

# SDM: Case Report

## COFCO International

Service Delivery Model Assessment: Short Version  
October 2019

Location: Vietnam

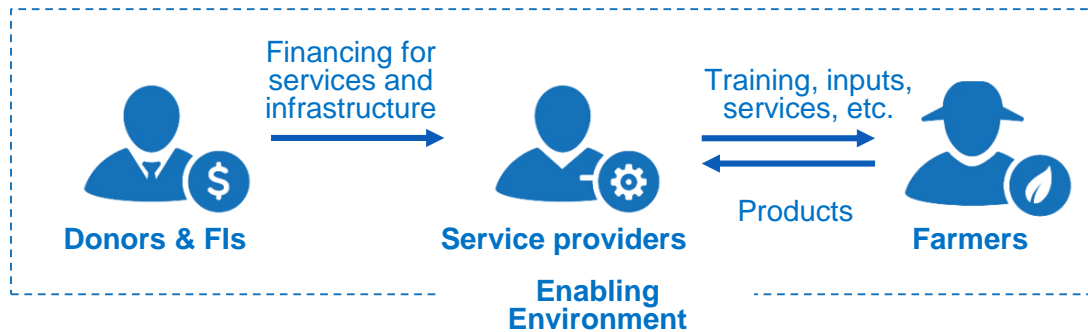
Commodity: Coffee

Services: Training, fertilizer provision & recommendations, online systems, training, monitoring & evaluation, certification, irrigation, access to finance.



# What are SDMs and why are we interested in analyzing them?

**Service Delivery Models (SDMs)** are supply chain structures, which provide services such as training, access to inputs and finance to farmers, to improve their performance, and ultimately their profitability and livelihoods.



By analyzing SDMs, we aim to support **efficient, cost-effective and economically sustainable SDMs at scale** through:

Key drivers for success of SDMs benchmarking



Innovation opportunities to support



Cross-sector learning, learning community



Convening at sector and national level



## Analyzing SDMs brings a range of benefits



### Farmers and farmer organizations

- **Better services** improve productivity, product quality, quality of life and social and environmental outcomes
- **Better outcomes:** improved productivity, income and resilience



### SDM operator

- **Understand** your model's business case
- Gain insights to **improve** service delivery
- Develop **cost-effective** SDMs based on insights
- Identify opportunities for **innovation** and **access to finance**
- **Learn** from other public and private SDM operators operating across sectors/geographies
- **Communicate** stories of impact and success at farmer level



### Investors/FIs

- **Common language** to make better informed investment decisions
- Insights to achieve optimal **impact, efficiency and sustainability** with investments and partnerships in SDMs

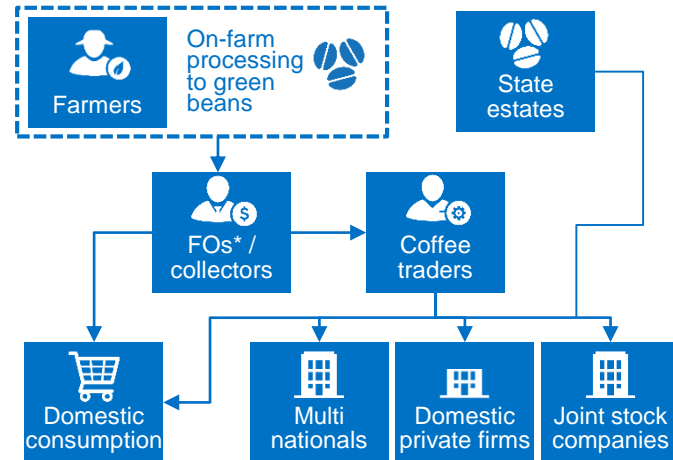
# Context | COFCO International and Vietnam

## SDM Operator



- COFCO International is a Chinese state-owned global agri-business that is headquartered in Geneva, and has 12,000 employees operating across 35 countries<sup>1</sup>
- Reporting USD34bn of revenue in 2017, COFCO is a leading trader of grains, oilseeds, sugar, coffee and cotton<sup>2</sup>
- COFCO is a vertically integrated business also operating a global distribution network including port terminals and a large fleet for freight services<sup>2</sup>
- COFCO trades 4-5 million bags per annum (~5% of global market share), and has an established presence in Vietnam through its local subsidiary, COFCO International Vietnam since 2002<sup>3</sup>
- COFCO operates voluntary sustainability verification and certification programs in Vietnam, including programs to support farmers to reach 4C standards<sup>3</sup>
- COFCO is establishing an SDM to focus on leveraging a variety of technological solutions to further improve its sustainable sourcing operations in the Vietnamese market<sup>1</sup>

