



COLUMBIA | SIPA

School of International and Public Affairs

Value Chain Analysis

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Meet your speakers



Carl Cervone

- Enveritas
- TechnoServe
- Cup of Excellence
- CBS Alum



Joel Arusha

- One Acre Fund
- Masters Agribusiness + Coffee Economics
- Cxfeedback Exchange
- Coffee Farmer



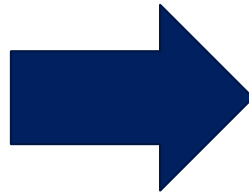
Dave Betts

- One Acre Fund
- Phil's Finest
- Shark Tank
- Chobani Incubator

Coffee: the value chain from farm to cup



\$4/kilo

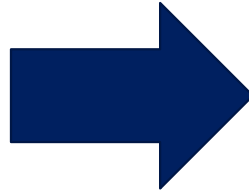


\$4/cup

Coffee: the value chain from farm to cup



\$4/kilo



\$4/cup

\$6/cup

Plan for today

- The Coffee Value Chain
- The Value Chain Framework
- Case Study: Rwanda
- Q&A

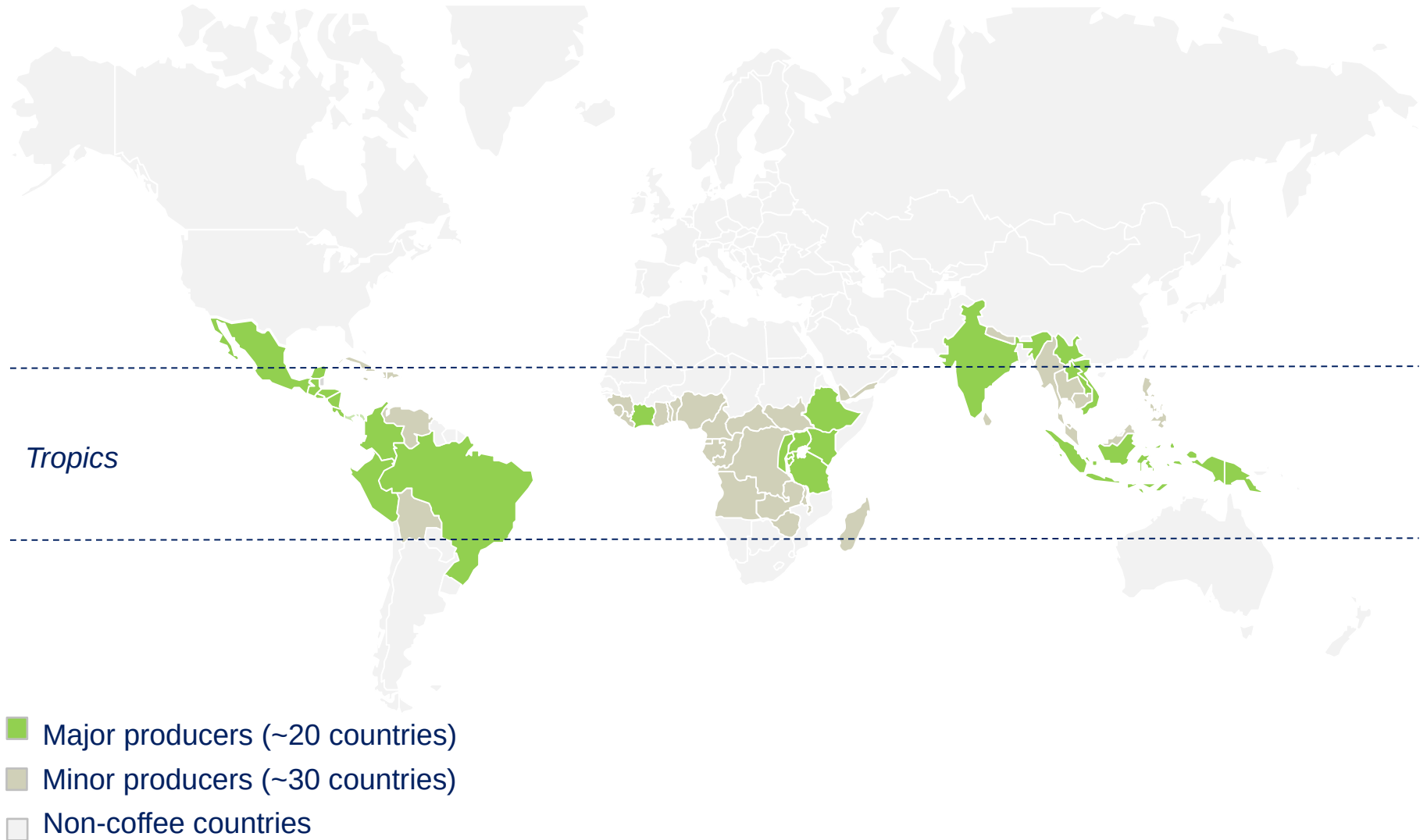
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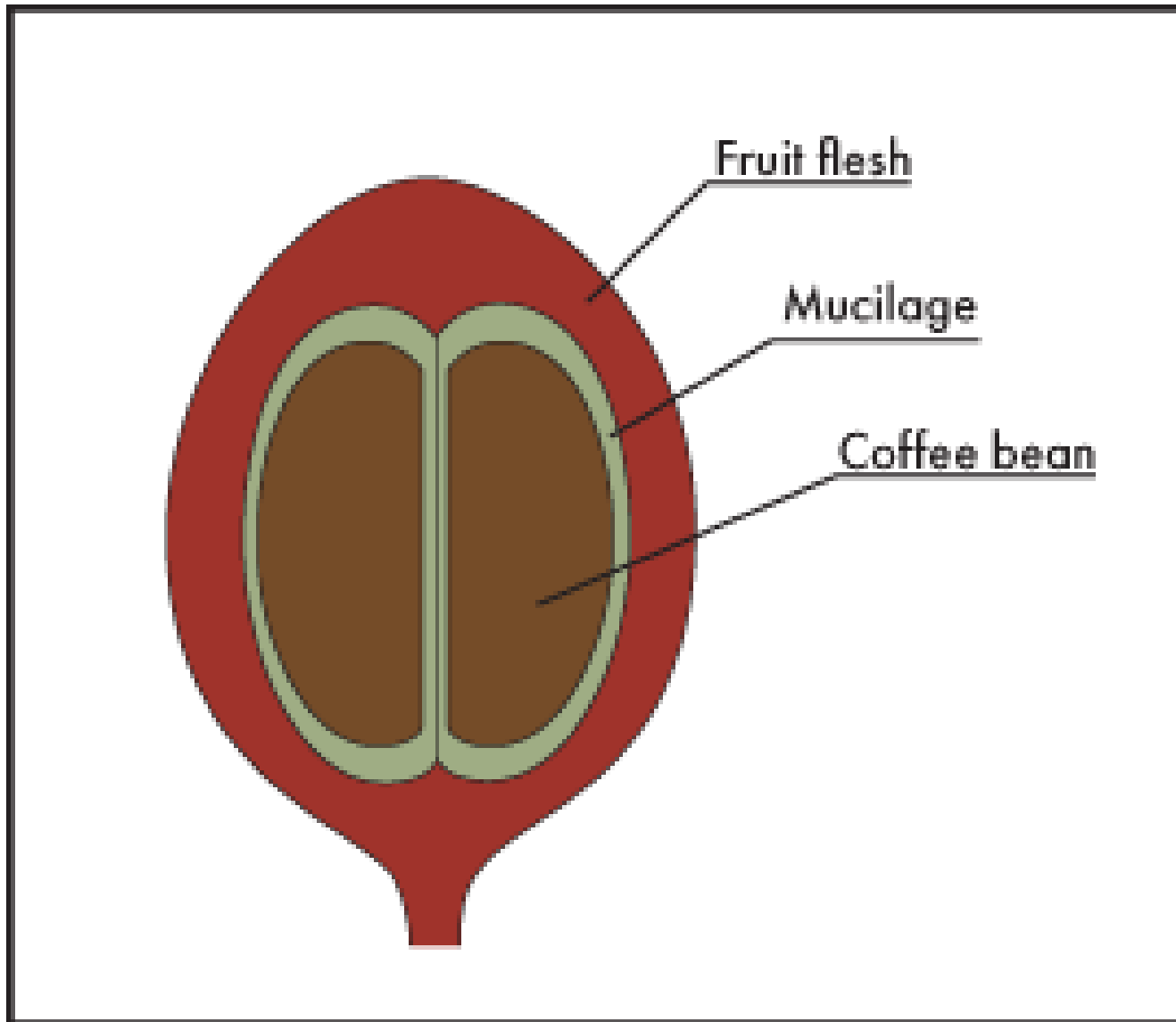
Coffee is a fruit that grows on trees



Coffee trees require a tropical climate



The coffee “bean” is the seed inside the fruit



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



... and dried

Parchment



Large mills process coffee for export



Green



Exportable coffee is bagged and loaded in containers



Coffees are blended and roasted to different profiles

Roasted



Coffee is ground, packaged, and vacuum-sealed

Ground









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









Cup









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

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	

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

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Three important steps in any Value Chain Analysis

