Commodity masterclass

Coffee

Ahold Delhaize Coffee Company

12 December 2024

Agenda

- **Introduction**
- **Commodity context & market specificities**
- **Case study: decarbonization levers**
- **Questions, answers & next masterclass** in series

Unrecorded section

- Discussion on **opportunities to partner & scale** for impact

Introducing today's speakers

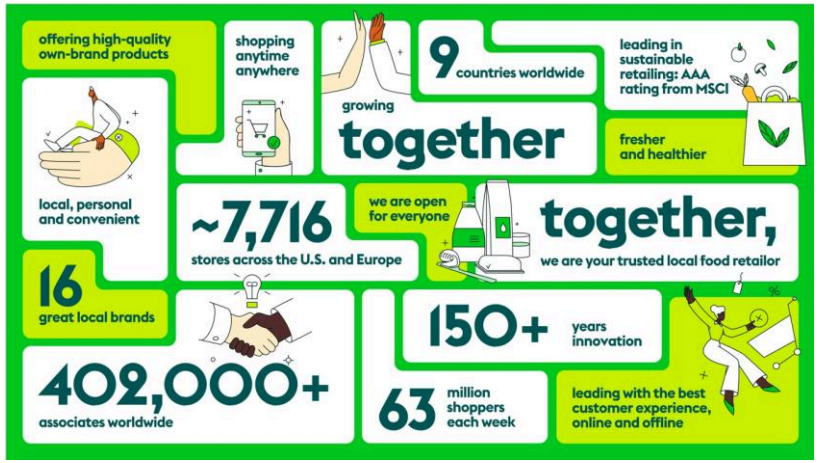
Grant Sprick
VP Climate & Environment
Ahold Delhaize

Maarten Vreeswijk
Manager Biodiversity, Product Sustainability & Animal Welfare
Ahold Delhaize

Sven Drillenburg
Green Coffee Buyer & Sustainability Lead
Ahold Delhaize Coffee Company

Ahold Delhaize & AD Coffee Company

Ahold Delhaize Coffee Company is part of retailer Albert Heijn



Portfolio ADCC

1. Private label

Beans | Capsules | Roast & Ground | Pods

2. Own brand

Context

Overall annual coffee production is over 10.14 million tonnes kg …

$138.15 bill. market value
(global, 2023)

… coming from top 5 producing countries responsible for 73% of global production …

