COLUMBIA | SIPA
School of International and Public Affairs

Value Chain Analysis

Guest lecture by Carl Cervone
February 16, 2021

How do we go from ? ? ? to ☕

?	?	?	Roasted	Ground	Cup
					

Why do value chain analysis?

K-Cup® Box
96 ct.

PURCHASE OPTIONS

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Save 25% View Benefits

1 CREATE AUTO-DELIVERY

Add to existing auto-delivery >

Nescafe Cafe Viet Black Iced Coffee Instant Coffee 15 Packets X 2 Packs

Brand: Nescafé

89 ratings | 3 answered questions

Price: $13.75 ($0.81 / Ounce) prime FREE One-Day

Plan for today

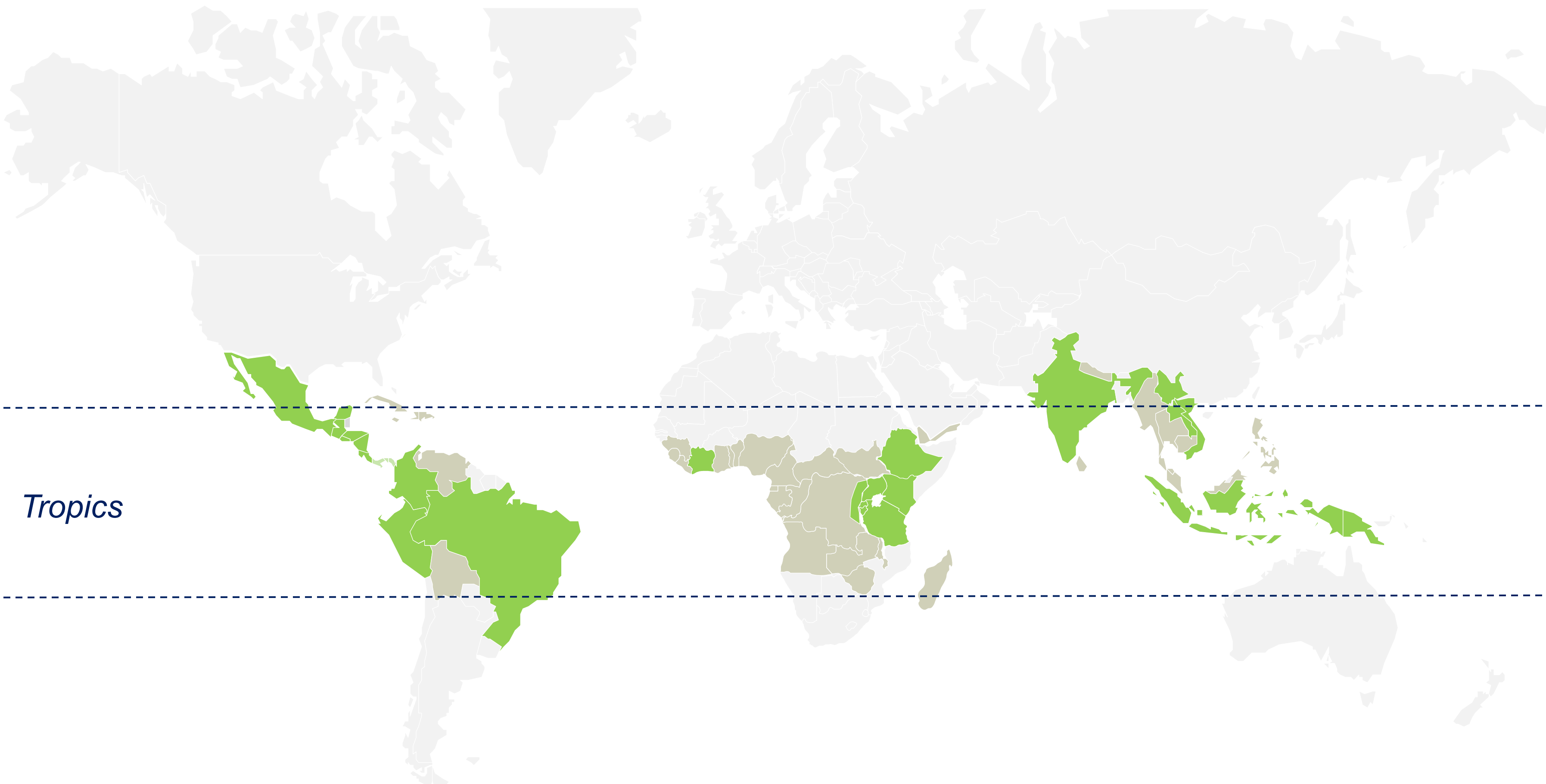
- The Coffee Value Chain
- The Value Chain Framework
- Case Study: Vietnam
- Cast Study: Colombia

Plan for today

- **The Coffee Value Chain**
- The Value Chain Framework
- Case Study: Vietnam
- Cast Study: Colombia

Coffee is a fruit that grows on trees

Coffee trees require a tropical climate

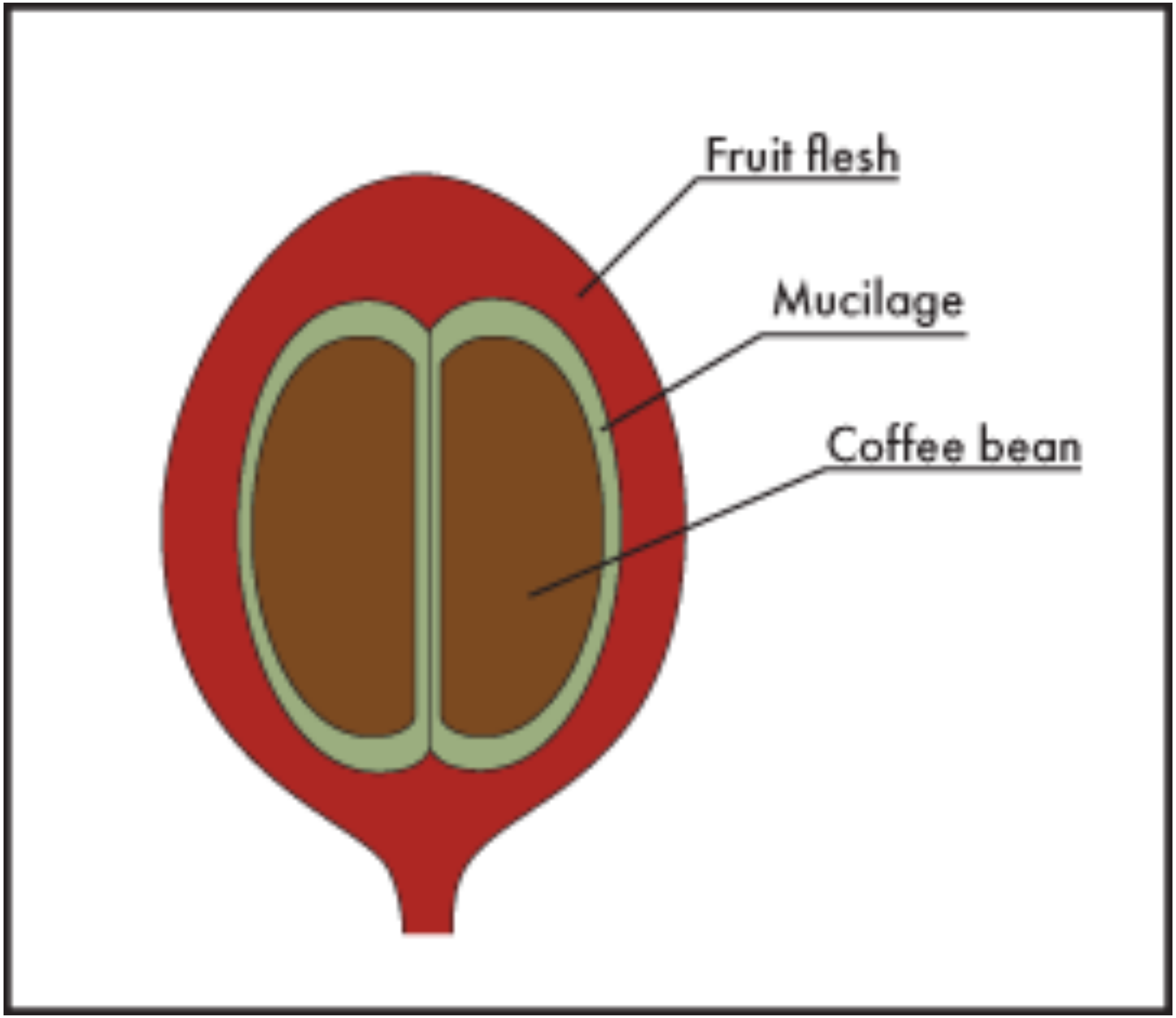


Major producers (~20 countries)

Minor producers (~30 countries)

Non-coffee countries

The coffee “bean” is the seed inside the fruit



Source: http://www.dbmudhouse.coffee/coffee-processing/

The coffee value chain from cherry to cup

Cherry

Parchment

Green

Roasted

Ground

Cup

>95% of the world's coffee farms are "smallholders"

Cherry

There are some very large, industrial coffee farms

Cherry

On small farms, coffee cherries are harvested by hand

Cherry

Coffee should be processed immediately after picking

Cherry

Cherries are de-pulped…

Parchment

… washed …

Parchment

Source: https://lisaleo.wordpress.com/2013/09/26/fully-washed-coffee-natural-process-coffee/

… and dried

Parchment

Source: https://www.perfectdailygrind.com/2018/12/processing-101-what-is-wet-washed-coffee-why-is-it-so-popular/

Large mills process coffee for export

Green

Exportable coffee is bagged and loaded in containers

Green

Source: https://coffeecollective.dk/stories/kenya-2012-part-2-kieni-gichathaini-karatu-and-more/

Coffees are blended and roasted to different profiles

Roasted

Source: https://www.sentryair.com/blog/industry-applications/chemical-solvents/diacetyl-hazards-coffee-roasting-industry/

Coffee is ground, packaged, and vacuum-sealed

Ground

Source: http://www.starbucksmelody.com/2014/08/10/free-tall-coffee-phased-out/

Water is added – and it's ready to drink!

Cup

Source: https://www.coffeedesk.com/blog/what-is-v60-and-how-to-make-drip-coffee/

Each stage of the value chain involves different actors

Cherry	Parchment	Green	Roasted	Ground	Cup
					
>10 M farms	**<1 M mills**	**< 0.01 M traders**	**< 0.1 M roasters**	**>1 M retailers**	**>1000 M consumers**

Today, we will focus on the first three stages of the value chain only

Cherry	Parchment	Green	Roasted	Ground	Cup
					
>10 M farms	**<1 M mills**	**< 0.01 M traders**	**< 0.1 M roasters**	**>1 M retailers**	**>1000 M consumers**

Natural and logistical factors make it difficult to occupy more than 1-2 roles in the overall value chain

Cherry	Parchment	Green	Roasted	Ground	Cup
					
>10 M farms	**<1 M mills**	**< 0.01 M traders**	**< 0.1 M roasters**	**>1 M retailers**	**>1000 M consumers**

Value addition done closer to farm

Value addition done where it's most efficient

Value addition done closer to consumer

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A thorough Value Chain Analysis should…

