



2024 Commodity Masterclasses: Key Takeaway Report



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Content and purpose of this document

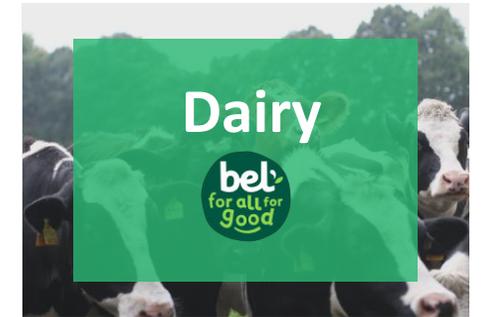
Food supply chains account for **25% of global greenhouse gas emissions¹**, making them vital to reducing the world's carbon footprint

Decarbonizing these supply chains is challenging, as each commodity—from coffee to wheat—faces **unique obstacles that require tailored approaches**

In line with TNZ's mission to leverage collaboration to achieve decarbonization, the **Commodity Masterclass series facilitates the sharing of best practices**, helping organizations learn, collaborate, and create scalable solutions for a sustainable future

This document summarizes the first five masterclasses held in 2024 and their overarching takeaways. **For full materials as well as session recordings, see [here](#)**

Masterclasses covered



1. World Economic Forum & BCG report 'The Supply Chain Opportunity' (Jan 2021)



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Themes | Common challenges

Fragmented supplier landscape makes many efforts more challenging

Production can be spread across millions of smallholder farmers from different countries, adding difficulty to key activities including rolling out and scaling new practices, verifying current practices, and collecting accurate carbon data

Variability across regions & farming models makes standardized solutions difficult

Regional differences in climate, soil types, and farming and ranching models require tailored decarbonization approaches

Lack of standardized and accessible data hampers progress

The current data landscape is spotty, disorganized, and difficult to navigate, causing unnecessary duplication of efforts and making it difficult to credibly prove impact

Financing is a persistent challenge

There is a need for more and different types of financial mechanisms that spread cost across the value chain and/or de-risk investment; e.g., multi-stakeholder partnerships incorporating public and private entities across the value chain

Scalable low-carbon technologies can be limited in availability and application

Adoption of low-carbon technologies is often hindered by availability, infrastructure gaps, and technical barriers, making it challenging to implement solutions even when funding is available

Themes | Key strategies and enablers



Producer empowerment is crucial for adoption

Successful interventions engage, educate, and benefit farmers and ranchers to help them overcome the financial & operational risks of adopting sustainable practices



Public-private partnerships are a key enabler

Companies frequently cite collaboration with public sector entities as an unlock for their most successful interventions



Data challenges can be mitigated

Investing in carbon monitoring & reporting tools, and using them diligently and uniformly, has helped members improve their ability to track progress



More information, including on successful application of these strategies, can be found in the individual masterclass recordings and materials [\(available here\)](#)

Themes | Common questions from masterclass participants tended to focus on the details of key enablers



Producer engagement

- What specific **financial and technical support** do you provide help farmers overcome the risks of transitioning their operations?
- How are you engaging farmers when you **don't have a direct relationship** with them?
- How do you ensure that new sustainable practices **align with farmers' other competing priorities**?
- What are the main **co-benefits for farmers** when adopting sustainability?



Financing

- How do you partner with your **treasury team / investment banking partners** to raise capital for your sustainability efforts? Or does it come from Opex?
- How can financial support be provided to farmers **several tiers away in the supply chain**, when commercial banks face **challenges in offering favorable terms due to multiple intermediaries**?
- Do **multi-stakeholder partnerships** with competitors get financial institutions to go faster?



Measurement

- How do you collect **accurate emissions data** at the farm level?
- What methods are you using to **measure and track reductions across different farmers**, such as logbooks, mobile apps, etc?
- How have you managed to **align GHG accounting methodologies** amongst a diverse set of suppliers?
- How do you find **LCA data** to be aligned or standardized globally?



Other

- How do you navigate the trade off between **internal pressure for results** and impact versus **solutions taking time**?
- Will new technologies or solutions need to be developed to reach net zero, or **do all necessary solutions already exist**?
- How are these levers **impacting the business model downstream**?
- Do you think it is possible to achieve success in reducing emissions if there is **no regulation in the field of emissions in the country**?



