

Financing the Coffee Industry's Climate Transition in the Lower Mekong Economies



Innovative financial solutions for nature

November 2023

Tradeoffs facing the global coffee industry

2.25 billion

cups of coffee are consumed worldwide every day ¹

65%

of coffee beans are sold as roasted beans, while the rest are processed into instant coffee ²



\$500 billion

of revenue is generated by the the consumer coffee industry annually ³

\$46 billion

of coffee was traded internationally in 2022 ⁴

\$181 million

was how much Starbucks made from unused gift cards alone in fiscal 2021 ⁵



1 square inch
of rainforest is destroyed for every cup of coffee consumed ⁶

140 liters
of water is required to produce a cup of coffee ⁷

50%

of land area suitable for coffee cultivation could be lost by 2050 due to rising temperatures ⁸



> 90%

of coffee beans are grown in developing nations, while consumption happens primarily in the developed world ⁹

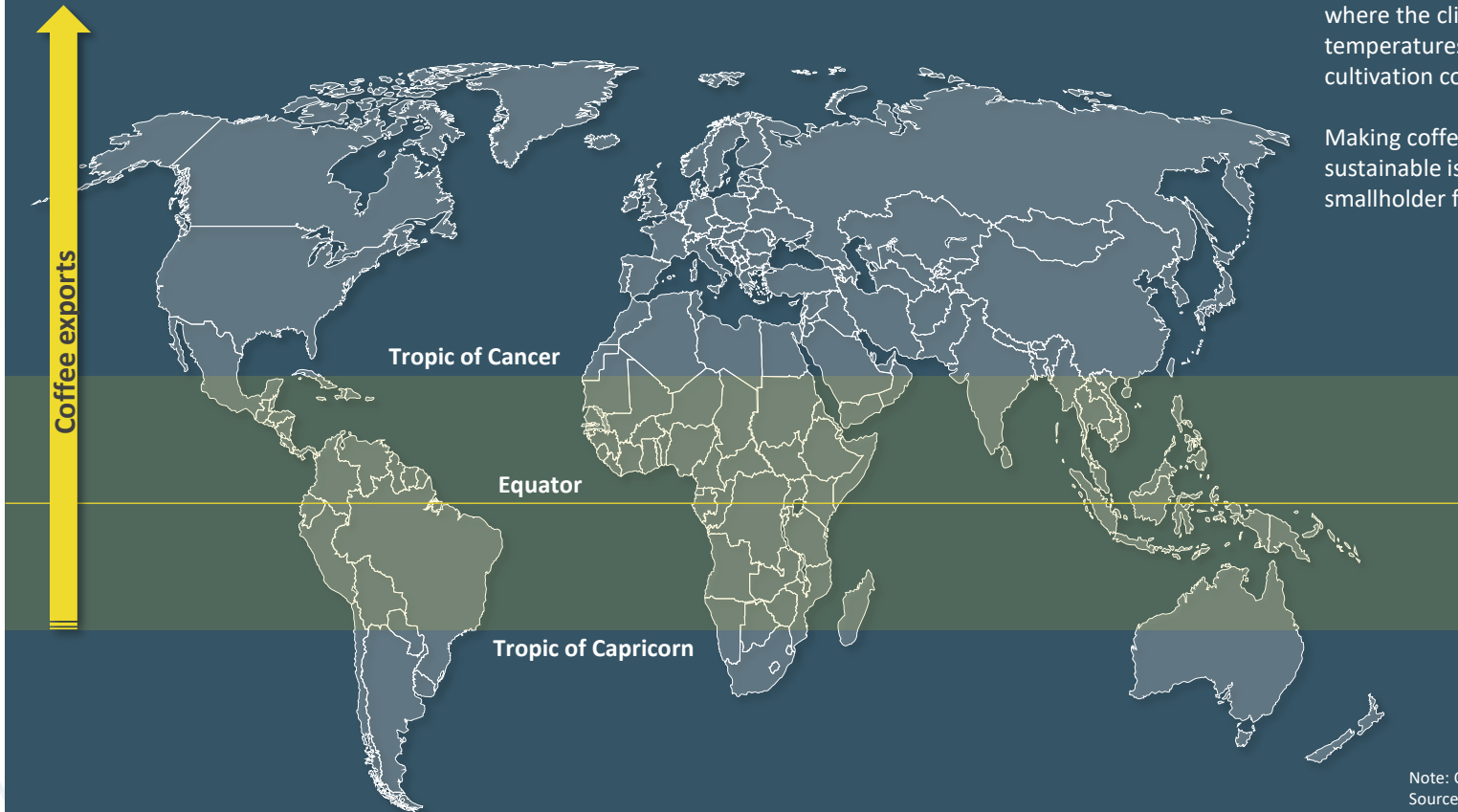
25 million

farming households, many of whom live in poverty, produce 80% of world supply ¹⁰