1 **MAP**

- who the relevant actors are
- what they do
- how they relate to each other

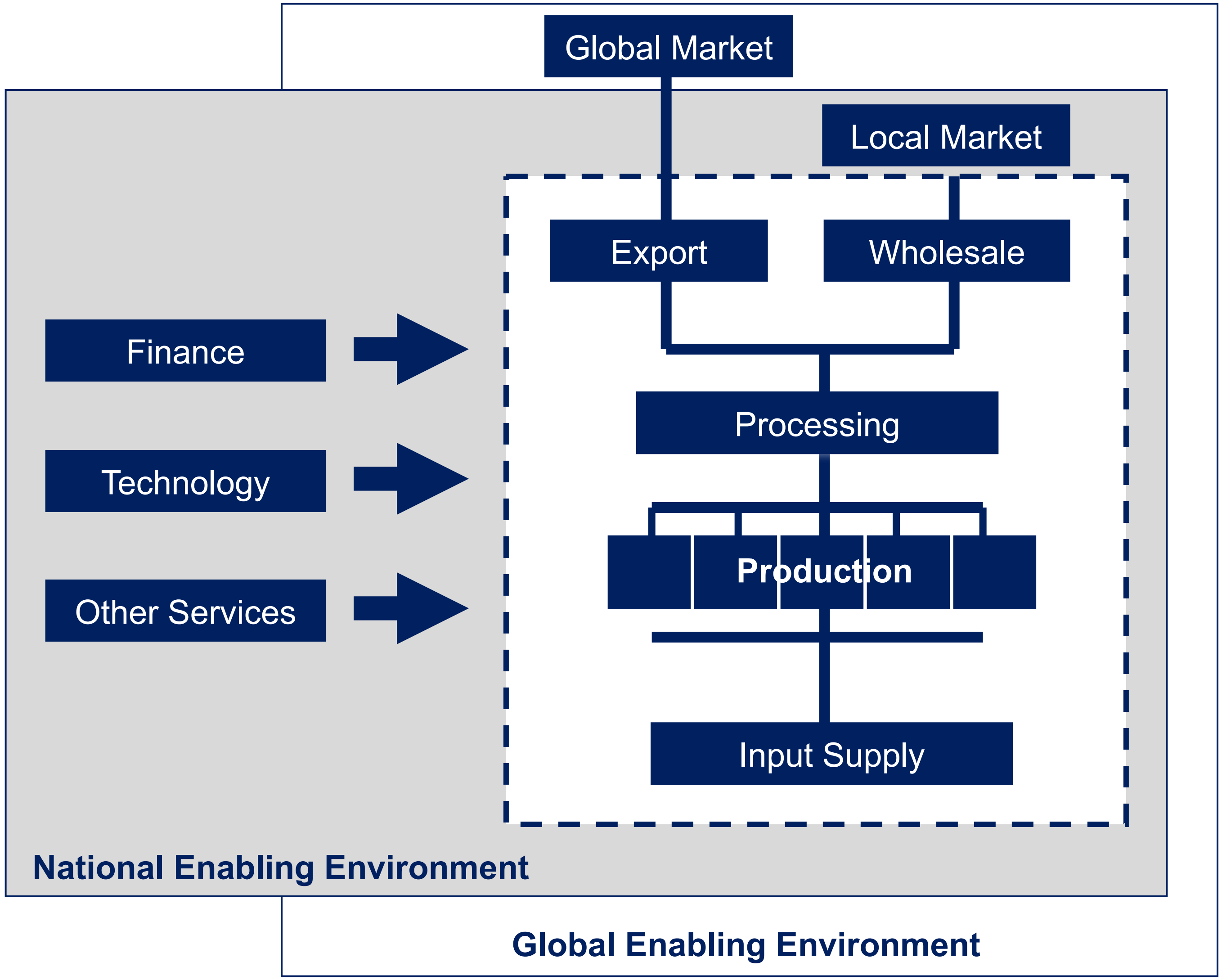
2 **BREAKDOWN**

- costs and revenues for each actor
- how value flows through the chain

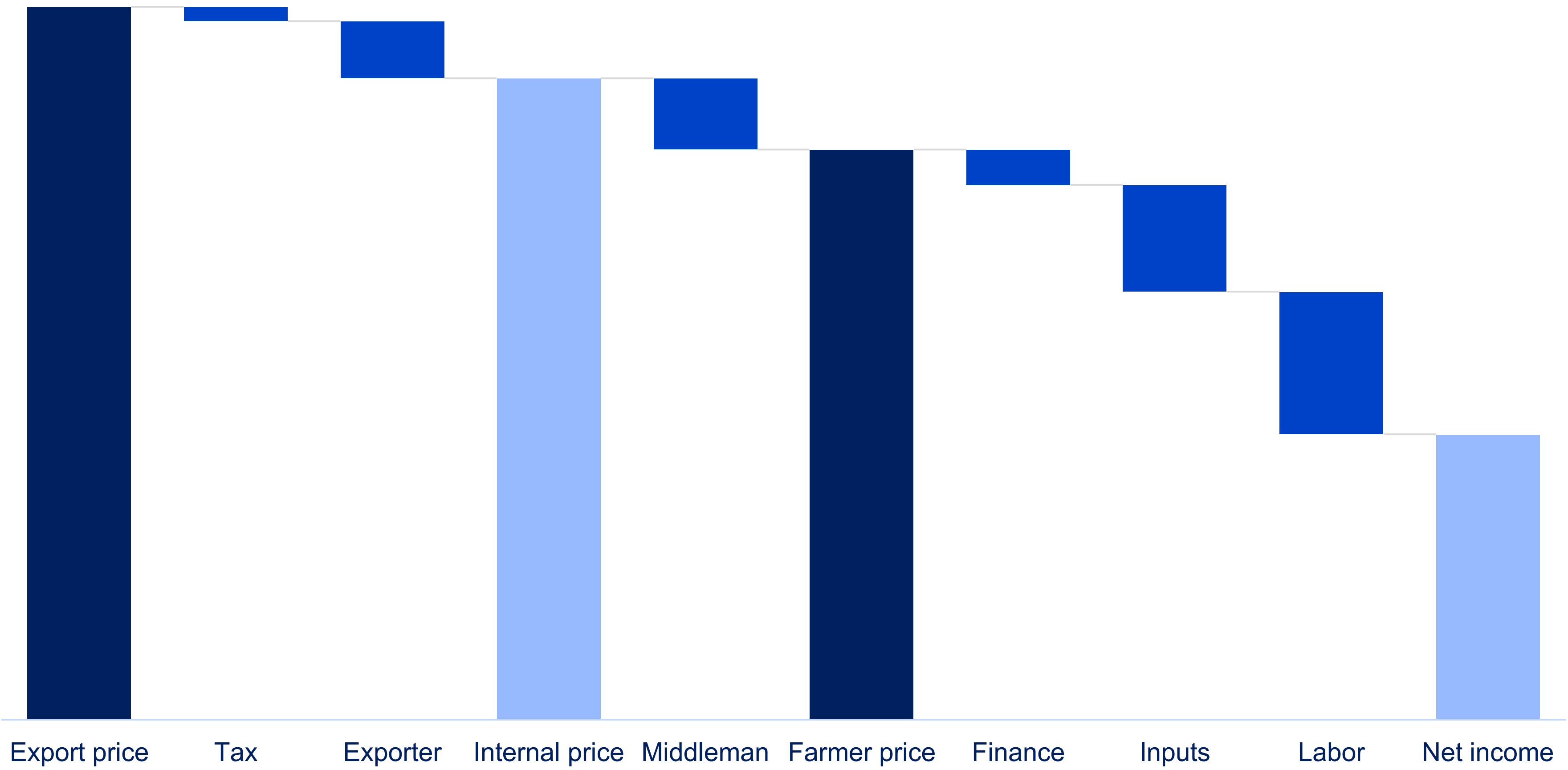
3 **BENCHMARK**

- performance of the value chain against peer countries or sectors

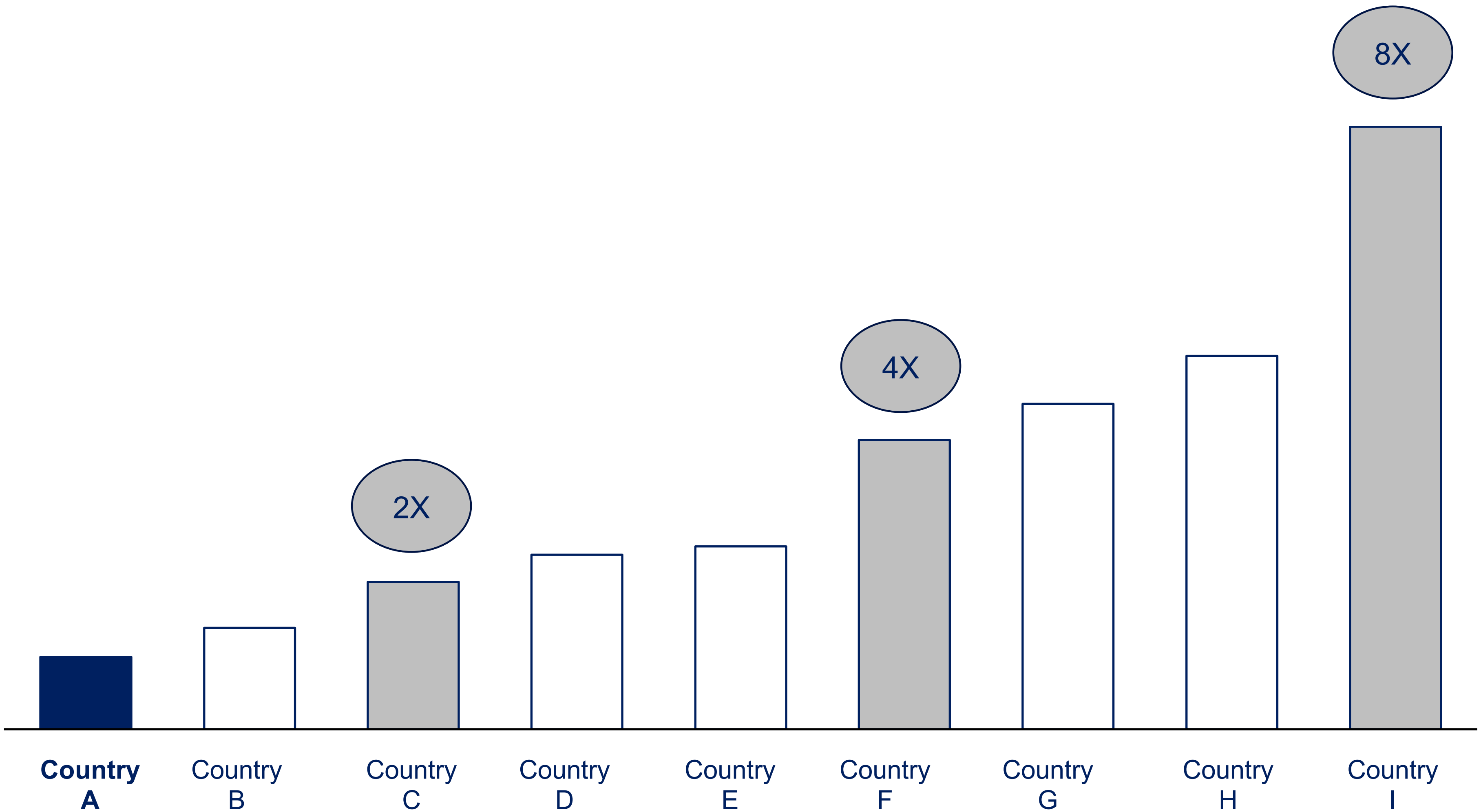
Map who the relevant actors are, what they do, how they relate to each other



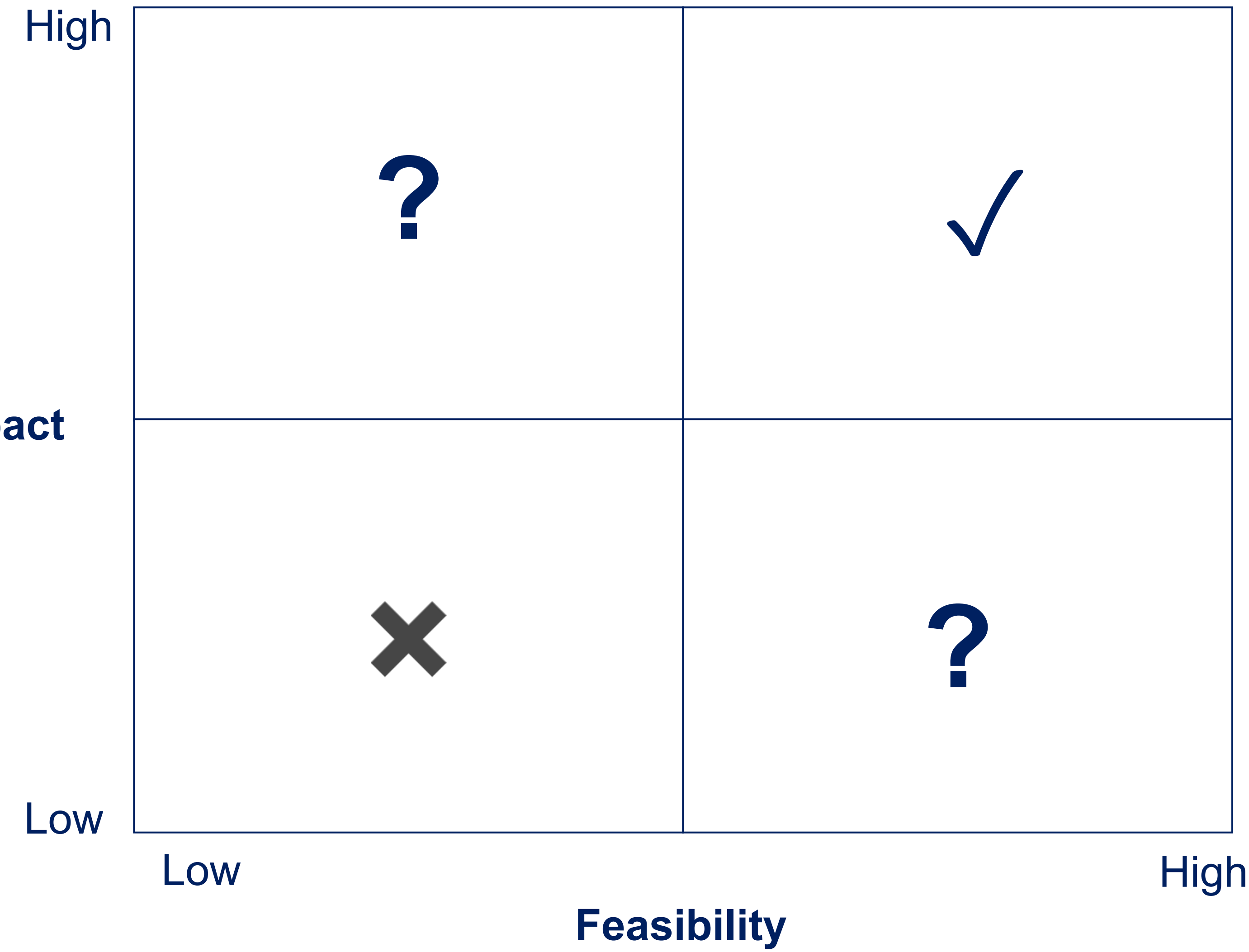
Breakdown costs and revenues for each actor, how value flows through the chain



Benchmark performance of the value chain against peer countries or sectors



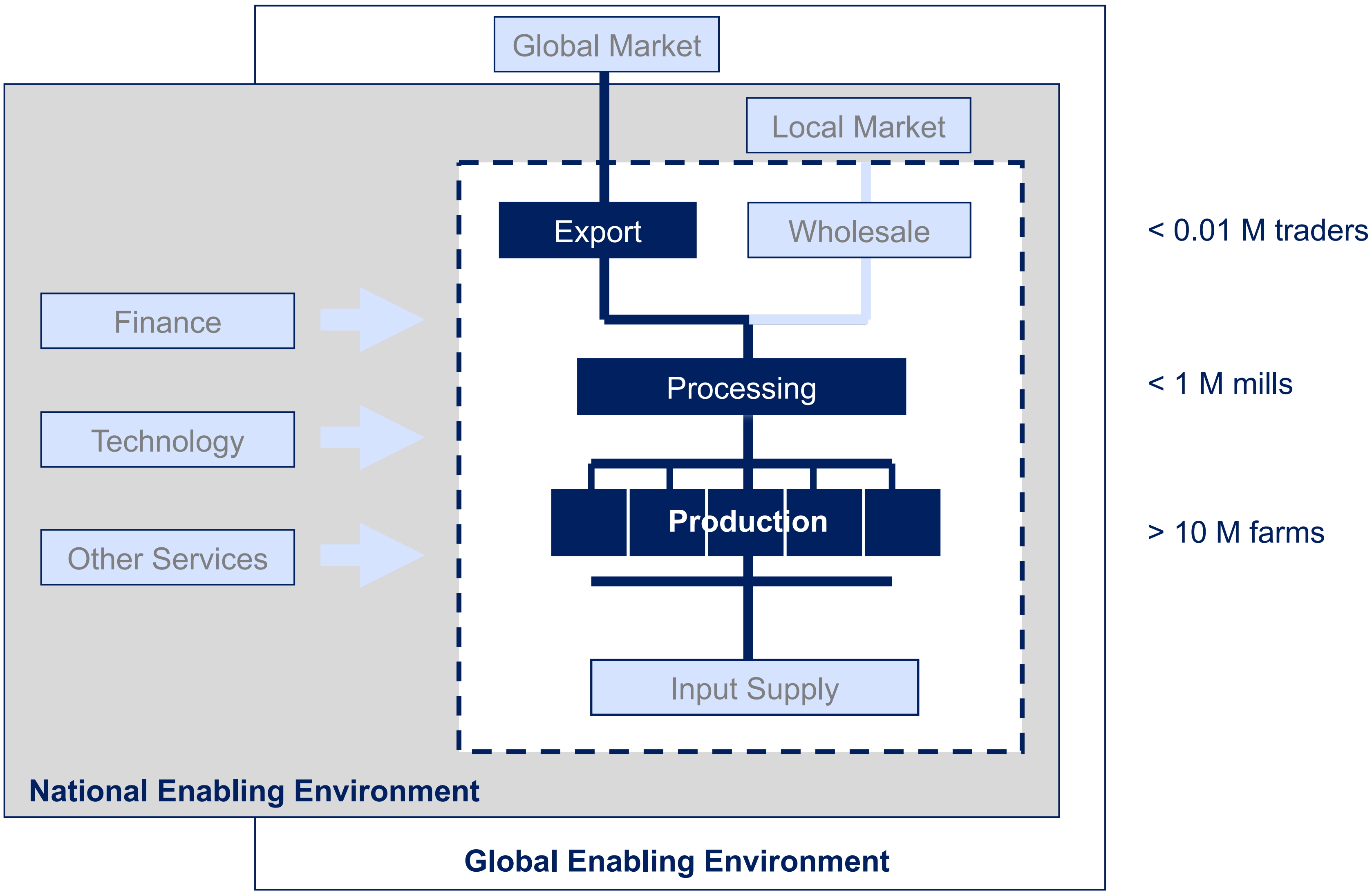
After analysis, **prioritize** recommendations (based on some pre-defined selection criteria)