1

MAP

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

2

BREAKDOWN

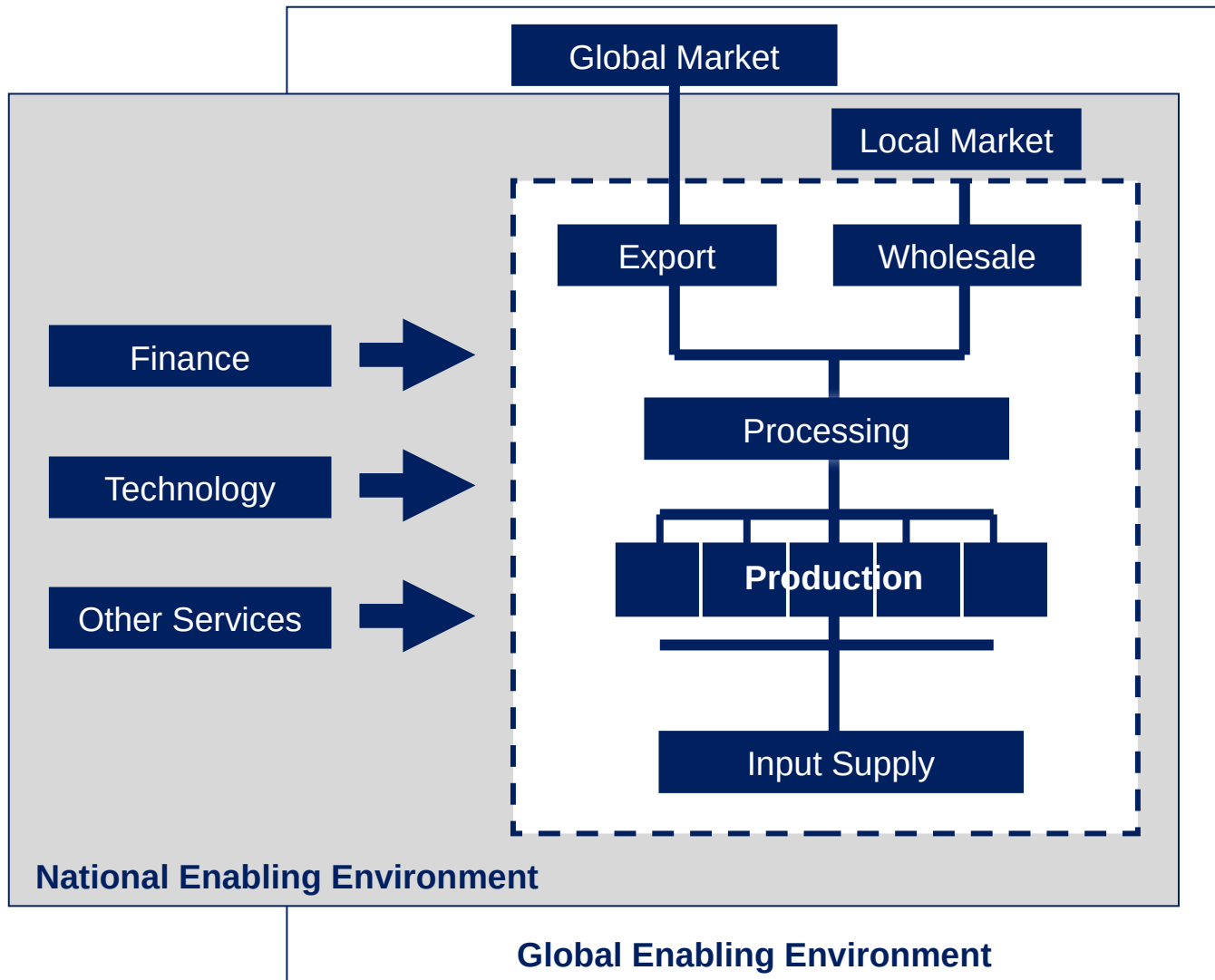
- costs and revenues for each actor
- how value flows through the chain

3

BENCHMARK

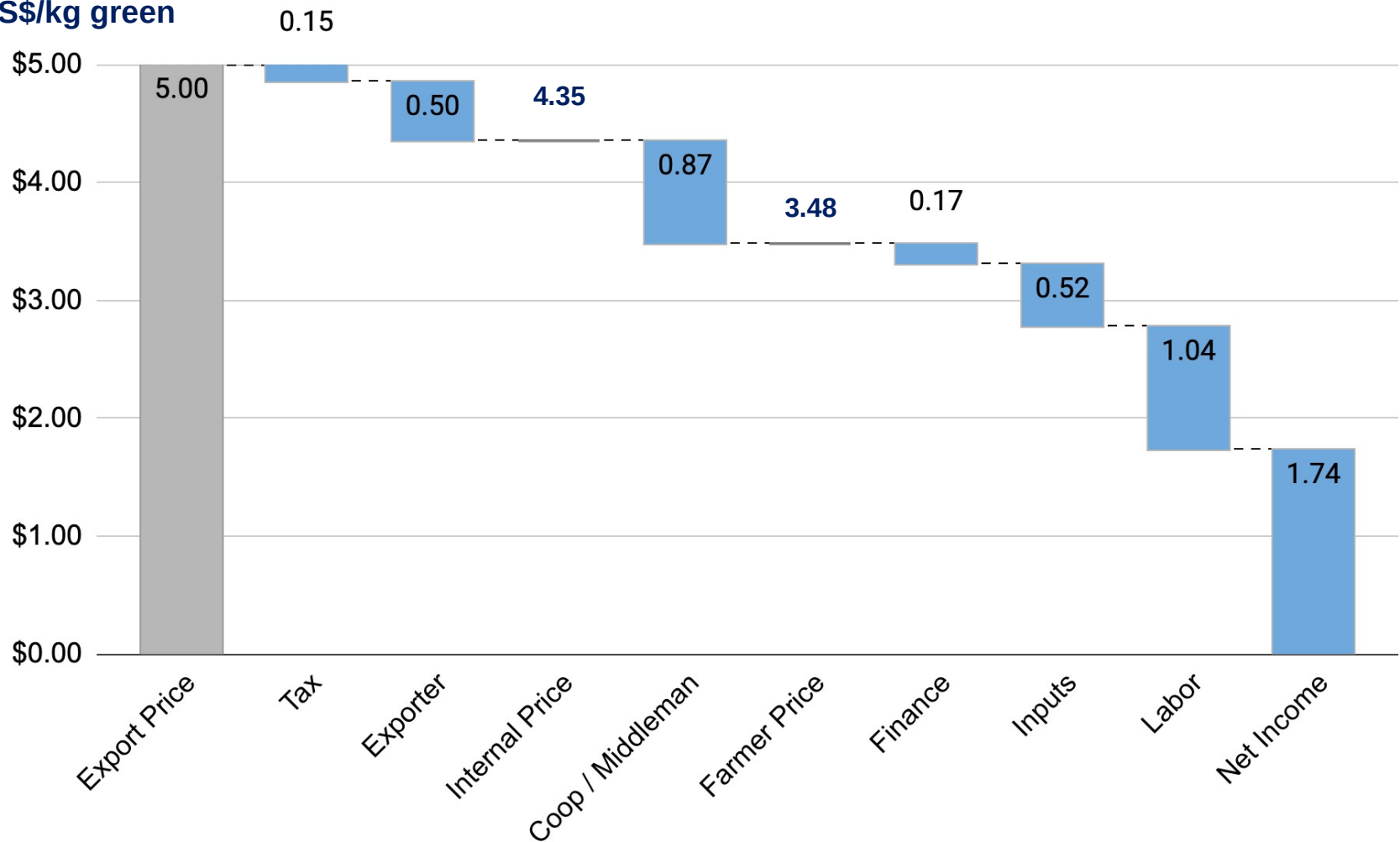
- performance of the value chain against peer countries or sectors
- use data to justify recommendations