## Overview of the country value chain







- Vietnam is the second largest producer of coffee by volume (18% market share) and the second largest coffee exporter (22% market share)<sup>5</sup>
- Production in Vietnam is centered on Robusta (1.7million tons in 2017/18), grown by around 600,000 smallholder farmers primarily in Vietnam’s Central Highlands<sup>4</sup>
- The coffee value chain in Vietnam is dominated by smallholders, who produce around 95% of all coffee<sup>4</sup>
- Vietnamese coffee farmers have average yields that are significantly higher than other big coffee-producing nations<sup>5</sup>
- In Vietnam foreign buyers cannot directly source from farmers due to government regulation. Therefore, local collectors play a very important role in the value chain

Sources: 1) Calls with COFCO Management; 2) COFCO SDM Outline; 3) [www.cofcointernational.com](http://www.cofcointernational.com); 4) IDH (2019) – Coffee Production in the face of climate change; 5) IDH & True Price (2016) – The True Price of Coffee from Vietnam. \*Farmer organizations exist in the value chain but are not within this SDM



# Overview | SDM Objectives

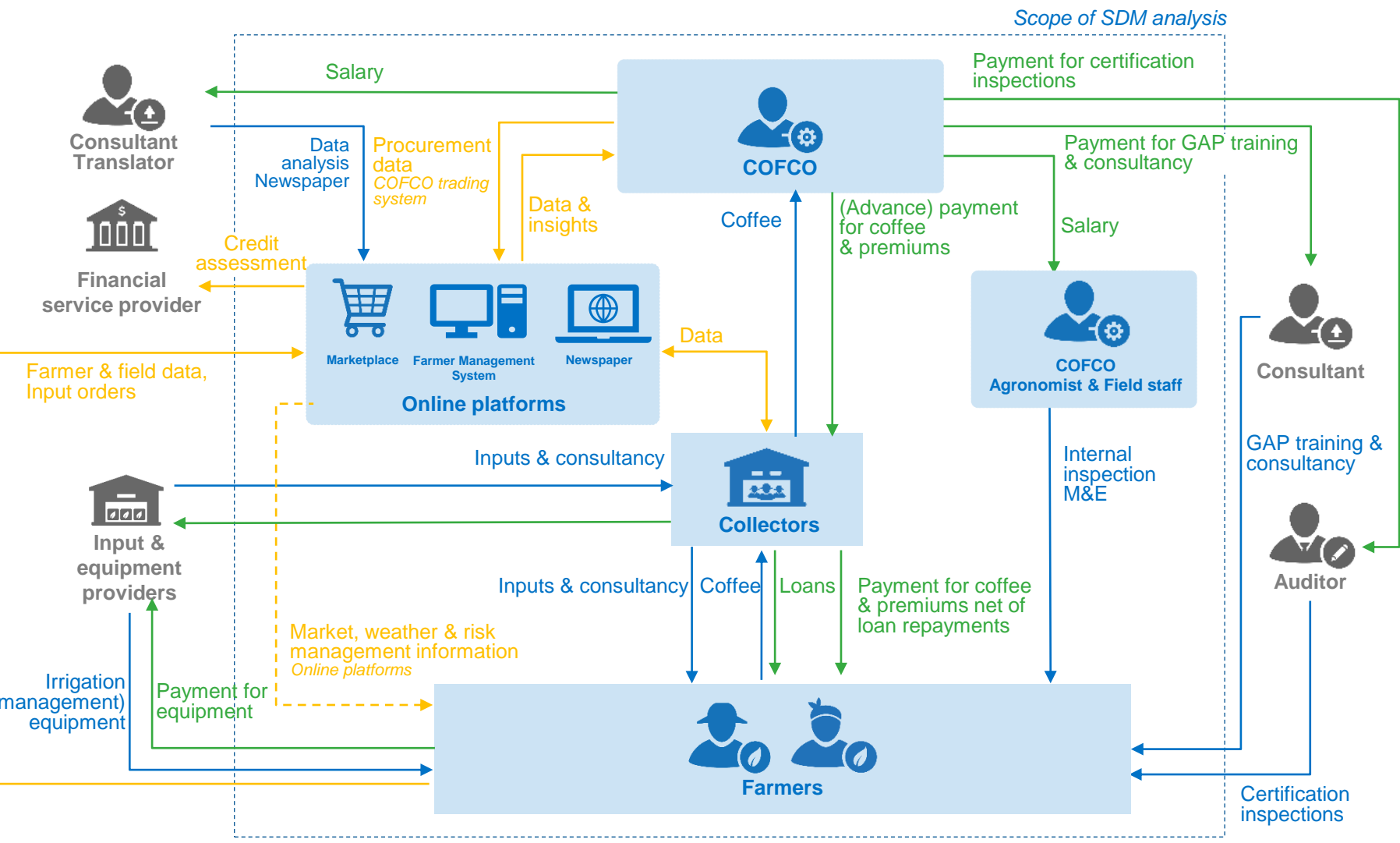
## Outcomes per Stakeholder

		Farmer 	SDM operator 	Collectors 	Environment 
CORE OBJECTIVES	1 Identify the purchasing mechanism that is most appropriate and commercially viable for sourcing coffee	<ul style="list-style-type: none"> <li>Better integration in international value chain</li> </ul>	<ul style="list-style-type: none"> <li>More high quality coffee sourced cost-efficiently</li> </ul>	<ul style="list-style-type: none"> <li>Better integration in international value chain</li> <li>More consistent sales channels</li> </ul>	
	2 Incentivize farmers to adopt sustainable farm management practices	<ul style="list-style-type: none"> <li>Reduced vulnerability to climate change</li> <li>Lower irrigation and input costs</li> </ul>	<ul style="list-style-type: none"> <li>More and higher quality coffee sourced</li> </ul>	<ul style="list-style-type: none"> <li>long-term sustainable client/supplier base</li> </ul>	<ul style="list-style-type: none"> <li>Better managed soil fertility</li> <li>Improved quality of groundwater</li> </ul>