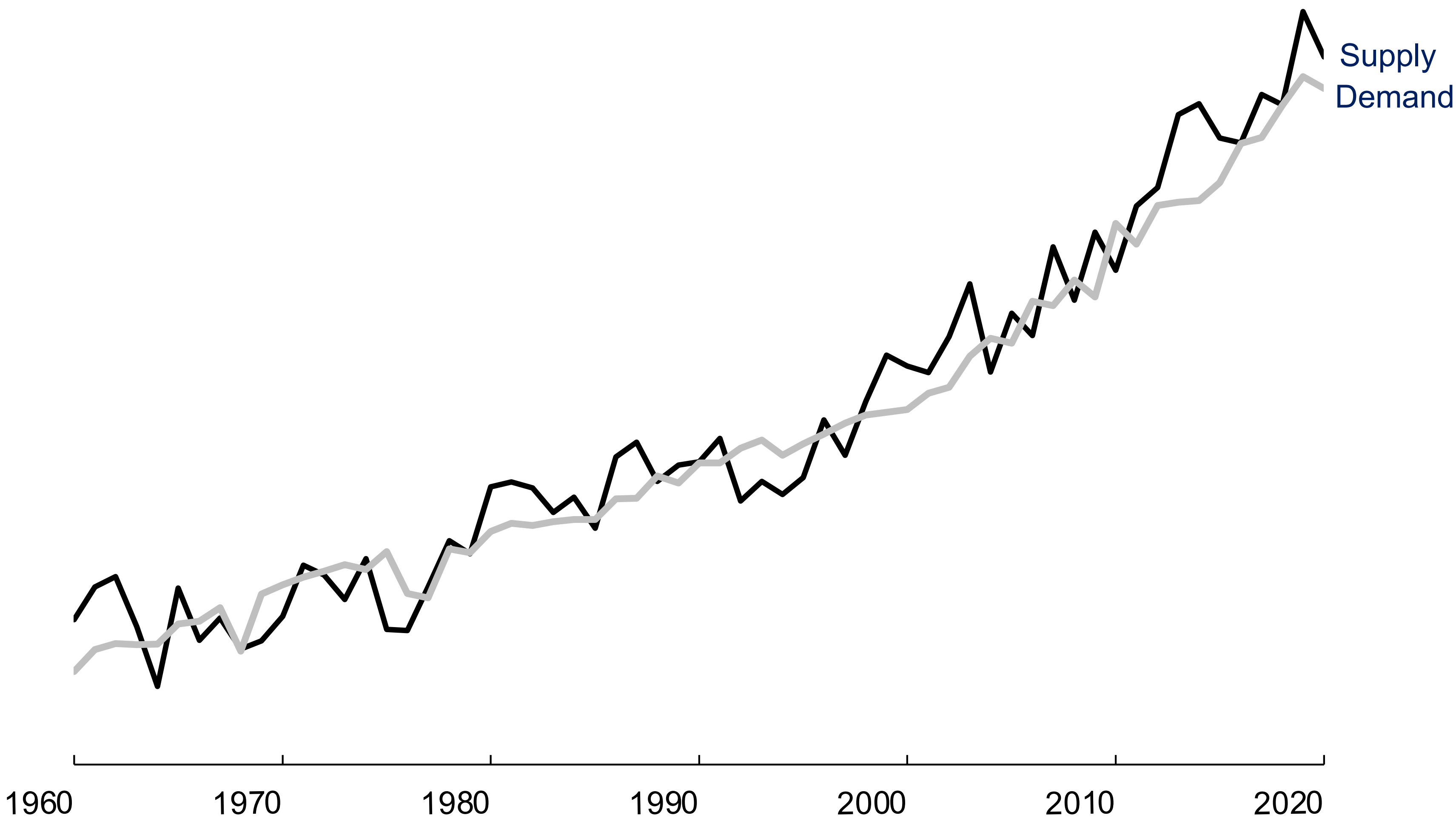
Applying these concepts to the Coffee Value Chain

Cherry	Parchment	Green	Roasted	Ground	Cup
					
>10 M farms	<1 M mills	< 0.01 M traders	< 0.1 M roasters	>1 M retailers	>1000 M consumers

Global coffee value chain **map**

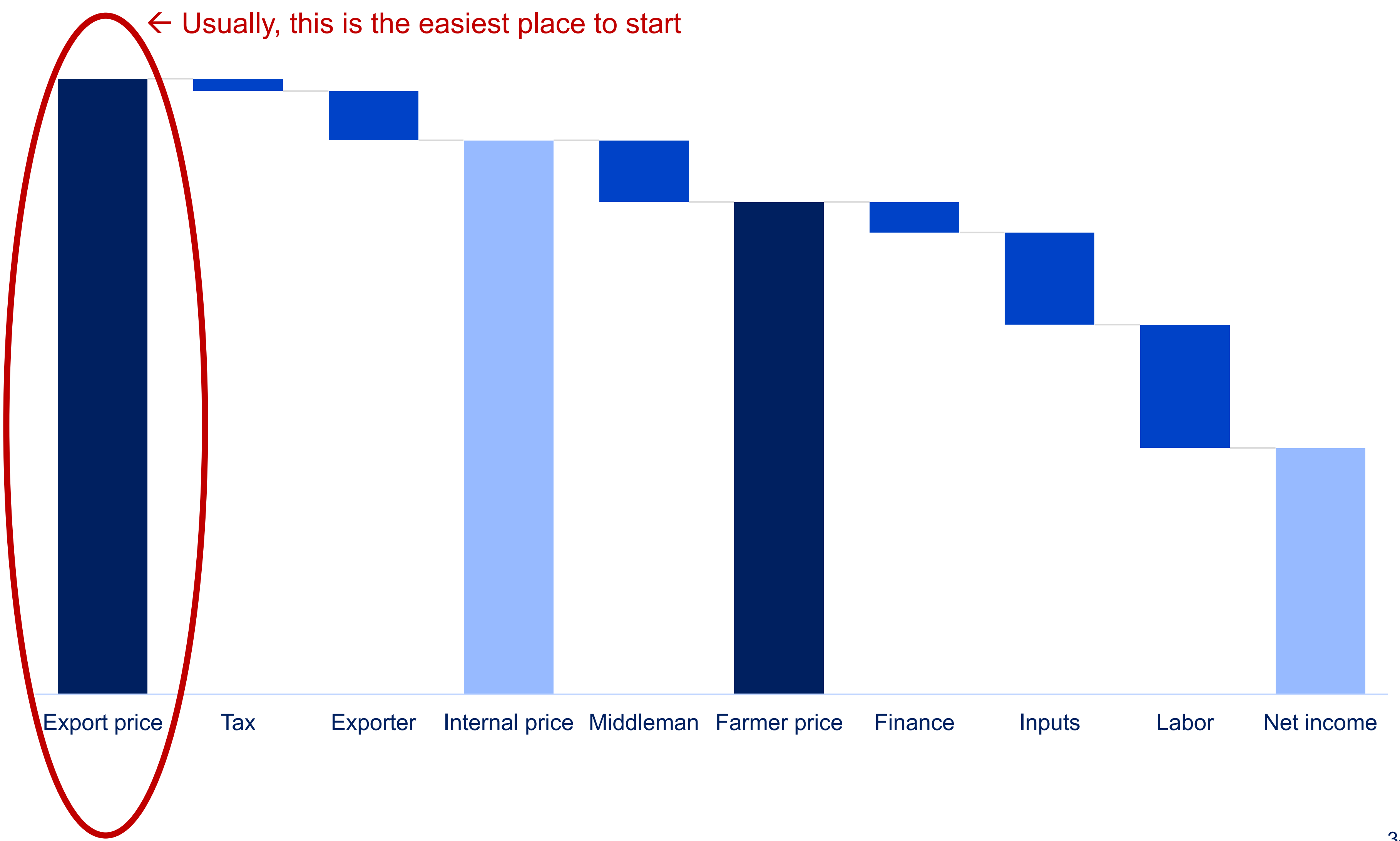


Coffee supply is more volatile than coffee demand



Source: USDA; ICO

Breakdown costs and revenues for each actor, how value flows through the chain



Futures market enables market players to manage risk

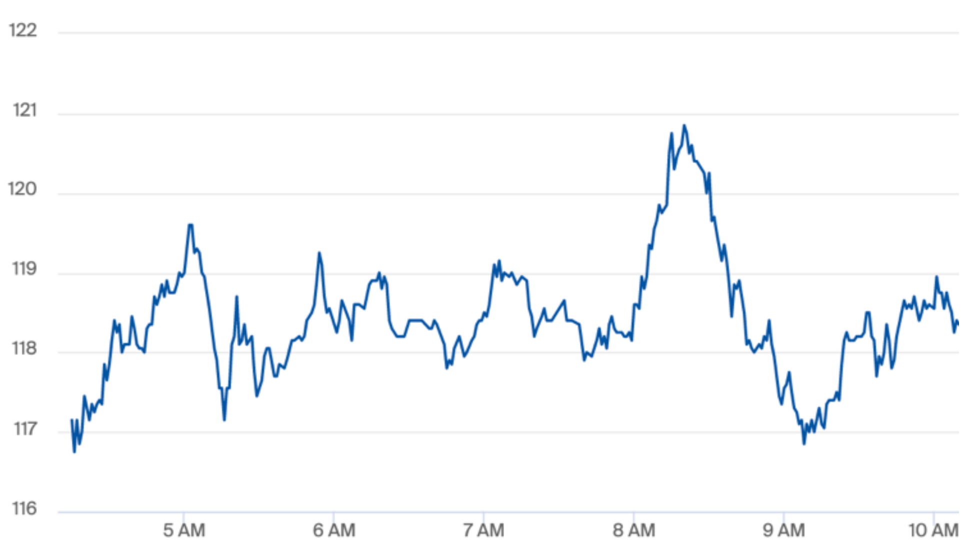
ICE FUTURES U.S.