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Dairy |
Danone
30 May 2024

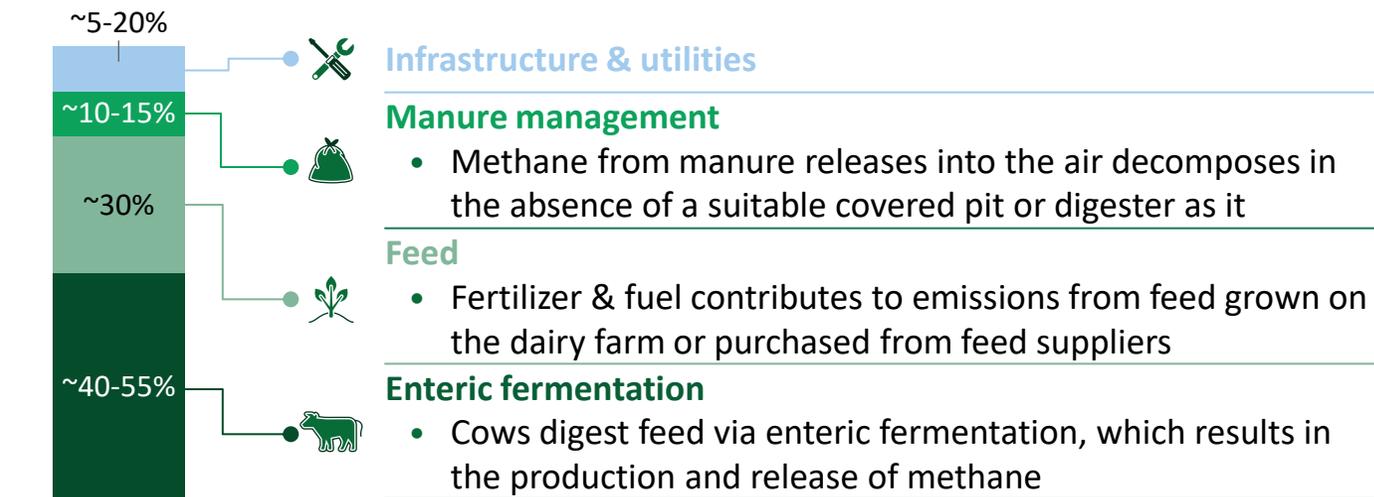


Overview | Dairy contributes up to 5% of global GHG emissions; enteric fermentation a key driver

Context

- The global dairy market is valued at approximately \$650 billion, with 950,000 kT produced in 2022
- Dairy farming supports the livelihood of over 10% of the global population
- Dairy contributes about 5% of total global greenhouse gas emissions

Main emissions drivers



“

Milk is a global commodity. This means that decarbonization of the dairy sector is a **global and a collective challenge**.

- Sarah Lockwood,
Global Regen Ag Director, Danone

”

Insights | Herd and manure management present unique challenges for decarbonization of dairy



Key challenges

- ◆ **High methane emissions:** Dairy production has significant methane emissions, especially from enteric fermentation
- ◆ **Diversity of farming models:** Dairy farming models vary widely across not only farm size but also feed & housing system (e.g., pastoral, land-based, limited land) farm outputs (e.g., specialized dairy vs dairy/meat-eggs/cash crops), and degree of technicality making standardized solutions difficult
- ◆ **Farm resilience:** Build economic and environmental resilience while pursuing decarbonization efforts



Decarbonization levers

- ◆ **Herd management:** Optimise herd size, animal health and welfare, and genetics to enhance productivity and reduce emissions per unit of output
- ◆ **Animal feed (incl. DCF):** Use sustainable, deforestation-free feed and optimize rations to reduce methane emissions
- ◆ **Manure management:** Implement advanced storage, transformation and application methods to lower methane emissions from manure
- ◆ **Methane innovation:** Leverage new technology such as feed additives to reduce enteric methane emissions
- ◆ **Soil health:** Enhance soil carbon sequestration through regenerative practices like cover cropping and reduced tillage



“

Methane is a key battle for us, because it has 80 times higher warming potential than CO2 and has a shorter lifetime in the atmosphere. This means that it's the **fastest and most powerful opportunity to curb GHG emissions.**

- Sarah Lockwood,
Global Regen Ag Director, Danone

”

Overview | Examples of Danone initiatives and progress

Case study 1:  **NORAM Reg Ag Program**

Context: 2017 initiative to improve soil health, carbon sequestration, crop yields, and long-term farm resilience

