



# Service Delivery Model Analysis

Sustainable Management Services (SMS) Kenya  
Case report

*November 2022*

# Introduction of IDH and the SDM analysis



**Smallholder Livelihoods**

Agriculture, including forestry, plays a key role in the wellbeing of people and planet. 70% of the rural poor rely on the sector for income and employment. Agriculture also contributes to and is affected by climate change, which threatens the long-term viability of global food supply. To earn adequate livelihoods without contributing to environmental degradation, farmers need access to affordable high-quality goods, services, and technologies.



**Service Delivery Models**

Service Delivery Models (SDMs) are supply chain structures which provide farmers with services such as training, access to inputs, finance and information. SDMs can sustainably increase the performance of farms while providing a business opportunity for the service provider. Using IDH's data-driven SDM methodology, IDH analyzes these models to create a solid understanding of the relation between impact on the farmer and impact on the service provider's business.

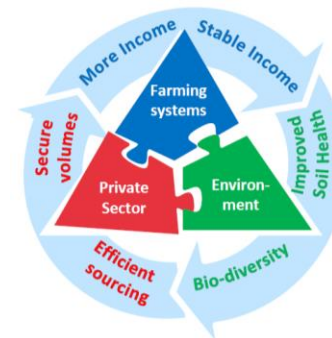


**Insights and Innovations**

Our data and insights enable businesses to formulate new strategies for operating and funding service delivery, making the model more sustainable, less dependent on external funding and more commercially viable. By further prototyping efficiency improvements in service delivery and gathering aggregate insights across sectors and geographies, IDH aims to inform the agricultural sector and catalyze innovations and investment in service delivery that positively impact people, planet, and profit.



# Introduction of Coffee Farmer Income Resilience Program



**Coffee Farmer Income Resilience Programme (CFIRP)**



**Outcomes of the programme**

**Period:** 2020 -2024

**Countries:** Uganda, Kenya

**Overall objective:** Improved livelihood of 20,000 coffee farming families in Kenya and Uganda

**Main intervention areas:**

- A. **Farming systems:** Coffee farmers have diversified farming systems with coffee cultivation integrated with other farming activities. To achieve a higher and more resilient farm income, coffee production and marketing will be embedded in an integrated farming systems approach.
  - B. **Environment:** Improved soil health and biodiversity are preconditions for regenerative agriculture systems leading to more resilient output levels.
  - C. **Private sector:** Co-investment by the agri-business sector for the set up, capacity building and testing of blended service delivery for farmers and creating conditions for efficient sourcing and securing supplies of coffee and other farm produce.
- 
1. Operationally and economically viable business cases for new tailor-made blended service delivery models are developed.
  2. 20,000 coffee farming families have access to blended services in line with their needs and potentials.
  3. Joint learning and efficient cooperation between different service providers (input supplies, extension, financial services, produce marketing, etc.).

Throughout the report, you can click the corresponding icons on the right of each page to be taken to the first page of that chapter

	1. Executive Summary
	2. The SDM
	3. Business case for SMS and FCS
	4. Farmer impact case
	5. Annex



Summary






The SDM

Business case

Impact case

Annex

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## The SMS strategy and Service Delivery Model



### STRATEGY

**Objectives:** SMS operates as a marketing agent in the Kenya coffee value chain working with nearly 46,000 smallholder farmers spread across 48 Farmer cooperative Societies (FCS). Due to the high competitiveness of the sector, SMS's main objective is to increase market share of coffee cherry in Kenya.

**Quality and volumes:** SMS aims to secure stable volumes of coffee from their farmers, while simultaneously focusing on producing high-quality coffee so as to tap into specialty markets and/or fetch higher prices.

**Sales channels:** SMS markets 80% of their sourced clean coffee on the auction and 20% to direct buyers. Similarly, they deal in both certified and uncertified produce. However, certification is not a common practice across most of the farmers they deal with.



### SERVICE DELIVERY MODEL

**Farmer Engagement:**

For SMS collaborate with smallholders, they need to operate through Farmer cooperative Societies (FCS) of whom the smallholder farmers are a member.

**Service package:**

SMS provides a wide range of services to FCS (and thereby to the farmers) including market access, dry milling, storage, training, certification (on a needs basis), inputs, finance and diversification.

**Segmentation:**

The farmer segmentation approach is based on the region in which they are based. This is because the region has an impact on the farmer yields. However, services accessed by these farmers remain the same across the regions.

## The business and impact case of the SDM

BUSINESS CASE*		
<b>kg</b> Volume (Kg clean coffee marketed)	<b>\$</b> Revenue & GP margin (%)	<b>\$</b> EBT and margin (%)
<b>5,000</b> # farmers Regen Ag project	<b>5</b> # of Regen Ag FCS	Break-even year


- SMS is projected to increase annual volumes of clean coffee marketed by 2%.
- Although SMS remains profitable at gross margin level, high overhead costs erode the margins generated from coffee marketing and service provision.
- Investing in a regenerative agriculture project for 5,000 farmers allows SMS to award most loyal FCS, generate farm-level impact while simultaneously creating additional profit for their business and unlocking potential new business opportunities in the macadamia, avocado, beans and dairy value chains.

IMPACT CASE			
Western Kenya farmer	Y1: \$-84 Y10: \$-55	Y1: \$-12 Y10: \$53	Y1: \$5 Y10: \$3,127
	Y1: \$11 Y10: \$43	Y1: \$98 Y10: \$166	Y1: \$118 Y10: \$3,295
Annual income			

- SDM farmers have higher returns per kg of coffee cherry produced as they benefit from increased performance (yield, quality) and lower input costs from right input use and adoption of RA. This justifies the business case for farmers to participate in the SDM.
- Only Segment 3 and 6 farmers, who practice regenerative agriculture, can earn more than the poverty line of \$1,418, although they remain heavily reliant on diversified farm income. None of the farmers can close the gap to a living income of \$8,170.
- As a result of farming macadamia and avocado trees and incorporating dairy on their farms, Segment 3 and 6 farmers are projected to unlock new profitable income streams and to improve their resilience to climate change and price shocks.