Coffee C ® Futures

Product Specs | Data | Expiry Details | Margin Rates | Options

CONTRACT	LAST
MAY20	118.800

INTRADAY | 3 MONTHS | 1 YEAR | 2 YEARS



Market Specifications

Trading Screen Product Name

Coffee "C" Futures

Trading Screen Hub Name

NYCC

Commodity Code

KC

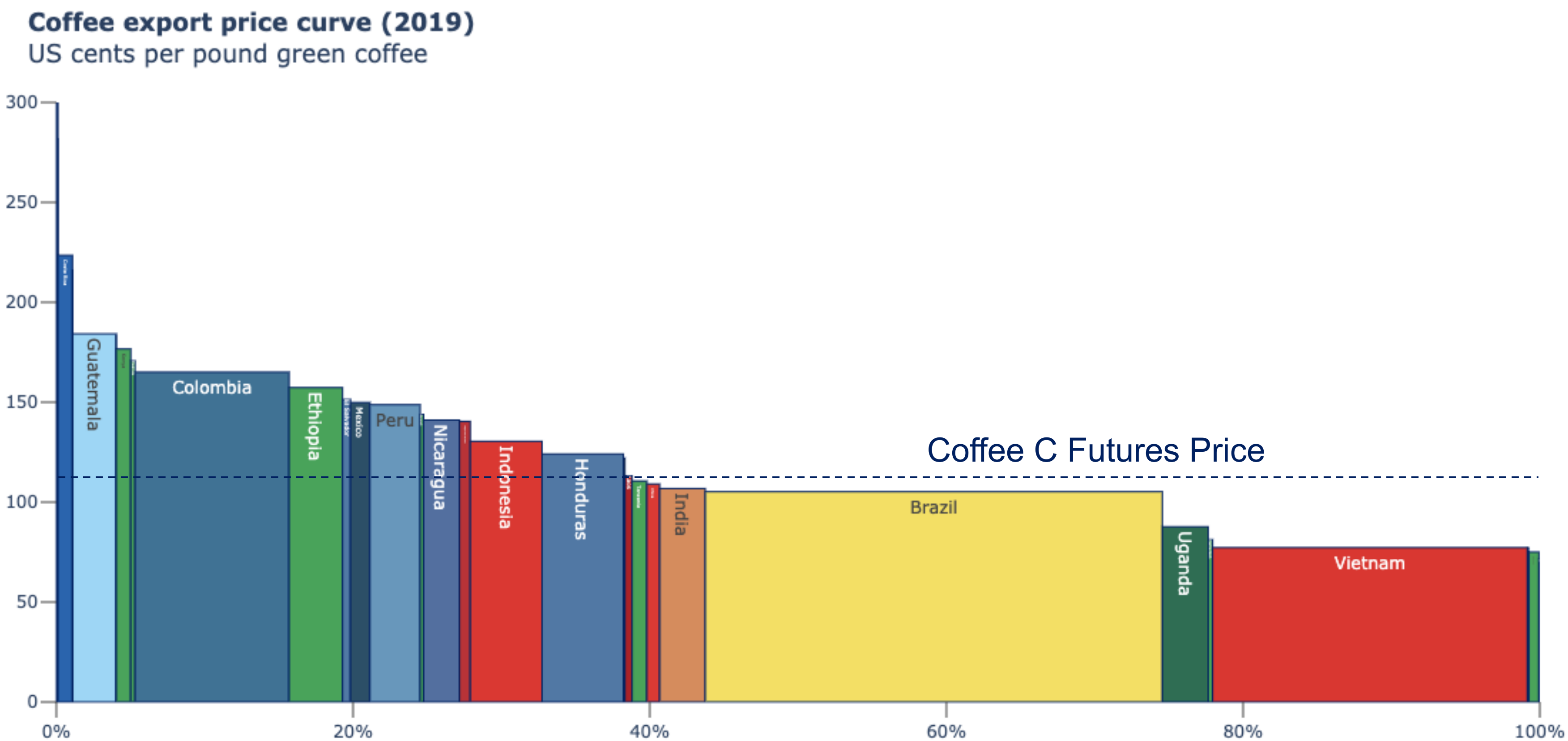
Contract Size

37,500 pounds

Price Quotation

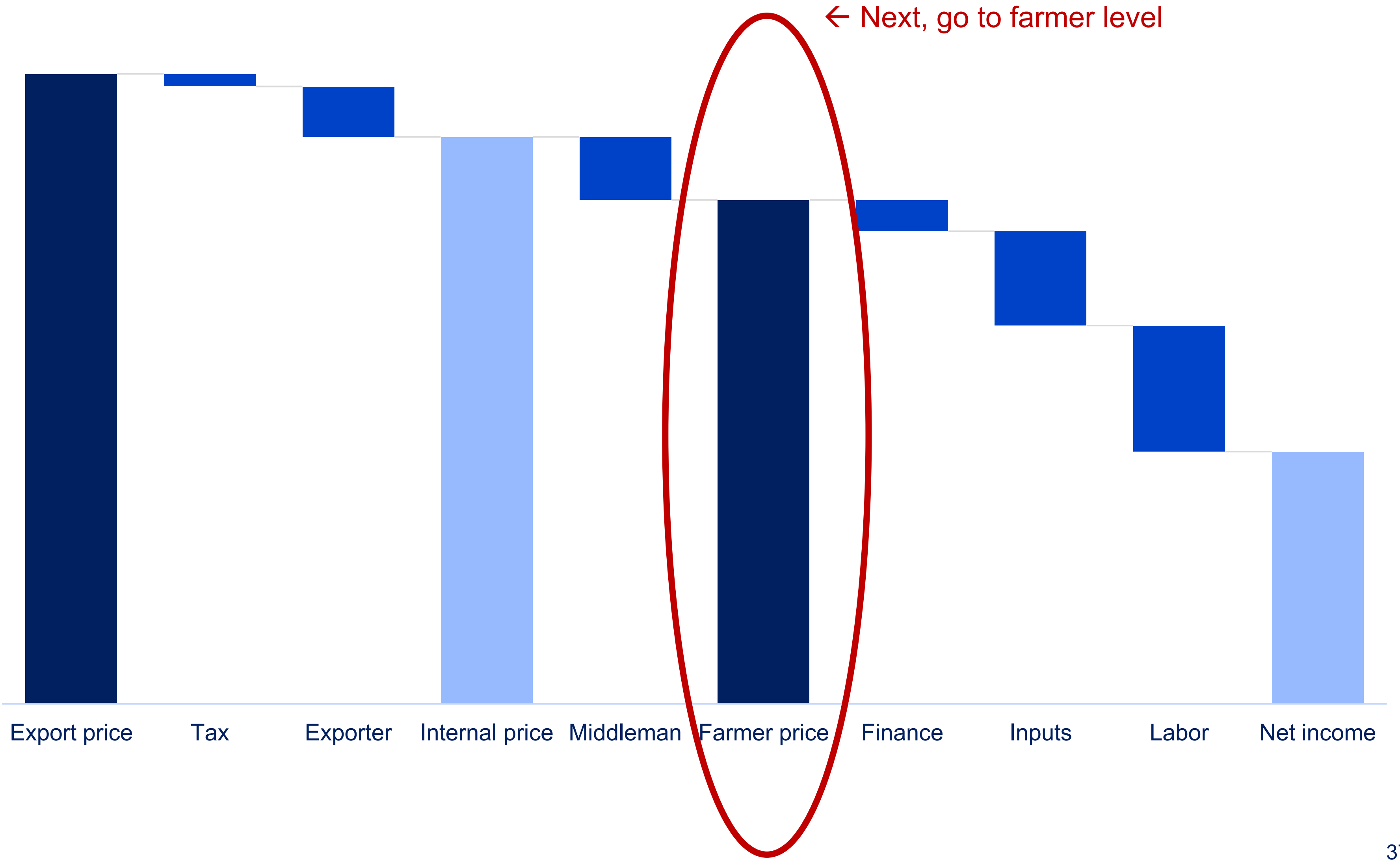
Cents and hundredths of a cent up to two decimal places

Each country has an average quality premium or discount relative to the global futures market price



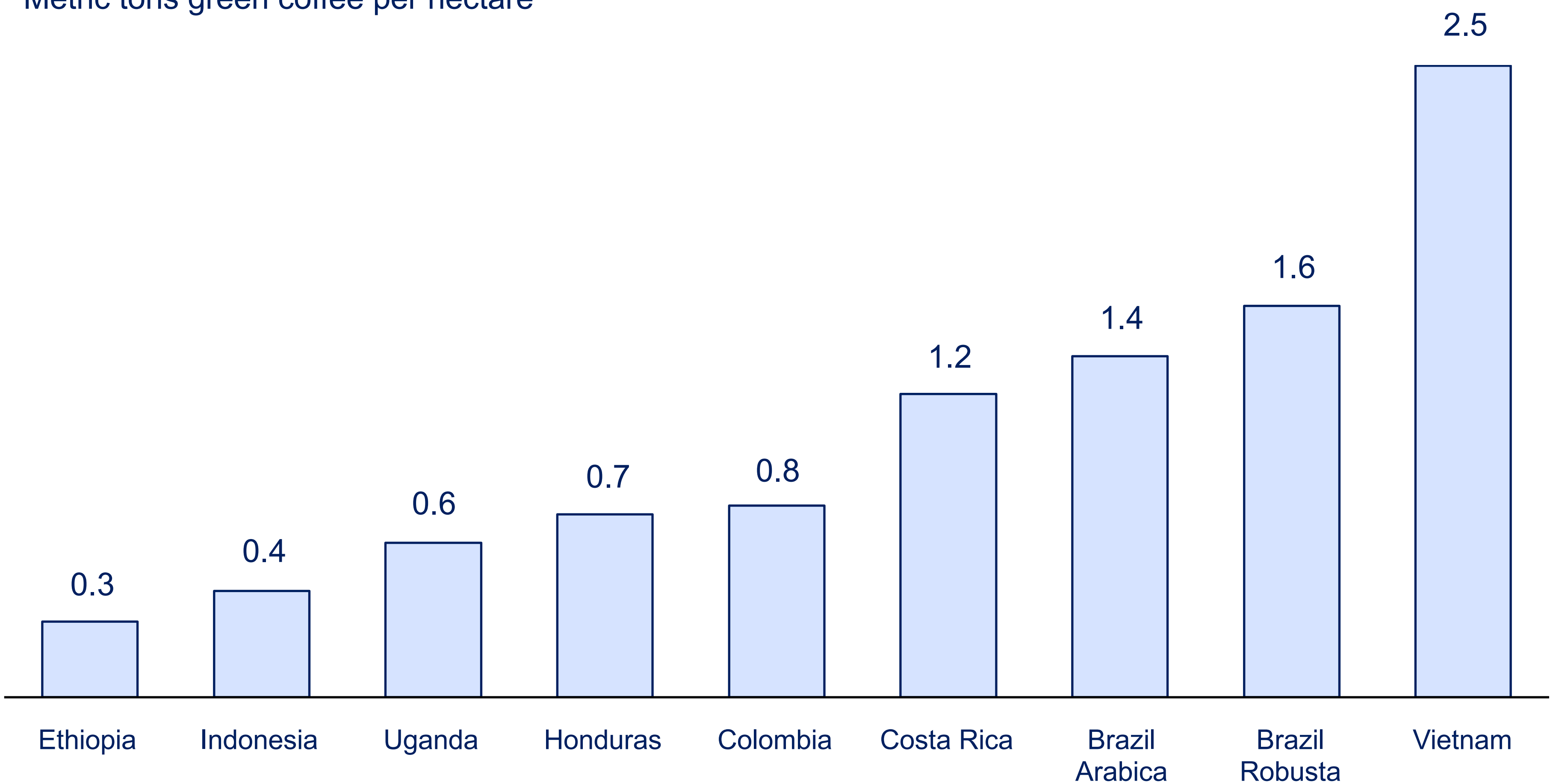
Source: COMTRADE

Breakdown costs and revenues for each actor, how value flows through the chain



Benchmark performance of the value chain

Average coffee farm yields*
Metric tons green coffee per hectare



*National average based on total production (average of last two crops) and area under coffee; includes both Arabica and Robusta unless noted otherwise

Source: USDA; TechnoServe analysis

Global coffee value chain review

1 **MAP**

- Diverse supply base: 20+ countries, >10 million farms, varying levels of sophistication
- Most coffee sold for export

2 **BREAKDOWN**

- Prices set internationally
- Production costs are influenced by local policies and conditions (e.g., taxes, wages, infrastructure, etc.)

3 **BENCHMARK**

- Lower price countries (Brazil and Vietnam) have higher yields
- Higher price countries (Colombia and Ethiopia) have lower yields

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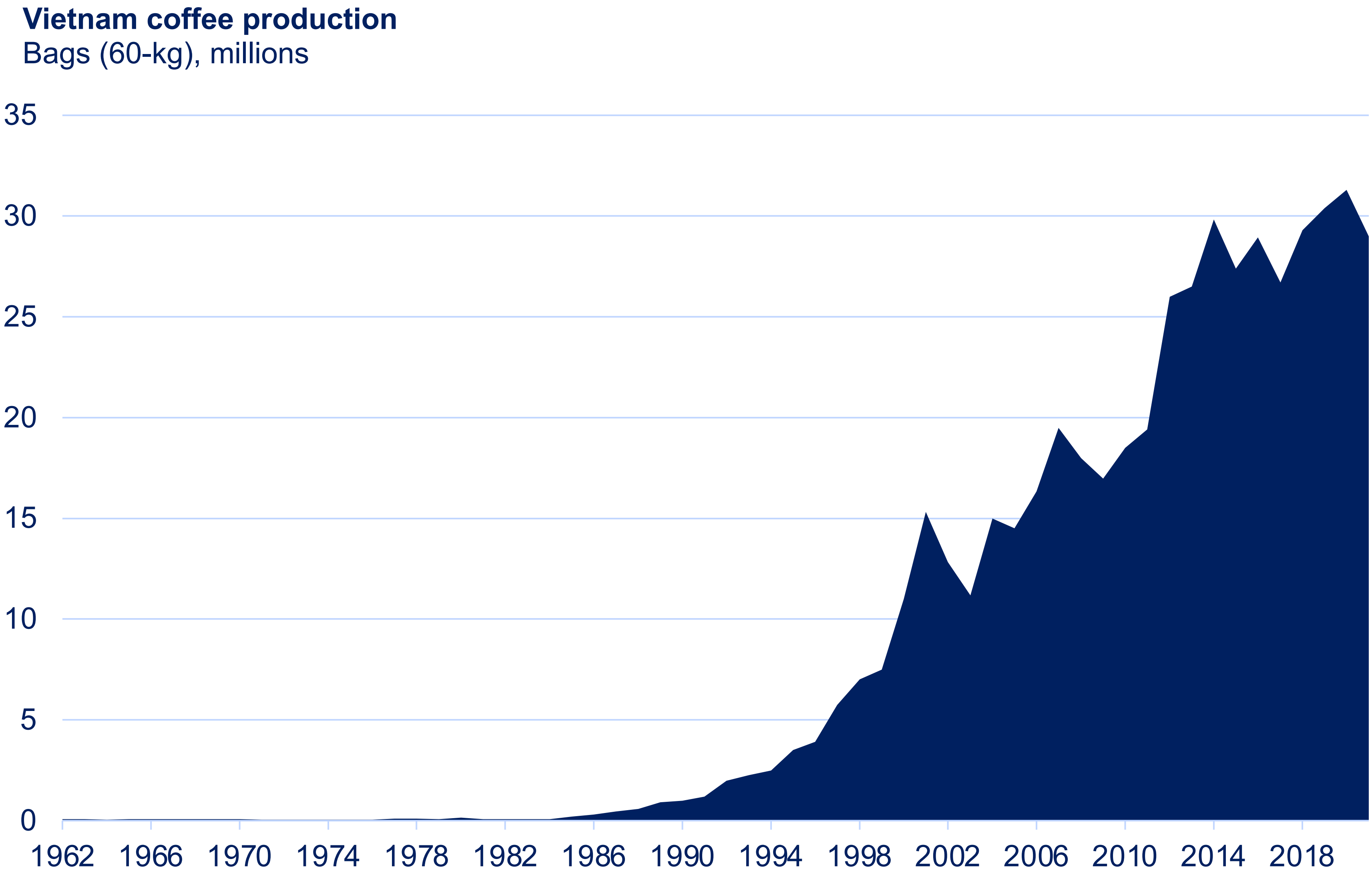
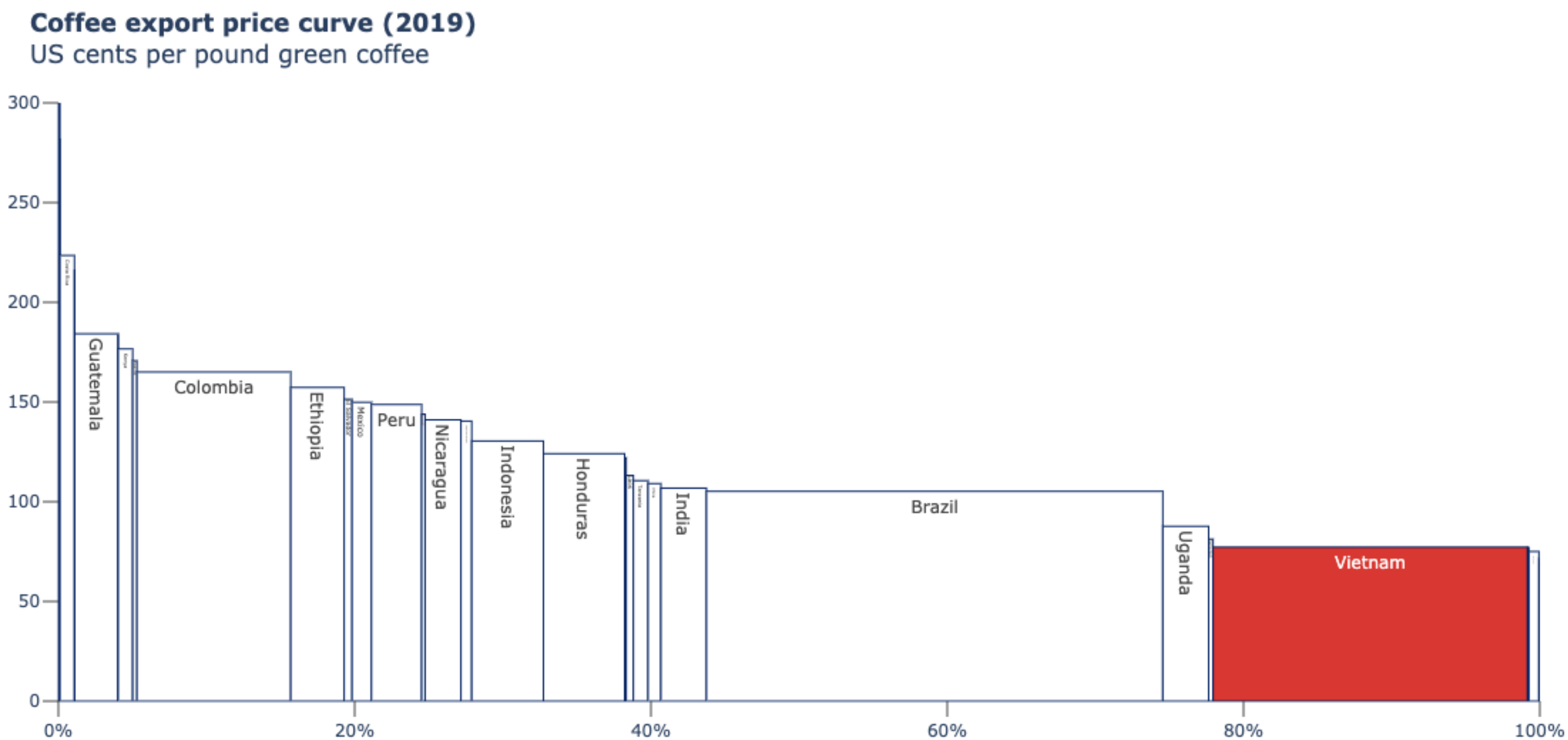
Vietnam has increased coffee production rapidly