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

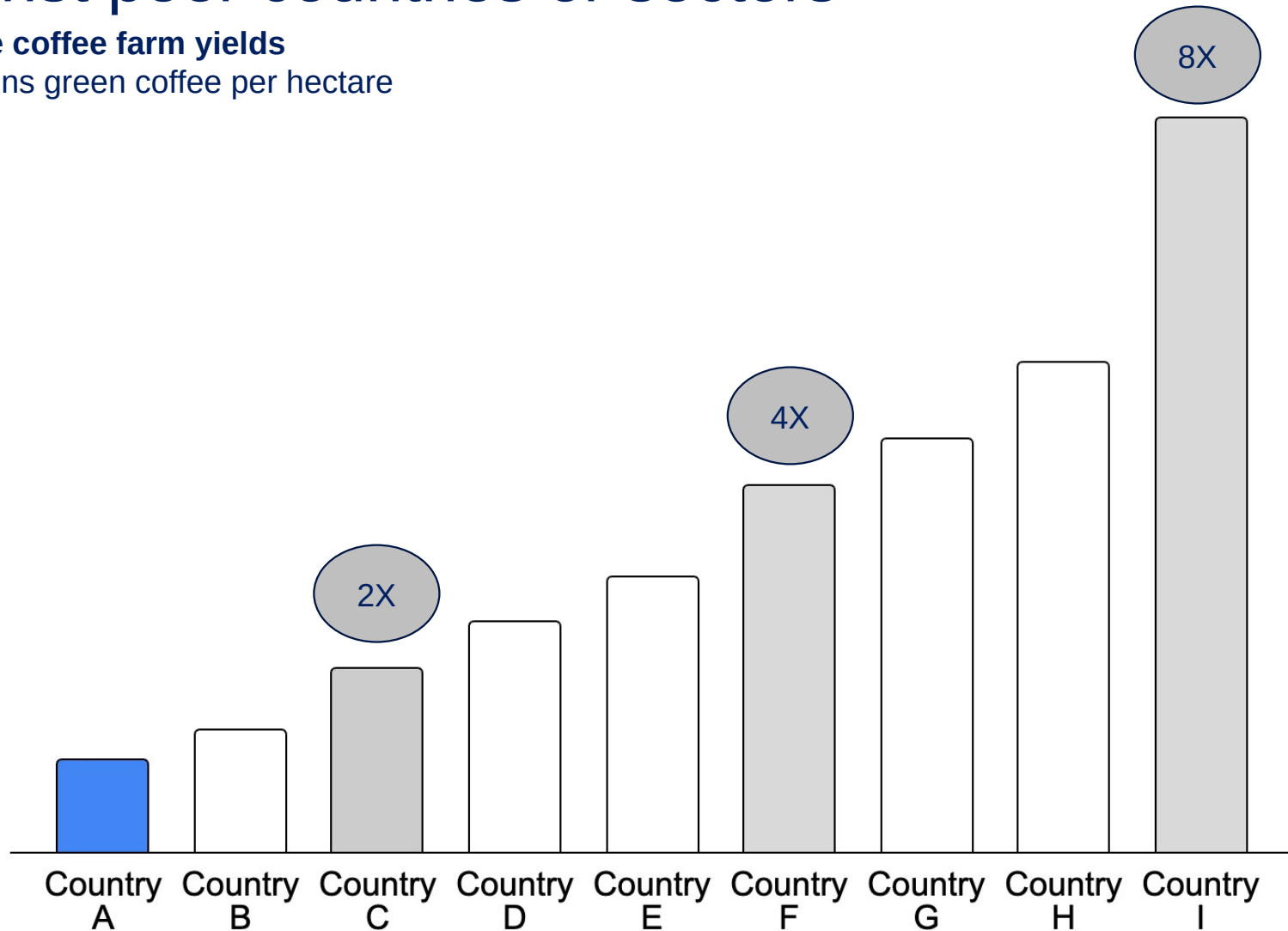
Value Flows
US\$/kg green



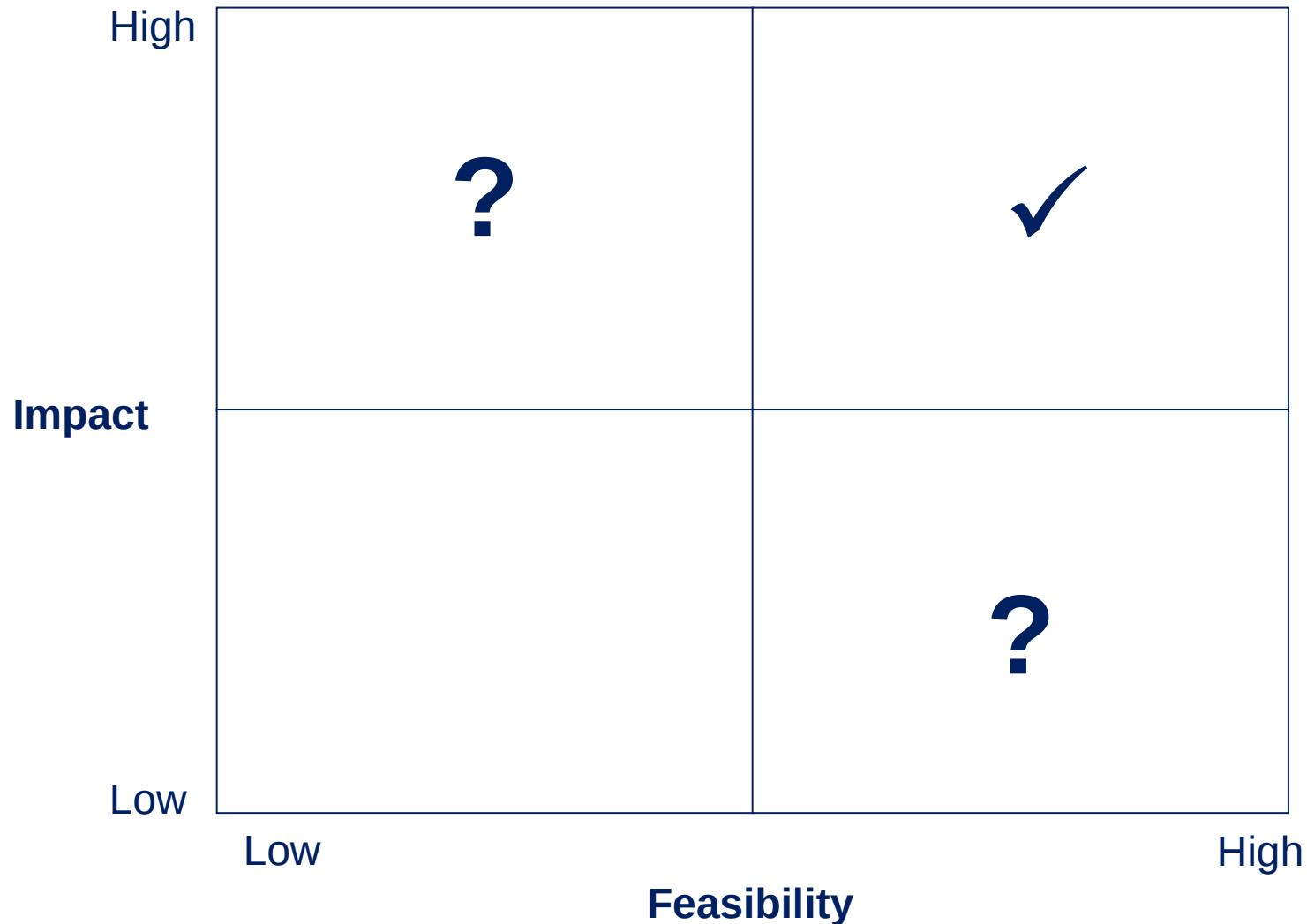
Benchmark performance of the value chain against peer countries or sectors

Average coffee farm yields







Metric tons green coffee per hectare



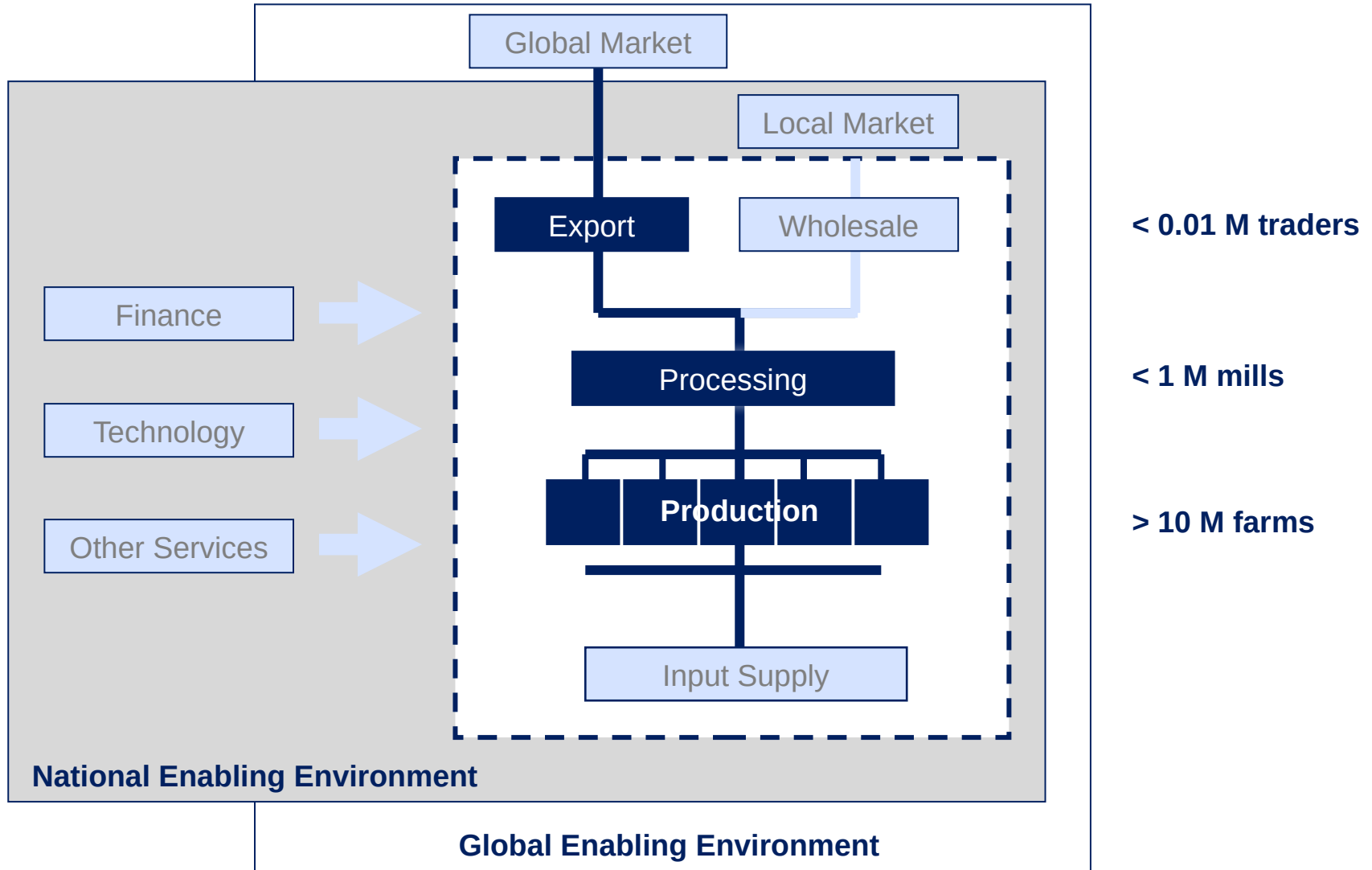
After analysis, **prioritize** recommendations (based on some predefined selection criteria)



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



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

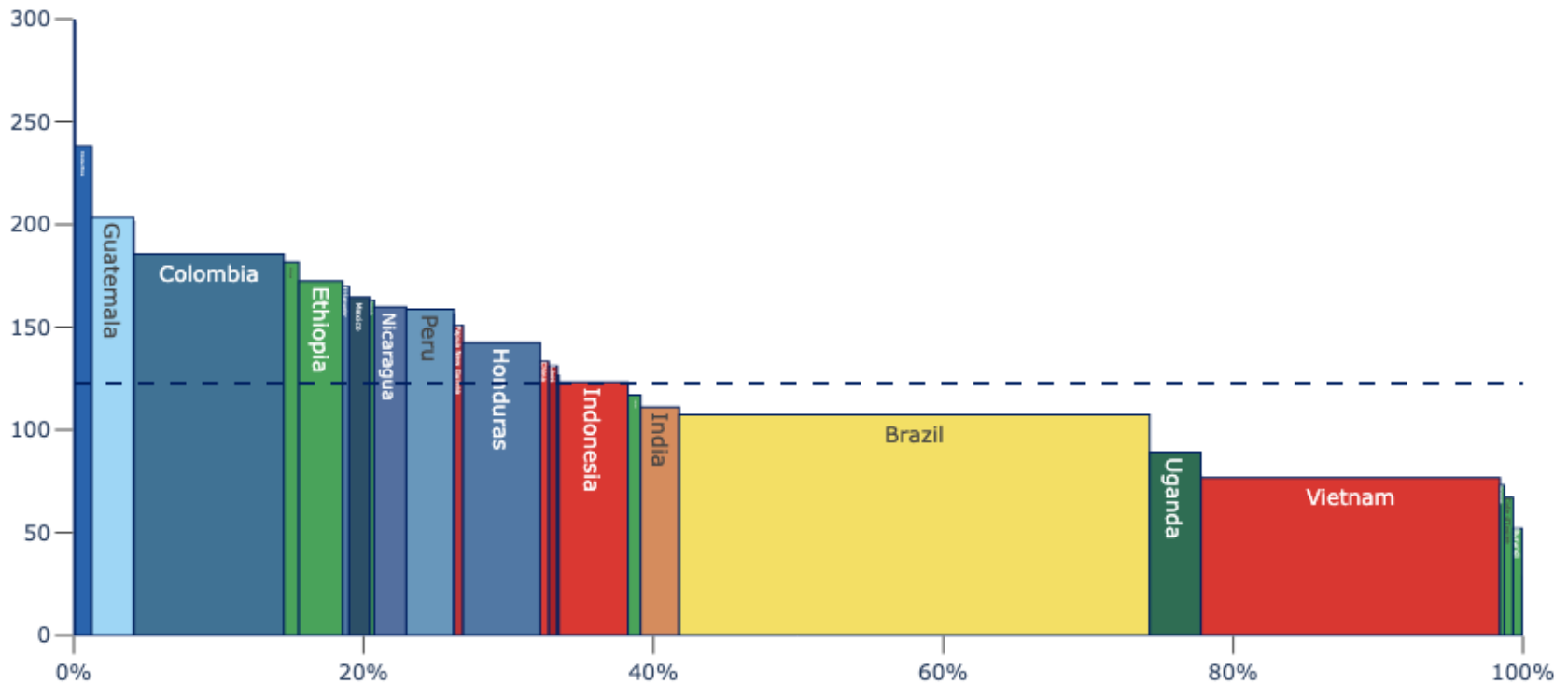
Value Flows
US\$/kg green



Usually export price is the easiest place to start because you can find public export stats