\*Figures presented are as per year 2027

## Insights and recommendations (1/2)

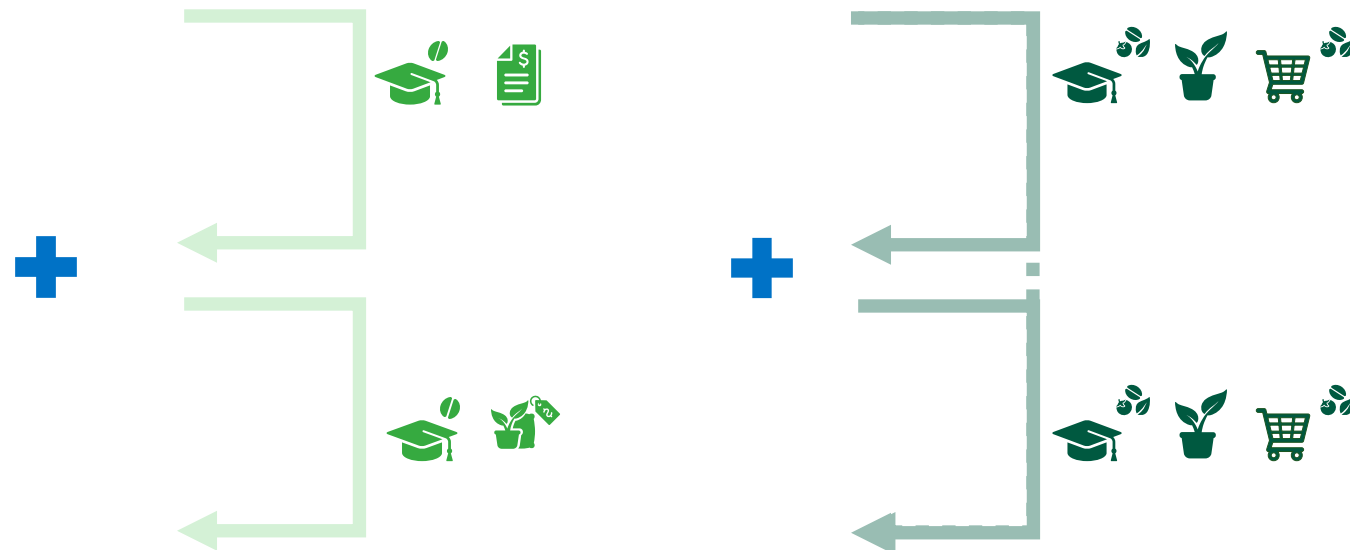
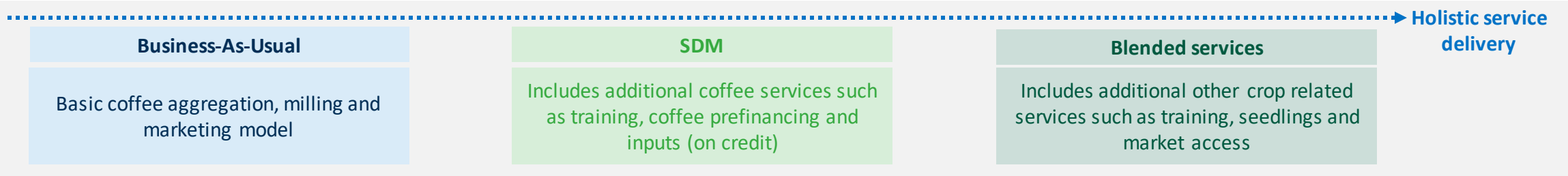
ACTOR	INSIGHTS	RECOMMENDATION
 <p data-bbox="224 805 295 836">SMS</p>	<ul data-bbox="479 337 1370 736" style="list-style-type: none"> <li>• Currently, the SMS SDM is loss making and this is projected to persist up to xxxx when the business breaks-even. High overhead costs relating mainly to overhead salaries and office costs offset margins from coffee trading.</li> <li>• While there is limited scope for SMS to increase the commission margins or reduce cost of services, SMS can make its SDM more efficient and financially sustainable by increasing the yield/acre and quality of coffee grown by the farmers in their SDM. This would also allow SMS to benefit from sourcing efficiencies thus reducing their costs.</li> </ul> <hr/> <ul data-bbox="479 839 1370 1200" style="list-style-type: none"> <li>• While SMS does not anticipate to incur any significant direct service costs in adaptation of regenerative agricultural practices by farmers, SMS will have to work closely with FCS/farmers in developing the RA roadmap, provide associated services and support for farmers in adopting soil restoration and crop diversification plans</li> <li>• SMS can encourage FCS/farmers to adopt RA by certifying RA farms, paying premiums and demonstrating the increase in income from diverse crops</li> </ul>	<ul data-bbox="1454 337 2390 1239" style="list-style-type: none"> <li>• SMS could increase business income by: a.) growing coffee volumes sourced by increasing average yield tests to maximize their return on investment; b.) participating in the aggregation and marketing of the diversifying crops and dairy could increase business incomes even further.</li> <li>• Although costly, investments made by SMS into the SDM can pay off if adoption of regenerative agriculture practices (RAP) takes place and is well monitored. By closely monitoring farmer performance (through their FCS) and developing a tracking mechanism, SMS can provide even better and more tailored services to their FCS based by an updated segmentation strategy.</li> <li>• SMS should continue its focussed strategy of developing market for coffee grown by their farmers and not take direct market/price exposure to other commodities such as macadamia, avocado or dairy.</li> <li>• At the same time, SMS can facilitate market access to diverse crop with other value chain actors taking lead and SMS getting a small marketing commission on diverse crops without direct involvement or exposure to the same.</li> <li>• SMS could also explore aggregating the diverse crops for its sister companies under the ECOM group if applicable.</li> </ul>








## Insights and recommendations (2/2)

ACTOR	INSIGHTS	RECOMMENDATION
 <p><b>FARMER</b></p>	<ul style="list-style-type: none"> <li>Access to GAP training, soil testing, inputs, finance and markets has a clear positive impact over time on SDM farmer coffee incomes. While their labour and input costs are slightly higher than those of non-SDM farmers, the increase in yield more than compensates for the increase in farm costs.</li> <li>Implementing regenerative agriculture practices and cultivating macadamia, avocado and dairy farming increases both coffee and other farm income significantly and outweigh the additional expenses incurred.</li> </ul>	<ul style="list-style-type: none"> <li>All coffee farmers have large potential to increase their coffee yield if properly guided on GAP practices and access to finance is given to all.</li> <li>Investment in dairy is capital intensive (\$705 in year 1 for purchase of cow, however the revenue from milk offsets investment cost to a large extent ) and it is likely that farmers would require financial support. SMS could consider offering a credit package specifically for regenerative agricultural purposes to enable loyal and high-producing farmers to invest in their own professional diverse farm</li> </ul>
 <p><b>FCS</b></p>	<ul style="list-style-type: none"> <li>Lack of clarity on the total revenue and cost package of FCS, especially on factory operations and overhead, makes it challenging to assess their overall profitability. However, it is clear that global and factory-level coffee prices have an impact on FCS's profitability, their ability to cover all their costs with their 20% margin on clean coffee value and pass on the rest of the value (80%) to farmers.</li> </ul>	<ul style="list-style-type: none"> <li>SMS should continue to engage FCS management towards improving their governance, efficiency and transparency by tracking FCS performances closely, capacity building and rewarding top performing FCSs. Providing services for coffee yield/quality improvement, enabling FCS to handle and facilitate market access for diverse crop will lead to better FCS asset utilization and additional pool of income to FCS</li> </ul>

Each coffee smallholder farmer needs to be member of an FCS and Marketing agents need to source coffee through FCS. This fixed interdependent relationship between farmer, FCS and marketing agents in the Kenyan coffee value chain defines the possibilities and limitations of service delivery to farmers.



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# SMS seeks to increase profitability and improve quality and sustainability of the coffee value chain

## Overall, SMS seeks to contribute to the creation of a sustainable and thriving coffee sector in Kenya



### Goals & aspirations

- Commercial:**
- Increase sales of coffee cherry
  - Increase market share
- Social & Environmental**
- Contribute towards **regenerative agriculture**
  - Contribute towards **food security**
  - Support farmers to diversify into **other crops** beyond coffee thus increasing their incomes
  - **Engage youth** by developing youth-targeted programmes



### Where to play

- Offer **blended services** that cover both coffee and food crops
- Increase **FCS loyalty** to ensure training continuity and that maximum return on investment is derived by SMS
- **Support certification, provide training** on GAP and **negotiating the best coffee prices for farmers**
- **Supports smallholders to restore soil health** and hence sustainability of coffee farms by adopting regenerative agricultural practices



### How to win

- **Paying competitive prices and offering full-service package** for coffee and non-coffee crops **that suits farmer needs.**
- Increase **FCS loyalty** to ensure training continuity and that maximum return on investment is derived by SMS.
- Increase **farmer productivity** and thus volumes of cherry available for sourcing.
- **Forge strong partnerships with value chain actors** (input suppliers, millers etc.) with a view to strengthen service delivery to farmers
- Ensure strict compliance of operations to certification standards



### Capabilities & Systems

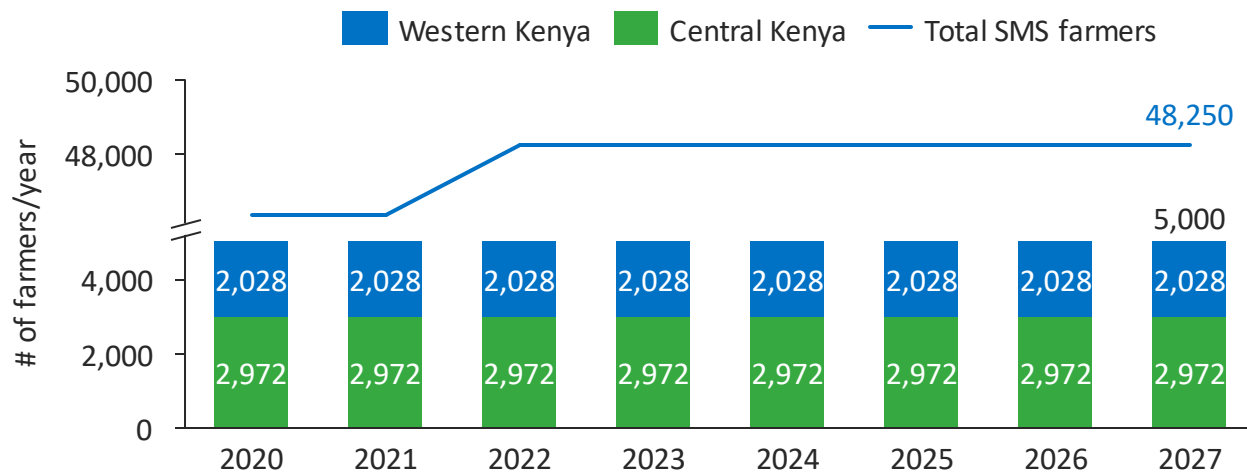
- **A robust financial system** that allows for payment of farmers and tracking program finances
- **Knowledge and expertise on smallholder service provision**, especially to their market share and farmer productivity
- **Network and collaboration with government and value chain players** to develop market access
- **Pilot experience, and vision on diversification activities** and continuous development to establish and tailor diversified service provision
- **Ability to incentivize farmer behaviour** to increase both farmer loyalty and adoption
- Ability to model and analyse the financial and environmental output of (to be) implemented interventions on farm and business level.