Source: USDA production figures

Today, Vietnam supplies ~20% of market at a low price



Source: COMTRADE

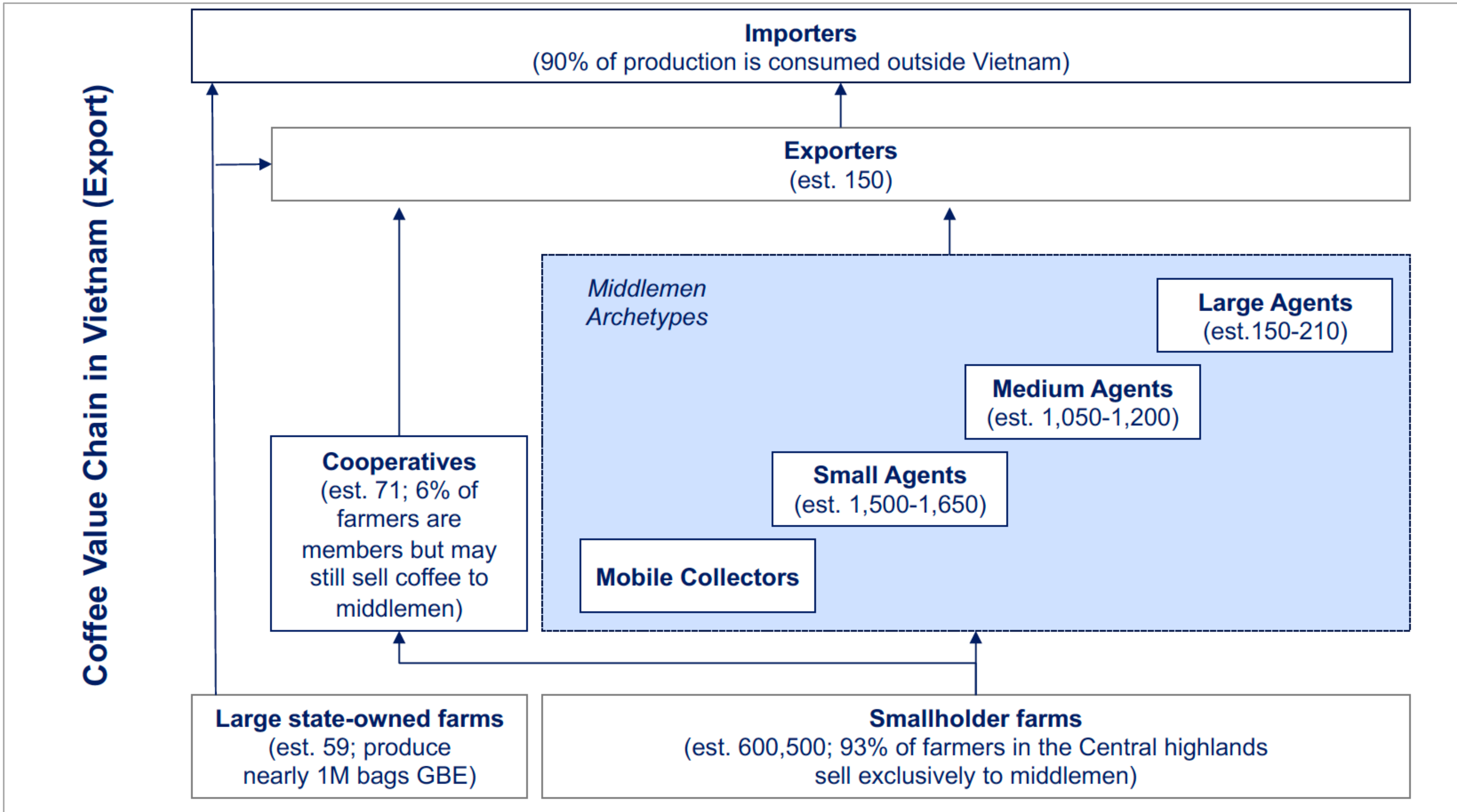
Government pursued various growth-oriented policies

Land rights	• Through the land reform of 1991, farmers gained the ability to freely buy and sell land, and to use it as collateral for loans
Credit access*	• The state-owned Vietnamese Bank of Agriculture and Rural Development has 1600 branches in rural areas and offers a comprehensive rural banking system • It has offered flexible repayments to farmers in times of hardship and lower coffee prices
Efficiency	• Strong competition between multinationals and local export companies • No export taxes or levies
Liberalization	• Gradual reforms transferred control of the coffee industry from the state to the private sector, including the selling of state-owned enterprises and plantations
Lack of quotas	• Price quotas and other controls on food crops (e.g., rice) led farmers to focus on export crops (e.g., coffee), which were not subject to any controls

* Many in the Vietnamese industry still see smallholders' access to credit, especially for inputs, as a major challenge

Source: Anthony Marsh / FAO

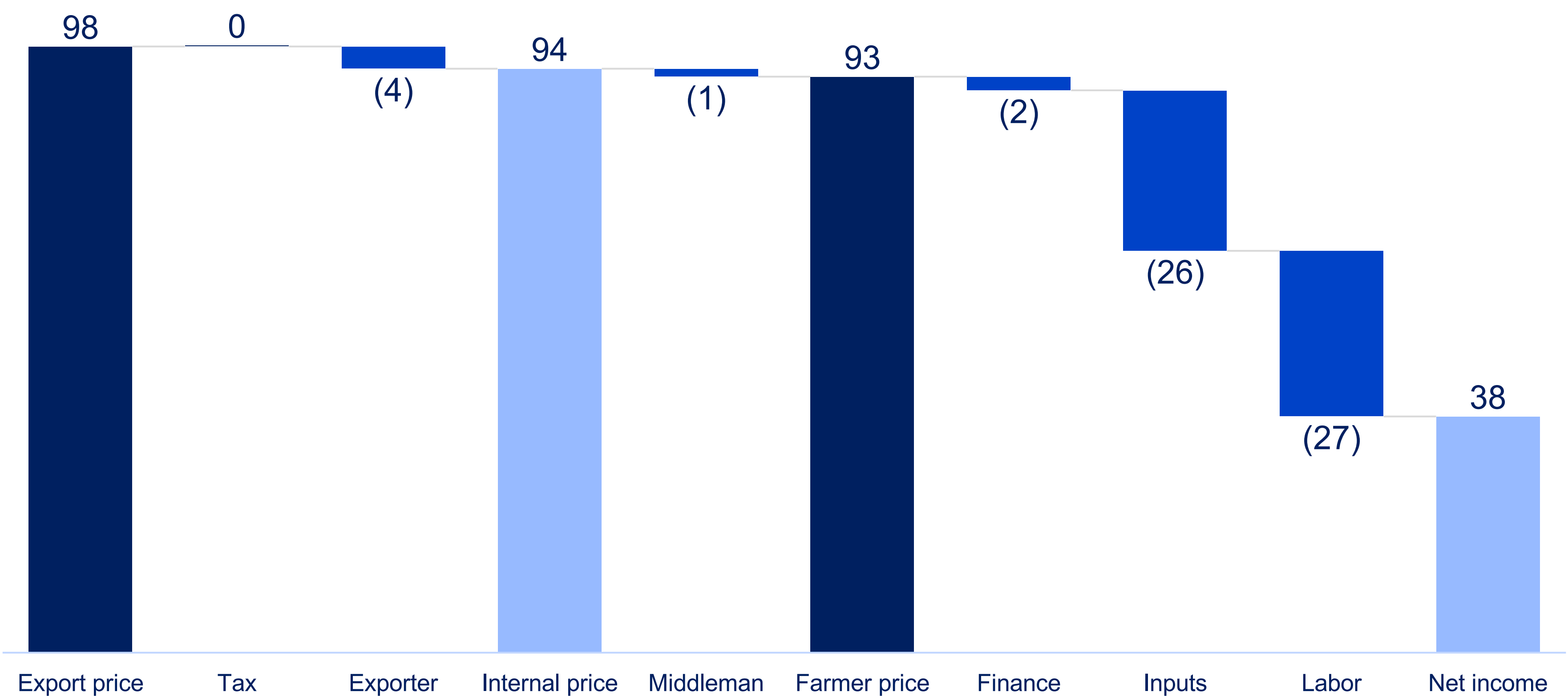
Vietnam has ~600,000 coffee farmers and a highly competitive “middleman” economy



Source: An analysis of the role of middlemen in coffee supply chains: Vietnam Country Report; prepared by Enveritas in January 2020

Farmers receive 95% of the export price, while middlemen (traders) have very slim margins

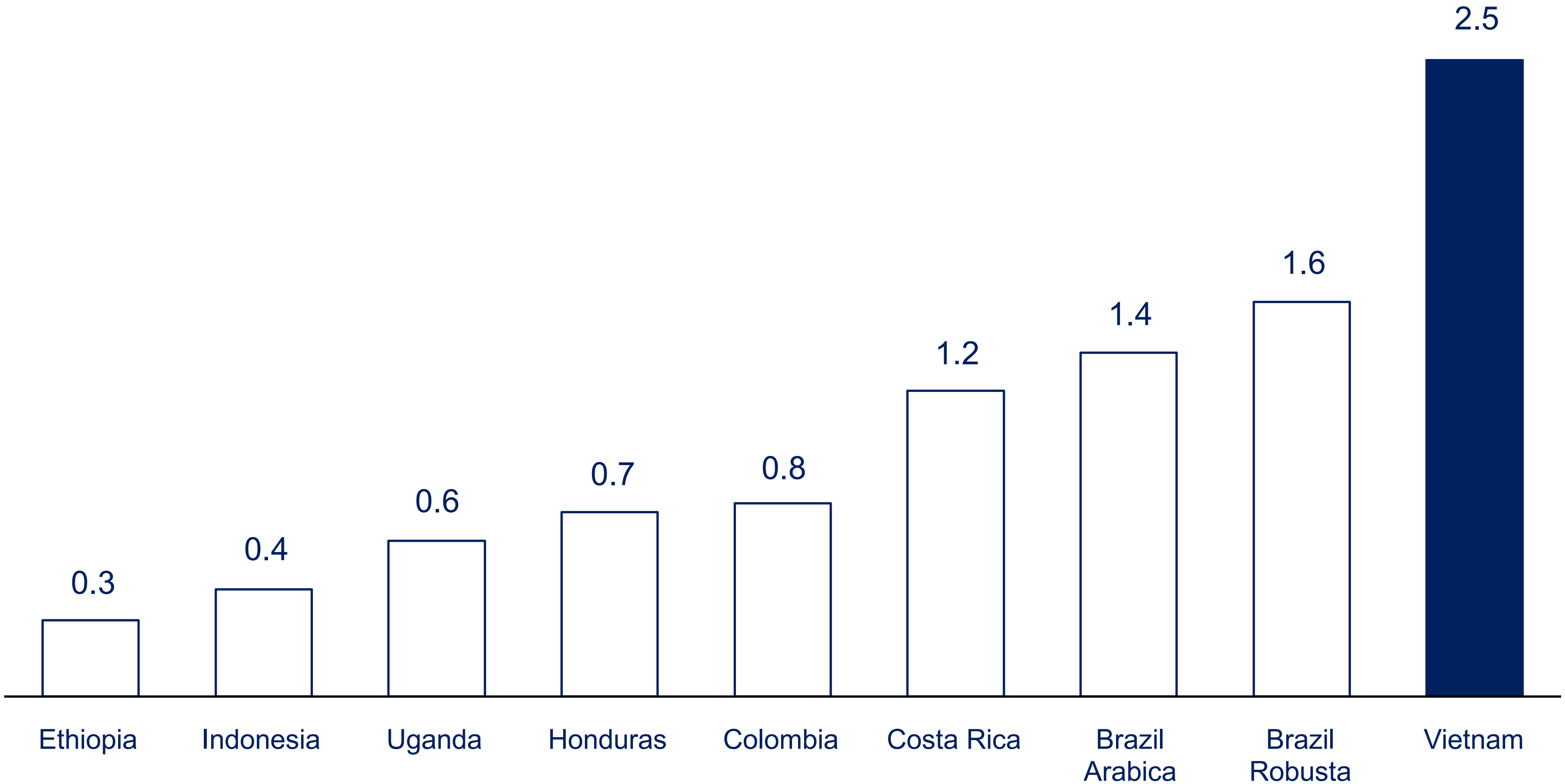
Illustrative Vietnam Robusta supply chain cost breakdown
US cents per pound green



DATE: March 8, 2013 (for pricing)
Source: interviews with local and multinational exporters