Results (2017 – 2022): Reduced 119k metric tons of CO2 equivalent, sequestered >21k tons of carbon, and prevented 337k tons of soil from erosion, resulting in ~\$3.3M cost avoidance for farmer partners

Case study 2:  **H'Lib Bladi, Morocco**

Context: 2016 project launched by a coalition of partners aiming to promote sustainable milk production model in Morocco

Results (2016 – 2019): Upgraded 30 Milk Collection Centers that provide resources and guidance to farmers to achieve social, economic, and environmental benefits

Case study 3:  **Low Methane Milk Belgium**

Context: In highly efficient farms with low carbon intensity, adding feed additive (3-NOP) into the feed ration to further reduce enteric methane emissions from cows

Results: TBD, but potential for 34% reduction of methane per cow and 12% reduction of CO2 eq. per farm



For more details, see the full [Danone masterclass materials](#)

Dairy |
Bel Group
23 October 2024

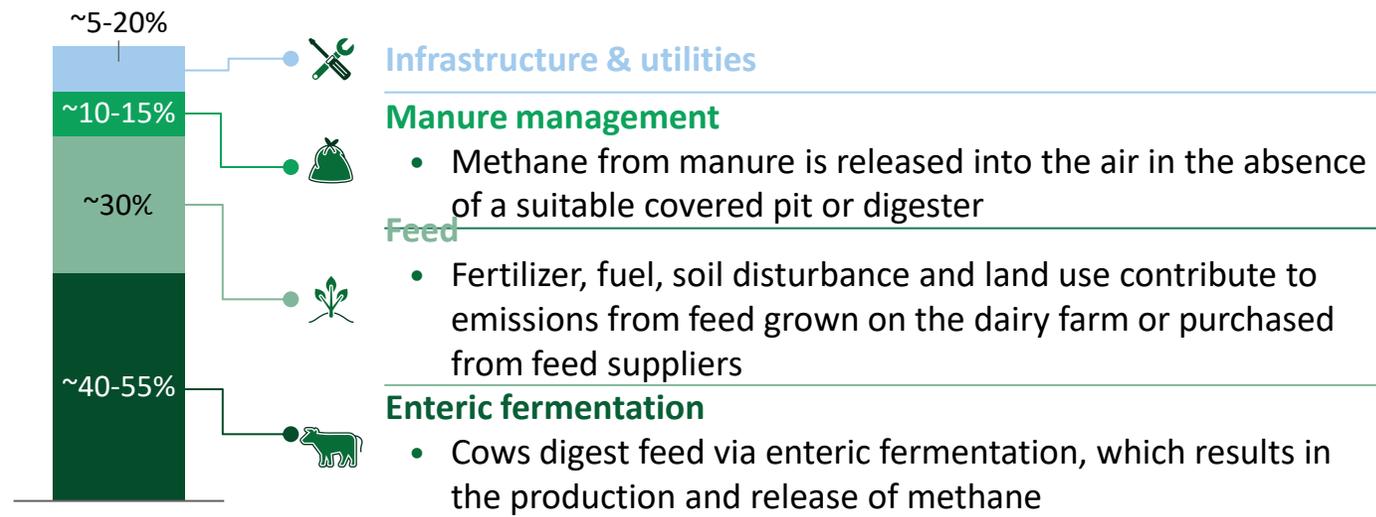


Overview | Dairy raw materials account for more than half of Bel's global emissions

Context

- Bel supplies >\$500M of milk and collects ~1,000 kT of raw milk each year
- Bel's milk supply comes from 8 dairy basins: France, Azores, USA, Slovakia, Iran, Portugal, Poland, and Canada
- Raw milk contributes to 35% of Bel's global emissions. Total dairy raw materials contributes 56%

Main emissions drivers



A key pillar of Bel's mission is to **preserve the planet and regenerate natural ecosystems** in order to contribute to limiting global warming below +1.5 degrees

-Elodie Parre,

Sustainability Director, Bel Group



Insights | Herd and manure management present unique challenges for decarbonization of dairy



Key challenges

- ◆ **High methane emissions:** Dairy production has significant methane emissions, especially from enteric fermentation
- ◆ **Diversity of operating models and agricultural conditions:** High heterogeneity between countries and within countries means there is not a single solution for all