# With the SDM, SMS aims to promote regenerative agricultural practices that are expected to increase coffee productivity and overall farm incomes

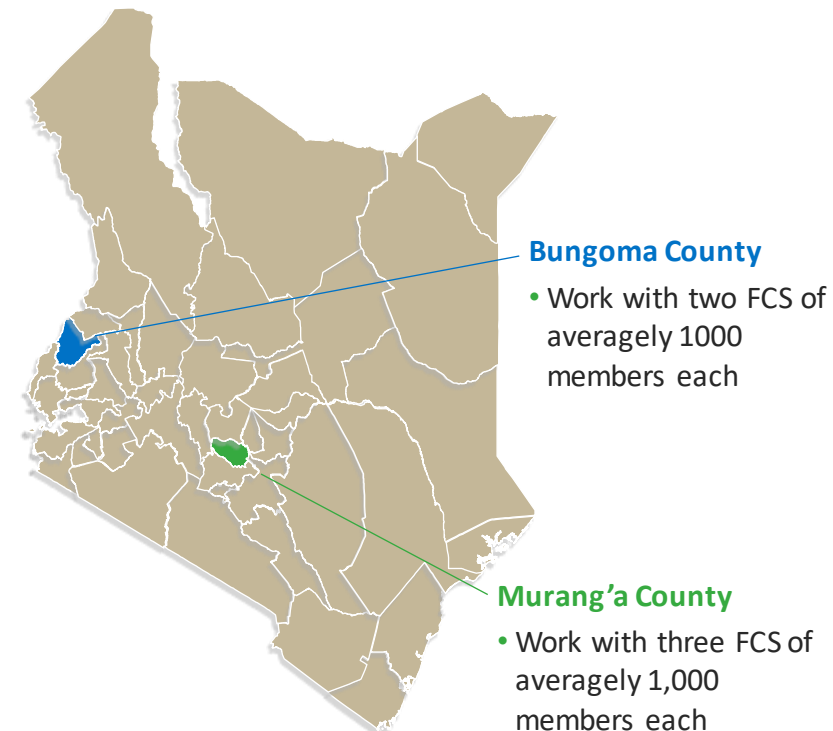
## About SMS's farmer base

- SMS currently works with +/- 48 FCS, totaling c.46,000 coffee farmers.
- Of the 46,000 coffee farmers, only 2,000 farmers are certified. Farmer certification is needs driven and not a mandatory requirement for the SMS farmers. SMS plan to encourage all their farmers to adopt Fairtrade Certification.
- SMS provides a [range of services](#) to their farmers, ranging from training to milling and marketing.
- Their service provision model is open to all farmers as there is no entry-requirement.

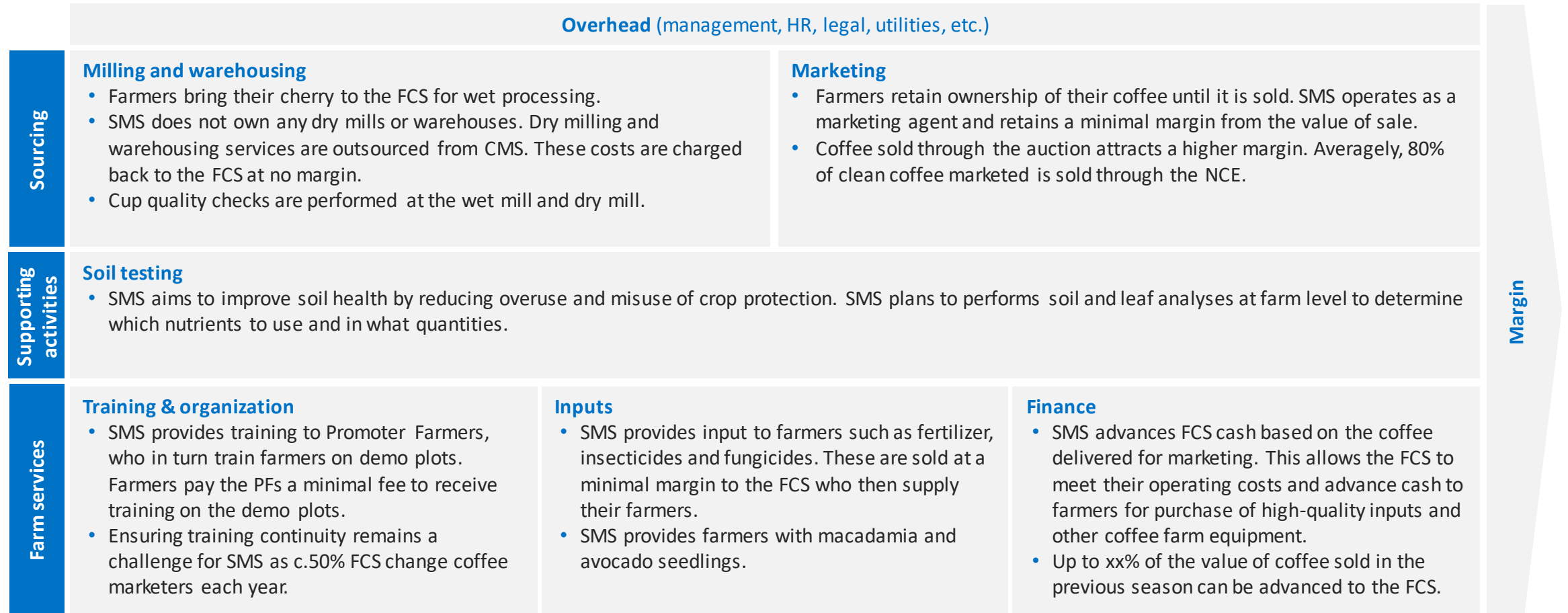
## Scale of farmers over time (Regenerative agriculture farmers by region and total farmers)



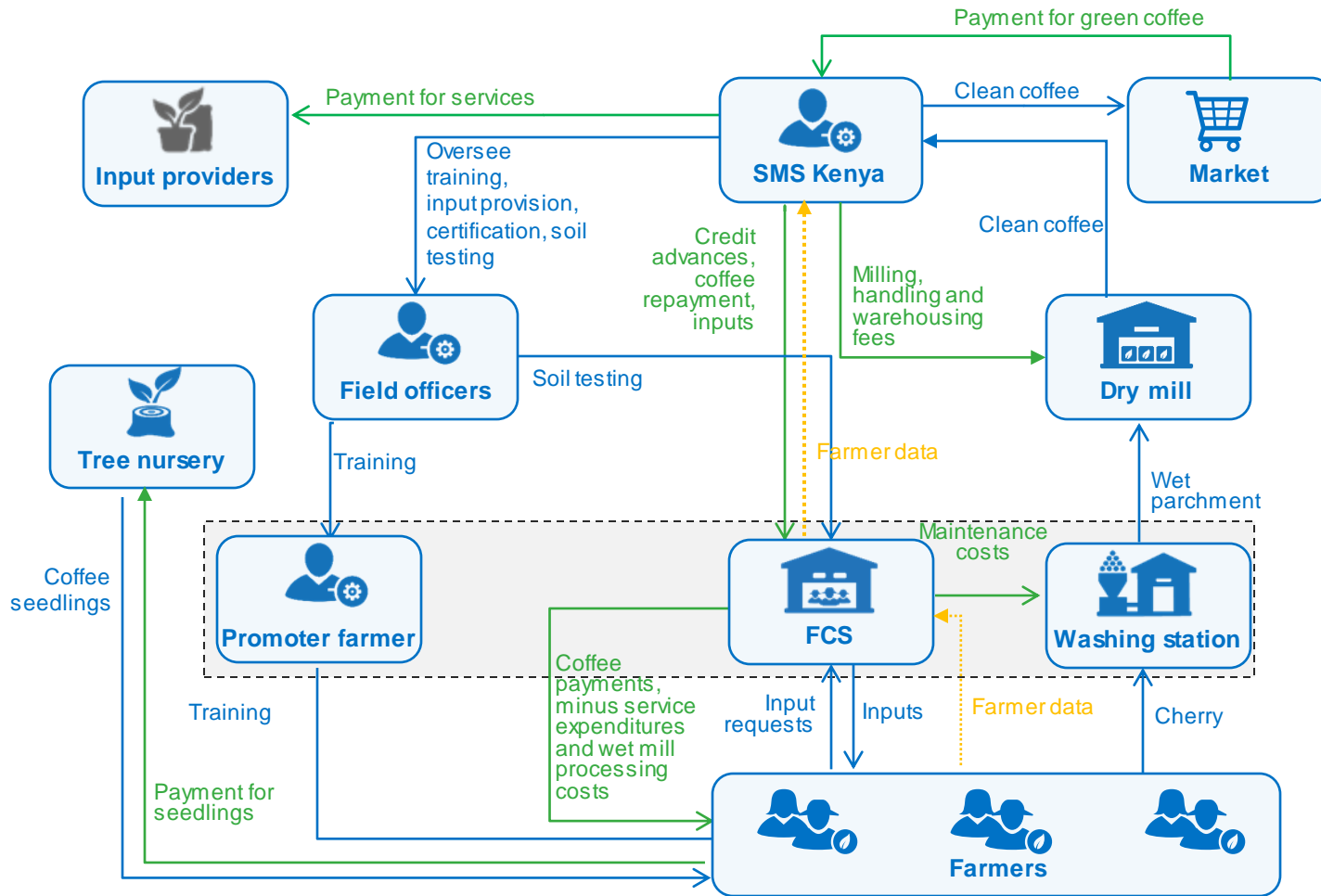
## SMS's regen ag pilot focuses on the Central and Western Kenya regions