Vietnamese farms have very high yields

Average coffee farm yields*
Metric tons green coffee per hectare

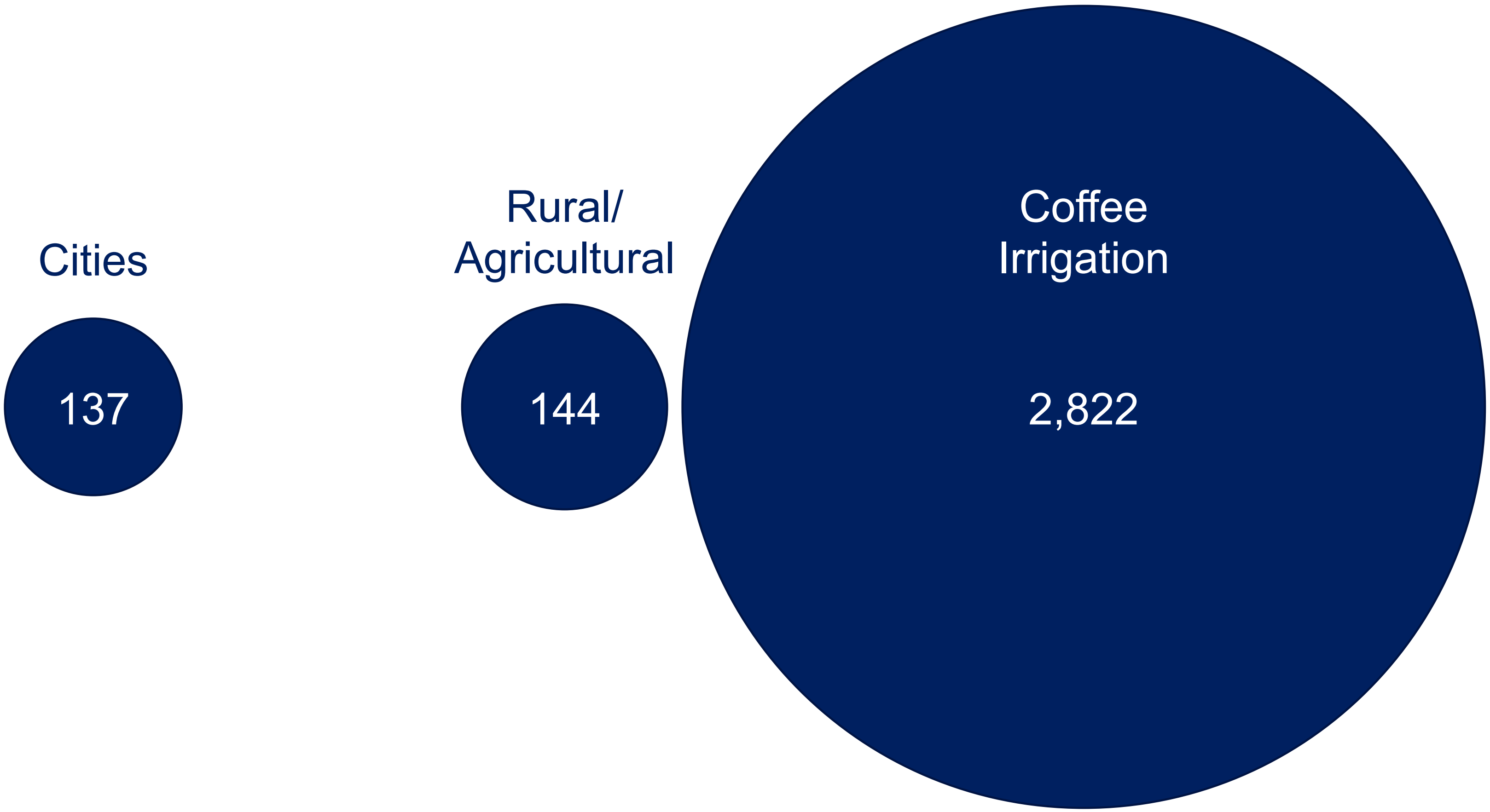


*National average based on total production (average of last two crops) and area under coffee; includes both Arabica and Robusta unless noted otherwise

Source: USDA; TechnoServe analysis

Coffee production has a large environmental footprint

Total water demand in Vietnam's Central Highlands
Tons per household* per year



* Assumes average household size of 4.5
Source: D'Haeze 2004; Lu 2002; extrapolations to current estimated rates of urban and rural usage

Vietnam review

1 **MAP**

- Approx. 600,000 mostly small-scale farmers
- Growth-focused government policies (land rights, credit access, lots of competition, etc.)

2 **BREAKDOWN**

- Farmers earn 95% of export price
- Margins for exporters / collectors are very slim (<1%)

3 **BENCHMARK**

- High farm yields and low costs relative to other coffee countries
- Production has a large environmental footprint

Potential ways forward

Sustain

- Improve environmental stewardship (water, etc.)

Add value

- Develop capacity to roast and package locally, and sell into regional markets (e.g., Southeast Asia & China)

Local demand

- Boost local coffee consumption, reducing exposure to volatile export prices

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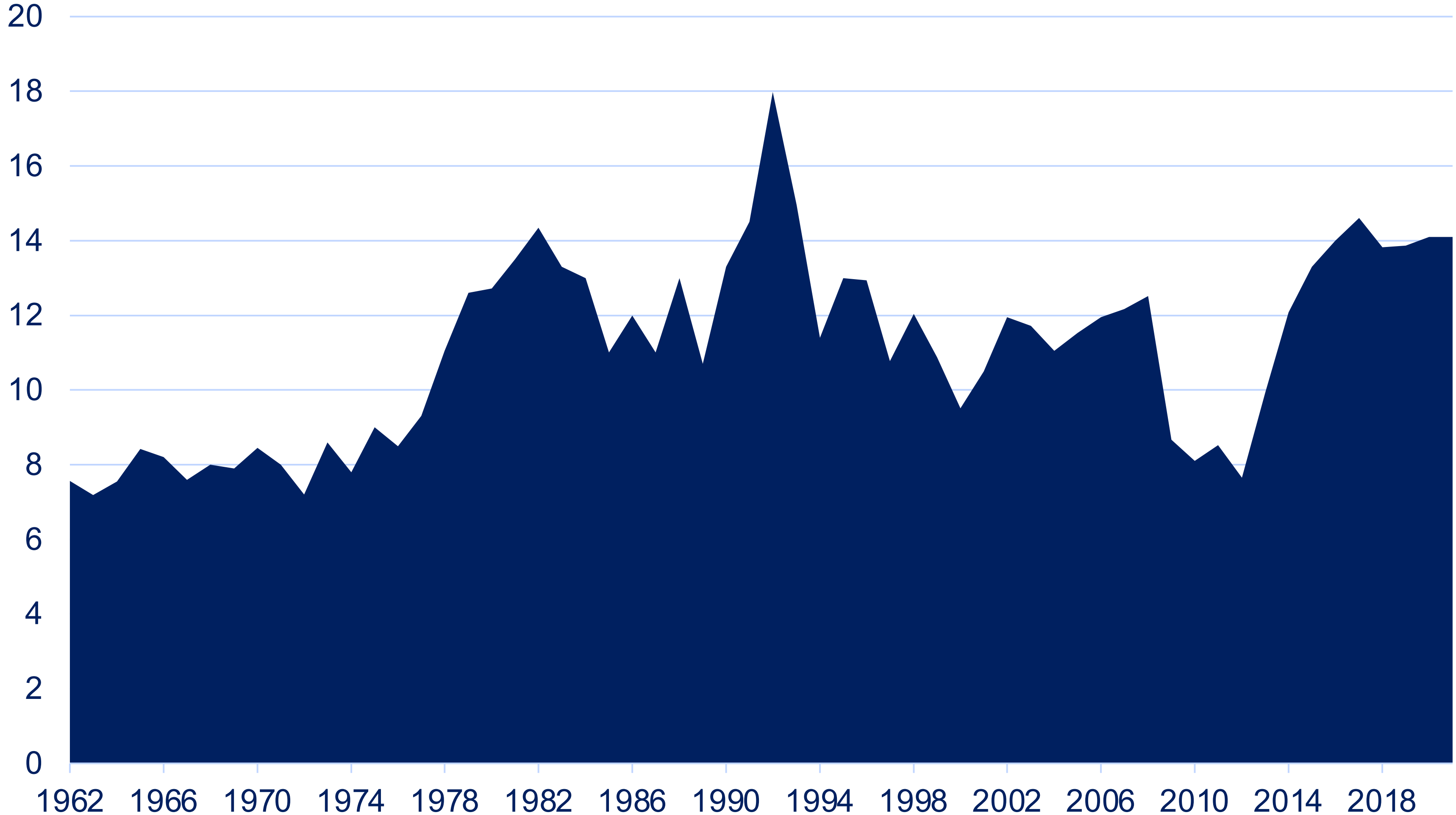
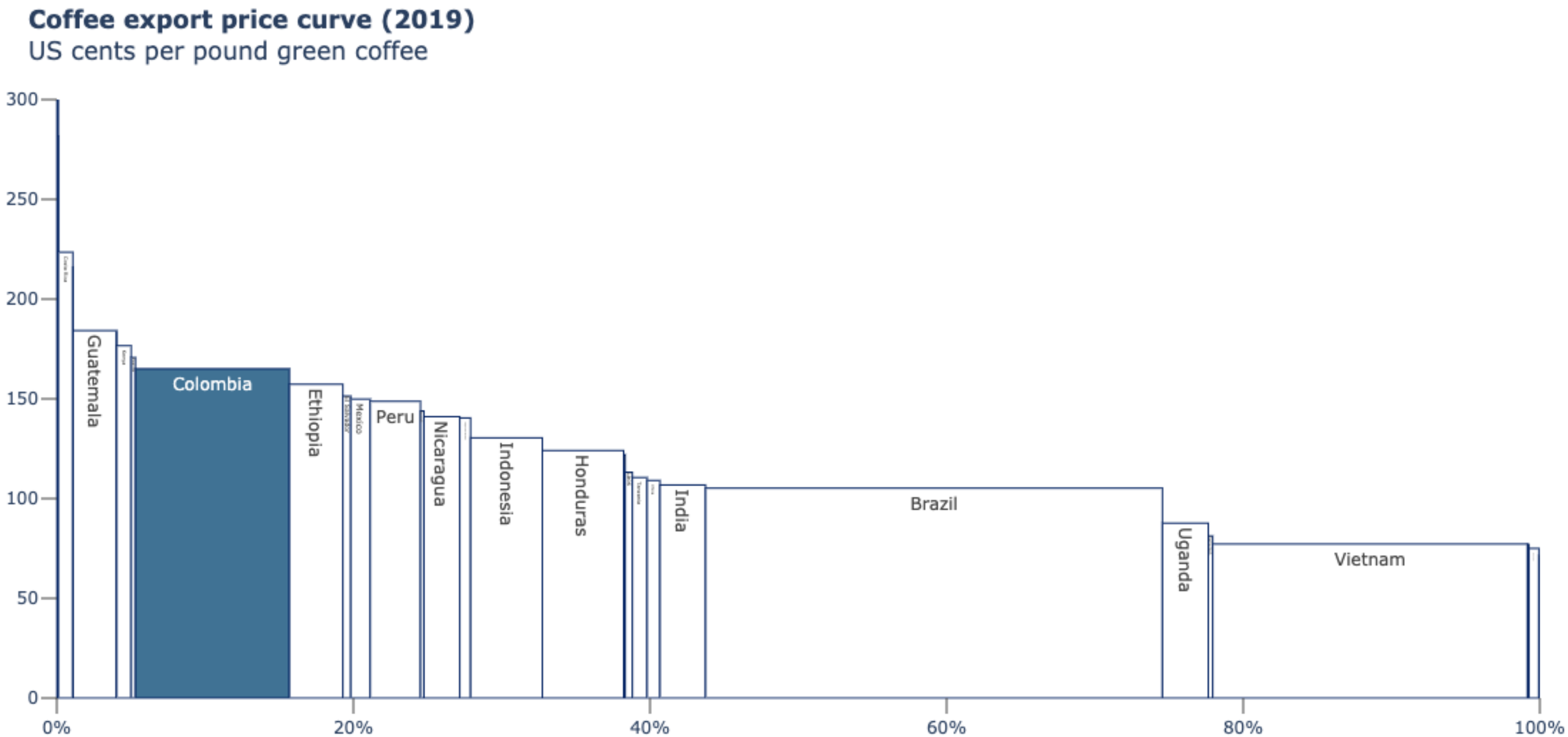
Colombia's coffee production has been relatively stable

Colombia coffee production
Bags (60-kg), millions



Source: USDA production figures

Colombia supplies ~10% of market at a premium price



Source: COMTRADE

Colombia has a distinctive coffee value chain with strong institutional support

Colombia's coffee value chain (Arabica)

Distinctive to Colombia

Farming

- **~500,000 farms, majority are small-holders** (with less than 5 ha under coffee)
- **Harvesting occurs year-round** in most areas, with a main harvest and a 2nd mid-year harvest (*mitaca*)

Processing: Wet milling

- **Nearly all farmers wet-mill at home and sell dry parchment** (in most regions there is no market for cherry)
- Some **wet mills have infrastructure gaps**, e.g., insufficient drying space, inadequate waste-water disposal, etc.

