Food and Agriculture Organization
of the United Nations

FAO GLEAM: ongoing developments, and future directions

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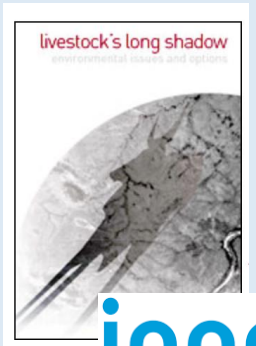
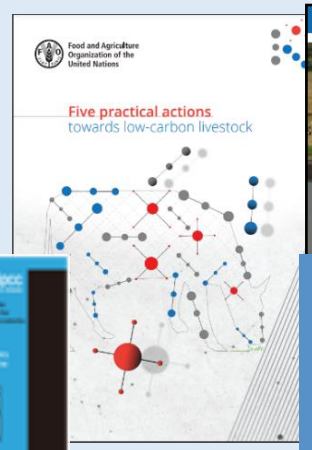
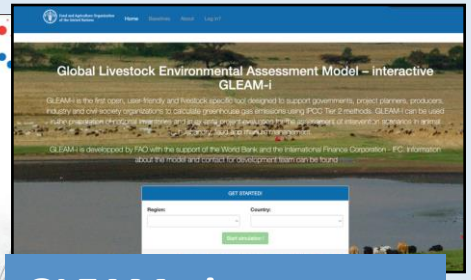
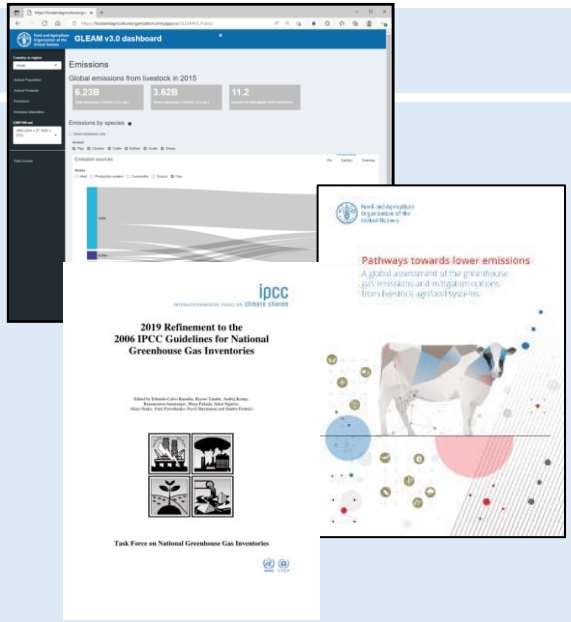
Introduction to GLEAM | The history







GLEAM –i
Online app for mitigation options
Default data: GLEAM 2
Baseline and scenario: user-defined
Non-spatial