Sources: (1) [Drive Research](#); (2) [Statista](#); (3) [Mordor Intelligence](#); (4) [World's Top Exports](#); (5) [Bloomberg](#); (6) [The World Counts](#); (7) [UNESCO](#); (8) [A bitter cup: Climate change profile of global production of Arabica and Robusta coffee](#); (9) [International Coffee Organization](#); (10) [UN FAO](#); Seneca Impact Advisors

The northbound coffee trade

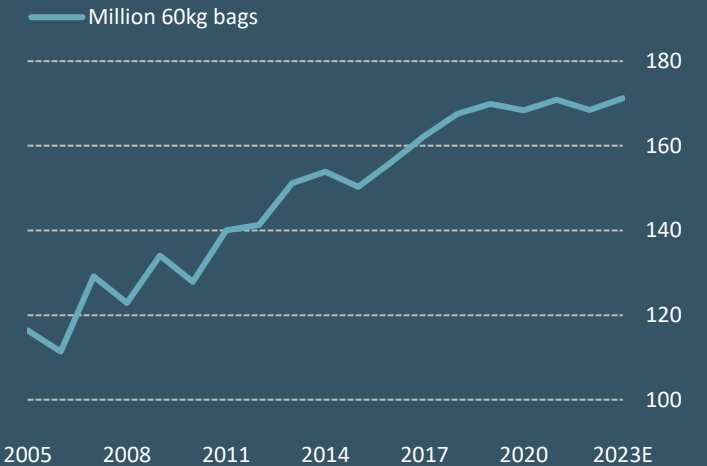
The Bean Belt supplies almost all of the world's coffee



Coffee plants grow in a region between the tropics of Cancer and Capricorn, where the climate, high altitudes, fertile soil, ample rainfall, and average temperatures of between 21° and 29° C (70° and 85° F) combine to foster ideal cultivation conditions.

Making coffee plants more climate-resilient and production techniques more sustainable is critical to the environment, biodiversity and the livelihoods of smallholder farmers in the Global South.

Global coffee production

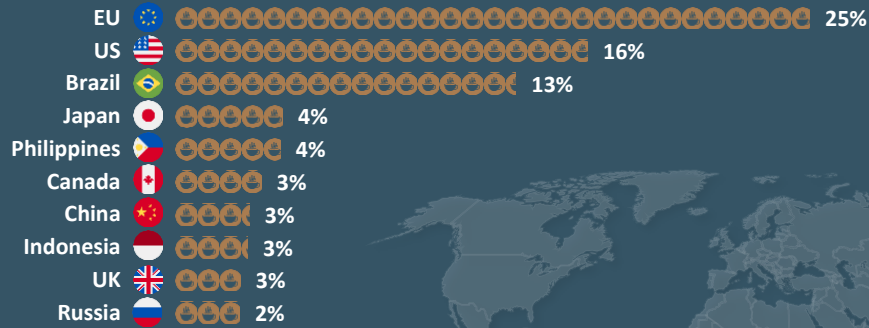


Note: October to September production years
Sources: [Statista \(2004-2017\)](#), [International Coffee Organization \(2018-2023E\)](#), Seneca Impact Advisors