Aggregation

- Aggregation is done **both by cooperatives and private buyers**
- **~ 35% of volume goes through coops*** , the highest share in Latin America
- **A purchase guarantee** exists at all aggregation points

Exporting

- **Competition exists between local and multinational exporters** (multi-national exporters have ~33% market share)
- **The FNC**, a nonprofit, is the largest exporter** (25% market share)
- **~90% of total production is exported*****

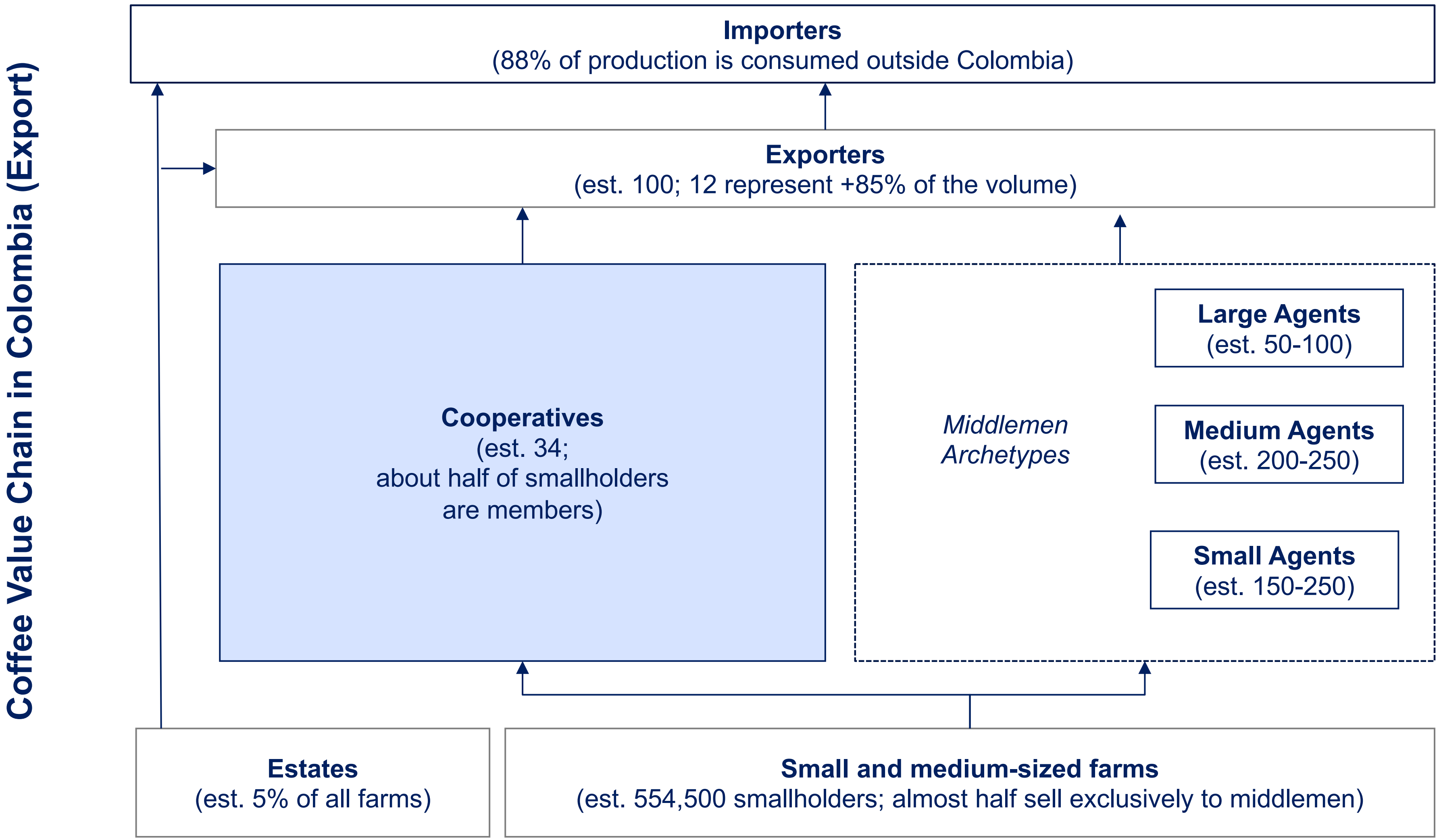
Roasting

- **~10% of production is consumed internally**
- **Internal demand is mainly for roast & ground** (rather than soluble)
- **Soluble manufacturing capacity exists**, both for export and internal markets

- **Strong institutional framework** through the establishment of the National Coffee Fund, which provides support to the coffee sector and is managed by the FNC

* There are 34 coops with 515 purchase points country-wide
** Federación Nacional de Café; responsible for the implementation of the National Coffee Fund
*** Coffee not fulfilling export quality standards is used for internal consumption
Source: FNC; interviews

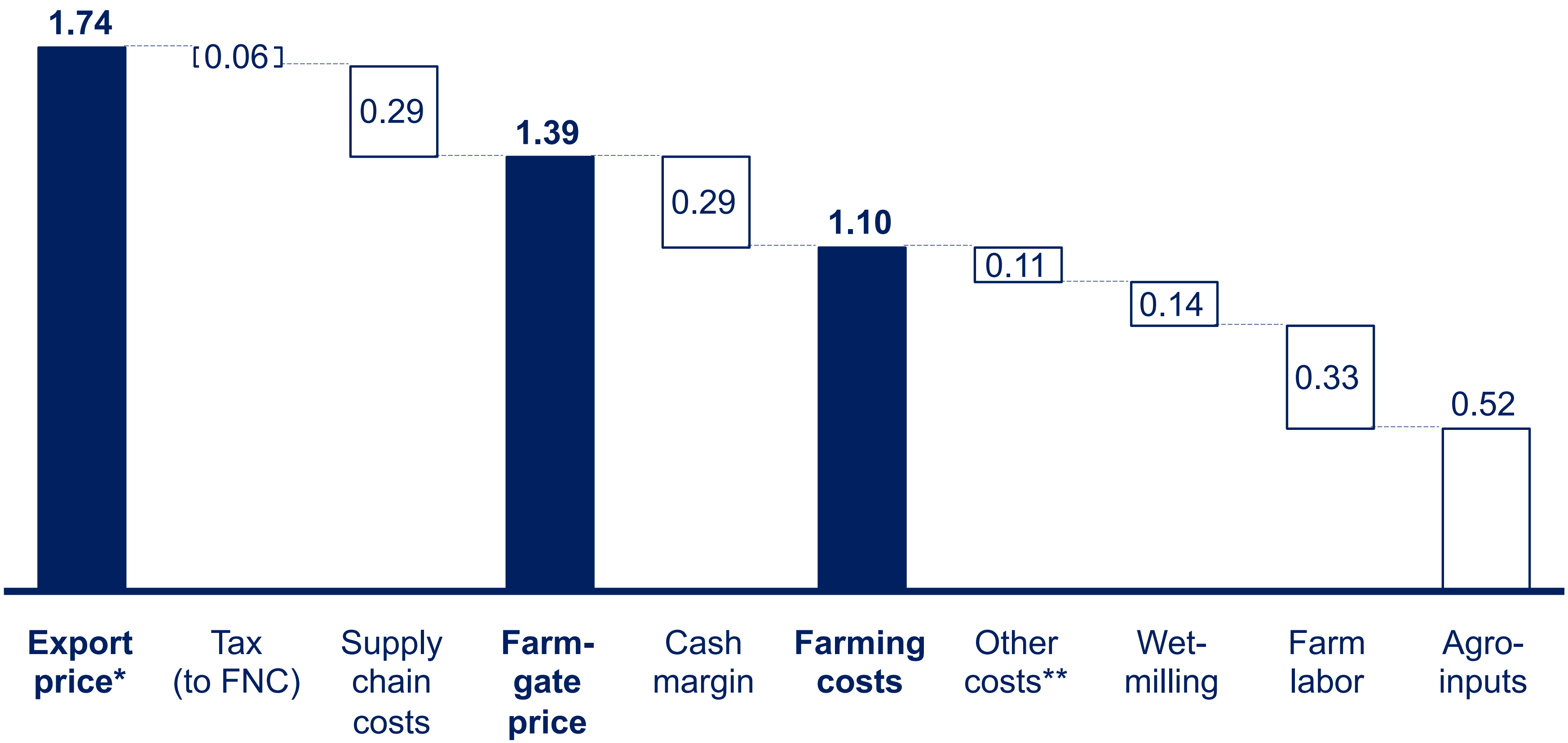
Colombia has ~550,000 coffee farmers and a strong cooperative sector



Source: An analysis of the role of middlemen in coffee supply chains: Colombia Country Report; prepared by Enveritas in January 2020

Farmer earns 80% of the export price

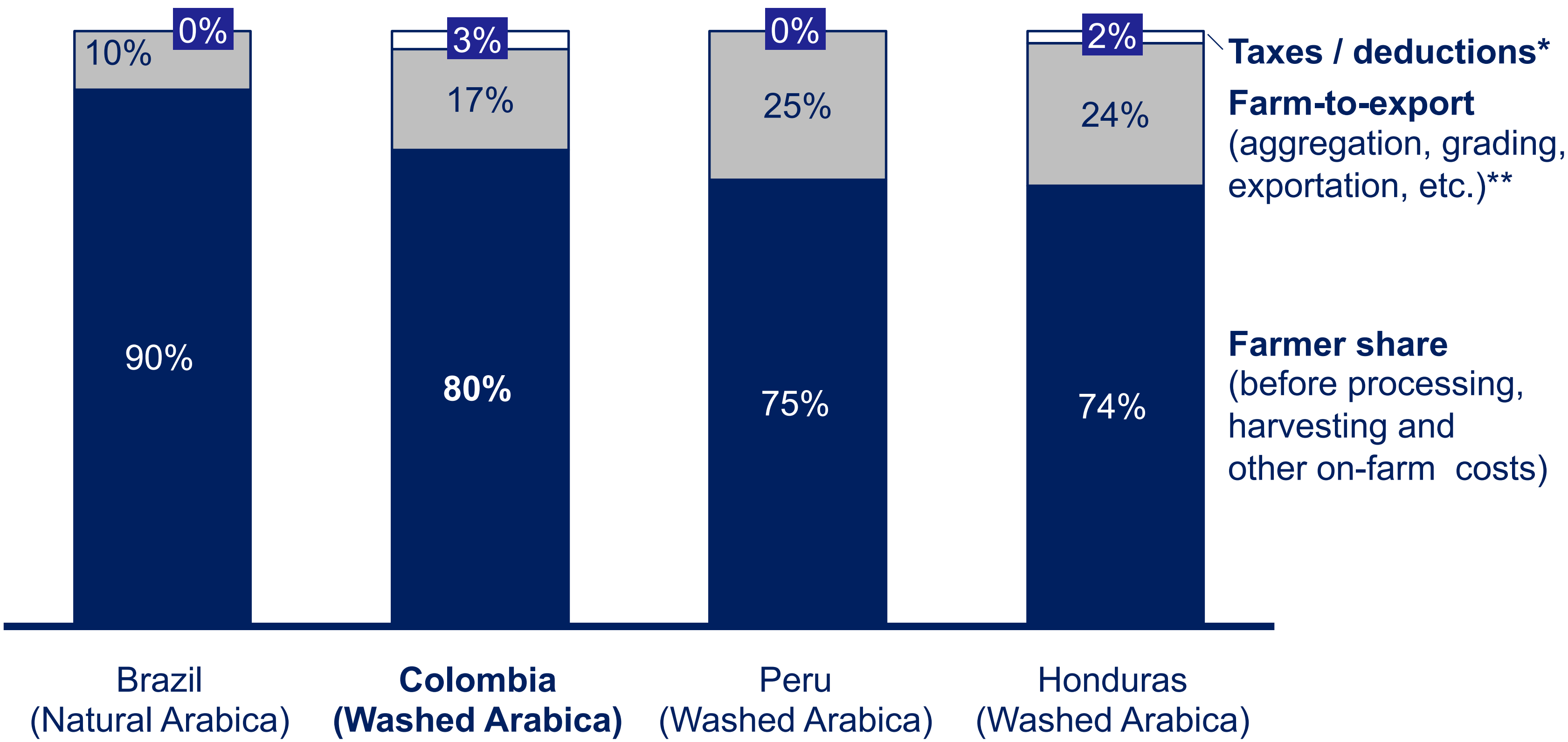
Value chain analysis for average Colombian farm
US$ per lb green



Note: Cost of production does not include costs for installation of wet milling equipment, tree renovation or financing
* Normalized to 2012/13 average commodity prices – Arabica ICE “C” of $1.50 but adjusted for market differentials
** Includes farm tools, equipment, internal transport, etc.
Source: Stakeholder interviews, TechnoServe analysis

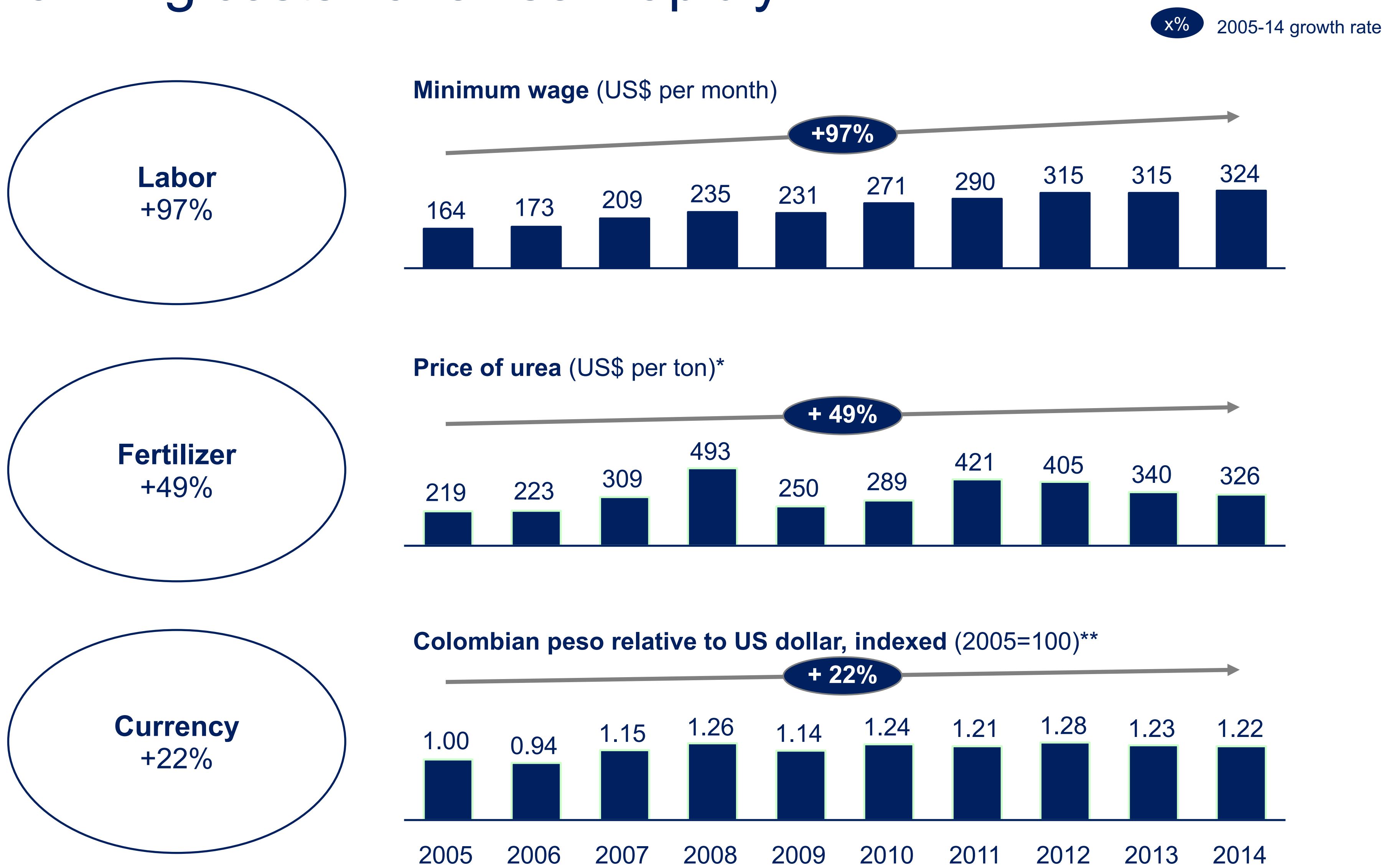
Colombia's farm-to-export chain is efficient relative to regional peers (e.g., Peru, Honduras)