Pre-GLEAM
Non-spatial
IPCC. 1997

GLEAM 1
base year 2005
IPCC 2006

GLEAM 2
base year 2010
IPCC 2006

GLEAM 3
base year 2015
IPCC 2019, IPCC 2006

2006 | 2010-2013 | 2017 | 2022-2023

2016
- Large Ruminants
- Small Ruminants
- Poultry
- Feed

2018
- Pigs
- Nutrient Flows

2019
- Water
- Soil Carbon

2020
- Biodiversity
- Feed additives

GLEAM-X

Global baseline assessment

Mitigation calculator

Mitigation scenarios

Web application

Open data

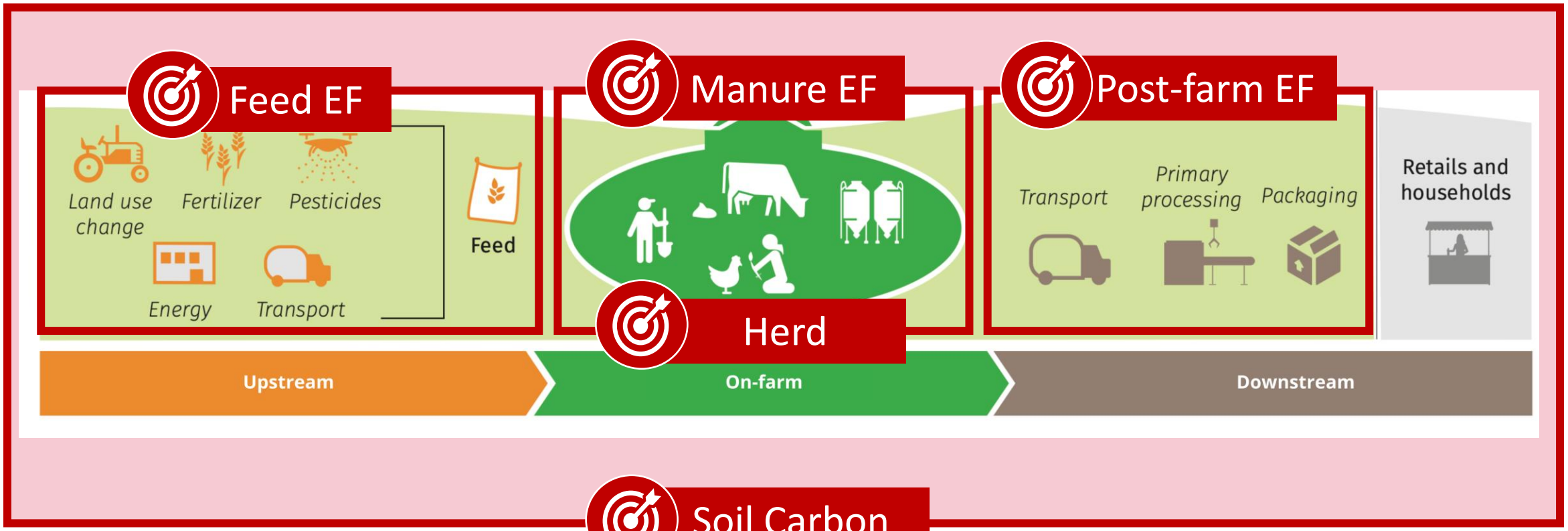
Transparency of methods

Application at different scales

Tradeoffs and synergies with other SDGs

Funded by

Federal Ministry of Food and Agriculture



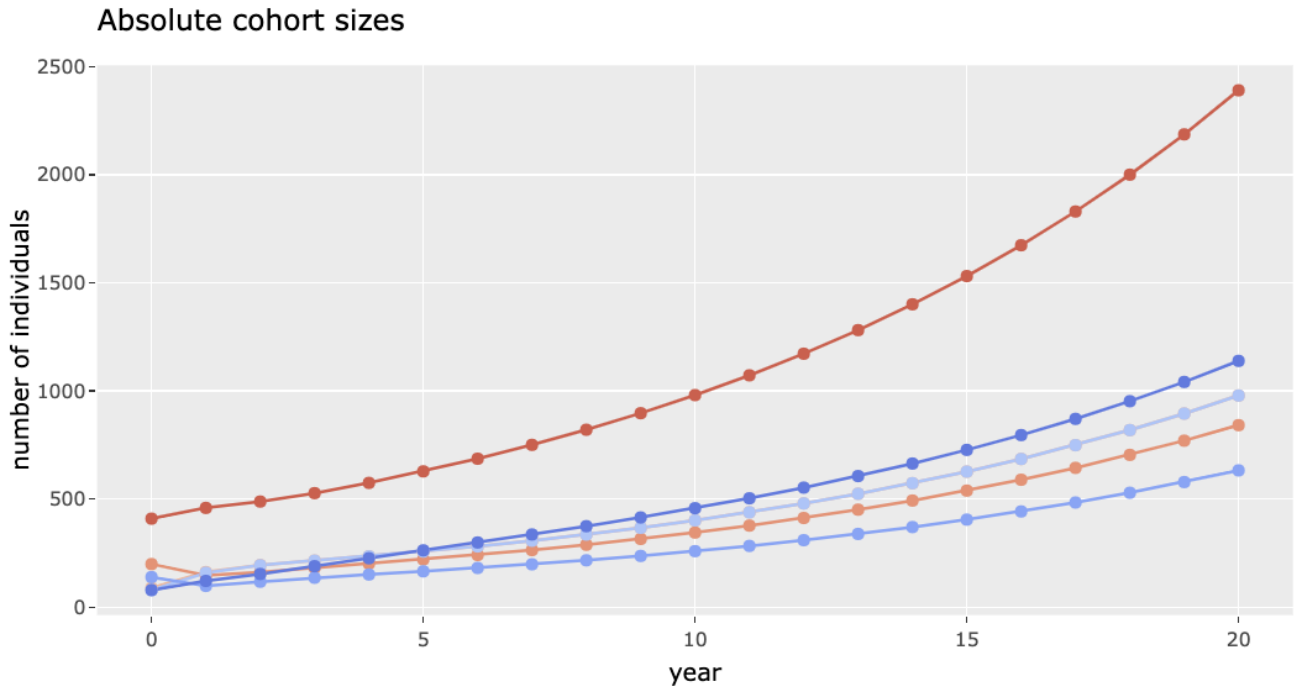
Soil Carbon

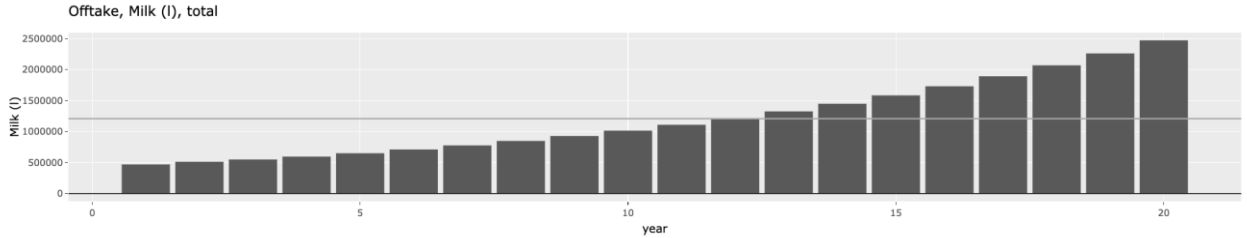
Uncertainty assessment

Other impact categories
(e.g., water, biodiversity, …)

Static Herd Module

GLEAM-X DYNAMIC HERD MODULE



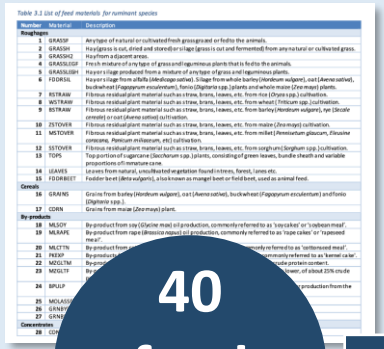


- **Simulate effects of interventions over time on herd dynamics**
- **Inform long-term decision-making**
- **Projected scenarios based on global meat/milk demand for 2050**

  e.g., What is the number of animals needed to meet the 2050 meat/milk demand?

Ongoing development | Feed

1 Expansion of the feed list



40 feed items

> 170 feed items

Suited for a global assessment, but difficult to use on a local scale

Increase flexibility to capture local diets

2 Update database with nutritional parameters

Feedipedia and literature

3 Update of emission factors

4 Harmonization with other sources

with in-house data sources such as FAOSTAT

5 Accounting for the origin of each feed commodity

Agro-SCAN (Basque Centre for Climate Change BC3)

Next steps

- Estimation of emissions from feed transport
- Update of Emissions from LUC and CH_4 from rice production
- Update of animal feed rations
- Improved estimates about pasture distribution, productivity and management level
- Expand to other impact categories