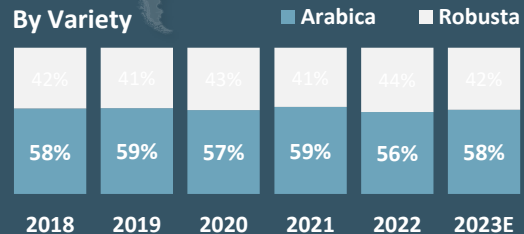
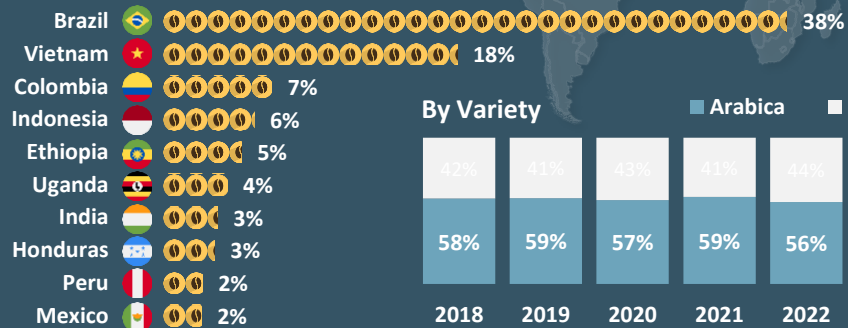
Fueling the world's coffee obsession

Coffee plays an important role in the Lower Mekong economies

Global Coffee Consumption Share



Global Coffee Production Share



Export Value

Vietnam
\$3.4 bn¹

Thailand
\$109 mn²

Laos
\$80 mn³

Cambodia
< \$1 mn⁴

Vietnam is the second largest coffee producer in the world after Brazil, with a market share of 18% in the year ended June 2023. Robusta beans account for around 95% of the country's output. In fact, no other market produces more Robusta coffee than Vietnam, which contributes to over 40% to the species' global supply. The industry employs some three million coffee farmers. With a rich coffee-drinking culture, Vietnam is home to over 6,000 cafes serving unique local flavors.

Thailand is a relatively late comer in the coffee scene. The crop was introduced to the northern region on a large scale in the 1970's as an alternative to opium poppies. Since then, the country has become a top 25 coffee producer in the world, with exports exceeding \$100 million a year. Robusta coffee is the main variety grown locally, mostly ending up in mass-produced instant coffee. However, there has been a strong push by local communities to pivot towards premium Arabica beans.

Coffee crops are the fifth most valuable agricultural export in Laos, behind cassava, bananas, rubber and sugar. Coffee exports are largely confined to the Lower Mekong nations, with Vietnam and Thailand accounting for around 70% of overseas shipments. Almost all of the country's coffee is grown in the southern provinces. In particular, the Bolaven Plateau in Champasak is naturally endowed with abundant farmland, fertile soil and favorable climate conditions for coffee bean cultivation.

While coffee crop was first brought to Cambodia as early as the 19th century, the country is not known as a coffee producer. Climate and topography are limiting factors, with Cambodia representing only 0.1% of global coffee production. That said, the Lower Mekong nation does have a young and growing coffee consumer market. Virtually all of the local coffee crops are Robusta beans, which are also favored by Cambodians for their strong flavor profile.

Note: Figures based on production year ended June 2023
Sources: US Department of Agriculture, International Coffee Organization, Seneca Impact Advisors

Sources: (1) Oct to Sep 2023, [nongnghiep.vn](#); (2) 2022, [Bangkok Post](#); (3) 2023, [Lao Coffee Association](#); (4) 2021, [The Observatory of Economic Complexity](#); Seneca Impact Advisors

Adapting to the climate crisis

Coffee crops are highly susceptible to:

Extreme weather



Coffee prices in the wholesale markets are heavily influenced by supply-side factors, which are in turn largely determined by crop yields in key export markets.

