5th & 6th October, Nigeria

A 2-day workshop between Wageningen researchers, Olam Management team and, Olam field coordinators, women group leaders and farmers from Olam Rice Outgrowers Initiative's four states: Taraba, Plateau, Nasarawa and Benue.

Workshop highlights:

- Explain the scope of study and validate each value chain step with stakeholders
- A breakout session to obtain detailed information on each value chain step
- Collective review of the Cool Farm Tool's Food Loss and Waste questionnaire to validate its relevance for the context
- Presentation of the project work flow and responsibilities to conduct observations, surveys and direct measurement of food loss
- Presentation of the Food Loss and Waste measurement protocol

REACH OF OLAM RICE OUTGROWERS INITIATIVE

State	N of Farmers	Land Area (Ha)	2018 Estimated Procurement from Initiative
Benue	9,590	9,590	18,000 MT
Taraba	2,327	2,327	7,000 MT
Nasarawa	2,912	2,912	5,000 MT
Plateau	1,894	3,893	10,000 MT
Total	**16,723**	**18,722**	**40,000 MT**

"Before, I thought losses were unavoidable, inevitable but the workshop has taught me that small changes can prevent losses"




For farmers, estimating losses is much harder than anticipated. Losses are somewhat "accepted" as part of their farming process.

Surveys and direct field measurements

in alignment with the Cool Farm Tool FLW Module and the WRI FLW Standard

FOOD LOSS & WASTE SURVEY

Asking farmers to estimate losses in kg or bags of paddy, based on previous farming years to identify hotspots / areas for improvements

Farmer self-assessment survey questions on:

- Farmer process, practices and tools used
- Farmer estimated losses
- Causes for loss (when known)
- Farmer preventive measures (when taken)

80 farmers to be surveyed across 4 states

Post kick-off workshop, the survey was adapted to farmer practices in Nigeria's rice value chain to best capture data.

For farmers, the most difficult stage to quantify loss is during harvesting, when ***"shattering"*** takes place. A loss that occurs when the paddy is ready for harvest.

"When the grains are mature, they fall on the ground like rain drops".

DIRECT FIELD MEASUREMENTS

Methodology: Tracking the load of 3 different "one square meter samples", taken from one 1 hectare field

Tracking 80 loads of paddy across 4 states

"Although it does not replicate the field conditions in which rice is harvested, piled, heaped, threshed or winnowed, it is the most reliable way to measure losses throughout the rice value chain."

Measuring weight and moisture content before and after each value chain stage

Step 1 **Observation**	Step 5 **Winnowing**
Step 2 **Cutting**	Step 6 **Bagging**
Step 3 **Piling & Heaping**	Step 7 **Transportation**
Step 4 **Threshing**	Step 8 **Storage**

When measuring on-farm losses, "traditional practices" are not uniform

- Time of harvest
- Distance travelled with cut paddy
- Quality of bag used (new vs re-used)
- No. of days paddy is left to dry in the field
- Storage conditions

Loss measurement exercise from cutting to winnowing took 1 hour.

After the "dry-run", participants led a strategy session to discuss the outcome of the exercise.

Next steps

Pilot's next steps:

- **Conduct Field Observations, Farmer Interviews, Direct Value Chain Measurements, Stakeholder Interviews, and GHG Data Collection *Cool Farm Tool)**

State	Schedule
Taraba	23rd – 27th October
Plateau	29th – 03rd November
Nasarawa and Benue	12th – 17th November

- **Analyse rice loss data based on interviews and field measurements results**
- **Include pilot learnings in the review of the Cool Farm Tool FLW module, to be launched by Q2 2019.**

Olam's next steps:

- **Use the learnings from the pilot to measure losses across other rice value chains and extend measurement approach to other crops**
- **Measure losses across all milling stages for Olam rice mill**

  Currently, milling output is quantified in terms of a) packaged rice volumes, and b) husks and other losses.

  Once farm improvement practices are implemented and losses are reduced, understanding losses at the mill will be key to translate avoided post-harvest losses at farm level into maximum commercial value and food availability.