Pastures and rangelands

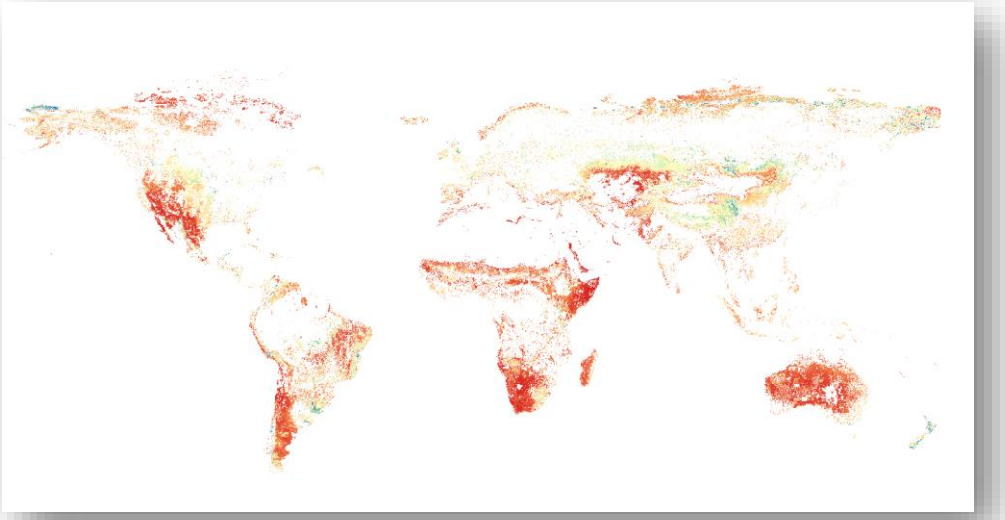
Soil carbon stocks and stock changes in grasslands

Impact of managements and practices

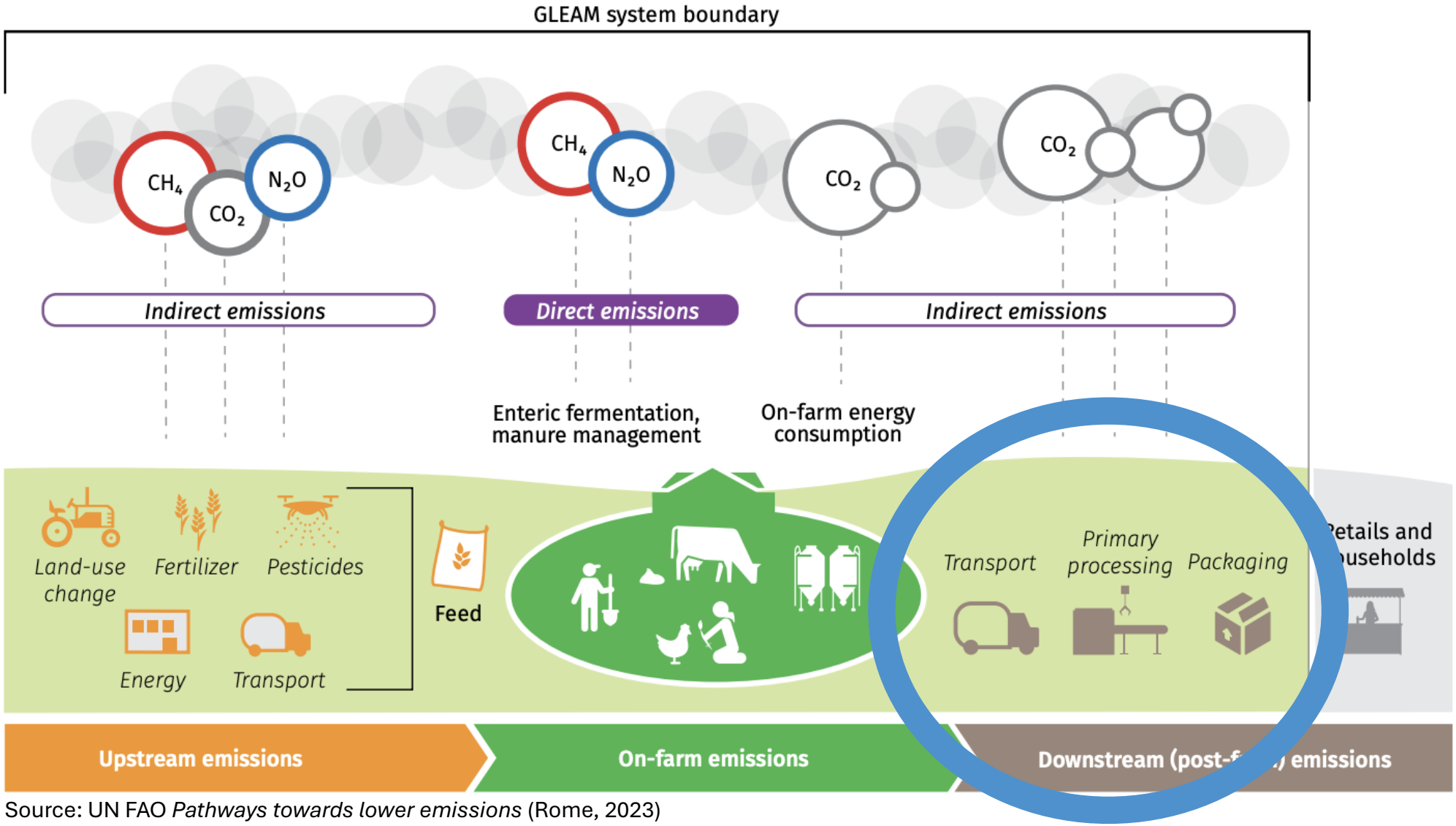
Climate
Temperature
Rainfall
Evaporation