# SMS invests in providing blended services to support smallholders in scaling up their livelihoods, improving their yields and in their transition towards regenerative agricultural cultivation of Arabica coffee









## SMS offers a wide range of services which are delivered through the FCS



Legend: → Produce / Services → Payment → Information



















- **SMS provides services to farmers through the FCS.** These services include dry milling, warehousing, marketing and pre-financing coffee for input purchases. SMS also provides training to the FCS on financial management, how to strengthen their management and gender balance at FCS board level.
- **SMS Field Officers (FO) train the Promoter Farmers (PF) who in turn train the farmers.** Each PF is responsible for c.35 farmers. Training modules offered to farmers include: coffee and other crops GAP, climate change, gender and certification.
- Coffee certification is needs driven. Currently, only 2,000 farmers are certified. SMS is looking to encourage farmers into fair traded certification.
- **PFs train farmers, twice a year, through demo plots.** SMS supports farmers in setting up of the demo plots.
- **SMS provides advances to FCSs where up to 40% of expected coffee revenues can be requested.** FCSs use advances to cover running costs and provide farmers with advances for services.
- Coffee serves as collateral for the FCS advance. **SMS charges interest on the loan and aims to recover costs within one season.**
- **SMS does not own any warehouses and nor a dry mill.** Storage and milling services are out-sourced from CMS Kenya at a fee.

## SMS engages with multiple actors both vertically and horizontally in the coffee value chain

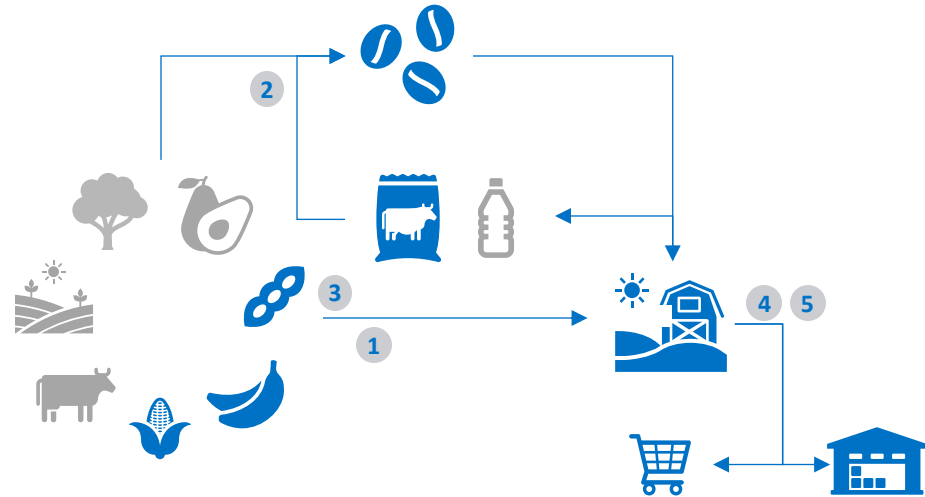
Actor	Organizations	Function (within this SDM)	Revenue model (within this SDM)	Incentive to participate (within this SDM)
 Operator	<ul style="list-style-type: none"> <li>SMS</li> </ul>	<ul style="list-style-type: none"> <li>Provides services to farmers</li> <li>Marketing agent who connects farmers with buyers (processors) to sell their Arabica coffee beans.</li> </ul>	<ul style="list-style-type: none"> <li>Margin on coffee sales</li> </ul>	<ul style="list-style-type: none"> <li>Increase and secure sustainable coffee supply</li> <li>Invest in farming communities</li> </ul>
 Processor	<ul style="list-style-type: none"> <li>Exporters</li> <li>Roasters</li> </ul>	<ul style="list-style-type: none"> <li>Buys coffee beans from farmers and processes it into consumer products.</li> <li>Exports final products of coffee.</li> </ul>	<ul style="list-style-type: none"> <li>Margin on coffee sales</li> </ul>	<ul style="list-style-type: none"> <li>Increased access to high quality single origin coffee</li> </ul>
 Dry mill	<ul style="list-style-type: none"> <li>Dry mill</li> </ul>	<ul style="list-style-type: none"> <li>Process wet parchment into dry parchment</li> </ul>	<ul style="list-style-type: none"> <li>Margin on coffee volumes</li> </ul>	<ul style="list-style-type: none"> <li>Increased supply</li> </ul>
 FCS	<ul style="list-style-type: none"> <li>Farmer Cooperative Society (FCS)</li> </ul>	<ul style="list-style-type: none"> <li>Organizes coffee farmers and manages their interests</li> <li>Provides services to farmers</li> <li>Aggregates coffee beans</li> </ul>	<ul style="list-style-type: none"> <li>Membership fee</li> <li>Margin on coffee volumes</li> </ul>	<ul style="list-style-type: none"> <li>Increase negotiation power of farmers</li> </ul>
 Impact Leads	<ul style="list-style-type: none"> <li>IDH</li> <li>IKEA Foundation</li> <li>Government</li> <li>Research Institutes</li> </ul>	<ul style="list-style-type: none"> <li>Co-investor and capacity builder for Regenerative Agriculture projects in Uganda;</li> </ul>	<ul style="list-style-type: none"> <li>None</li> <li>Consulting Fee</li> </ul>	<ul style="list-style-type: none"> <li>Increase experience on business with smallholders and cooperatives.</li> <li>Bring into practice the results of research</li> </ul>
 Input providers	<ul style="list-style-type: none"> <li>Value Chain Players</li> </ul>	<ul style="list-style-type: none"> <li>Manufacture, sell and source agro-inputs, equipment and produce in order to improve farmer productivity and income.</li> </ul>	<ul style="list-style-type: none"> <li>Margin on product sales</li> </ul>	<ul style="list-style-type: none"> <li>Increased sales volumes</li> <li>Increase experience on business with smallholders.</li> </ul>



## Farmers are segmented based on agricultural practices adopted and region

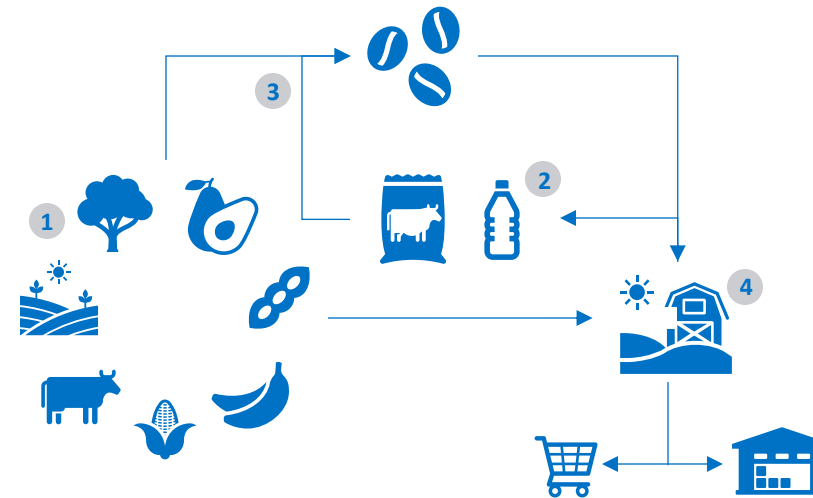
	 Segment 1	 Segment 4	 Segment 2	 Segment 5	 Segment 3	 Segment 6
<b>Description:</b>	<ul style="list-style-type: none"> <li>Farmer is not part of SDM</li> <li>Farmer is not practicing RA</li> </ul>		<ul style="list-style-type: none"> <li>Farmer is part of SDM</li> <li>Farmer is not practicing RA</li> </ul>		<ul style="list-style-type: none"> <li>Farmer is part of SDM</li> <li>Farmer is practicing RA</li> </ul>	
<b>Location:</b>	Western	Central	Western	Central	Western	Central
<b>Farm characteristics:</b>	<ul style="list-style-type: none"> <li>Coffee: 0.25 acre</li> <li>Other crops: 0.75 acre</li> <li>Coffee tree density: 660 trees/acre</li> </ul>					
<b>Coffee yield:</b>	Year 1: 1Kg/tree/year Year 10: 1.5Kgs/tree/year	Year 1: 2.5Kgs/tree/year Year 10: 3.0Kgs/tree/year	Year 1: 2.0kgs/tree/year Year 10: 3.0Kgs/tree/year	Year 1: 3.5Kgs/tree/year Year 10: 4.5Kgs/tree/year	Year 1: 2.0Kgs/tree/year Year 10: 5.0Kgs/tree/year	Year 1: 3.5Kgs/tree/year Year 10: 6.5Kgs/tree/year
<b>Cherry : green bean ratio:</b>	Year 1: 7.0Kgs : 1Kg Year 10: 7.0Kgs : 1Kg	Year 1: 7.0Kgs : 1Kg Year 10: 6.5Kgs : 1Kg	Year 1: 6.5Kgs : 1Kg Year 10: 6.5Kgs : 1Kg	Year 1: 6.0Kgs : 1Kg Year 10: 6.0Kgs : 1Kg	Year 1: 6.0Kgs : 1Kg Year 10: 6.0Kgs : 1Kg	Year 1: 6.0Kgs : 1Kg Year 10: 5.5Kgs : 1Kg
<b>Price (cherry):</b>	\$ 0.xx/Kg	\$ 0.xx/Kg	\$ 0.xx/Kg	\$ 0.xx/Kg	\$ 0.xx/Kg	\$ 0.xx/Kg
<b>Diversified portfolio:</b>	     			     		
<b>Service package:</b>	Business-As-Usual		SDM		Blended services	