	3 Improve transparency and traceability along the value chain	<ul style="list-style-type: none"> <li>Better market information</li> <li>Higher trust level on inputs</li> </ul>	<ul style="list-style-type: none"> <li>Ability to sell traceable coffee</li> </ul>	<ul style="list-style-type: none"> <li>Increased professionalism</li> <li>Better market information</li> </ul>	<ul style="list-style-type: none"> <li>Less usage of lower quality fertilizer</li> </ul>
SECONDARY OBJECTIVE	4 Increase access to finance	<ul style="list-style-type: none"> <li>Improved availability of affordable credit</li> </ul>	<ul style="list-style-type: none"> <li>More coffee sourced</li> </ul>	<ul style="list-style-type: none"> <li>More input sales</li> <li>Larger base of lenders</li> </ul>	

Sources: COFCO Management interviews



# Overview | SDM Services and Revenues Flow



**Legend**    → Flow of goods and services    → Payment    → Data/information

Sources: 1) COFCO International (2019) – Outline of the new Coffee Service Delivery model; 2) COFCO management interviews

# Overview | Services



## Training

- Farmers will be trained by agronomic consultants on Good Agricultural Practices (GAP) and Post Harvest Treatment (PHT)



## Certification

- Farmers will receive code of conduct training in line with the appropriate certification standards (RA/Utz, 4C)



## Monitoring and Evaluation

- Additional M&E for non-certified farmers will be undertaken to collect farm-level impact data
- This is not considered as a service but an additional expense



## Soil testing and recommendations

- Soil testing will be used to provide tailored recommendations for fertilizer application to farmers



## Access to high quality fertilizer

- High quality fertilizers will be made available to farmers at competitive prices
- Farmers will also be able to obtain advice through consultants



## Access to crop protection

- Crop protection products will be made available to farmers at market price through the online market place



## Irrigation

- Irrigation (management) equipment such as moisture sensors will be made available to farmers
- Farmers will also be able to purchase drip irrigation systems



## Access to finance

- COFCO will use farmer agronomic, purchase and repayment data to develop creditworthiness ratings for farmers which will enable collectors to make better informed lending decisions



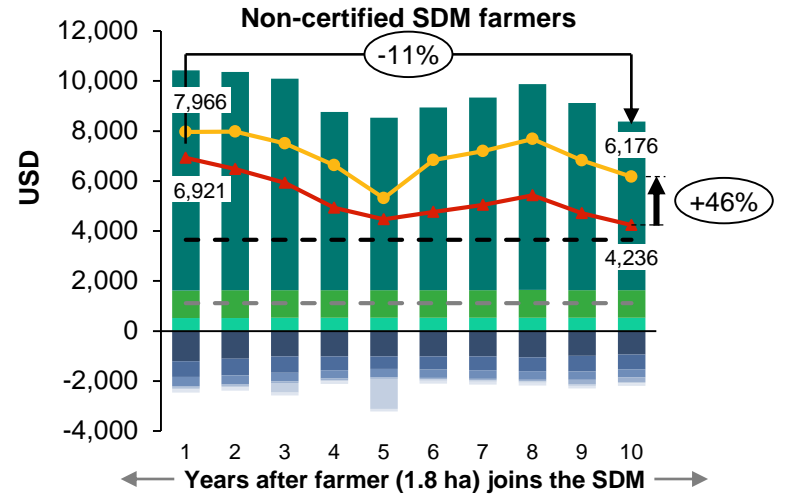
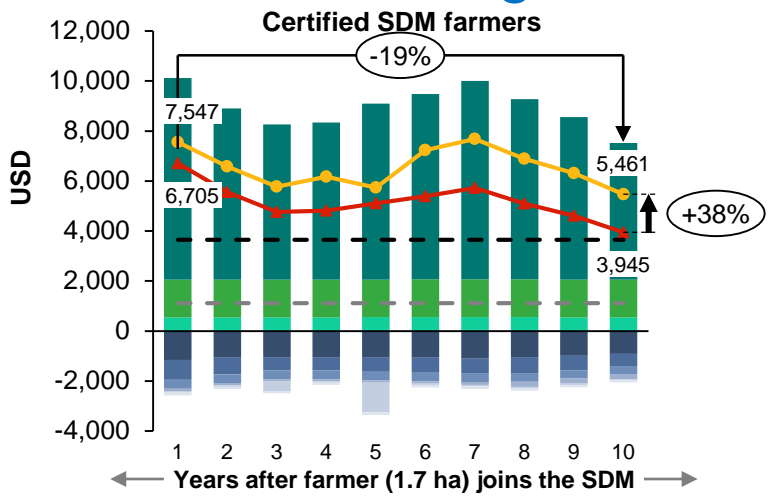
## Online platforms