Soil
Carbon content
Bulk density
Clay content
Soil type, cover

Organic inputs
MANURE
Plant residues



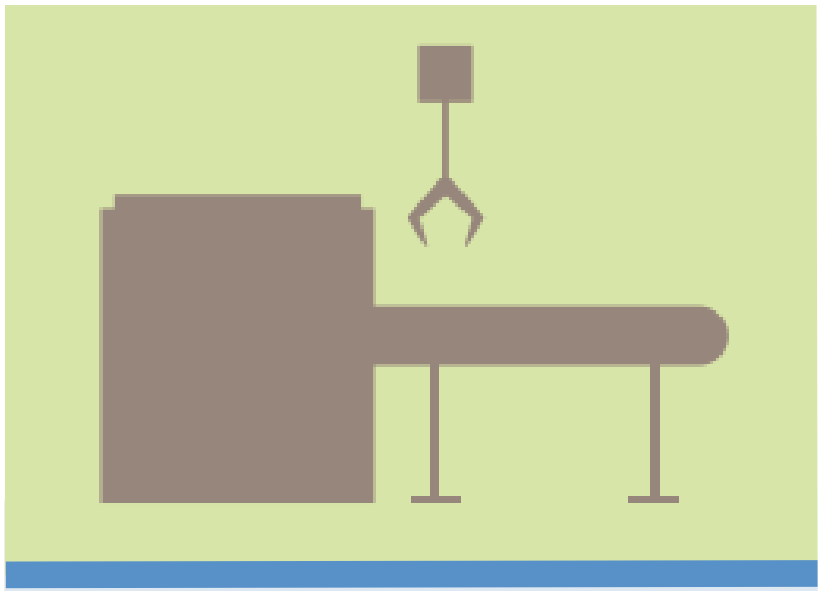
Ongoing development | Post-farm Emissions



Source: UN FAO *Pathways towards lower emissions* (Rome, 2023)

Key opportunities:

Data enhancement & collaboration



Primary Processing

Packaging

Transport

Thank you

FAO