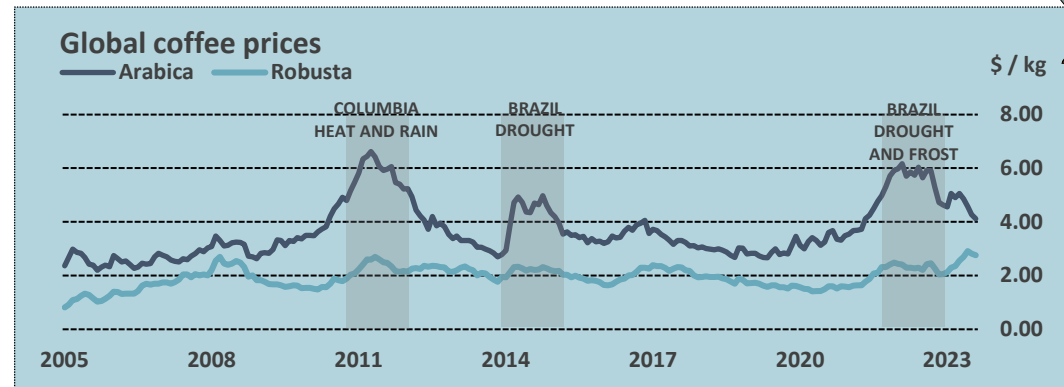
Coffee plants require the right combination of temperature and rainfall to ripen properly and maintain their quality. Extreme weather events have historically led to significant disruptions in the supply chain.

The resulting price impacts are more pronounced for Arabica beans, which

command a premium over Robusta varieties but are less weather-resilient.

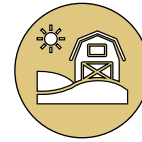
Notable supply shortages in the last 20 years occurred during the extreme heat and heavy rainfalls in Columbia around 2011 and the droughts and frosts in Brazil in 2014 and 2021.

Weather-related price volatilities are exacerbated by the geographical concentration of coffee production and underscore the vulnerabilities of the commodity as a cash crop in the Global South.



Sources: World Bank, Seneca Impact Advisors

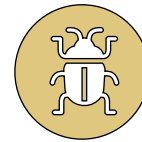
Climate change



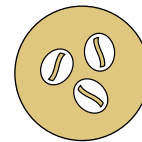
Climate change will disrupt the weather patterns in the bean belt, potentially reducing coffee cultivation areas by 50% by 2050. That figure may be as high as 88% in Latin America. Deforestation caused by industrial-scale coffee farms may further compound these long-term risks. ¹



Even in the near term, heatwaves, droughts, frosts and excessive rainfalls may negatively impact flower and fruit formation, hurting crop productivity and quality. This may steer farmers away from coffee production towards other cash crops, creating a vicious cycle in supply shortfalls.



Warmer temperatures and higher humidity may lead to a rise in coffee berry borers, coffee leaf rust and other pathogens that damage coffee crops. The use of chemical fertilizers, insecticides and herbicides will significantly add to the environmental costs of large-scale coffee production.



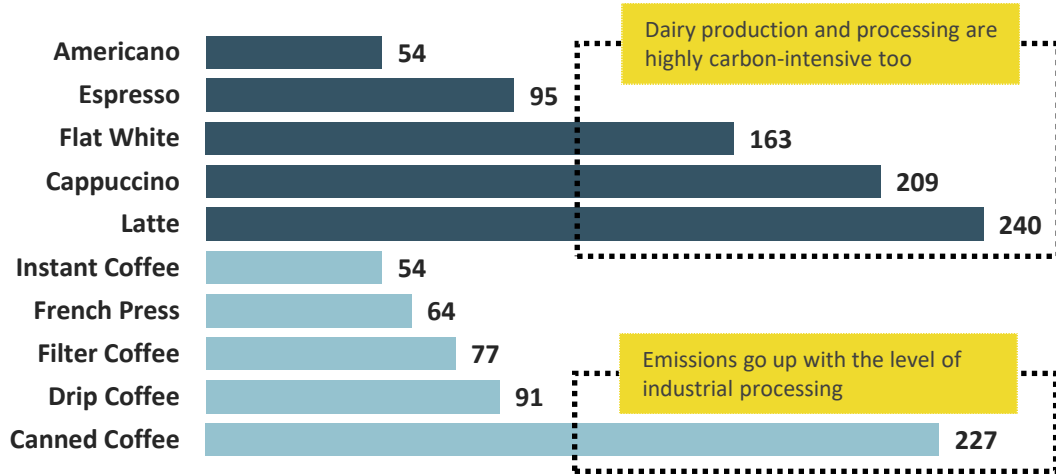
Climate change may upend the crop's ripening process and alter the chemical profile of the coffee beans, affecting their acidity, flavor and aroma. This may drive uneven production cycles and undermine the quality and consistency of the end consumer products.