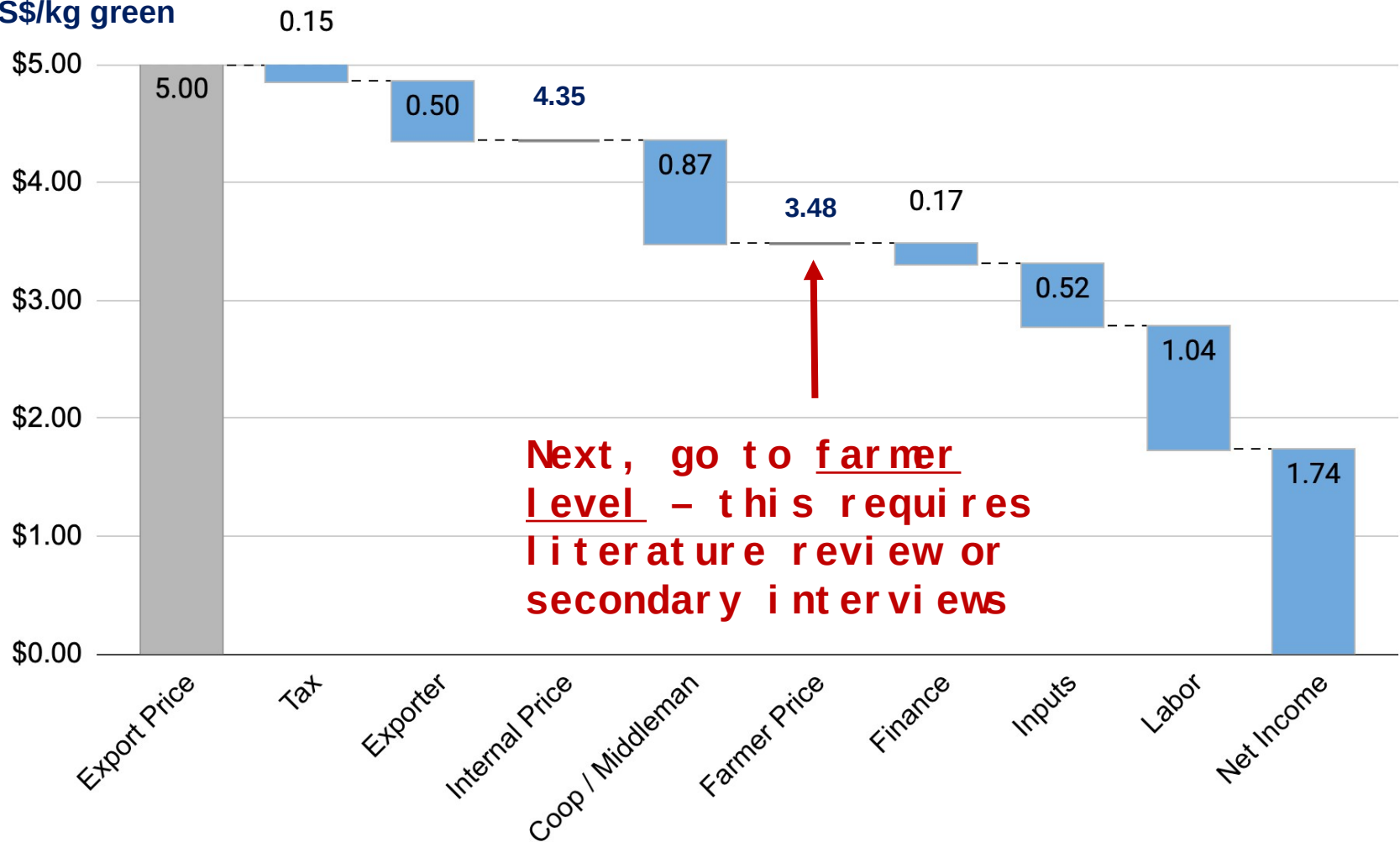
Big “commodity” producers tend to receive lower coffee prices

2020 | 96M bags at avg price of 123 c/lb



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

Value Flows
US\$/kg green



Prices usually require conversions to go from local units to standard international units

RWANDA EXAMPLE

Starting Points:

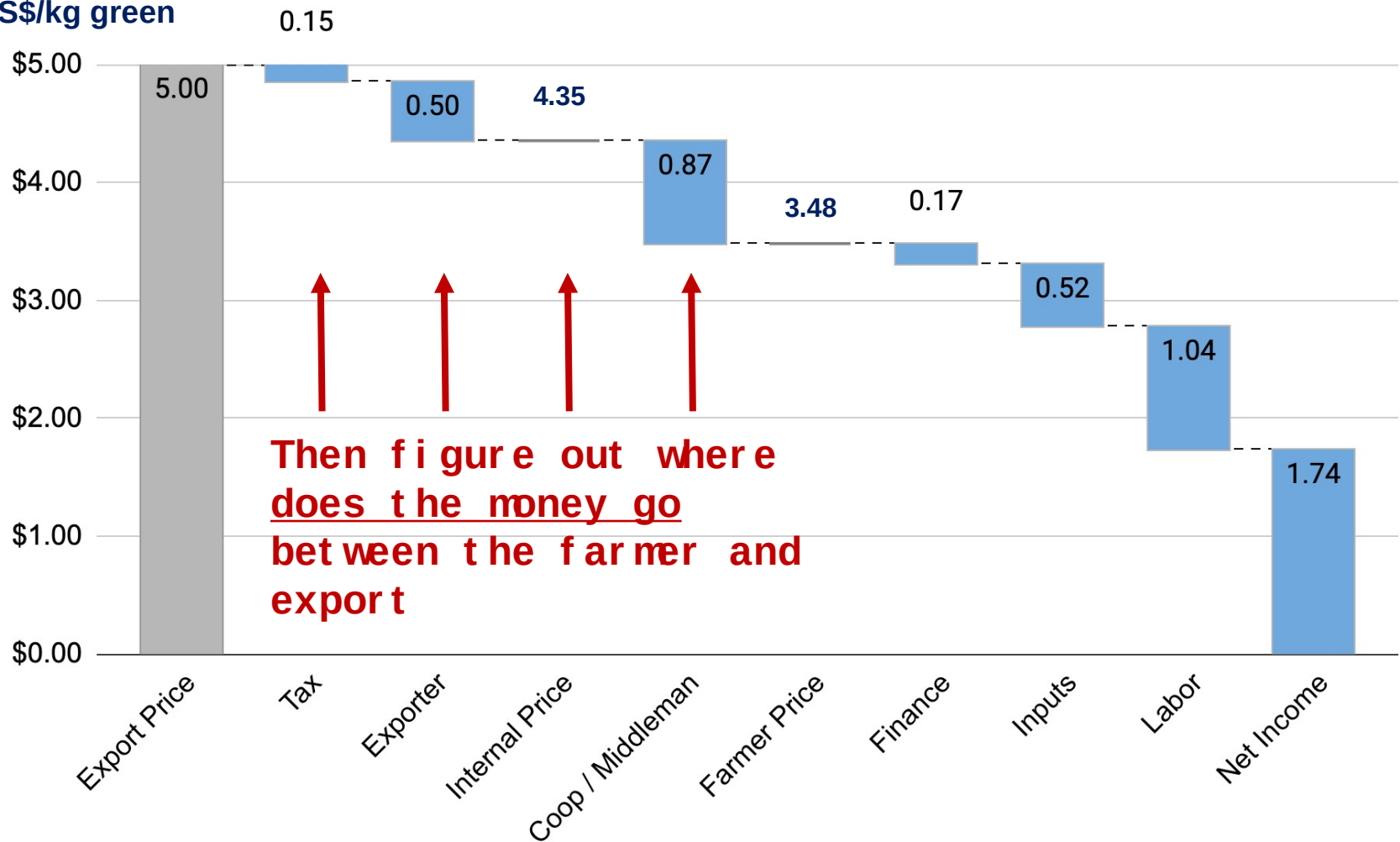
- Export price: \$2.23 per pound green coffee
- Farmer price: 500 RWF per kilo cherry coffee

Conversions:

1. $(500 \text{ RWF} / \text{kg cherry}) \times (0.00076 \text{ USD/RWF}) = \mathbf{\$0.38 / kg cherry}$
2. $(\$0.38 / \text{kg cherry}) \times (0.45 \text{ kg} / \text{lb}) = \mathbf{\$0.17 / lb cherry}$
3. $(\$0.14 / \text{lb cherry}) \times (7 \text{ cherry} / \text{green}) = \mathbf{\$1.20 / lb green}$
4. $(\$1.20 / \text{lb green farm-gate}) / (\$2.23 / \text{lb green export}) = \mathbf{54\% share}$