- A **Farmer Information System** will provide access to market news and information which is tailored to the needs of SDM farmers
- A **Farmer Management System** will collect data at the farm-level
- An **Online Marketplace** will give farmers direct access to the online purchase of high quality inputs and equipment

Sources: 1) COFCO International (2019) – Outline of the new Coffee Service Delivery model; 2) COFCO management Interviews

 **Enabling Services**  
 **Additional Expense**

# Farm Profitability | The SDM has a positive impact but does not reverse declining coffee revenues



- Coffee revenues
- Other income
- Fertilizer expenses
- Financing expenses
- Irrigation expenses
- Net income
- Poverty line (household)
- Other crop income
- Premiums
- Labour expenses
- Other input expenses
- Other expenses
- Baseline
- Est. living expenses (household)

## Economic sustainability at farm-level

Coffee farmers in Vietnam are among the best performing in the world with high productivity rates at relatively low production costs<sup>1</sup>. Household income from farming remains above estimated household living expenses<sup>3</sup>, and is around 5 times higher than the PPP adjusted poverty line per household. Income increases further from participating in the SDM. These facts paint a somewhat deceptive picture because farmers in this region are far from wealthy.

The fluctuations in net income over the years are primarily driven by the changes in productivity of trees and hence coffee revenues: in Vietnam, most coffee trees were planted in a short period of time around 20 years ago. This means that productivity is likely to go down at around the same time for all trees. Farmers spread out and postpone the point where trees need to be renovated by structurally rejuvenating their trees, typically by grafting. But after year 7 or 8 the impact of this wears out and productivity and income decline rapidly.

Minor fluctuations are a consequence of investments in irrigation: SDM farmers who adopt all services are assumed to invest in a basic irrigation management system in year 3 and move to drip irrigation in year 5. In particular this second investment results in an income dip, despite significant subsidies by COFCO.

## Main cost drivers

Fertilizers are the main cost driver for all farmers analyzed. SDM farmers will apply higher quality and more expensive fertilizers, but in lower quantities. The net result is lower cost of fertilizers, and this leads to lower costs related to the interest paid for the purchase of the fertilizer on credit.

Grafted and newly planted trees require less fertilizer. Lower fertilizer costs have a small positive impact on the income of farmers once they start rejuvenating and renovating.

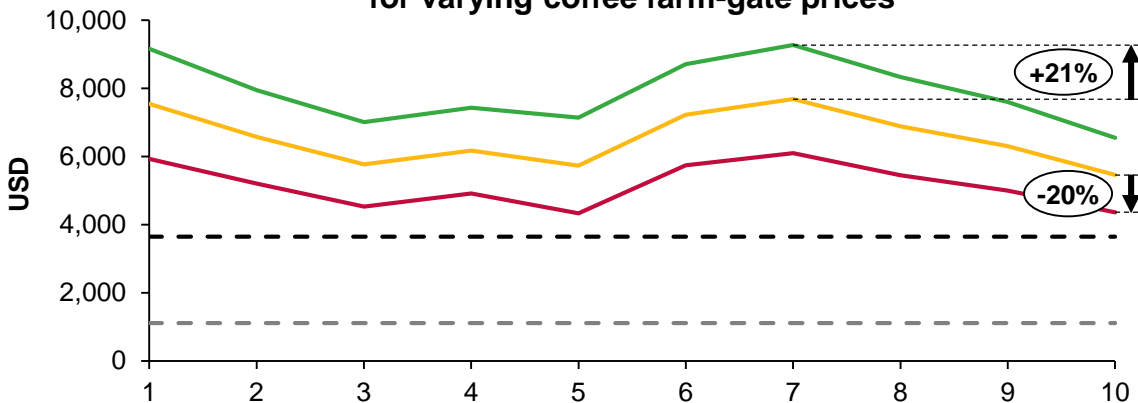
## Main revenue drivers

All farmers' main source of income is the sale of coffee (on average 78%). Certified farmers have higher rates of intercropping and therefore a slightly higher income from other crops is assumed. Certification premiums add only USD 40 to total revenues at the most so have no real impact on net income.