Sources: (1) [Tropical crops could suffer as climate change brings longer dry spell](#), [A bitter cup: Climate change profile of global production of Arabica and Robusta coffee](#), [Coupling of pollination services and coffee suitability under climate change](#); Seneca Impact Advisors

Mitigating the industry's environmental impacts

Carbon footprint by coffee drink ¹

g CO_{2e} / avg serving

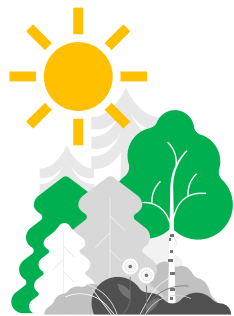


If you drink a cup of latte a day for a year...



- CO₂** 87.5 kg of CO_{2e} will be produced
- Equivalent to driving from New York to Boston
- Or charging your phone 11,200 times
- You'll need to plant four trees to offset that
- Over 50,000 liters of water will also be used

Environmental impacts of conventional industrial-scale coffee farms



Deforestation

The removal of trees to increase the size of available coffee farmland could have grave environmental consequences.



Loss of carbon sequestration

Leafy canopies sequester carbon from the atmosphere. Moving away from agroforestry could increase the amount of emissions released.

Soil degradation

Trees' root systems filter water and hold the soil together by shielding it from heavy wind and rain. A decline in soil quality could result from extensive deforestation.



Biodiversity loss

Forests provide natural habitats for animal, insect and plant species. Monoculture crops could substantially reduce biodiversity.

Chemical pollution

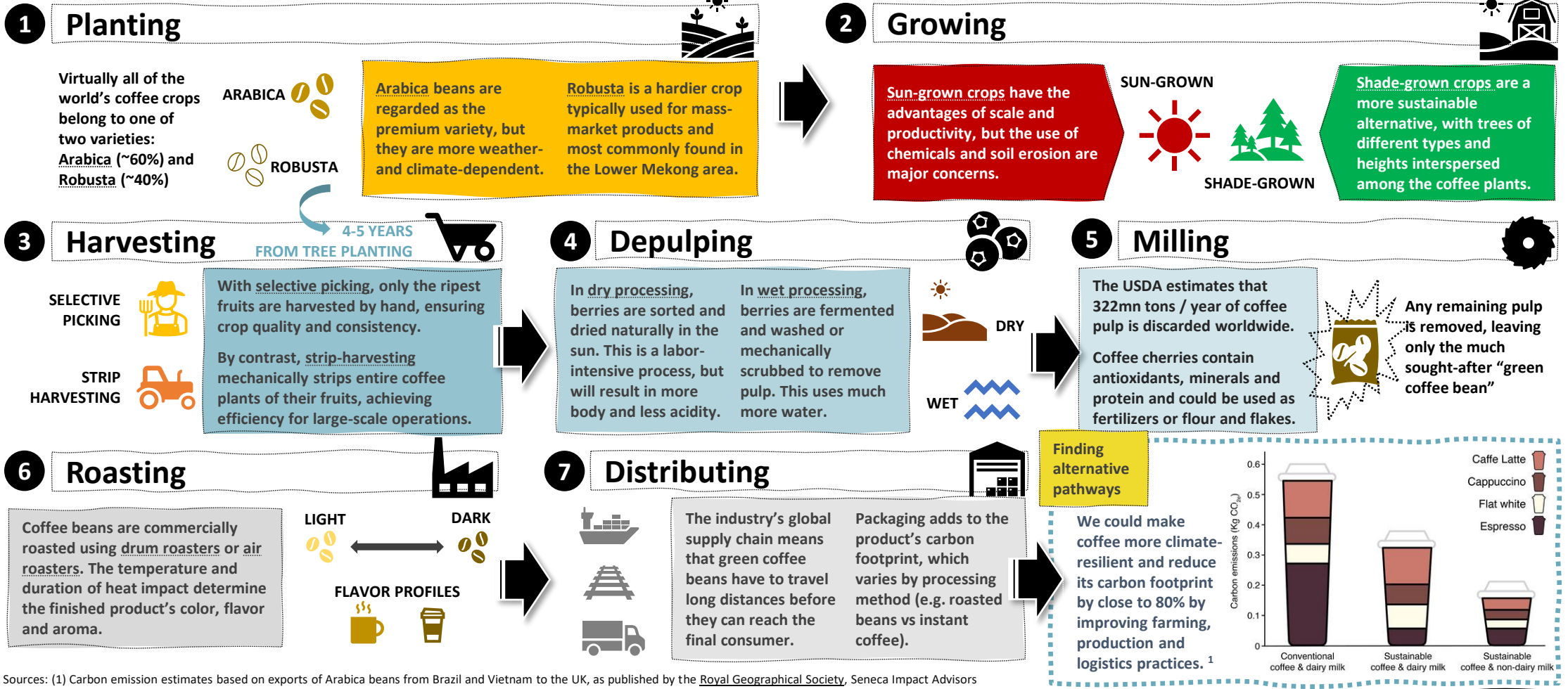
Fallen leaves act as natural fertilizers. The use of chemicals pollutes the soil and local waterways. This may reduce soil fertility, alter soil acidity and be detrimental to natural life.