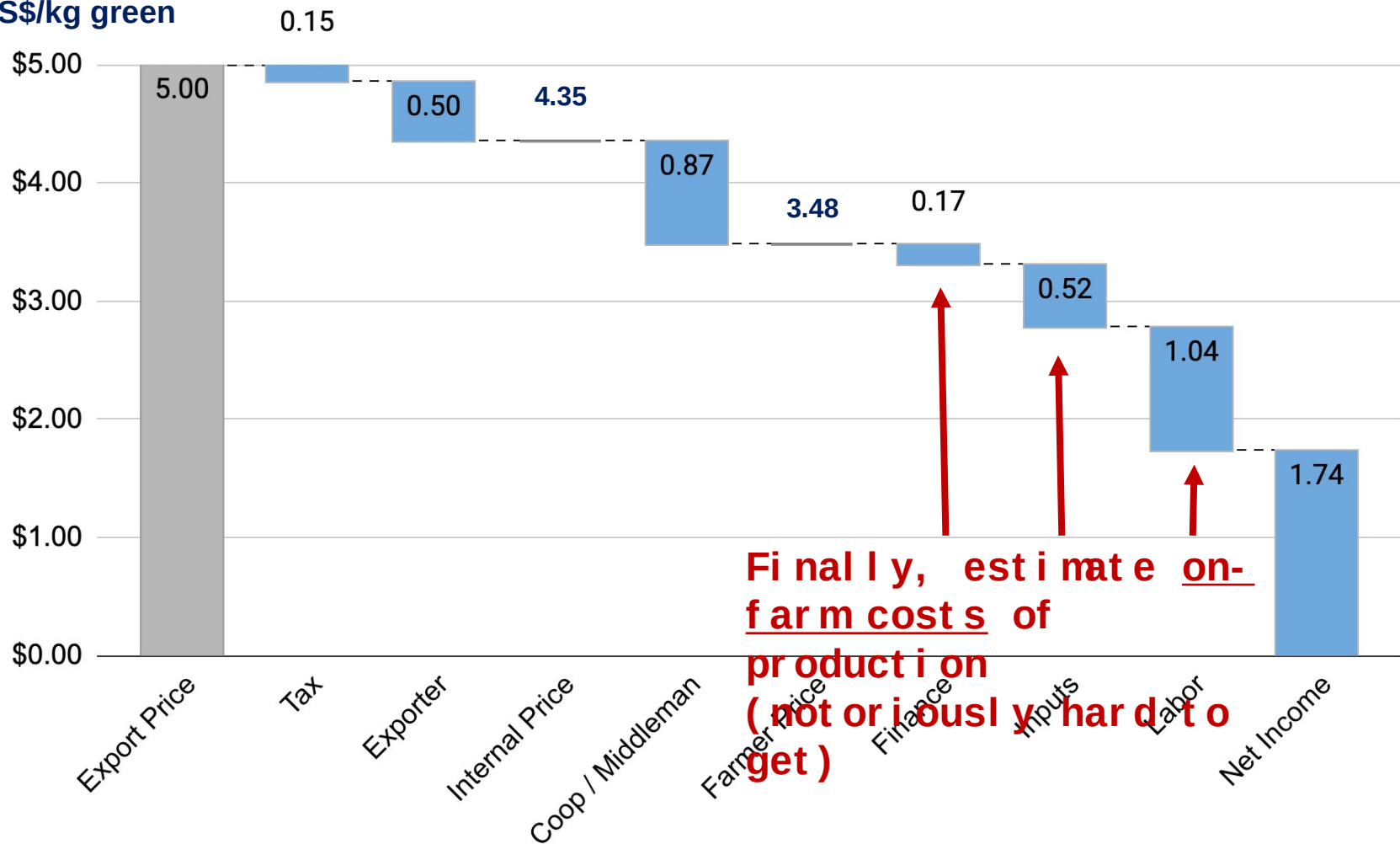
Breakdown costs and revenues for each actor, how value flows through the chain

Value Flows
US\$/kg green



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

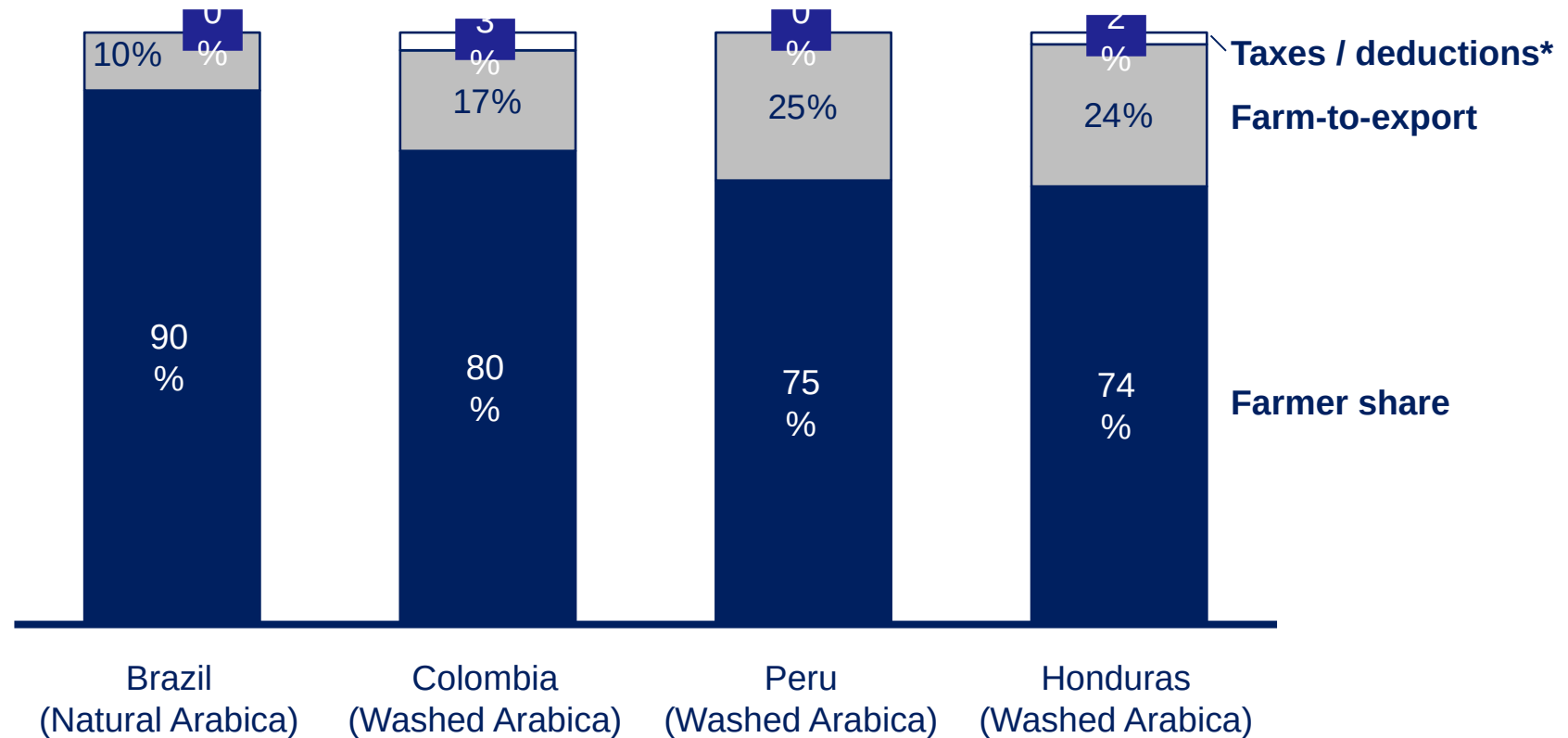
Value Flows
US\$/kg green



Benchmark performance of the value chain

Efficiency levels of major Latin American coffee supply chains, 2012/13

100% = average export price



* 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)

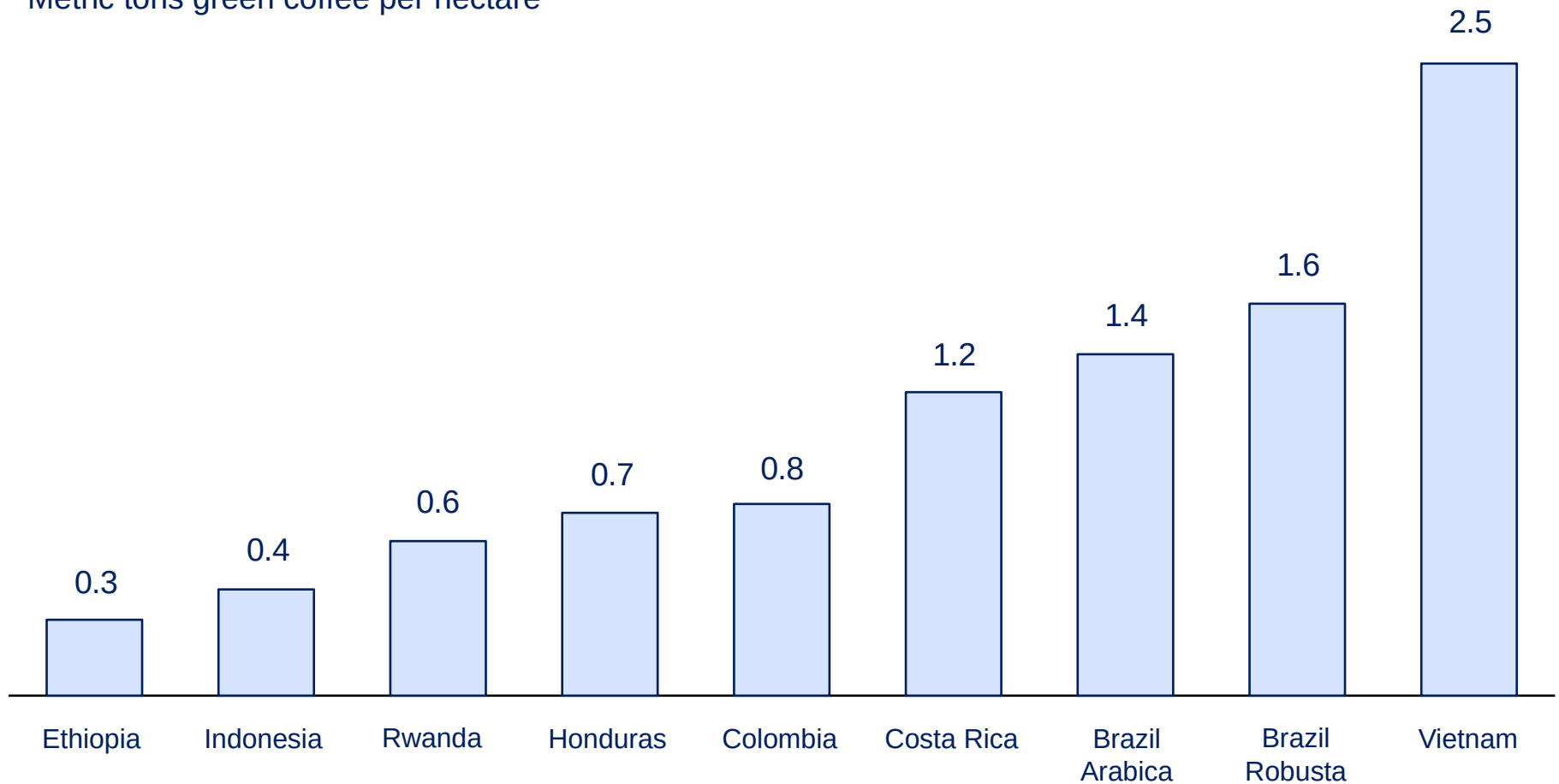
** Calculated as difference between farm gate price and ICO price

Source: trade statistics; TechnoServe analysis and interviews in Brazil, Colombia, Honduras and Peru