# SMS is looking to support 5,000 smallholder farmers with blended service provision with the purpose of supporting regenerative agriculture practices at farm-level to restore soil health and provide additional income sources for the household



**Current farmer practices (Segment 1 – 4 farmers)**

1. Diversified produce from beans, banana and maize are mainly used for household consumption.
2. Residual of the diversified crops is used as mulch, is mixed with manure to produce organic compost to stimulate coffee trees' production.
3. Crop protection is used. Additionally, Beans are used as cover crops to reduce the growth of weeds.
4. Most of coffee and diversified produce is sold at local markets and to aggregators or used for household consumption.
5. Limited to no return of energy to the soil or to protect, feed, and fertilize farmer activities (coffee and diversified crop).



**Regenerative farmer practices (Segment 5 and 6 farmers)**

1. Additionally, farmers diversify their activities with the cultivation of avocado and macadamia trees. Cows are reared for milk and onward-sales.
2. Farmers use manure (from cows and bought) and opt for manual weeding in place of using herbicides. Soil nutrients added is based on a soil analysis to inform right use.
3. Avocado and Macadamia are used as shade trees, cultivated in boundaries between acres or amongst the coffee trees to reduce the spread of diseases.
4. Produce from diversified activities is used for household consumption, to diversify income, to dampen cash flow volatility, and to increase income resilience against e.g., climate extremes.

**Legend**

- (Un) performed
- Coffee
- Banana
- Beans
- Maize
- Grasses
- Avocado / Macadamia
- EM2
- Fertilizer and Agrochemicals
- Cows (milk)
- Farm
- (Local) market
- Off taker

Sources: IDH IKF EA coffee Programme 2021, IDH Coffee income diversification Study Kenya 2020

## While SMS is an established marketing agent in the Kenyan coffee value chain, the fierce competition and volatile coffee prices will require them to continue to invest in their smallholder farmers and quality personnel

	Helpful	Harmful
Internal	<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>SMS is part of a larger business ecosystem, ECOM Limited, a leading global commodity merchant and sustainable supply chain management company.</li> <li>SMS has a team of skilled agronomists and field staff having extensive experience in coffee sector</li> <li>Over the years SMS has developed and continue to maintain a close relationship with the FCS management and coffee farmers across the country</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>Low control on FCS loyalty as contracts with FCS need to be renewed annually</li> <li>The role of coffee marketing agent is highly regulated in Kenya resulting in a narrow profit margins for SMS</li> <li>Fierce competition can cause a barrier for SMS to further increase or maintain the number of farmers</li> </ul>
External	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>Demand for organic, certified coffee is increasing globally</li> <li>Helping farmers to adopt regenerative agriculture practices will lead to a) higher coffee productivity and sustainability b) higher farm income and resilience from crop diversification</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>High level of competition in the Kenyan coffee market that increases the risk of losing market share</li> <li>Reducing area of established coffee acreage due to clearing of plantations for meeting the demands of urbanization. The challenge is widely prevalent in central Kenya</li> <li>Volatile global coffee prices</li> <li>An increase in adverse weather events due to climate change is increasing crop losses and negatively impacting farmer incomes</li> </ul>

# SMS has made notable steps in ensuring female participation in the coffee value chains. Further progress can be achieved by developing the gender strategy further and implementing measurable gender targets

## Where is SMS on its gender journey?



### Current situation<sup>1</sup>

- **SMS has adopted policies that make the workplace inclusive for both men and women.** Internal policies covering gender related issues are documented and disseminated to employees. Employees are required to sign the code of ethics after every two years.
- **At least 80% of SMS staff are trained on gender related issues.** Gender training is mandatory for all field staff.
- **SMS adopted a gender action learning system (GALS) in 2016** with a view to empower men, women and youth at household level.
- Of the 5 FCS SMS is working with in the SDM, **two FCS have women only groups.**
- **SMS conducts women only trainings** to ensure more women are available to attend. Such trainings are organised in consultation with the all farmers and their spouses.
- **SMS sensitizes and encourages management of FCS on the importance of having women on the board.**

### Best practices to implement in becoming transformative

- **Regular review and update of disciplinary procedures and implementation of an organisation wide training on violence or sexual harassment in the workplace.**
- **Develop the gender strategy further to outline the underlying activities that can be budget for** e.g., capacity and skill enhancement for employees or facilitating input access for female farmers.
- Use **sex disaggregated data collected to inform service delivery to farmers** e.g., track sex disaggregated farm level metrics such as yield and income to understand gaps and need for services and skills.
- **Support women's positioning in high-value roles** by identifying barriers to women participation in high value roles (e.g., FCS leadership) including gender norms and stereotypes around leadership and unpaid care and domestic work.

### Potential KPIs to monitor on the gender journey

- Number of women benefitting from improved working conditions
- Number of women with access to and control over income
- Increase in number of coffee bushes under female management
- Increase in income for women
- Increase in the number of women accessing services
- Increase in women working as promoter farmers
- Number of women with access to and control of income




Sources: <sup>1</sup>Gender module responses from SMS

## Coffee farmers are most food insecure between Jan and July as during these dry months food crop production is limited. There exists an opportunity to support more farmers with seedlings for other crops

Risks and opportunities		Measures taken by SMS	
Current situation	Food security risks and opportunities	Current measures and policies in place	Challenges and room for improvement
<p><b>Food security</b></p> <ul style="list-style-type: none"> <li>• <b>Prevalence of undernourished people in the total population (2019-2021): 26.9%<sup>1</sup>.</b></li> <li>• <b>Prevalence of moderate or severe food insecurity in the total population (2019-2021): 69.5%<sup>1</sup>.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Farmers are most food insecure for about 5 months mainly between Jan - Aug. These are dry months and thus difficult to grow food crops.</li> <li>• The main challenge is not production of the food crops but rather the post harvest handling which results in loss of production.</li> <li>• Average farmland size of 0.75 acres per household constraining farmers to grow food crops in sufficient quantities</li> <li>• There is low awareness among farm households about importance of nutrition and diet on household health and wellbeing. Farmers would rather buy meat than consume beans for protein</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers grow beans, banana and maize for their own consumption, while any excess produce sold in local market</li> <li>• On livestock farmers are encouraged to keep dairy cows</li> <li>• Farmers receive trainings in family nutrition and climate resilient crops</li> </ul>	<ul style="list-style-type: none"> <li>• Average farmland size of 0.75 acres per household constrains farmers to grow sufficient quantities of food crops. Cohesive crop diversification and mixed farming strategies can maximize crop yields</li> <li>• If coffee yield or coffee price are lower in a particular season, farm households are forced to sell a larger share of their food crops production to meet the income shortfall. Having insurance for coffee crop and encouraging other cash crops such as macadamia and avocado will reduce the need to sell food crops</li> <li>• Seasonal distribution of cropping calendar of various crops will reduce production risk due to any single weather-related occurrence</li> </ul>
<p><b>Assets</b></p> <ul style="list-style-type: none"> <li>• <b>Average farm size<sup>2</sup>: 0.75 acre</b></li> <li>• <b>Of which food crops<sup>2</sup>: 33%</b></li> <li>• <b>Land ownership<sup>2</sup>: Farmers own land</b></li> </ul>			
<p><b>Health &amp; Sanitation</b></p> <ul style="list-style-type: none"> <li>• <b>The prevalence of stunting among children under five years age<sup>1</sup>: 19.4%</b></li> <li>• <b>National average dietary energy supply adequacy<sup>1</sup>: 99%</b></li> <li>• <b>Access to clean water<sup>1</sup>: Yes. At least 61.6% of Kenyans have access to basic drinking water services.</b></li> <li>• <b>Access to sanitation<sup>1</sup>: 32.7% of Kenyans have access to basic sanitation services</b></li> </ul>			