Sources: (1) [Omni Calculator](#); Seneca Impact Advisors

From farm to coffee table

Opportunities abound to strengthen the industry's climate resilience and mitigate its environmental impacts



Sources: (1) Carbon emission estimates based on exports of Arabica beans from Brazil and Vietnam to the UK, as published by the Royal Geographical Society, Seneca Impact Advisors

Capitalizing on the fourth wave

Lower Mekong countries are well-positioned to monetize on the shift in global demand

	1st Wave	2nd Wave	3rd Wave	4th Wave	Potential bankable nature solution projects in the region
Focus	Affordability / Mass production	Replicability / scalability	Customer experience	Supply-chain partnership	Pivot from mass-market exports to premium, specialty production via partnerships with 4th-wave coffee distributors in more developed nations
Sourcing scope	Continent / Country	Country / Region	Region / Area	Individual farms	Encourage more shade production and agroforestry through investments from public/private-sector partners and/or 4th-wave distributors
Quality	★☆☆☆	★★☆☆	★★★★☆	★★★★★	Develop higher-quality, more resilient coffee crops to boost yields, increase consistency and achieve premium pricing
Organic	✗	●	●	✓	Introduce organic farming practices and eliminate the use of chemical fertilizers and pesticides to align with the goals of 4th-wave distributors
Fair trade	✗	●	✓	✓	Facilitate third-party certifications to meet the requirements of 4th-wave distributors via grants and/or other forms of public funding
Direct trade	✗	✗	●	✓	Strengthen overseas marketing efforts through online trade shows, seminars and coffee tourism
Source investment	✗	✗	●	✓	Establish formal channels to connect local coffee farmers with 4th-wave distributors to enable co-investments with public/private-sector partners

Examples
















Lower Mekong: The next wave?