Decarbonization levers

- ◆ **Reduce unproductive animals:** Decrease emissions by optimizing herd productivity and removing underperforming livestock
- ◆ **Manure storage conditions:** Improve manure storage and handling to minimize methane and nitrous oxide emissions
- ◆ **No deforestation feeding for EU:** Use animal feed free of deforestation-linked commodities like soy or palm oil in the EU
- ◆ **Unsaturated fatty lipids in ration:** Incorporate unsaturated fatty acids in livestock diets to reduce enteric methane production



Partnering with farmers, supporting regenerative agriculture, and ensuring animal welfare are the **key enablers** driving Bel's unique global framework

-Simon Bonnet,

Global Milk Upstream &

Sustainability Director, Bel Group



Overview | Examples of Bel Group initiatives and progress

Case study 1:  **ABPO partnership in France**

Context: 2018 collaboration with French association of 700 dairy farms to reduce milk carbon footprint

Results (end of 2023): 100% of farms with no GM feeding and pasture access. 100% of farms with a 1st carbon diagnostic, and 15% with a 2nd

Case study 2:  **Bovaer deployment in Europe**

Context: Partnership with DSM-Firmenich started in 2022 to incrementally deploy Bovaer in European countries

Results: By end of 2024, 50% of milk from Slovakia will come from cows with Bovaer

Case study 3:  **Regen ag promotion in Azores**

Context: 2022 pilot with 5 farms, implementing trials in crops & fertilizer as well as grazing management

Results: Strong results so far, especially in improving grazing and feeding, as well as on farmer margins. Plans to scale up with 15 additional farms in 2025



For more details, see the full [Bel Group masterclass materials](#)

Potatoes |
PepsiCo
7 November 2024

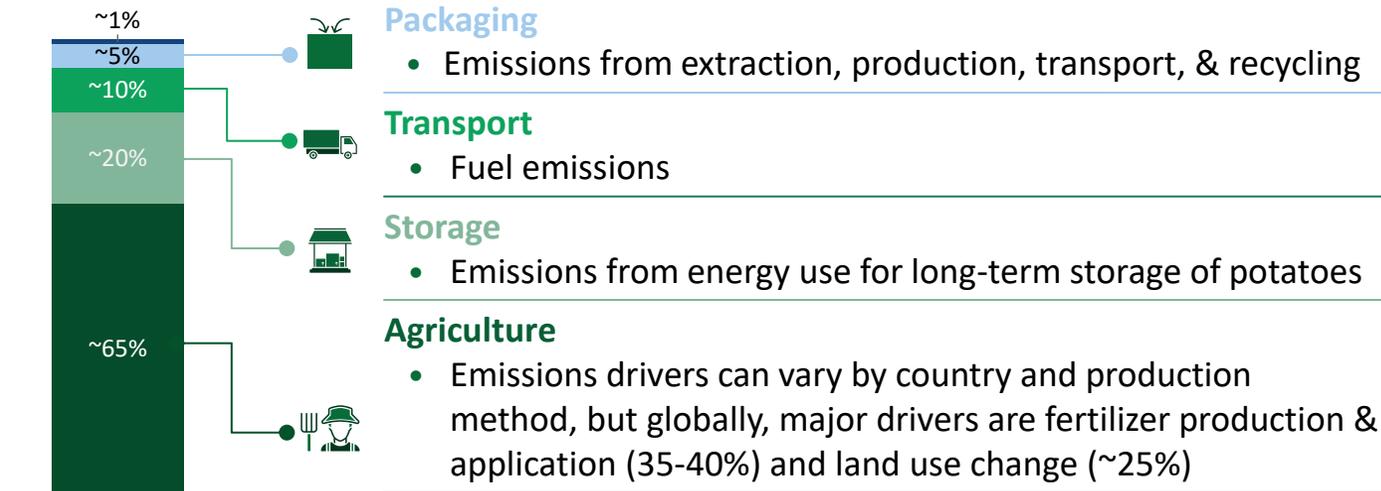


Overview | Fertilizer, land use change, & storage drive emissions for ~\$130B global potato market

Context

- The global potato market is large, valued at ~\$130B
- ~374 Mt of potatoes are produced globally each year
- 7 countries account for 60% of production: China (~95 Mt), India (56 Mt), Ukraine (20 Mt), Russia (18 Mt), USA (17 Mt), Germany (10 Mt), and Bangladesh (10 Mt)
- Potato movements tend to be largely intra-regional due to risk of spreading disease

Main emissions drivers



We work to source our crops in a way that aims to restore the Earth's soil, strengthens farming communities, decarbonizes the food system and creates a more sustainable food system for the future

-Archana Jagannathan,
CSO, PepsiCo Europe



Through our engagement with farmers, we've seen uptake of regenerative practices, with the associated carbon impacts.