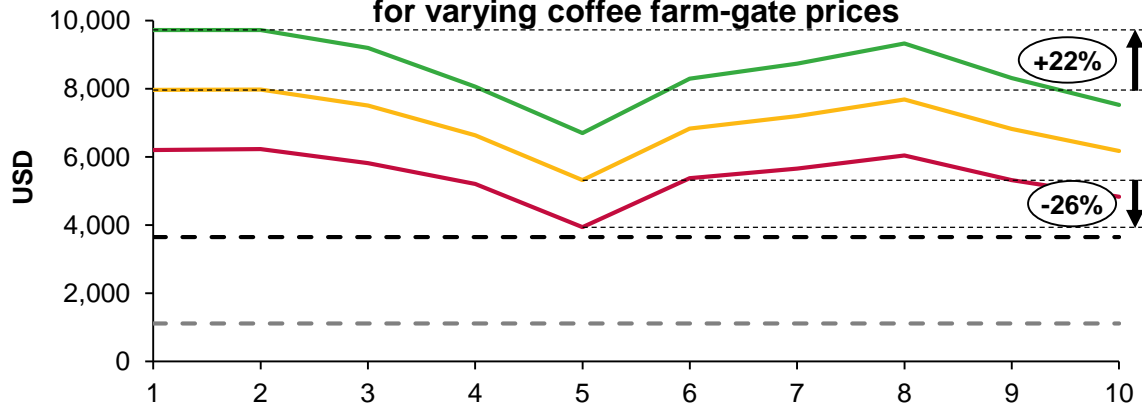
SDM farmers earn slightly higher revenues than Baseline farmers as they are assumed to apply Good Agricultural Practices more consistently than their Baseline counterparts, leading to a slightly higher marketable surplus and increasing volumes that can be sold at a small quality premium.

# Farm Profitability | Price fluctuations have a predictable influence on net income which largely stays above living wage

**Certified SDM farmer annual net income (USD/year) for varying coffee farm-gate prices**



**Non-certified SDM farmer annual net income (USD/year) for varying coffee farm-gate prices**



## Commodity prices

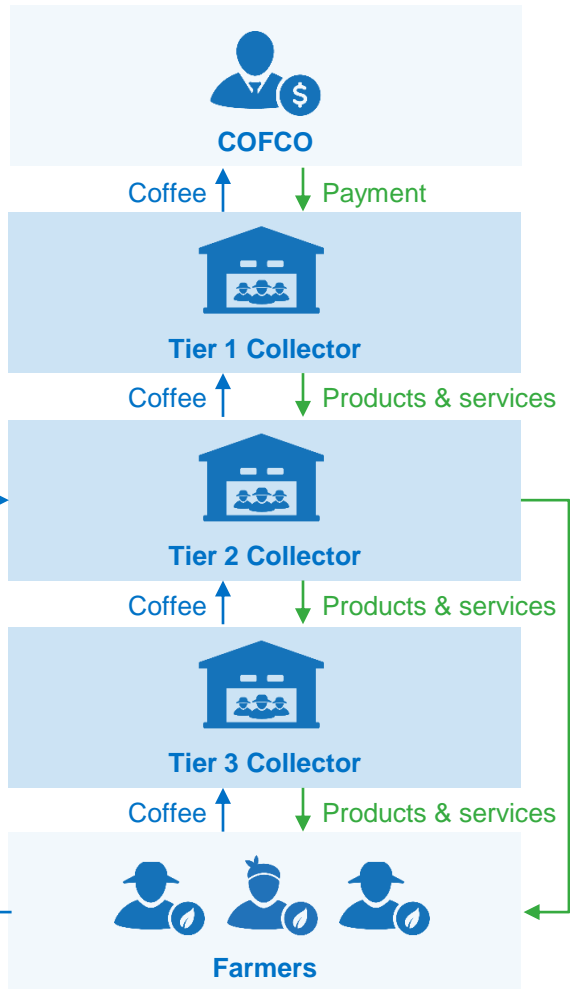
- A 20% upward or downward fluctuation versus the currently assumed farm-gate price (32,000 VND/kg) tends to impact net income at comparable rates
- Even at lower farm-gate prices, net incomes are generally high enough to stay (well) above the poverty line. However, a 20% fall in prices would threaten a household's ability to cover their costs in years of lower production<sup>3</sup>
- With farm-gate prices very closely following global commodity prices, this is pretty much entirely out of the sphere of influence for farmers as well as COFCO
- Farmers and COFCO are however able to influence the rate and timing of rejuvenation and renovation. As tree productivity is the biggest driver of income fluctuations and ultimately income decline, COFCO is advised to focus more on these practices. The impact of current rejuvenation and renovation practices on productivity is discussed in more detail on the next page

- Farm-gate price: 25,600 VND/kg
- Farm-gate price: 32,000 VND/kg
- Farm-gate price: 38,400 VND/kg
- — Est. living expenses (household)
- — Poverty line (household)

Sources: 1) COFCO raw farmer data; 2) COFCO management interviews; 3) Global Living Wage Coalition



# Collector Profitability | Role of collectors in this SDM



## As-Is relationship between COFCO and collectors:

Historically COFCO has sourced coffee from the Central Highlands through collectors. A typical coffee supply chain in the region consists of two or three collectors<sup>1</sup>. The role of collectors is to aggregate coffee volumes to a point where they are sufficiently large for international buyers to purchase efficiently, as well as to provide farmers with access to a number of products (agro-chemicals) and financial services.