Vietnam



Thailand



Laos



Cambodia



Sources: District Roasters, Seneca Impact Advisors

Mobilizing private-sector capital is key

Challenges for private investors in coffee adaptation and mitigation projects

Rationalizing the costs to produce positive externalities

Project NPV – An illustration

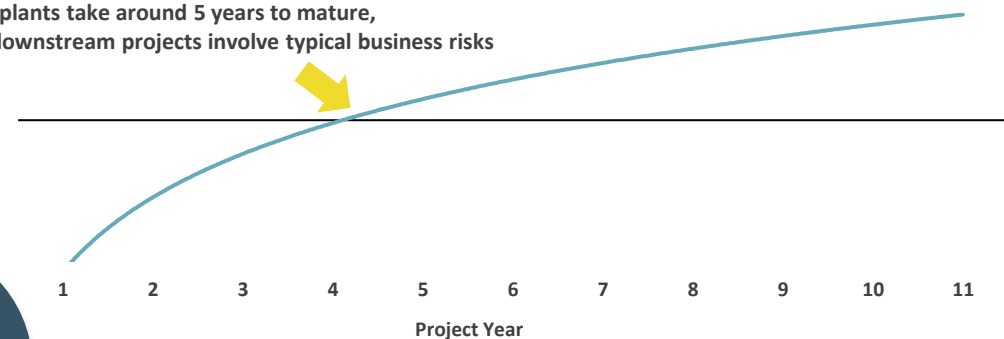


Navigating long and uncertain payback periods

Free cashflow breakeven –

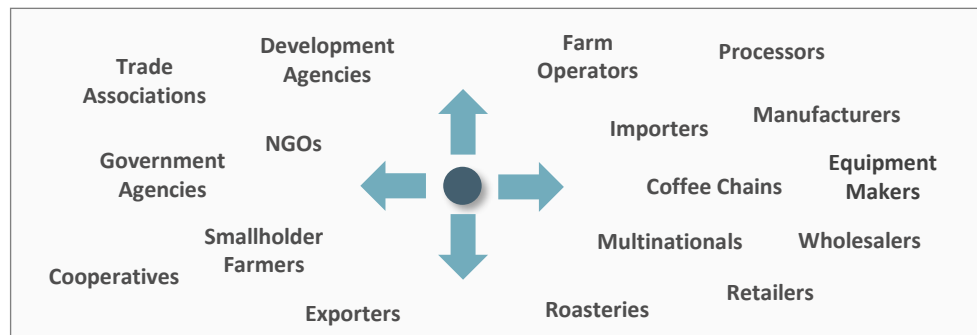
Coffee plants take around 5 years to mature, while downstream projects involve typical business risks

Project free cashflows – An illustration



Gaining access to scalable, high-quality projects

Project opportunities could originate from any part of the value chain



Managing country-specific risks

		Credit Rating ¹	Corruption Perception Ranking ²	Ease of Doing Business Ranking ³
Vietnam		BB+	77	70
Thailand		BBB+	101	21
Laos		n/a	126	154
Cambodia		B	150	144

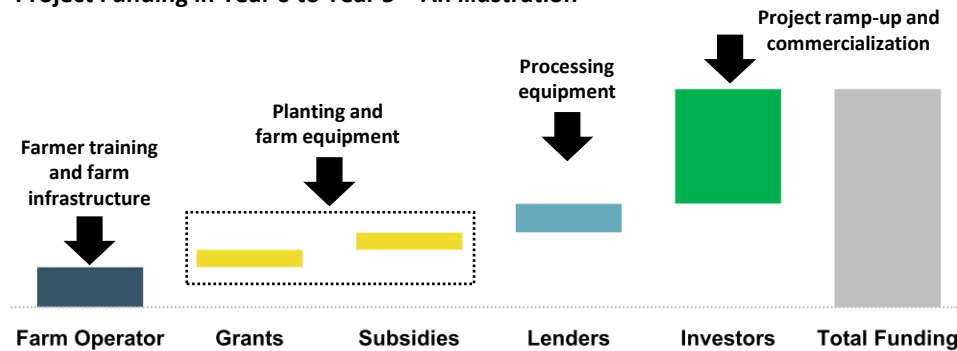
Sources: (1) S&P Global; (2) Out of 180 countries, the higher the better, Transparency International 2022; (3) Out of 190 economies, the higher the better, World Bank 2020; Seneca Impact Advisors

Enabling financing solutions

Transactions could be structured to optimize project outcomes and address investor concerns

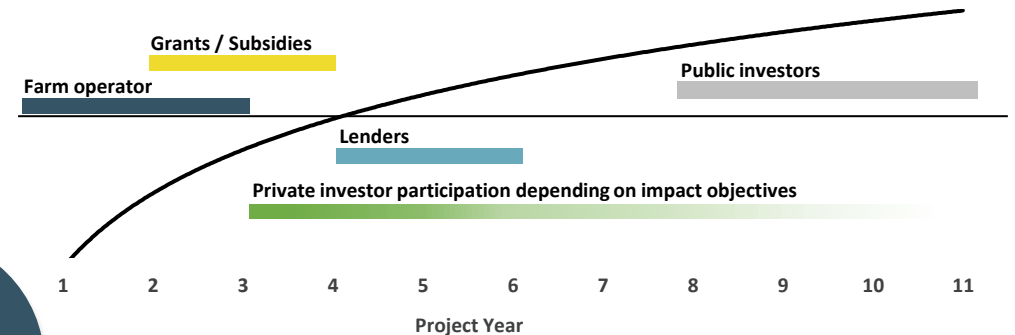
Aligning financing needs with funder objectives