-Margaret Henry, VP, Sustainable &
Regenerative Agriculture, PepsiCo



Insights | Potato production entails sometimes-overlooked nuances that impact decarbonization



Key challenges

- ◆ **Energy-intensive storage:** Potato storage can be very energy intensive in hot/cold climates, creating significant carbon footprint in some regions
- ◆ **Funding sources:** Relative to other crops, potatoes are not as top-of-mind for global organizations that help fund sustainable agriculture
- ◆ **Farmer risk:** Potato farmers are often less diversified than farmers of other crops, meaning they face more risk from changing their practices



Decarbonization levers

- ◆ **Yield optimization:** Maximize crop yields through improved farming practices to reduce emissions per unit of production
- ◆ **Reduced & low carbon fertilizer:** Use fertilizers with lower carbon footprints to minimize emissions
- ◆ **Precision agriculture:** Employ data-driven technologies to optimize input use and minimize resource waste
- ◆ **Renewable electricity:** Transition to renewable energy sources for irrigation, storage, and other farm operations
- ◆ **Soil coverage:** Maintain living roots or cover crops year-round to improve soil health and enhance carbon sequestration



“Potatoes don't get as much attention as some other crops. They don't get as much investment when you look at global flows of financing for regenerative agriculture. But they should, given the opportunities for decarbonization in this value chain.”

-Steven James,
Sr. Director, North American Potatoes,
PepsiCo



Overview | Examples of PepsiCo initiatives and progress

<p>Case study 1: Renewable electricity </p> <p>Context: 2023 & 2024 pilots of using renewable energy to cover on-farm grid electricity</p> <p>Results: Pilots ongoing. Anticipating meaningful reduction in GHG footprint</p>	<p>Case study 2: Reduced soil disturbance </p> <p>Context: Implementing multiple sustainable practices, including pre-tilling and ground cover, to reduce soil disturbance</p> <p>Results: Sustained progress on emissions reduction and environmental impact reduction</p>	<p>Case study 3: Fertilizer optimization </p> <p>Context: Utilizing low carbon fertilizers made via renewable energy and which replace nutrients in the soil lost during harvest</p> <p>Results: “Green” fertilizer reduces CO2 emissions and can promote soil health and biodiversity</p>
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For more details, see the full [PepsiCo masterclass materials](#)