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

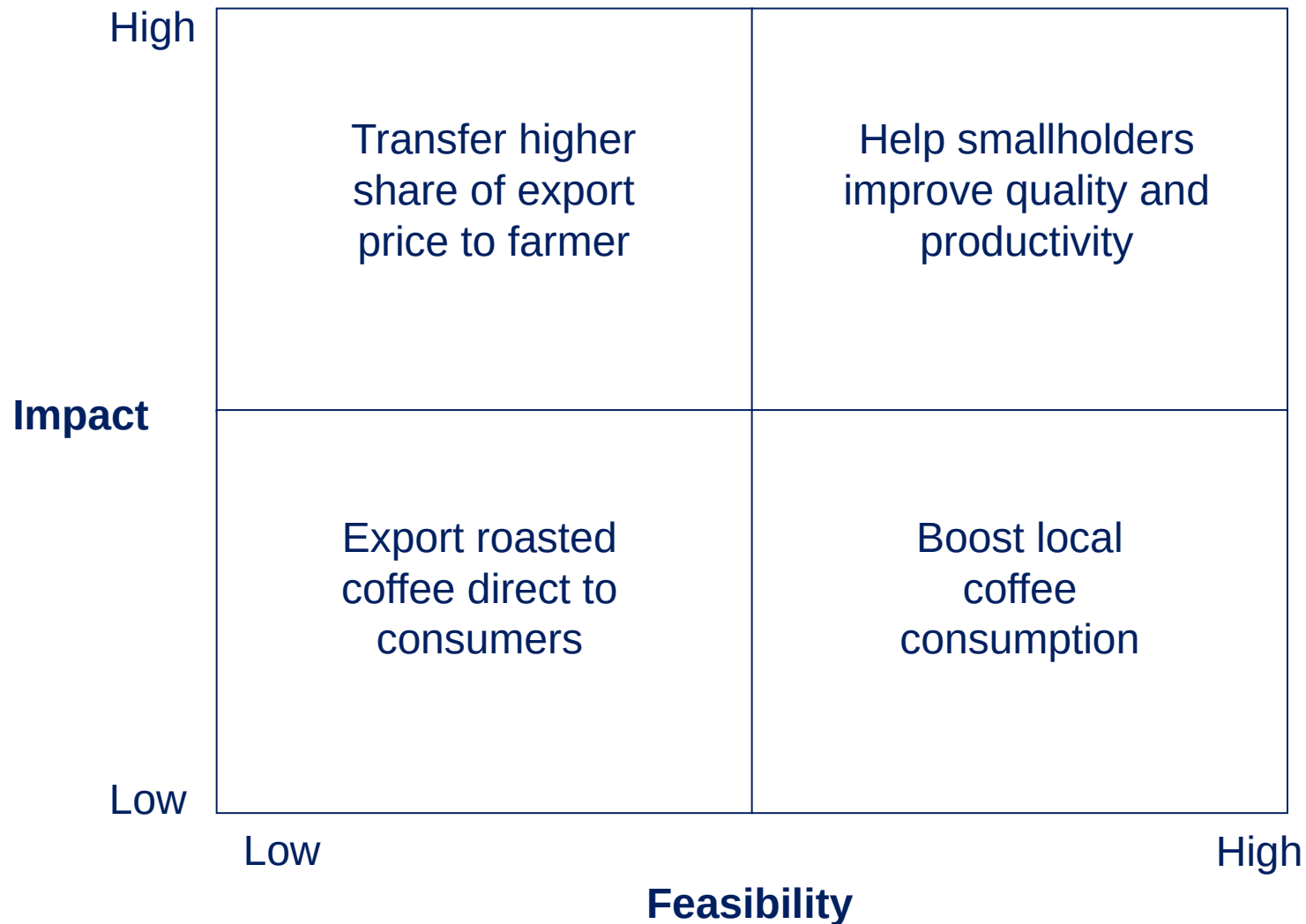
- Prices set internationally
- Production costs are influenced by local policies and conditions (e.g., taxes, wages, infrastructure, etc.)

3

BENCHMARK

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

Recommendations for global coffee value chain



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Coffee in Rwanda



Rwandan coffee farms are smaller than 1 acre



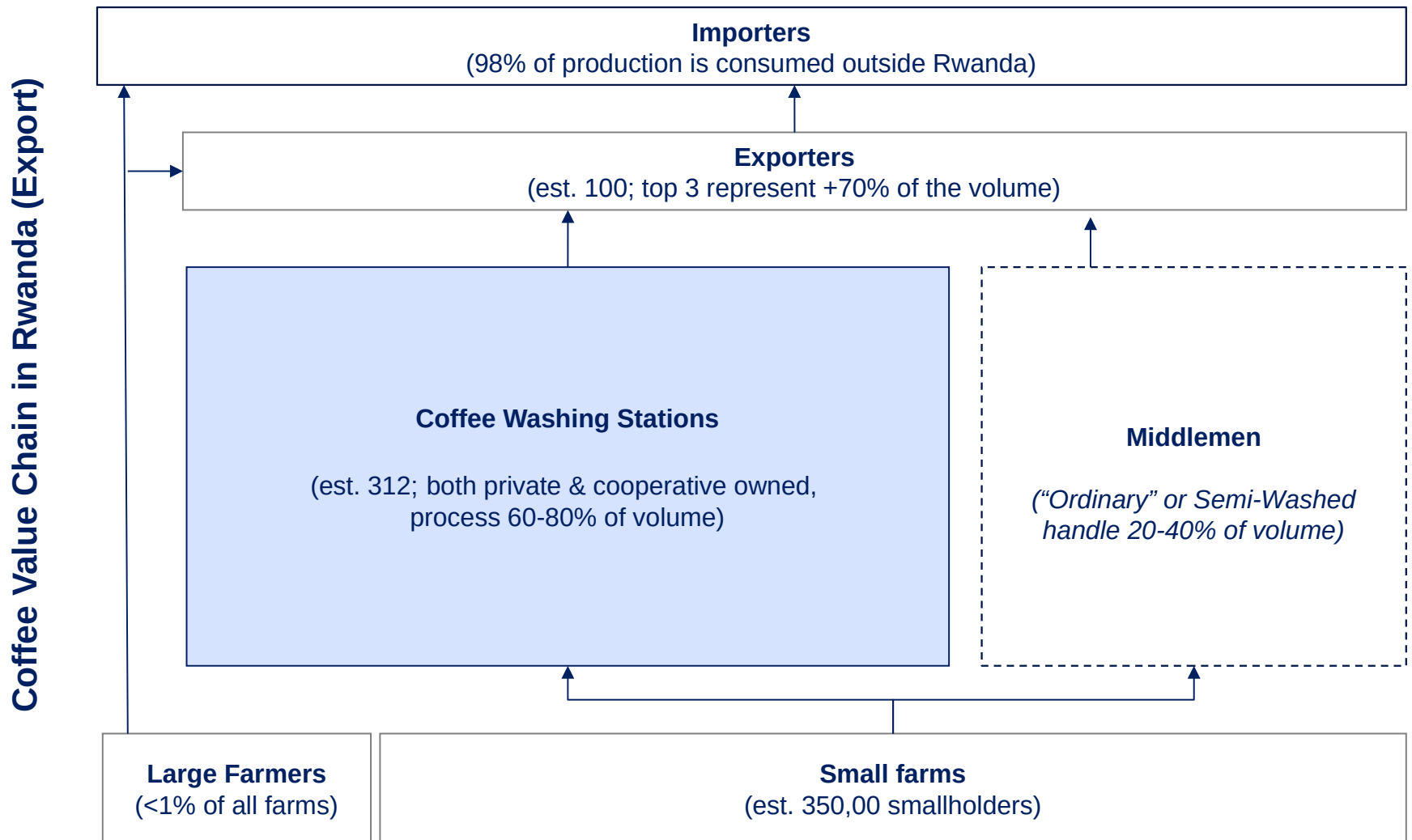
Rwandan Coffee Washing Station



Juru Coffee facilities and farm in Rwanda



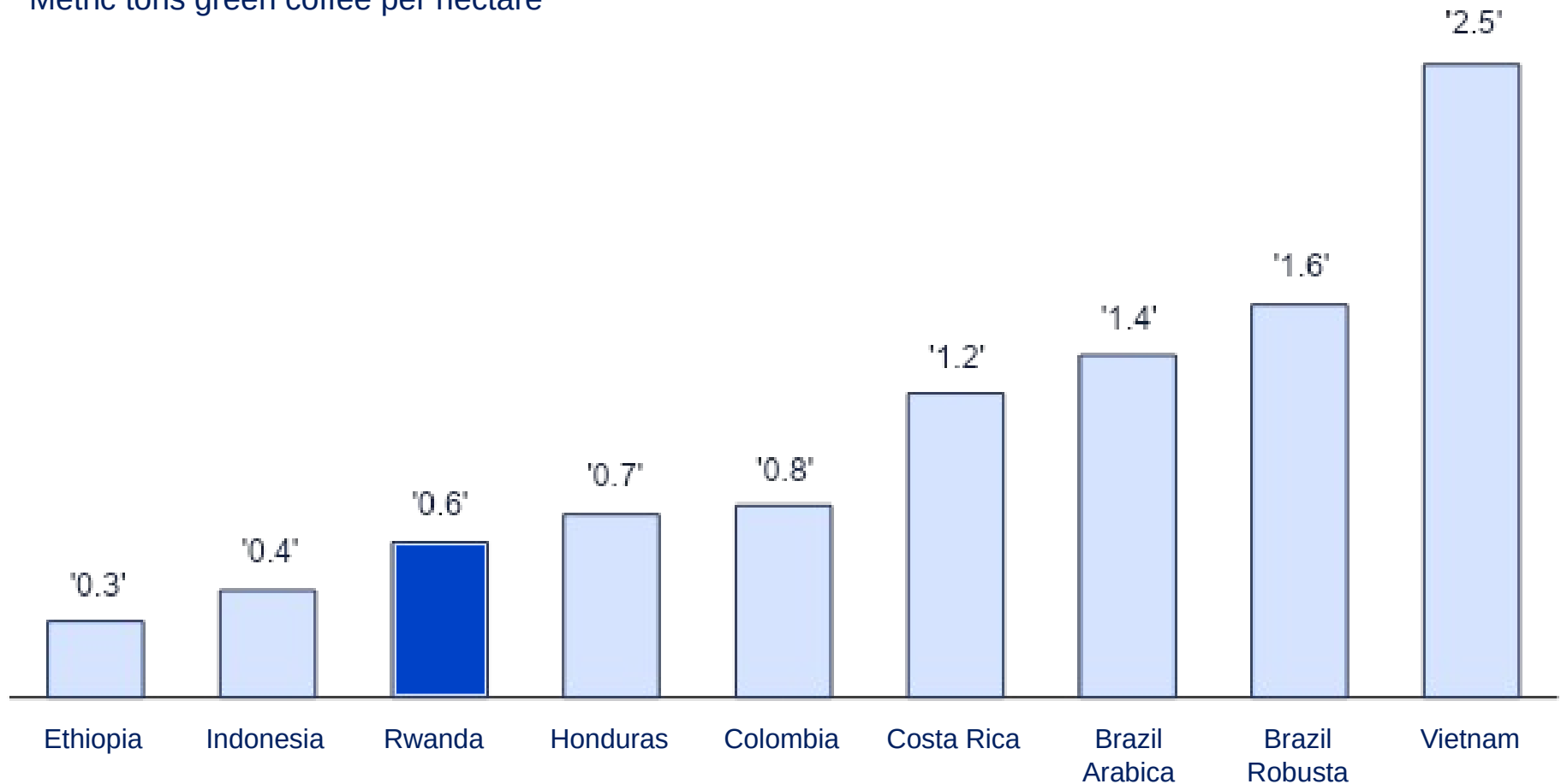
Rwanda has ~350,000 coffee farmers, transitioning from cooperative led to exporter led