Project Funding in Year 0 to Year 5 – An illustration







Staggering project-level funding to manage startup risks

Project free cashflows – An illustration



Evaluating project opportunities









Key success factors

-  Is the investment contributing to incremental carbon sequestration via agroforestry?
-  Are the source farms organically maintained to eliminate the use of chemicals?
-  Do coffee growers benefit economically from the switch to sustainable coffee cultivation?
-  Is the project scalable and commercially viable in the long term?



Mitigating country-specific risks


Contributing to the host country's SDG goals

		Country Ranking ¹	SDG Score	Performance By SDG
Vietnam		55	73.32	
Thailand		43	74.74	
Laos		115	62.96	
Cambodia		103	64.84	

Sources: (1) Ranking out of 193 UN member states, Scores out of 100, Sustainable Development Report 2023; Seneca Impact Advisors

Typical project parameters

Climate and land-resilient coffee farming



Shade-grown coffee

Vietnam
Thailand
Laos
Cambodia



Snapshot

Project owner	Farm operator working with local coffee growers
Objective	Commercialize sustainable shade-grown coffee
Value chain	Farming / processing / export / retail
Public-sector partners	Development agencies / local agriculture and forestry departments / trade organizations
Potential Investors	Foundations / development banks / multilaterals / HNWIs / family offices / impact investors

Background

- The typical project owner has worked with local smallholder farmers for more than five years and introduced sustainable shade-grown coffee species and agroforestry techniques to households with very low to no income otherwise.
- The project may have been funded by a combination of shareholders' capital, grants and subsidies. To scale up, the project owner is looking to raise new capital to fund investments in processing equipment, facilities and sales and marketing capabilities.
- The coffee crop's yield and quality are proven. The processing of coffee parchment into green coffee beans and roasted coffee is expected to deliver additional financial and sustainability benefits.

Financial factors

Funding need	\$500,000 - \$1,000,000
Funding structure	Grants and/or private-sector debt/equity
Use of proceeds	Equipment (50%), Facilities (25%), Working capital (25%)
Breakeven	3 - 5 years
IRR	15 - 20%

Sustainability factors

Carbon sequestered	70 - 80 tons / hectare
Other environmental	More resilient crops, elimination of chemical use, soil quality improvement, reduced water use
Biodiversity	> 50 bird, animal and insect species retained
Employment	> 1,000 farmers + local non-farm staff
Average income impact	1 - 3x increase

About Seneca Impact Advisors

Seneca Impact Advisors is a specialist advisory firm based in Hong Kong with extensive experience and networks in the Asia-Pacific region. It specialises in developing innovative financial solutions for scalable and commercially viable nature and climate positive projects. Seneca's aim is to mobilise private-sector capital to protect and restore nature.

Seneca was formed to bridge the financing gap between traditional conservation and private investment capital seeking returns. There is a growing amount of capital with a willingness to invest in nature-based projects with highly impactful and measurable outcomes. However, there have been few scalable and commercially viable projects to attract investment capital. By working with leading NGOs, governments, ODA agencies, environmentally passionate entrepreneurs, and ESG-concerned corporates, the team at Seneca has been successfully originating

and developing projects to meet the demand from funders. With enhanced public awareness about the climate crisis, biodiversity loss and resource depletion there is a significant amount of capital seeking nature and climate positive investments.

Structuring bankable projects requires knowledge of both conservation and investments. The team at Seneca combines its passion for the natural world with financial and technical expertise to help build commercially viable projects which contribute positively to the environment and society.



AGRICULTURE



FOOD



FORESTRY



FRESHWATER



COASTAL ECOSYSTEMS

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