Cocoa |

Mondelēz International

26 November 2024

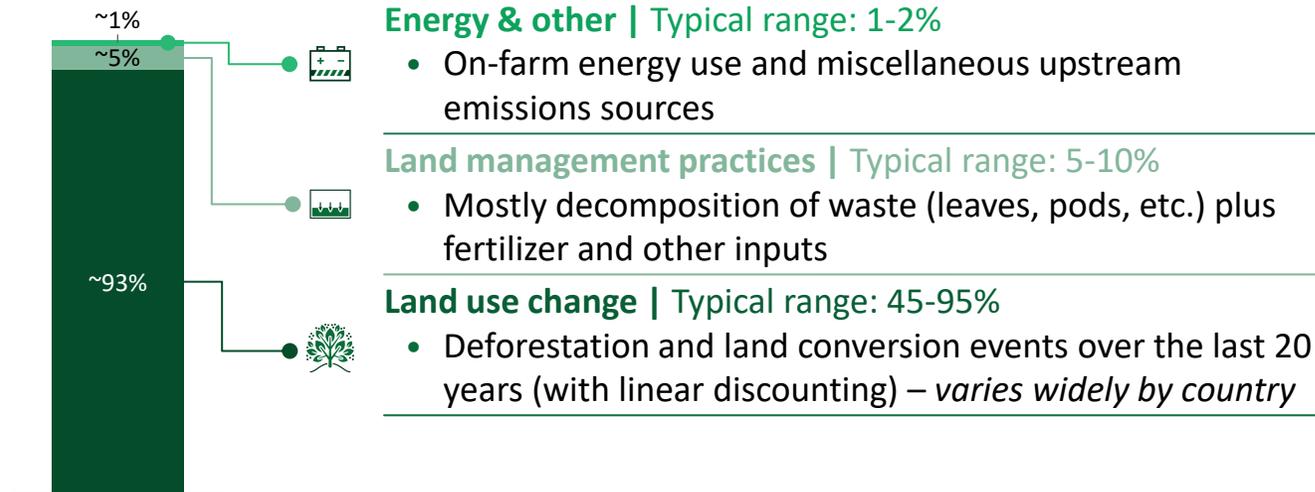


Overview | Cocoa emissions driven almost entirely by land use change

Context

- Overall cocoa market is valued at ~\$26B¹
- ~5 Mt of cocoa is produced each year
- Over half of cocoa production comes from two countries: Ivory Coast (~2Mt) and Ghana (~550kt)
- West African markets are top cocoa exporters across top producing markets

Main emissions drivers



1. Includes cocoa butter, powder, and liquor



We see a wide range of emissions factors between countries and growing areas, as historically deforestation events and land management practices can vary a lot. Farm level data insights are a key requirement to support carbon reduction roadmaps.

-Michael Weber,
Sr. Director Climate & Environment,
Mondelez International



Insights | Fragmented supply makes it challenging to address deforestation risks of cocoa farming



Key challenges

- ◆ **Highly fragmented supply:** Cocoa is produced by ~5M smallholder farmers from different countries, adding difficulty to key activities, including:
 - Rolling out and scaling new practices
 - Verifying farmers' current practices
 - Collecting accurate carbon data
- ◆ **Regulatory enforcement:** Countries' changing regulations related to cocoa can be unclear and difficult to keep up with



Decarbonization levers

- ◆ **Zero deforestation:** Eliminate deforestation from cocoa production by protecting forests and avoiding land conversion
- ◆ **Agroforestry:** Integrate shade trees and diverse plant species into cocoa farming systems to sequester carbon, improve soil health, and enhance biodiversity
- ◆ **Productivity:** Increase cocoa yields through improved farming techniques and access to better planting material, reducing the need for expansion into new land
- ◆ **Farm Management:** Implement sustainable practices such as crop rotation, nutrient management, and proper use of inputs to optimize resource use and lower emissions per unit of output



“

Fragmentation is a key challenge in decarbonizing cocoa supply chains. Cocoa is produced by five million farmers from different countries. Not all of these farmers are registered.

– Cedric van Cutsem,
Sr. Director Cocoa Life,
Mondelez International

”

Overview | Examples of Mondelez International initiatives & progress

Case study 1:
10+ years of implementing Cocoa Life program 

Context: Cocoa Life program focuses on an integrated approach to support smallholder farming and communities

Results: Comprehensive progress report available in masterclass materials (p. 26)

Case study 2:
Addressing deforestation & climate change 

Context: Implementing awareness building & trainings, planting of trees, farm mapping & satellite monitoring, & payment for Ecosystem Services Models

Results: ~146k farms mapped, ~323k hectares with deforestation risk assessments complete, ~16.5k farmers applying agroforestry, and more

Case study 3:
Developing land management practices 

Context: Coaching farmers, building awareness and conducting trainings to increase yield and promote agroforestry, climate resilience, and crop /income diversification

Results: ~225k farmers trained/coached, ~498k community members & farmers trained on Good environmental practices ~ 8.6M economic shade trees distributed, and more



For more details, see the full [Mondelez International masterclass materials](#)