Brazil
39%
4 million tonnes

Vietnam
17%
1,750 million tonnes

Colombia
7%
732.000 tonnes

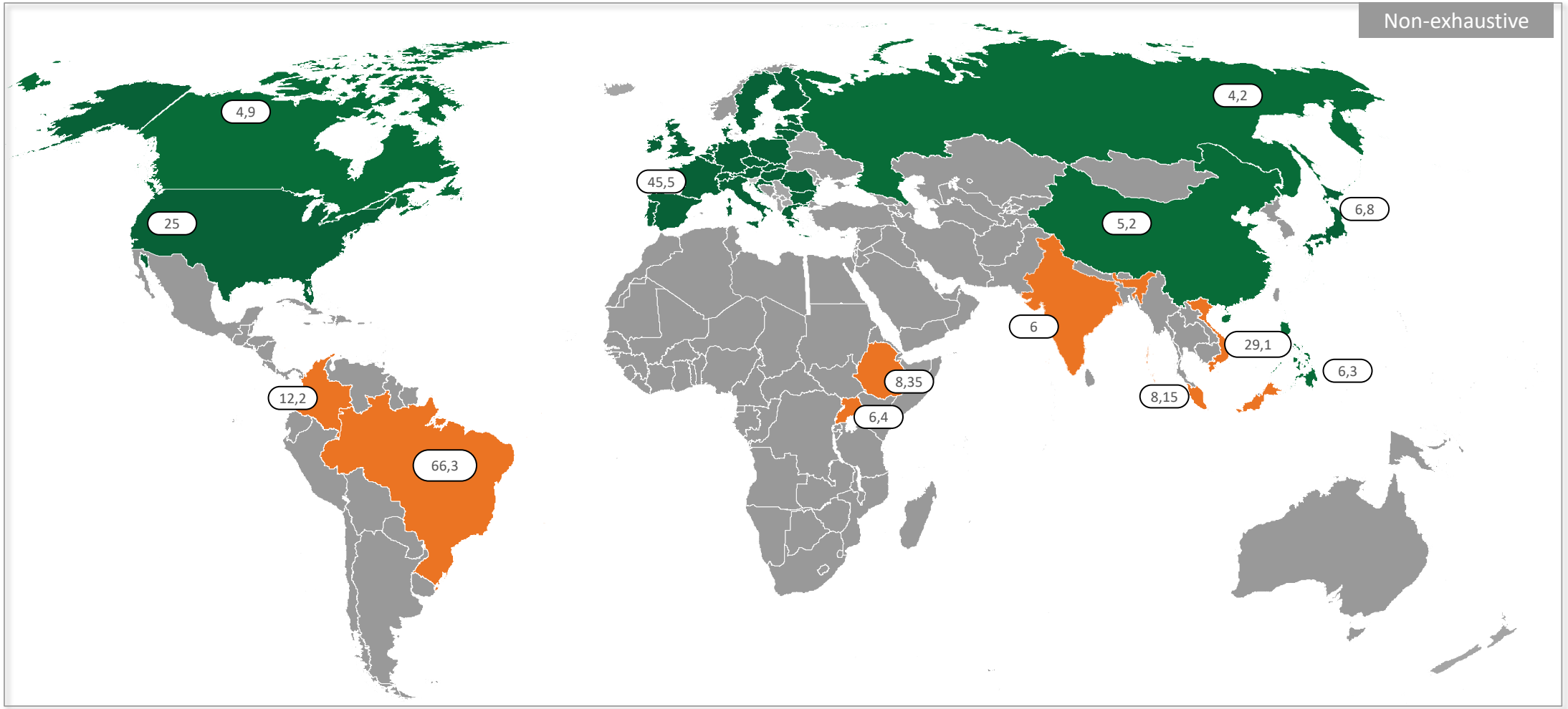
Ethiopia
5%
500.000 tonnes

Indonesia
5%
490.000 tonnes

…with 20 countries responsible for production of the other 27% of coffee.

Source: USDA (2024)

Coffee production mainly takes place in the global south, while coffee consumption occurs mostly in developed economies in the global north



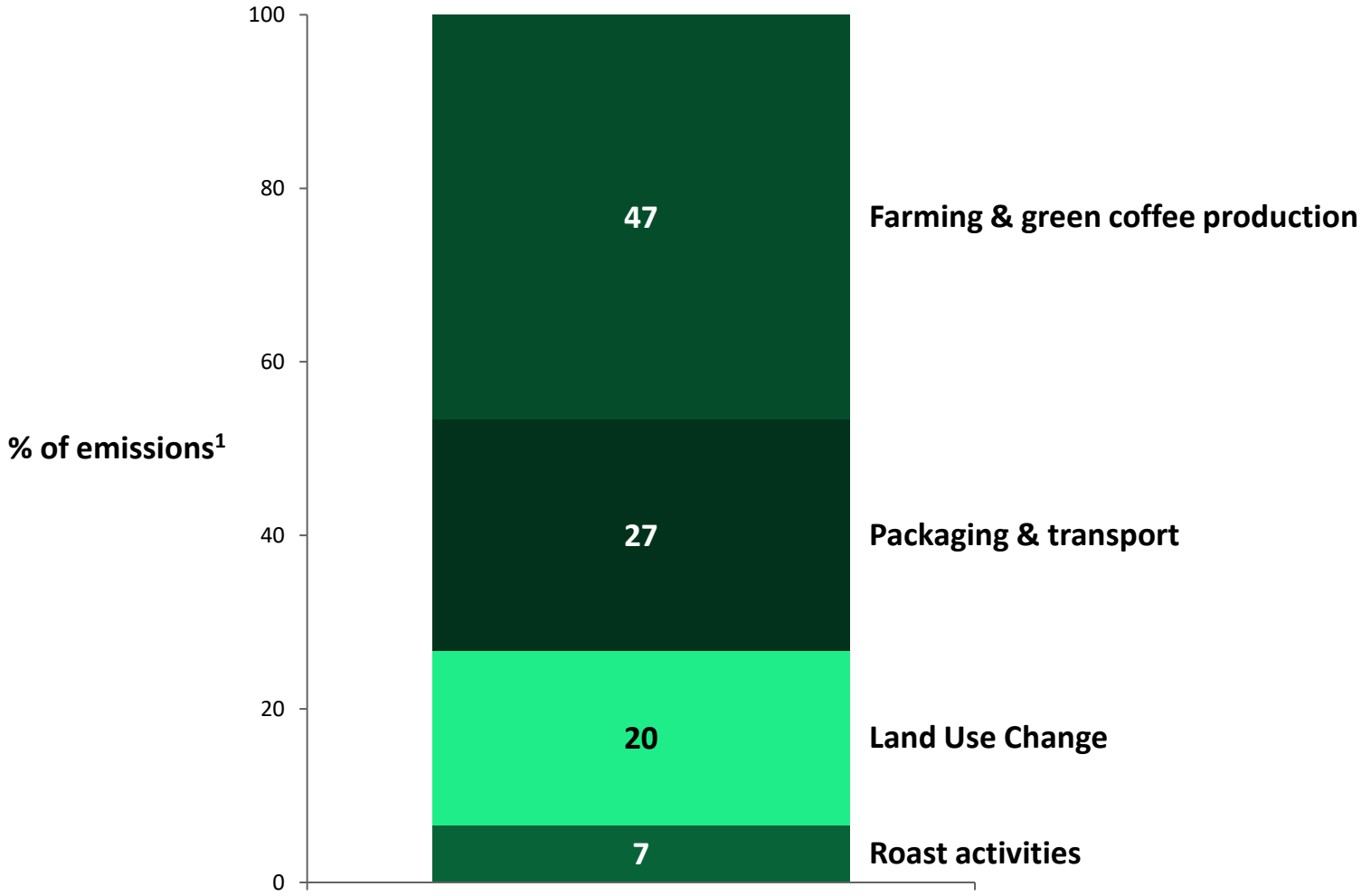
Source: USDA (2024)