Rwanda farms have average level yields

Average coffee farm yields*

Metric tons green coffee per hectare

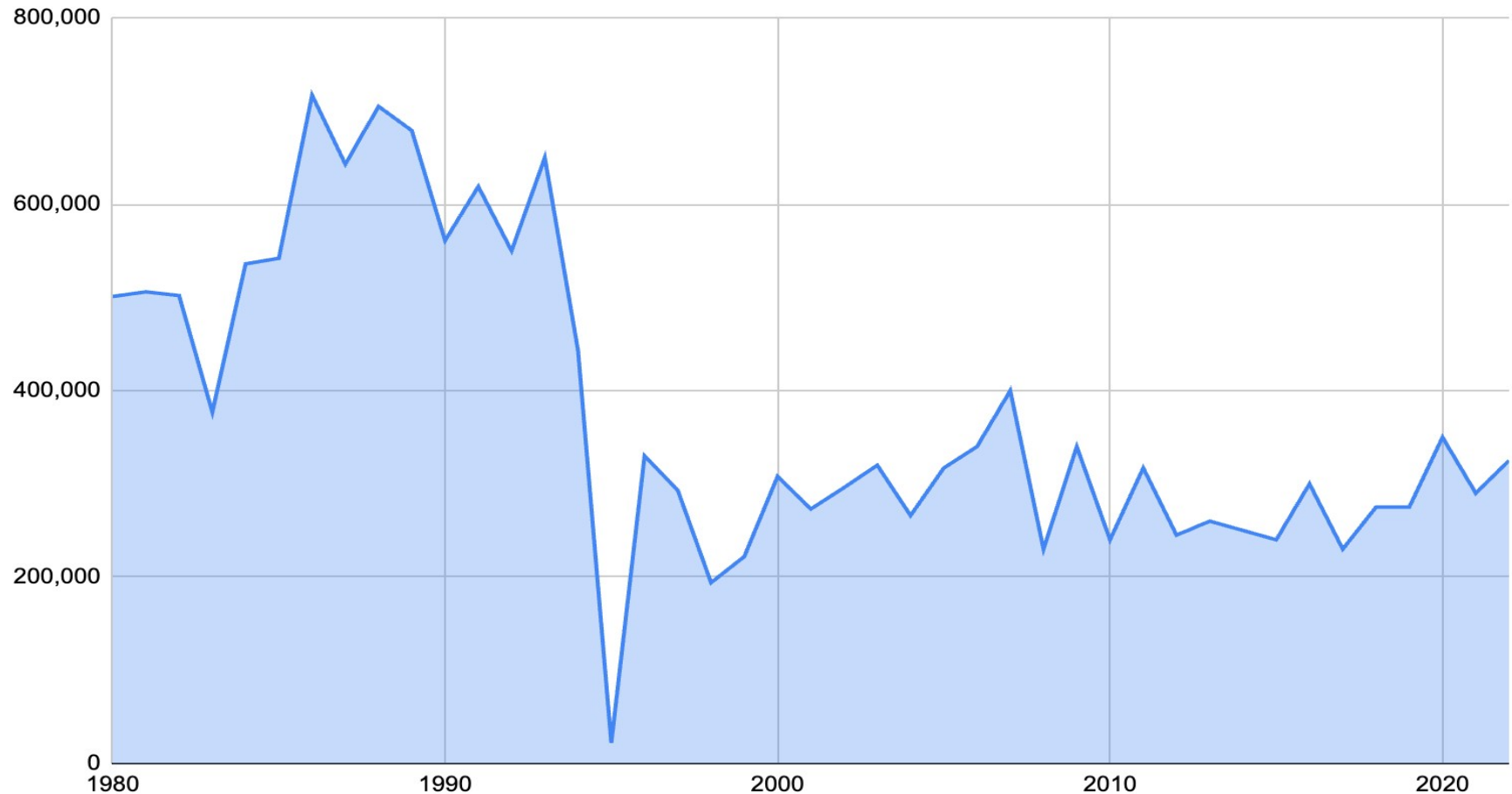


*National average based on total production (average of last two crops) and area under coffee; includes both Arabica and Robusta unless noted otherwise

Source: USDA; TechnoServe analysis

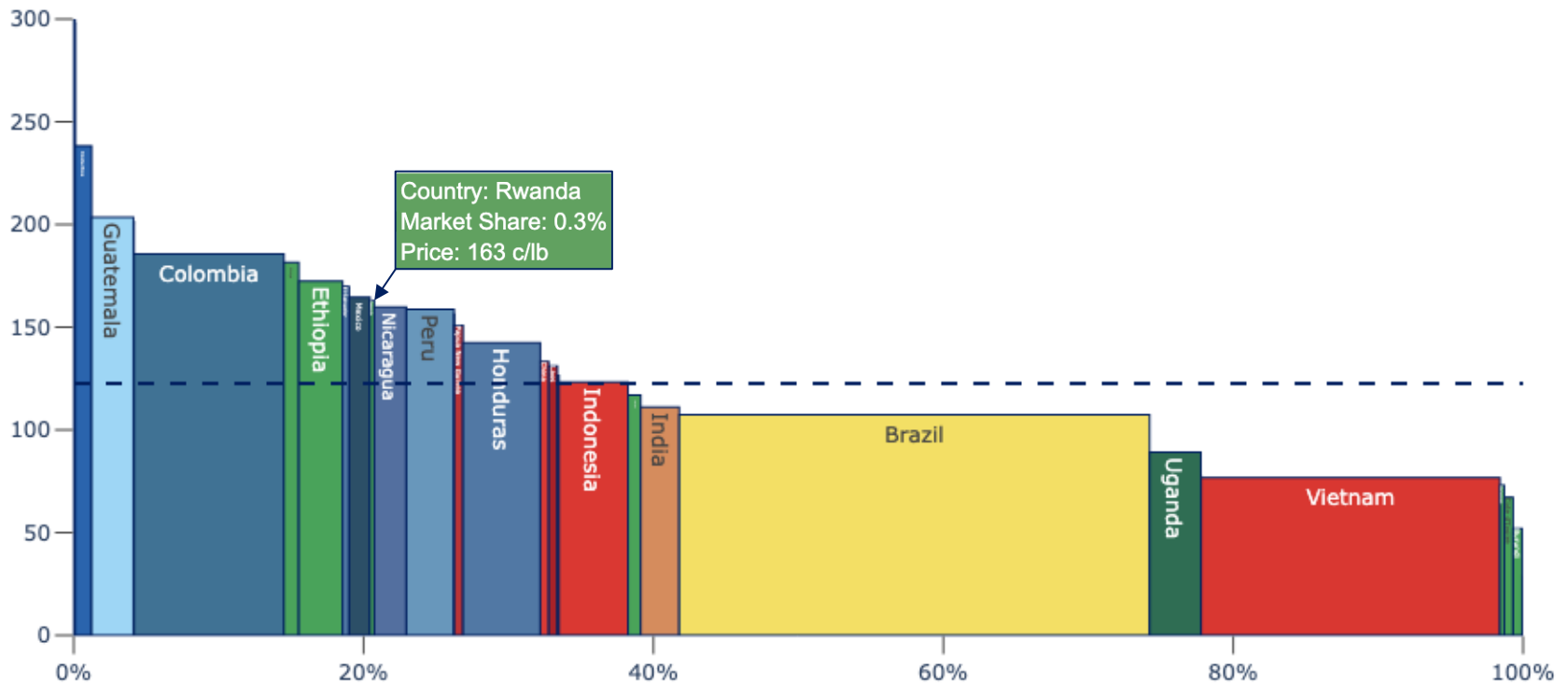
Rwanda's production has been stable since 2000

Rwanda coffee production
Bags (60-kg), millions



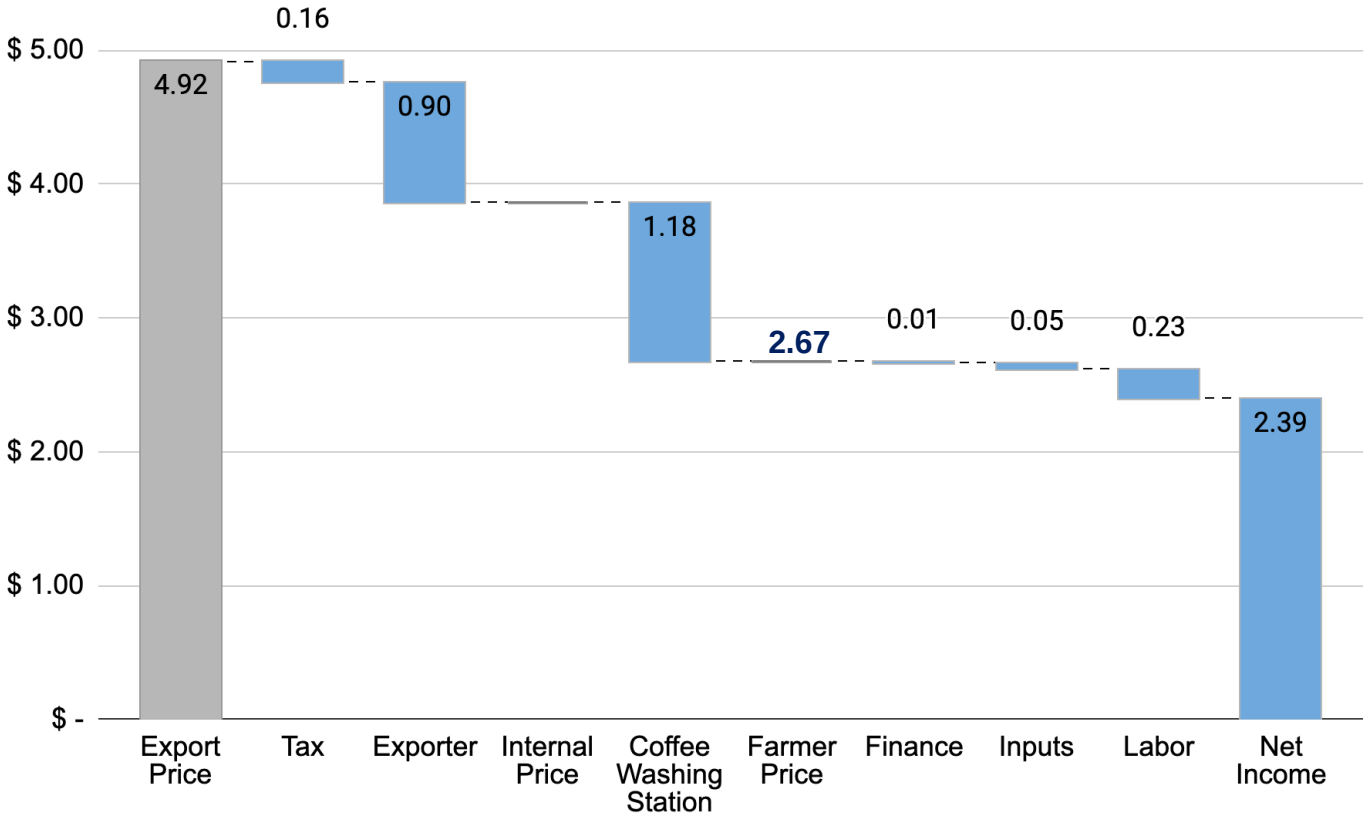
Rwanda has transitioned to being a premium (high price) supplier