Coffee |
Ahold Delhaize
12 December 2024

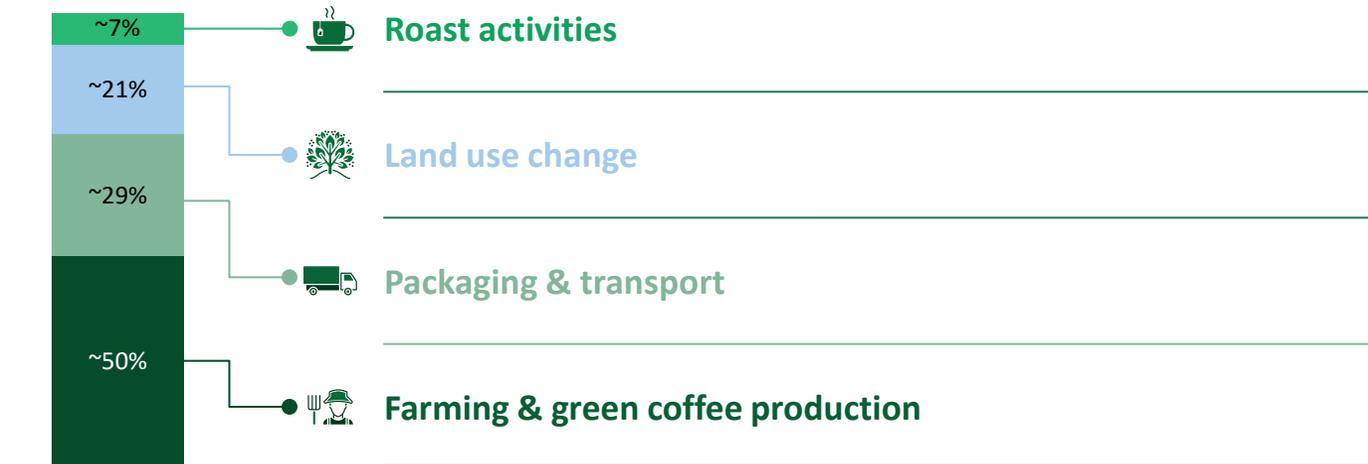


Overview | Farming, packaging, and land use change are all significant emissions sources for coffee

Context

- Overall coffee market is valued at ~\$138B
- Over 10M tonnes kg of coffee is produced each year
- ~73% of global production comes from five countries: Brazil (39%), Vietnam (17%), Colombia (7%), Ethiopia (5%), and Indonesia (5%)
- Coffee production mainly takes place in the southern hemisphere, while coffee consumption occurs mostly in the northern hemisphere

Main emissions drivers



Source: USDA (2024)



The coffee industry is estimated to support the livelihoods of over 12M families around the world. While we're focused here on decarbonization, we cannot forget the opportunity to improve social conditions.

-Grant Sprick,
VP, Climate & Environment, Ahold Delhaize



In recent years, coffee prices are steadily rising, seeing an absolute price record last year that was mainly attributable to climate change.

-Maarten Vreeswijk, Manager Biodiversity
& Product Sustainability, Ahold Delhaize



Insights | Fragmented supply and lack of financing among challenges for sustainable coffee production



Key challenges

- ◆ **Large, fragmented supplier landscape:** Coffee is produced by many individual smallholders, making it difficult to enact change at scale
- ◆ **Challenging economics of transitioning practices:** Sustainable practices cause short-term reductions in yield and higher production costs, impacting farmer revenues
- ◆ **Financing:** It is difficult to obtain funding for the adoption of regenerative practices



Decarbonization levers

- ◆ **Regenerative agriculture (farm level):**
 - Monitor and enforce compliance with deforestation laws
 - Replace chemical fertilizers with organic
 - Implement multi-cropping instead of mono-cropping
- ◆ **Circular processes (post-farm):**
 - Used coffee grounds, previously considered as waste, can create value through circular models around the creation of biofuels and clean energy products
 - Wastewater treatment is needed for water runoffs resulting from wet milling production process, which are a large contributor to CO₂



“ The current coffee production model, which focuses on cost reduction and profit maximization, contradicts sustainability commitments. We need to find a way to get financial incentives to the farmers where they can actually make a difference in how they produce the coffee.

-Sven Drillenborg,
Green Coffee Buyer & Sustainability
Lead, Ahold Delhaize Coffee Company



Overview | Examples of Ahold Delhaize initiatives and progress

Case study 1:
Moving towards 100% renewable energy 

Context: Improving ADCCs¹ own operations through moving towards wind-generated electricity, offsetting natural gas, using solar panels for 5% of total electricity, with further initiatives planned

Results: Steady increase in renewable energy share

Case study 2:
Addressing emissions in the farming stage 

Context: Eliminating land-use change by buying only Rainforest Alliance certified coffee, ensuring no land use change after 2014

Results: Joining Rainforest Alliance has led to a price increase, but retailers have been willing to accept this given carbon reduction and social factors

Case study 3:
Reducing plastic use in coffee packaging 

Context: Introducing design updates to make packaging thinner, lighter, and more recyclable

Results: TBD; efforts ongoing



For more details, see the full [Ahold Delhaize masterclass materials](#)

1. Agricultural Demand and Community Centers



We'll be hosting more masterclasses in 2025! If you are interested in hosting one, please reach out to Sharon Bligh at The Consumer Goods Forum (s.bligh@theconsumer goodsforum.com)

Thank you