Collectors at tier 1 are the biggest and most professional in the chain. They buy coffee mainly from other collectors and less from farmers<sup>2</sup>. They primarily sell to local roasters as well as international buyers like COFCO. They tend to be located in larger towns.

Collectors at tier 2 typically buy from both collectors and farmers directly. They sell to tier 1 collectors as well as direct to other buyers. Competition at this tier is particularly fierce.

Collectors at tier 3 are the collectors that are situated within a 5-10 kilometer range to the farmers they serve<sup>3</sup>. These collectors are the smallest and least professional in the chain, but they also have the most personal relationship with the farmers. These collectors typically sell to other collectors and buy only from farmers. The relationship-based nature of business at this level means competition is lower here than at the other tiers

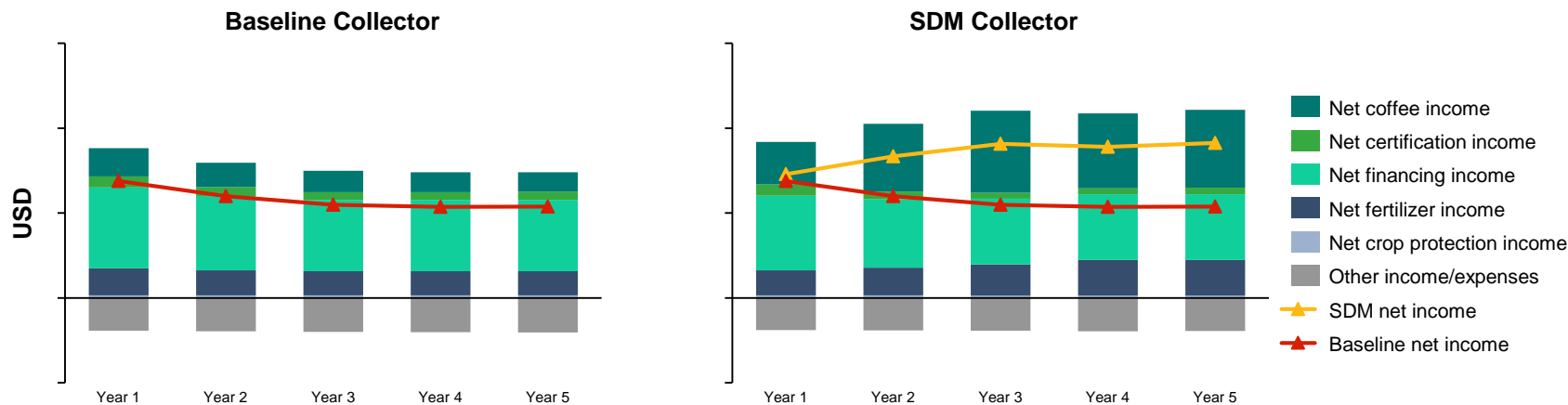
## To-Be relationship between COFCO and collectors:

In the SDM that COFCO is planning to implement, the role of tier 3 collectors is leveraged to drive effective service delivery to farmers: soil testing, fertilizer recommendations, access to high quality inputs and ultimately access to finance.

For COFCO to work with tier 3 collectors means that tier 1 and 2 collectors will lose market share in the supply chain. This is expected to have significant consequences: on the one hand it increases margins available to divide between supply chain partners as one to two layers of collectors are removed. On the other hand it is expected to create severe competition between COFCO and collectors operating at tier 1 and 2, with currently unforeseen consequences. COFCO will potentially have to invest in additional resources to (1) trade with a larger number of smaller and more remote collectors and (2) resolve issues that result as unforeseen consequences of competing with tier 1 and 2 collectors.

Sources: 1) COFCO management interviews; 2) Hoang (2017) – Examining the performance of coffee supply chains in Central Vietnam; 3) Collector interviews

# Collector Profitability | Net finance income remains a key driver of income, but profitability improves by higher net coffee income