Average coffee production emissions are ~6 kg of CO2 per kilogram of green coffee (from farm to shelf).

Because of the large production scale, the coffee supply chain is an important contributor to global GHG emissions.

Sources: World LCA Food Database

Main emissions drivers for coffee[1]



1. Carbon footprint of green coffee up to company manufacturing doors, excluding downstream life cycle phases such as coffee brewing and coffee ground disposal

Two main market archetypes of coffee production result in different carbon footprints and potential levers for decarbonization

	1. Smallholder farms	2. Plantations
		
Cropping type	Mixed (multi-) cropping	Monocropping
Farming type	Household farming with low to moderate use of external inputs	Mechanical farming with high fertilizer input
Capital intensity	Low: smallholder farmers	High: large farmers
Average size and yield	<2ha; 500-1000 kg/ha	6ha; >1500 kg/ha
Example geography	Ethiopia	Brazil

Source: Poncet, V. et al (2024)

5 major challenges impede decarbonization for coffee industry

Key decarbonization challenges

Large & fragmented supplier landscape

Short-term reduction in yield & **higher production costs**, affecting farmer revenues

Lack of financing for adoption of regenerative agriculture practices

Instable political environment in producing countries

Hesitation to adopt new techniques within farmer community

Challenges with highest impact for commodity

Other applicable challenges

Solutions

Addressing coffee decarbonization: Towards sustainable coffee production

Changing how coffee is grown, transported and consumed can slash the crop's carbon emissions by up to 50%

Key levers for sustainable coffee production…

- **Farm-level: Regenerative agriculture**
  - **Preventing deforestation** and reducing land use conversion by monitoring (remote sensing) and enforcing compliance
  - Replacing chemical fertilizers with **organic fertilizers**
  - Implementing **multi-cropping** instead of mono-cropping
- **Post-farm: Circular processes**
  - Products such as 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 CO_2

…will take us from

6-7 kg

of CO2 per kg of green coffee

to

3-3.5 kg

of CO_2 per kilogram

…along with other potential ecosystem benefits like increased biodiversity, water quality, etc.

Sources: WWF (2022); Bernard, K. et al (2014); Nab, C. & Naslin, M. (2020); Panhuysen, S. & De Vries, F. (2023); ITC (2021); World Food LCA Database