Sources: <sup>1</sup>FAO, <sup>2</sup>SDM data collected from SMS

## Coffee farmers are affected by increasing temperatures and changed rainfall patterns impacting yield. SMS has the opportunity to support farmers with regenerative agriculture practices which can be profitable both on farm and SM level

Climate risks exposure and impact		Measures taken by SMS		
Risk exposure		Farmer resilience and impact		
Adaptation measures and policies in place		Challenges and room for improvement		
 <p><b>Temperatures</b> (change in) short- and long-term averages</p>	<p><b>Medium</b></p> <ul style="list-style-type: none"> <li>Kenya has experienced increasing temperature over the last 50 years. Future climatic predictions for Kenya indicate possible annual temperature increase of 2.3°C by 2050<sup>1,5</sup>.</li> </ul>	<p><b>Farmer resilience</b></p> <ul style="list-style-type: none"> <li>Farmers are learning to adopt climate change mitigation practices such as mulching, growing shade trees and planting resilient variety of coffee plants.</li> <li>Farmers have diversified sources of income from dairy and bananas and are further diversifying their crops by planting macadamia and avocado.</li> </ul> <p><b>Impact</b></p> <ul style="list-style-type: none"> <li>Coffee farmers are highly susceptible for erratic rainfalls, increase in temperate and higher incidence of pests. Coffee yields may decline without climate change adaptation strategies. Farmers in lower altitude regions are acutely affected.</li> </ul>	<p><b>Adaptation measures and policies in place</b></p> <p><b>Strategy, measures and policies</b></p> <ul style="list-style-type: none"> <li>SMS aims to improve coffee yield and farmer profitability through soil regeneration and enhancement, support to biodiversity and protection of crops through agroforestry and right use of quality inputs</li> </ul> <p><b>Intelligence</b></p> <ul style="list-style-type: none"> <li>Collect soil health data</li> </ul> <p><b>Farm services</b></p> <ul style="list-style-type: none"> <li>Regenerative agriculture practices</li> <li>Agroforestry</li> <li>GAP</li> <li>Crop diversification training</li> <li>Access to timely high quality inputs</li> </ul>	<p><b>Challenges and room for improvement</b></p> <ul style="list-style-type: none"> <li>Limited resources for investing in climate adaptation practices</li> <li>Farmers are risk-averse to invest in diverse crops.</li> <li>Developing alternate value chains for diversified crops in parallel to coffee which is attractive</li> </ul>
 <p><b>Precipitation</b> (change in) timeliness and availability</p>	<p><b>High</b></p> <ul style="list-style-type: none"> <li>Kenya is experiencing changes in the distribution, onset and cessation of rainfall seasons thus making it increasingly difficult to plan agricultural operations<sup>1,3,4</sup>.</li> </ul>			
 <p><b>Climate extremes</b> (change in) likelihood and severity of hail, floods, locusts, etc.</p>	<p><b>Medium</b></p> <ul style="list-style-type: none"> <li>Increased incidence of dry spells/droughts and increased heat wave duration<sup>2</sup>.</li> </ul>			

Sources: <sup>1</sup>Kenya Agriculture Climate Smart Agriculture Implementation Framework (2018 – 2027), <sup>2</sup><https://www.climatelinks.org/countries/kenya>, <sup>3</sup>Databasin.org, <sup>4</sup>WRI Water risk Atlas (2019), <sup>5</sup>Geofolio

## Embracing technology to monitor climatic changes, in coffee production and processing and integration of agroforestry as an additional source of income have potential to revive the coffee sub-sector

Definition	Situation	Impact on SDM
<b>Technology</b> <i>Technology availability, research &amp; development, delivery and adoption</i>	Adoption of technology, particularly at SHF level, is not widespread. Wet processing at cooperative level is dominated by traditional disc pulpers while small estates mainly use hand pulpers that are inefficient and not environment friendly <sup>1</sup> .	Conditions under which coffee cherries and mbuni are processed affects not only the financial and environmental costs but also the cup quality which eventually affects the net payout to the coffee producers <sup>2</sup> .
<b>Environment</b> <i>Climate change, possibility of extreme weather, soil type, water supply and quality, pests and diseases. Potential environmental damages such as deforestation</i>	Climate changes have altered the distribution and incidences of pests and diseases and the quantity of water available for irrigation and processing. Farmers are also faced with uncertainty in predicting timing of various coffee development cycles <sup>1</sup> . Disposal of effluents and off gases coffee processing driven mainly by use of traditional pulpers remains of concern <sup>1</sup> .	Climate related changes have resulted in significant reduction in coffee production and productivity <sup>1</sup> . Consequently, farmer livelihoods are potentially affected as this reduces the income they earn. Continued environmental pollution particularly where eco-pulpers and other modern technology is not adopted <sup>2</sup> .
<b>Infrastructure</b> <i>Existence and state of roads, water and electricity networks as well as proximity to main trading / processing hubs (e.g., access to market)</i>	Generally, coffee growing areas have good roads which has eased the transportation of coffee to the factories and buying centers. This has further helped in the marketing of the processed berries <sup>3</sup> .	Quality of coffee cherries is maintained as farmers can deliver their harvest in time to the FCS.
<b>Labor</b> <i>Cultural norms that restrict/promote people of certain ages, genders or social groups from farm labor. Availability and cost of labor</i>	The coffee sector is one of the major employers in Kenya as it is labor intensive. The dense population in the growing areas provides adequate labour <sup>3</sup> .	None.
<b>Inputs &amp; Financing</b> <i>Availability of affordable, quality inputs and the necessary marketing and distribution mechanisms. Availability of credit. Enabling regulatory environment</i>	Farmers have limited access to loans due to their lack of credit history and high-risk profiles. Quality input are scarce and highly priced while delivery of inputs to farmers is not always timely. Further, the market is flooded with counterfeit products.	Inadequate access and application of farm inputs affects farm productivity. SMS supplies cooperatives with high quality inputs which farmers can access. Further, SMS conducts soil tests to ensure farmers apply the right inputs.

<sup>1</sup>Sauti ya Kahawa Strategic Plan 2018 – 2022, <sup>2</sup>Sauti ya Kahawa – Study on cost of coffee processing in Kenya, <sup>3</sup>Kahawa Safi,






## Following promulgation of a new constitution, legal reforms within the agricultural sector have been under implementation. There is need for a coordinated legal approach between the national and county governments in administration of the coffee sub-sector

Definition	Situation	Impact on SDM
<p><b>Trading System</b> <i>Organization of the system through which crops are traded from farmer to market, including the number and type of actors involved</i></p>	<p>83% of the coffee in Kenya is sold through the auction. The auction structure ensures maximum transparency in the supply chain. The coffee value chain is heavily regulated by the government, whereby farmers retain legal ownership of the coffee until it is sold and paid for., cooperatives aggregate the coffee, and marketing agents market the coffee to direct buyers or at the auction.</p>	<p>SMS as marketing agent can legally only play a limited role in the value chain and is not able to directly work with the farmers. This reduces their direct control on quality and quantity, on the other hand working with the cooperatives assures them of set sourced quantities.</p>
<p><b>Pricing &amp; Competition</b> <i>Market dynamics of the main crop of the SDM, including competition between buyers and possible price-setting by the government or other parties</i></p>	<p>The coffee sub-sector is prone to systemic risk and price shocks, occasioned by global supply chains, which has resulted in fluctuation of the farm gate prices of coffee cherry. The sub-sector faces competition in the world market due to flooding occasioned by over production. Locally, competition amongst marketing agents is fierce as they seek to secure their quantities from cooperatives, however this competition does not directly translate into better pricing for farmers.</p>	<p>Owing to price fluctuations, producers and marketers are unable to predict market trends and plan ahead.</p>
<p><b>Institutional Stability</b> <i>Stable political environment, peace and security in farming areas</i></p>	<p>Post the devolution process, management of the coffee sector is a shared function of the county and national government. There lacks clarity on the role of the Coffee Directorate in the sector particularly on licensing millers.</p> <p>At community level, governance of cooperatives remains a challenge. This situation is exacerbated by rife political interference.</p>	
<p><b>Land Tenure</b> <i>Existence of land ownership rights / regulations and their enforcement. Ease of purchasing/ transferring land</i></p>	<p>Land ownership is culturally dominated by men. Women who own farms are largely those who have been widowed<sup>1</sup>.</p>	<p>Limited participation by women in coffee farming. However, SMS remains intentional in including women in the coffee value chain.</p>
<p><b>Social Norms</b> <i>Availability and quality of schooling and healthcare. Cultural factors. Potential social externalities like child labor, gender disparity</i></p>	<p>In Kenya, coffee farming is dominated by ageing farmers with an average of 58 years. Inclusion of women in the value chain is constrained by unequal land rights and exclusion in decision making amongst others<sup>2</sup>.</p>	<p>Lower farmer productivity from aged farmers.</p>