## Discussion

- For baseline collectors, net financing income from input loans is the most lucrative business line followed by net fertilizer income
- SDM collectors see significant increases in net coffee margin that are driven by and dependent on cutting out the additional layers of collectors in the supply chain. SDM collectors selling directly to COFCO triple their coffee margins as a result of capturing the margins that are usually ceded to other collectors. The impact of this is more evident in later years as a greater proportion of coffee is sold to COFCO rather than other buyers
- The SDM aims to facilitate access to higher-priced, higher-quality fertilizers. Generally, collectors earn higher margins on the lower-priced fertilizer. To counteract the bigger margins on lower-priced products, in this SDM COFCO will purchase fertilizer in bulk generating a discount large enough to both reduce farmer expenses and increase the margin on the higher-quality fertilizers to a level that compares favorably to the margin they make on lower-priced fertilizer
- Under current low coffee prices, most farmers are inclined to buy the cheaper fertilizers; recognizing that international fertilizers are of a higher quality, but do not provide a return on investment quick enough to make it a good business case. Low farmer demand combined with the fact that selling higher-quality fertilizer will result in lower volumes may disincentivize collectors from switching
- Declining revenues remain a threat in the long term as farmer productivity is constrained by ageing coffee trees. On the one hand coffee volumes will fall, while on the other hand, lower fertilizer requirements during rejuvenation and renovation will reduce earnings to collectors on fertilizer sales and the associated credit provision. Therefore, a lack of diversification across other crops presents a key risk in the medium term to collectors
- Access to the SDM's credit assessment tool is assumed to reduce the default rate from 3.3% to under 1.5% after five years. Nevertheless, lower loan sizes due to lower fertilizer volumes means the net effect of the SDM on financing income is negative
- Ultimately, while the net impact of the SDM on overall profitability is positive, this analysis is assuming no significant change in how input loans are made. Proposed changes to financing that are considered in the [High Value Opportunities](#) all reduce collector's financing income. Collector participation in the SDM will be at risk unless gains from non-finance income cover any lost interest income from input loans

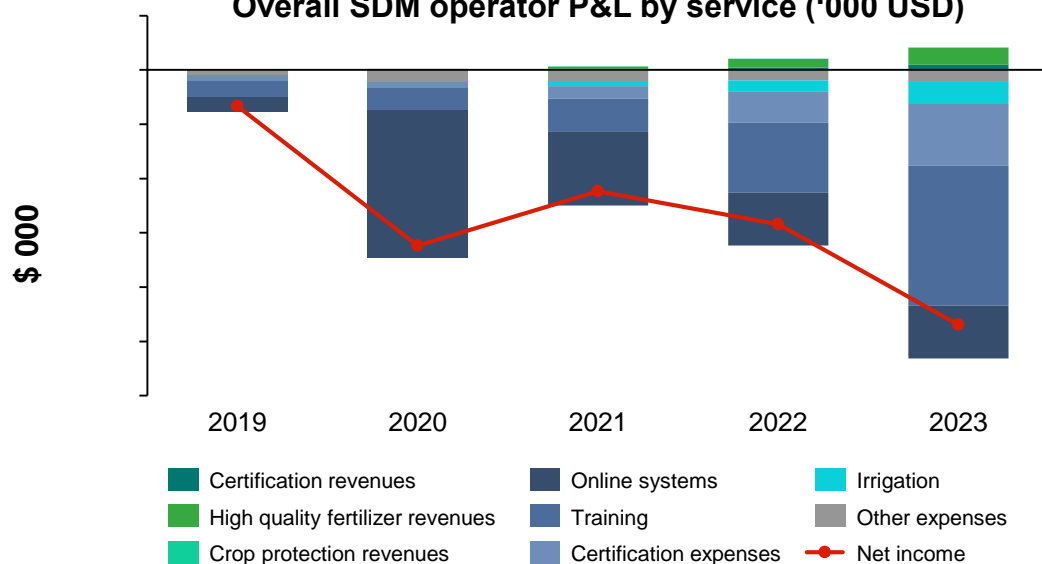
Sources: 1) COFCO management interviews; 2) Collector interviews; 3) Hoang (2017); 4) Collector data

[Go to assumptions](#)

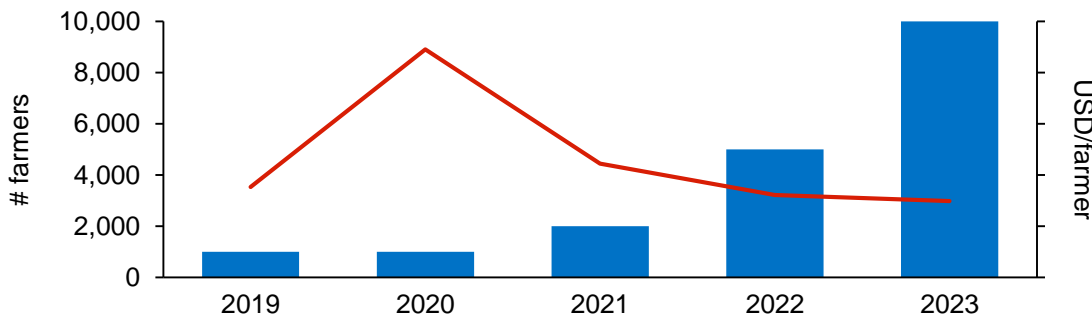


# SDM Profitability | The economic sustainability of the SDM is constrained by high expenses and limited service revenues

Overall SDM operator P&L by service ('000 USD)



Number of farmers in the SDM and net cost per farmer (USD)



## Economic sustainability of the SDM

- Encapsulated in the significant investments in technology in the SDM is the fact that it is not designed to serve only the small number of farmers in the pilot phase but rather to reach much larger numbers
- As scale increases, the sourcing cost falls dramatically
- Irrespective of this, there is no return on investment from the SDM on a standalone basis under the current design

## Main revenue drivers

- The biggest revenues come from the distribution of inputs despite the fact that the 1% margin on inputs aims at only covering the cost of the associated services
- COFCO only makes a limited amount on certification, which is not enough to cover even the costs of certification itself. The value of certification is considered in more detail on the [service profitability slide](#).