2020 | 96M bags at avg price of 123 c/lb



Rwandan farmers earn 50-60% of the export price

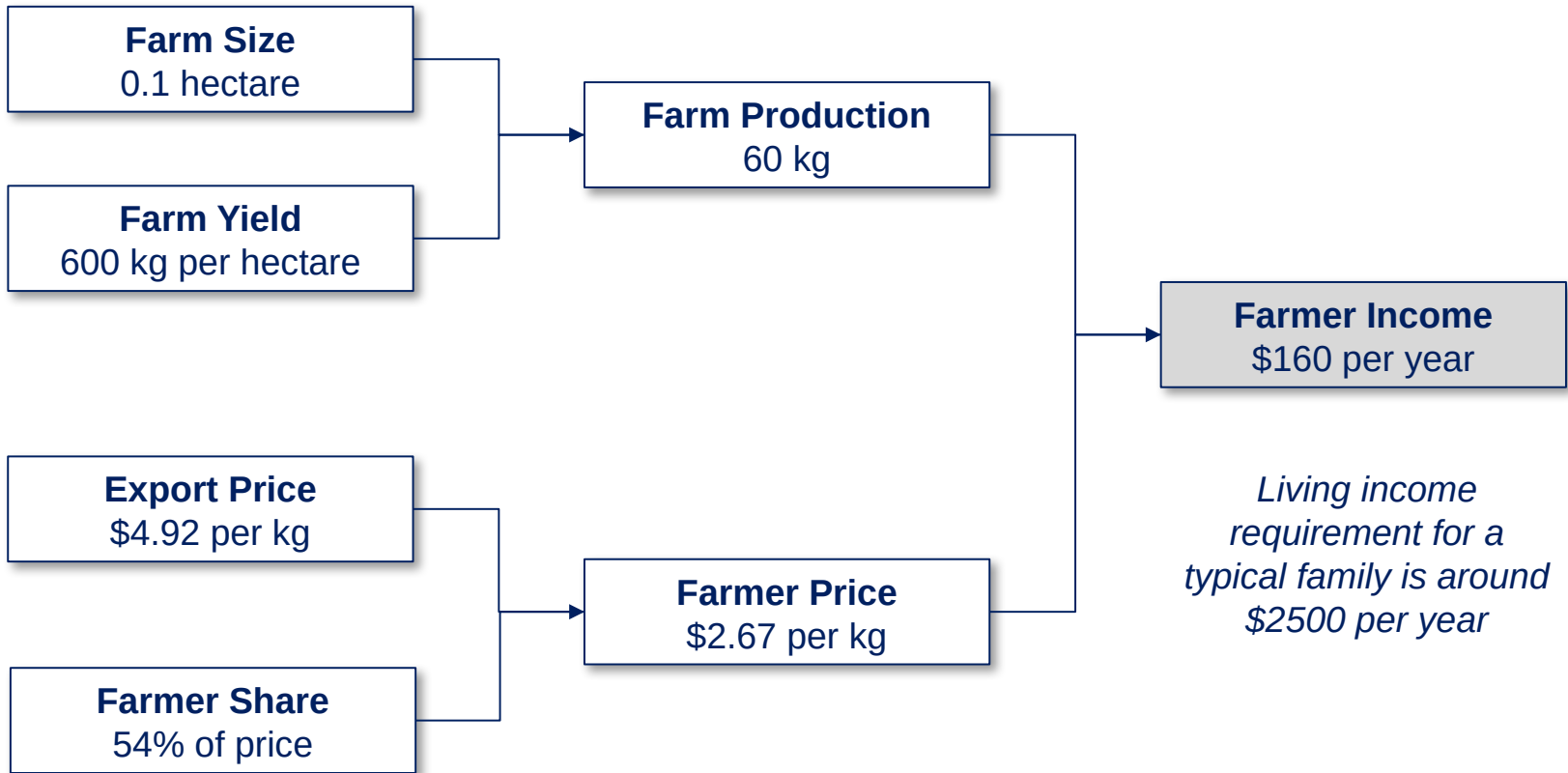
Illustrative Rwanda Arabica supply chain cost breakdown
 US cents per pound green



Note: Cost of production does not include costs for installation of wet milling equipment, tree renovation or financing
 * Normalized to March 2024 commodity prices – Arabica ICE “C” of \$1.83 but adjusted for market differential of +\$0.40 per pound green
 ** Includes farm tools, equipment, internal transport, etc.
 Source: One Acre Fund analysis

Many Rwandan farms struggle to earn a living income from coffee

SIMPLIFIED MODEL



Rwanda review

1

MAP

- Approx. 350,000 mostly small-scale farmers
- Very small farms, most sell through coffee washing stations

2

BREAKDOWN

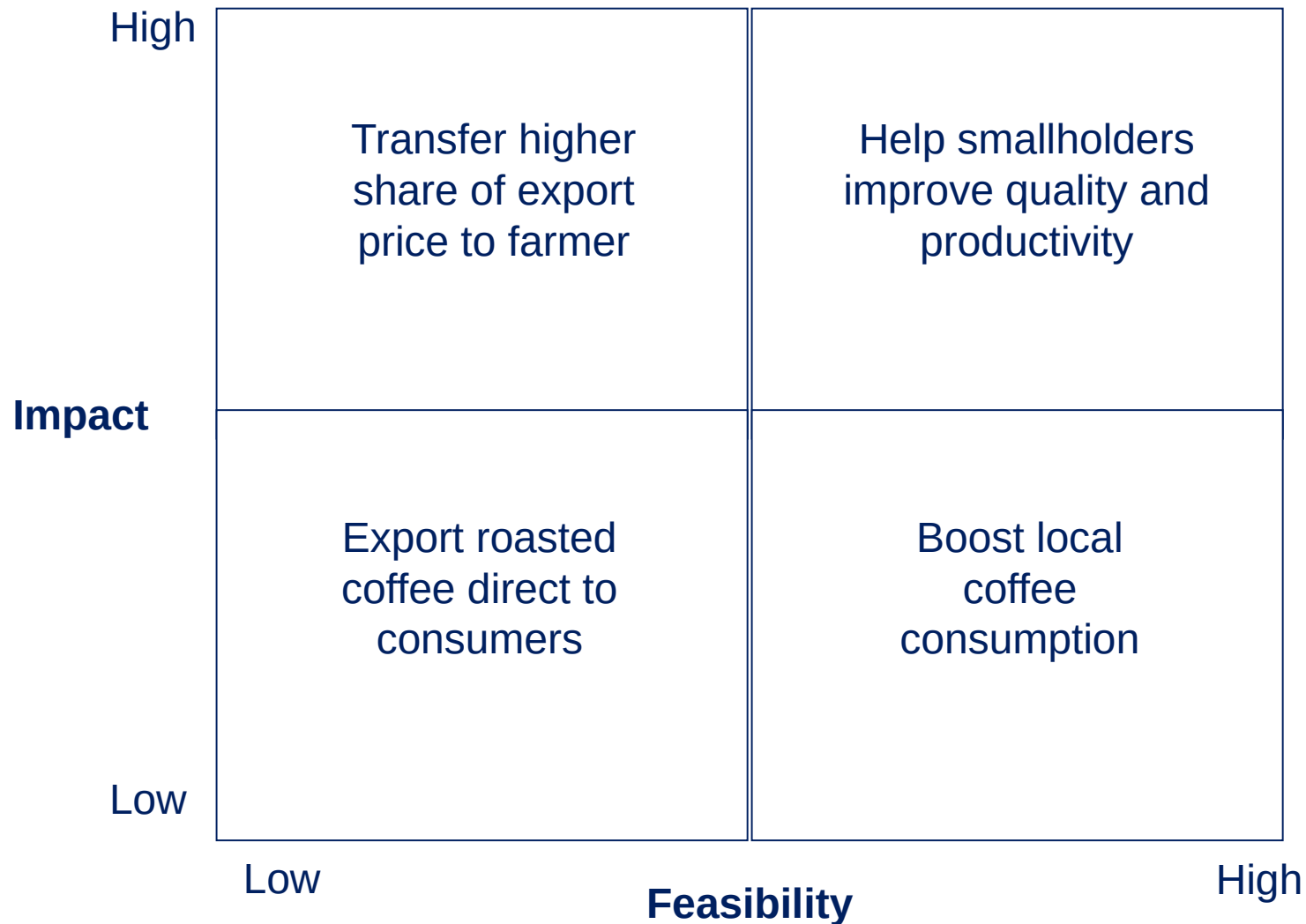
- Farmers earn 50-60% of export price
- Strong institutional support provided by government (through tax)

3

BENCHMARK

- Average yields and high costs relative to other coffee countries
- Many farmers are unable to achieve a living income solely from coffee

Recommendations for Rwanda's coffee value chain



Q&A

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Practical advice

- Context, context, context
- Identify the right mix of stakeholders to interview
- Get diverse opinions
- Make it easy for people to give you data (e.g., carry a USB)
- Know that official statistics aren't always accurate
- Corroborate numbers with different sources
- Be OK going downstream (start at farm) and upstream (start at buyer)
- Talk through hypotheses with experts
- One-size-fits-all solutions are rare; segmentation is usually needed
- Keep slides simple