Sources: <sup>1</sup>[International Coffee Organization](#), <sup>2</sup>[Sauti ya Kahawa Strategic Plan 2018 – 2022](#),



Throughout the report, you can click the corresponding icons on the right of each page to be taken to the first page of that chapter

	1. Executive Summary
	2. The SDM
	3. Business case for SMS and FCS
	4. Farmer impact case
	5. Annex



Summary

The SDM

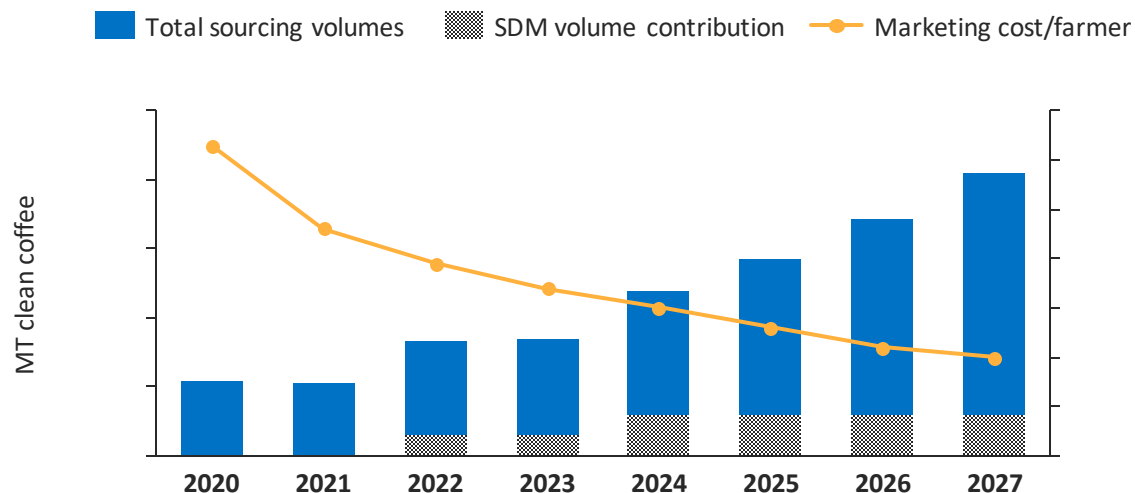
Business case

Impact case

Annex

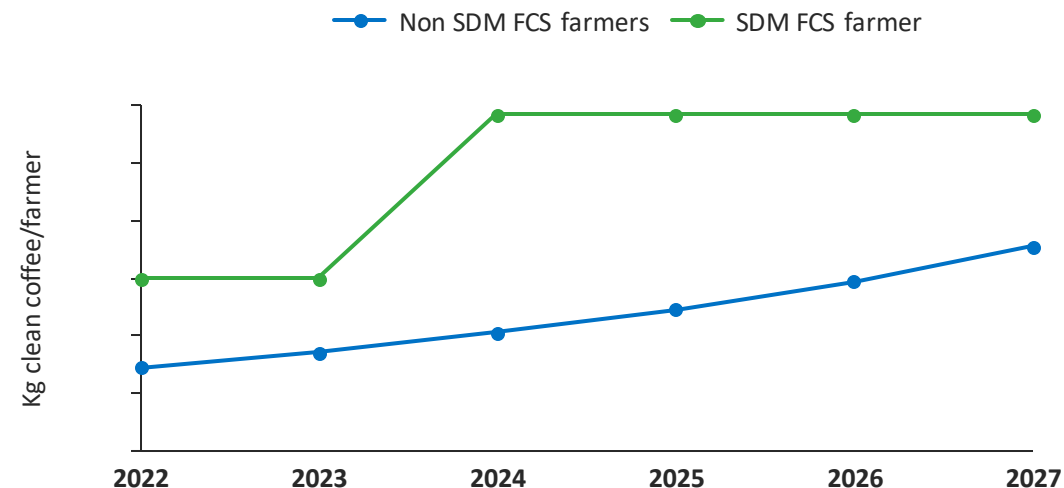
## By focusing their efforts on providing an extensive service package, SMS can benefit from sourcing efficiencies thus reducing costs

Marketing volumes (MT clean coffee) and cost (\$/MT) (2020 – 2027)



- Volumes of clean coffee marketed is the key driver of SMS' business growth. The aim is to increase this by 20% annually.
- Assuming the five FCS onboarded into the SDM remain with SMS, they could potentially contribute 14% of the 2027 marketing volume target.
- All things constant, SMS would need to work with 36 SDM FCS to meet the 2027 sourcing target, a reduction from the 50 FCS they currently project to work with.
- Marketing cost/farmer declines due to efficiency gains where the growth in marketing volumes increases faster than the cost base. Marketing costs include salaries, warrants, registration of marketing agreements, licensing fees and subscriptions.

Marketing volumes (Kg)/farmer (2022\* – 2027)

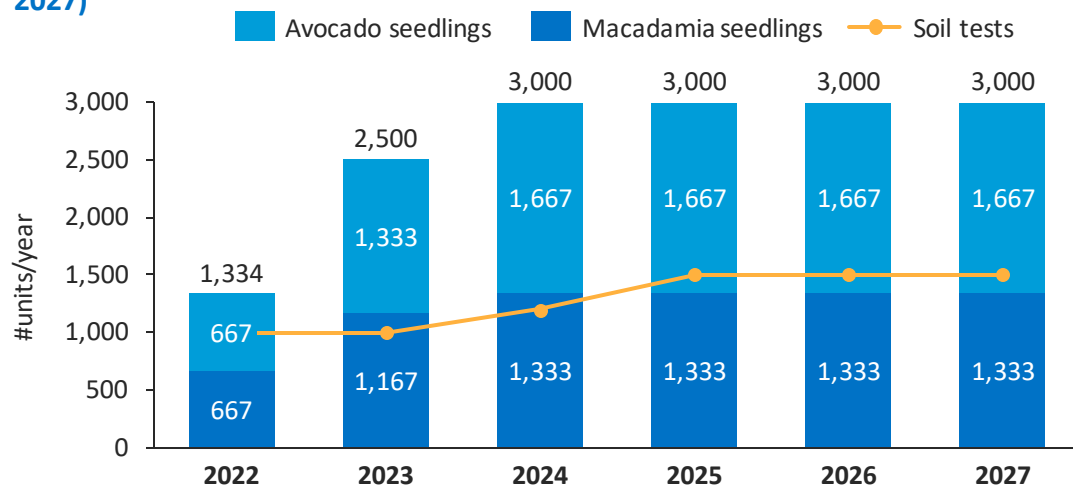


- Onboarding more FCS into the SDM allows SMS to increase their sourcing efficiency as they can secure up to 1.7 more from the SDM FCS farmer than from the non-SDM FCS farmer.
- Farmers are assumed to attain their maximum obtainable yield in the second year of the SDM thus the sudden increase in marketing volumes between 2023 and 2024.
- Increasing per acre farmer yield, particularly in the face of reducing coffee acreage due to competition from other crops, remains critical to ensuring SMS can secure the projected marketing volumes.

\*Assumes 2022 is the first year of the SDM

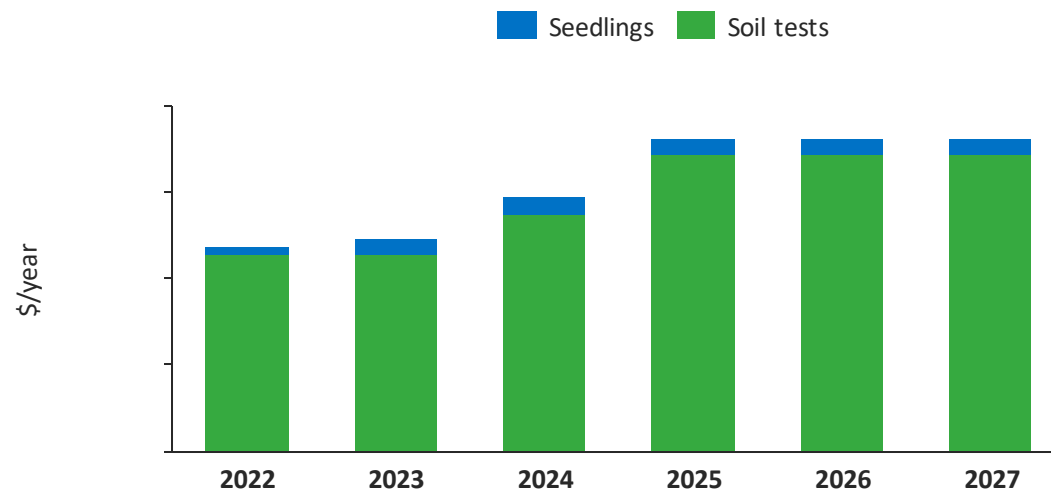
## Farmer adoption of regenerative agriculture not only boosts the quantity and quality of coffee available to SMS for marketing but also generates additional income for the business through sale of inputs

Macadamia & Avocado seedlings supplied, and soil tests conducted (2022 – 2027)



- Farmers will be encouraged to incorporate avocado and macadamia trees on their farms to shade the coffee bushes and diversify farm income. Each farmer will receive five macadamia and five avocado trees on their plot. Based on this, the total seedling demand for the SDM is 50,000 (25K avocado & 25K macadamia).
- Between 2022 and 2027 SMS projects to supply 34K seedlings fulfilling 70% of the total requirement.
- Soil tests will be conducted to inform right input use. SMS intends to conduct 1,500 tests/year by 2027. SMS FOs will be responsible for conducting the soil tests.