## Main cost drivers

- Online platforms with three different modules are being developed in 2020, leading to a significant jump in expenses
- The cost of technology has been isolated to a single service but in reality the platforms facilitate the functioning of several other services including the access to high quality fertilizer, crop protection and irrigation
- Alongside online platforms the biggest contributor to the relatively high cost per farmer is training
- To encourage the adoption of irrigation management systems at farm-levels, COFCO intends to cover the associated network costs (weather stations, gateways etc.) and subsidize drip irrigation modules.

Sources: 1) COFCO management interviews; 2) COFCO data request

# Conclusions | key drivers for success and key risks



## Key drivers of success

- If the projected productivity improvements are realized, farmers can expect a **significant increase in net income from participating** in the SDM, creating an incentive for them to participate
- An important driver for the success (which is also discussed as a key risk) of this SDM is the **shortening of the supply chain**: by working directly with tier 3 collectors rather than with tier 1 and 2 collectors, COFCO will be able to free up margins which can be distributed among the remaining players, and used to invest in and improve service delivery
- The **distribution of these margins** needs to happen in a way that effectively **creates sufficient incentive** for the critical players to participate in the SDM:
  - tier 3 collectors benefit the most from freeing up the margin. But collectors will also benefit from being supported in growth and increased professionalization through the use of technology
  - farmers will benefit from being guided through their first round of coffee tree renovation
- The **online platform channels service delivery** creating additional efficiency and control over the level of interconnection between the services
- The **personal dedication of the COFCO project team** contributes to the success of the SDM: in the absence of a strong financial return on investment for COFCO, the team's commitment plays an important role in securing the support of senior management at COFCO headquarters



## Key risks

- The **business case for key actors is vulnerable**:
  - given the high starting productivity levels it is expected to be challenging for farmers to reach the projected productivity and related income increase
  - the business case for collectors relies heavily on margins being freed up by removing one to two layers of collectors from the supply chain and those margins being passed on to tier 3 collectors
  - there is a small net profit on COFCO's investment in year five, but total costs are not recovered within 5 years
- COFCO has the clear intention to leverage rather than compete with the existing supply chain. However, working with tier 3 collectors is essential to reach farmers efficiently. At the same time this means cutting tier 1 and tier 2 collectors out of the supply chain. **The consequences of the competition** that the SDM is likely to unintentionally create, **are currently unknown** and the design of the SDM does not address the risk this may pose
- Farmers seem to have insufficient collateral to increase the size of their bank loans, and turn to collectors for additional yet expensive loans. The SDM does not directly address the risk of **farmers becoming increasingly indebted**
- Any structures to improve the **provision of loans to farmers via collectors** will need to be verified against local regulations to ensure that it is lawful, as well as investigated using more robust data so as to provide a higher level of confidence of the outcomes



# Conclusions | Lessons learned during the study exercise



## Opportunities for improvement

- The current set of services does not address the common interest of the most important stakeholders in the SDM: farmers, collectors and COFCO benefit in the long term if farmers successfully renovate their plantations. Therefore **a service package for rejuvenation and renovation should be designed** to guide farmers through this challenge. This service package would likely need to consist of at least the following elements:
  - Continued support in applying increasingly sustainable farming practices (optimal application of fertilizers, crop protection and irrigation) to reduce the negative impact on soil and environment of coffee production;
  - Inputs and tools required for renovation;
  - Inputs for crop diversification;
  - Additional training on effective rejuvenation, renovation and crop diversification practices;
  - Access to appropriate financing, potentially in the form of affordable long-term loans
- Another opportunity for improvement is to **improve the efficiency** of (1) training farmers and (2) providing customers and consumers confirmation of the sustainable farming practices applied in the production of coffee
- To ensure their level of commitment, **more intensive communication with collectors** should be established
- Two additional opportunities are considered to have potentially high value and are discussed in more detail in the next section



## Key factors for replication

- Any replication of this model will show a **much better return for COFCO**, as the current investment in the online platforms can be fully leveraged and learnings used to make improvements to the platform
- A similar model set up in the future should take full advantage of the **learnings around leveraging the role of collectors** in the delivery of services
- Any future models should put **more focus on planning the renovation of coffee plantations**:
  - In the current set-up of the SDM little focus is put on convincing and supporting farmers to renovate their coffee trees but, as the analysis demonstrates, timely renovation of coffee plantations is critical for farmers if they want to continue grow coffee: through adequate rejuvenation and renovation practices farmers can spread the income impact of the drop in productivity over a longer period and continue to grow coffee for COFCO to source
- Replication of the model should take into account the potential to scale and **increase the investability** of the model



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