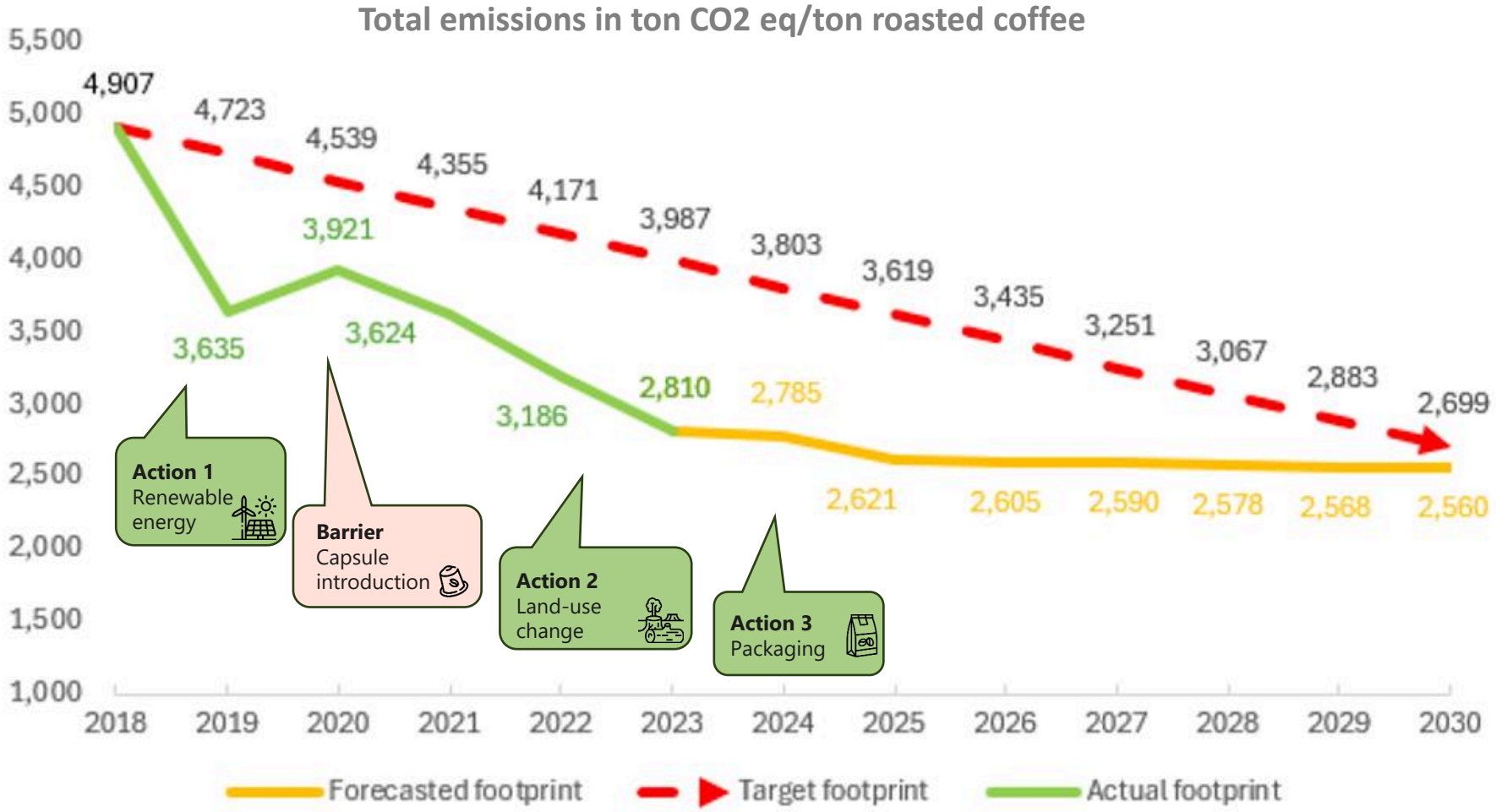
Case study: Ahold Delhaize Coffee Company decarbonization journey

CO2 emission reduction

Actions & barriers

Role of the retailer

Ahold Delhaize Coffee Company plans to reduce its CO2 emissions with 45% by 2030



Calculated using the Climate Activator Certification's Green Coffee Calculator

Action 1
Moving towards 100% renewable energy

STEP 1
Improving ADCC own operations

- Move towards wind generated electricity
- Offsetting of natural gas (under discussion)
- Use of solar panels for 5% of total electricity

Advantages

- Relatively cheap and available in the Netherlands
- Big reduction potential

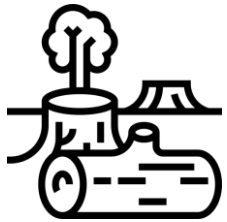
NEXT STEPS
Reduction of natural gas by increasing efficiency

- New roastery saves 15% of natural gas
- Roaster analyses
- Roasting batch optimization (balancing, rest warmth usage)
- Switching to hydrogen/electricity

Barriers

- Costs and net congestion
- Natural gas roasting techniques
- Trade-off: coffee quality and precise roasting vs. optimal efficiency