Efficiency levels of major Latin American coffee supply chains, 2012/13
US$ per pound green



* Coffee contribution of US$ 6 cents/lb in Colombia and US$ 4.25 per 46-kg bag in Honduras (not considering 'retención' of US$ 9 per 46 kg bag that is reimbursed to registered farmers after payment)
** Calculated as difference between farm gate price and ICO price
Source: trade statistics; TechnoServe analysis and interviews in Brazil, Colombia, Honduras and Peru

Farming costs have risen rapidly



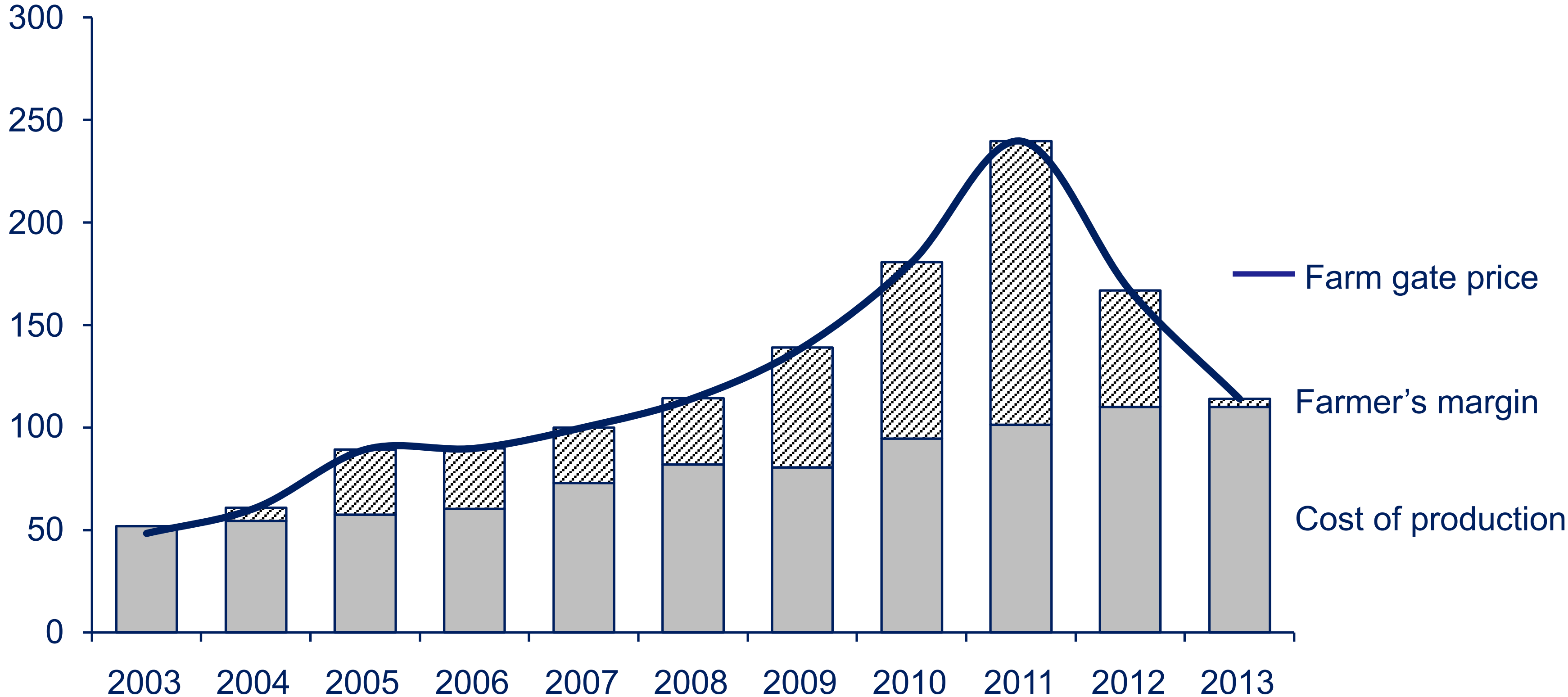
* Average sales price of key importers; import taxes on fertilizers higher in Colombia than in other coffee producing countries

** Rise is appreciation of the Colombian peso relative to the US dollar

Source: Ministerio de la Protección Social (minimum wage); indexmundi.com (urea price); xe.com (exchange rate)

Farmers’ margins have eroded

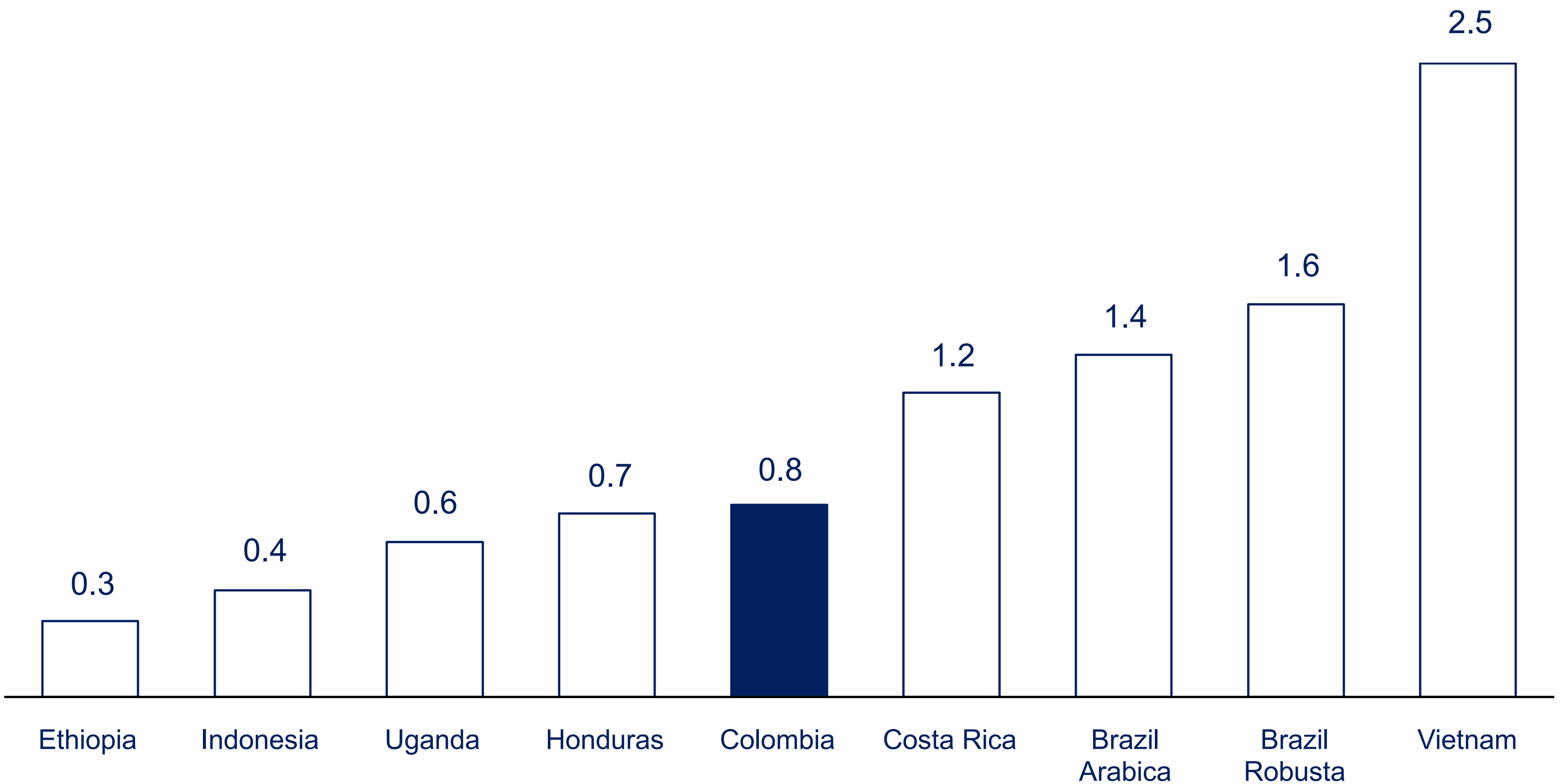
Colombia prices and production costs*
US cents per lb green



* Cash production costs
Source: ICO, FNC, TechnoServe analysis

Colombian farms have average level yields

Average coffee farm yields*
Metric tons green coffee per hectare



*National average based on total production (average of last two crops) and area under coffee; includes both Arabica and Robusta unless noted otherwise

Source: USDA; TechnoServe analysis

Colombia review

1 **MAP**

- Approx. 500,000 mostly small-scale farmers
- Unique supply chain with mix of private, public and cooperative operators

2 **BREAKDOWN**

- Farmers earn 80% of export price
- Strong cooperative sector and institutional support provided by FNC (government)

3 **BENCHMARK**

- Average yields and average costs relative to other coffee countries
- Farmers' margins shrinking due to rising cost base

Potential ways forward

Exit

- Shift away from coffee farming and move into other economic activities that provide better income prospects
- In particular, in peri-urban areas and in places most vulnerable to climate change

Diversify

- Diversification into additional crops that provide income and decrease dependency on coffee prices
- In particular, in lower altitudes that are more susceptible to disease and climate change

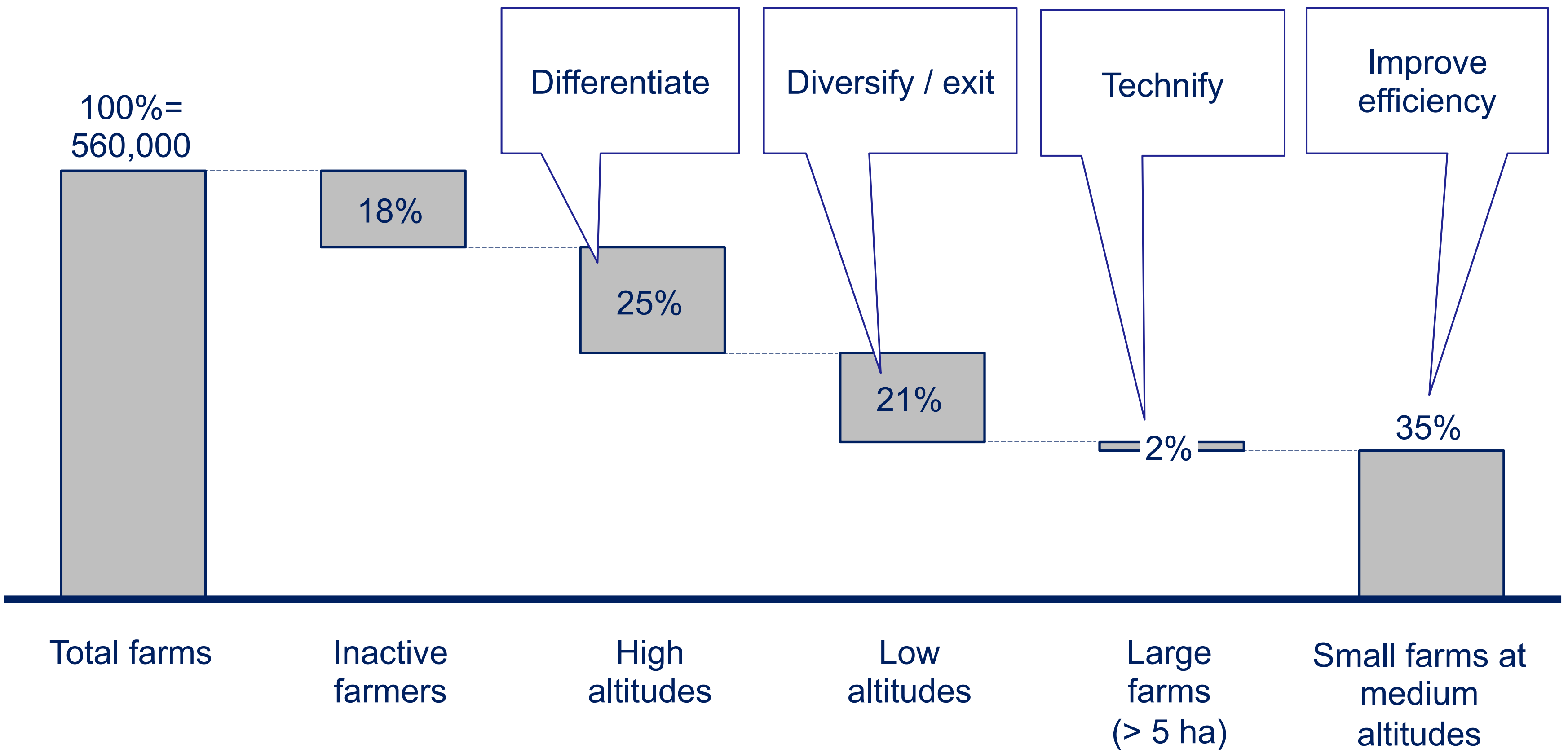
Differentiate

- Focus on specialty coffee and implement activities to improve quality in order to achieve higher margins
- In particular for farmers at higher altitudes or with traditional varieties

Improve efficiency

- Decrease cost of production in order to improve efficiency and gain higher profit margin

Different strategies for different producer types



Some pointers when doing VCA in the real world

- Context, context, context
- Identify the right mix of stakeholders to interview
- Get diverse opinions
- Carry a USB drive (people never email data after you leave)
- Official statistics aren’t always accurate
- Corroborate numbers with different sources
- Go bottom-up and top-down
- Talk through hypotheses with experts
- One-size-fits-all solutions are rare; segmentation is usually needed
- Keep slides simple

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Guest lecture by Carl Cervone
February 18, 2021

Our panellists

Senthil
Indonesia
Operations (Asia)

Diana
New York
Product/Impact

Celine
Côte d'Ivoire
Operations (Africa)

Nick
New York
Partnerships

Value chain analysis in the real world

How has COVID affected the coffee/cocoa value chains?

How has COVID affected labor dynamics in producing countries?

Value chain analysis and the sustainability agenda of the next decade

Some pointers when doing VCA in the real world

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