Action 2
Addressing emissions in farming stage



STEP 1

Eliminating land-use change by buying only certified coffee

- Introducing 100% Rainforest Alliance certified coffee, ensuring no land use change after 2014
- Reduced land use change emissions after 2014 following Quantis Lineair Discount Model

Advantages

- Availability of certified coffee
- Holistic approach

Disadvantage

- Costs of certification

NEXT STEPS

Reducing emissions in farming practices

- Regenerative agriculture
- Barrier: direct sourcing and small % purchase of ADCC per farmer

Barriers

- Long term sourcing commitment
- Coffee is a commodity so will be bought in bulk, where it's cheapest and available
- For structural improvement, longer term agreements with strategic partners are needed
- A financial investment for farmers is needed to invest in regenerative agriculture, meaning that supply chain partners need to work together to get this in place.

Action 3
Reducing plastic use in coffee packaging

STEP 1

Introducing design updates to limit packaging

- Less material in packaging by smarter cutting and design, resulting in a reduced weight of 56 kg to 51 kg per tonne coffee.
- A lot of small steps still deliver emissions reductions, such as thinner interior lining , reduced pad packaging weight and removing sealed bulk sales.

Advantages

- Availability
- Holistic approach

Disadvantage

- Costs

NEXT STEPS

Small steps deliver considerable results

- Thinner material by ribbed capsules
- Recycled aluminum instead of virgin

Barriers

- Trade-off between oxygen permeability of different mono-materials is lesser than multi-materials, so thicker packages might be needed)
- Investments in machinery is costly

Barrier examples
In the coffee decarbonization journey

- Commercial pressure to introduce capsules
- Sourcing from high-emission countries due to price & taste profile
- Limited customer database due to sustainability preferences
- Joint investments by supply chain partners needed to incentivize farmers

Retailers and suppliers can help decarbonize coffee by:

1. Set a baseline for more sustainable coffee

Define a set of minimum requirements (or ask your supplier to do so) for:

- Traceability
- CO_2 calculation, incl. fertilizer
- Deforestation/land use change

Examples: Third party certifications (Rainforest Alliance, Fairtrade) or Trader sustainability programs (Equivalence Mechanism GCP)

2. Invest in regenerative agriculture

Support farmers to implement regenerative coffee farming by:

- Diversifying cropping systems
- Collective and landscape actions
- Applying an environmental and social risk assessment tool

Retailers and suppliers need to support community of practice in farming communities.

3. Invest in long term sourcing relationships

Sustainability results don't come direct or in a linear way.

It requires a long breath and mutual trust to build a solid and more sustainable supply chain.

Not recorded – will not be available to the public

Open discussion – Where do we see opportunities to partner & scale for impact?

Appendix

Regional differences to be aware of for coffee decarbonization

	Main influencers of change	Main archetype[2]	Yield (tons green coffee/ha)	Production (million tons/year)	Export	Emissions factors (kg CO2/kg)	Land use change
Brazil	(Very) large farmers and big corporations	Plantation	1.6	3,661	56%	1.7-3.6	Low
Vietnam	Government	Smallholders	2.6	1.760	85%	4.0	Low
Colombia	**FNC** (organization representing the interests of coffee growers)	Smallholders	1	848	87%	7.1	Medium-High
Indonesia	Large plantations are a public/private partnership	Mix	0.56	636	60%	20.0	Very High
Ethiopia	Government	Smallholders	0.65	437	55%	?	Low

Sources: USDA (2024); WWF (2022); World Food LCA Database

Links to sources

- ITC (2021): The Coffee Guide
- Nab, C. & Naslin, M. (2020): Life cycle assessment synthesis of the carbon footprint of Arabica coffee: Case study of Brazil and Vietnam conventional and sustainable coffee production and export to the United Kingdom
- Panhuysen, S. & De Vries, F. (2023): Coffee Barometer
- Pulleman, M.M.; Rahn, E.; Valle, J.F. (2023) Regenerative agriculture for low-carbon and resilient coffee farms: A practical guidebook.
- Poncet, V. et al (2024): Which diversification trajectories make coffee farming more sustainable?
- Bernard, K. et al (2013): Carbon Footprint across the Coffee Supply Chain: The Case of Costa Rican coffee.
- USDA, 2024: Coffee: World Markets & Trade
- WWF (2022): Measuring and Mitigating GHG's: Coffee

Thank you