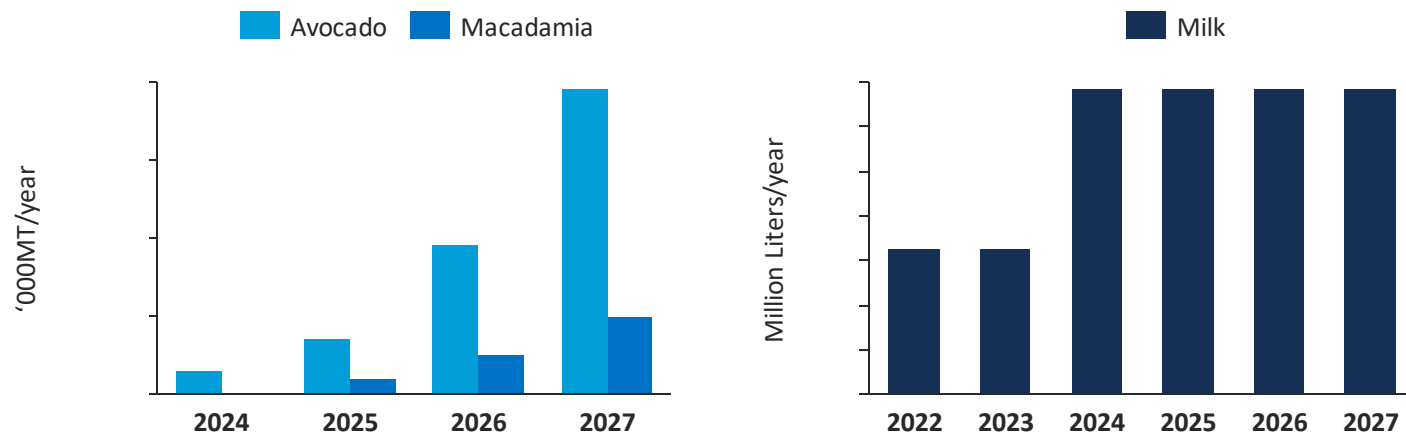
Gross income from supply of seedlings and soil tests (2022 – 2027)



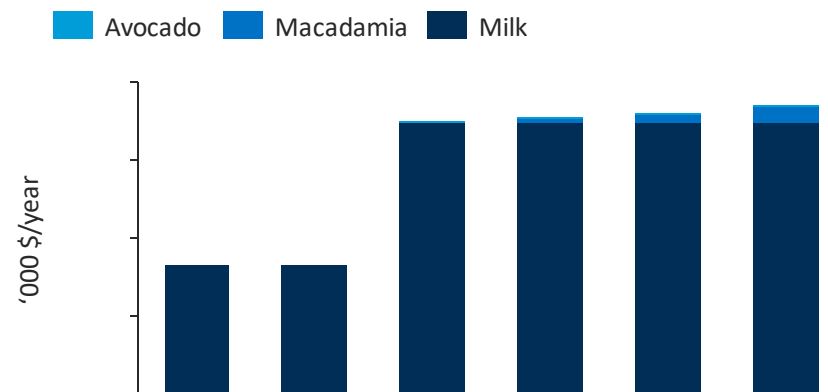
- .
- Gross revenue from soil testing does not include the cost to purchase the soil testing equipment.
- There is headroom to increase the projected gross income from sale of seedlings and soil testing by ramping up sales to meet demand from the 5,000 SDM farmers. However, decision to scale up the services should be reviewed against additional resources (e.g., manpower, equipment, storage) required.

## Participating in the aggregation and marketing of the diversifying crops and Dairy could increase business incomes even further

Quantity of macadamia, avocado and milk aggregated ('000MT/year and Million liters/year)



Potential revenue\* from marketing diversifying crops



- SMS aims to work with 5,000 farmers in the SDM (regenerative agriculture) project.
- **Dairy:** Farmers will be encouraged to maintain at least two dairy Dairy from which they can produce milk for sale and organic manure for use on the farm. With two heads of dairy Dairy, a farmer can produce 14,400 litres and sell 13,680 litres annually.
- Aggregation of milk at FCS level will require investment in a milk cooler. Such investments would be undertaken by the FCS. In return, the FCS would make a margin from the milk aggregation.
- **Macadamia:** With five trees on the farm, farmers are expected to produce 350Kgs annually all of which would be sold through the FCS. Farmers are expected to make their first harvest in the fourth year after planting new trees.

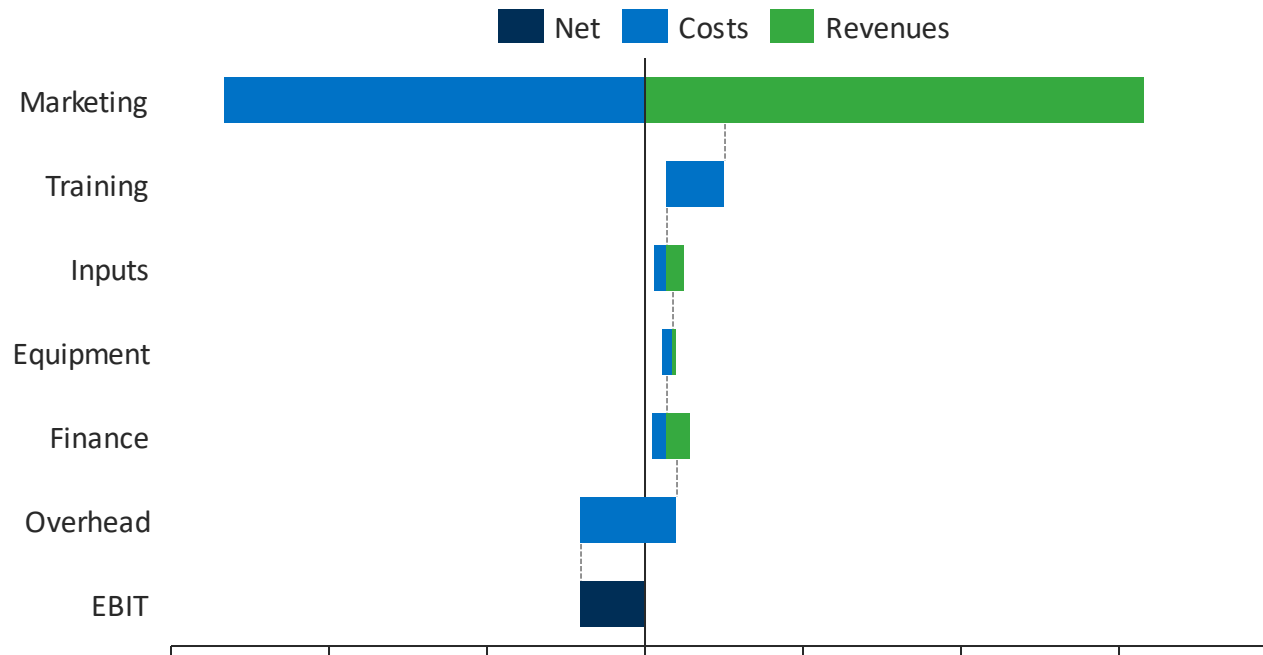
- **Avocado:** SMS will encourage farmers to plant high yield export quality hass avocados. As the fruit is highly perishable, availability of timely logistical infrastructure is crucial to limit post-harvest losses.
- With five trees on the farm, farmers are expected to produce 1MT annually. 24Kgs of this would be for own consumption and the balance sold through the FCS. Farmers are expected to make their first harvest in the third year after planting new trees.
- SMS intends to encourage aggregation of milk, avocado and macadamia at FCS level then providing the market linkage with the appropriate offtaker. Assuming SMS can earn a minimal margin of x% of the total value of produce aggregated, SMS could earn an additional \$xxx by the fifth year.

\*Assumes SMS earns 2% of the total value aggregated based on the farm gate price. Farmer loyalty estimated at 50%

## Overall, service provision is profitable. However, as a stand-alone service, soil testing is not profitable as the revenue generated does not cover salary costs. SMS should consider ramping up the soil tests to maximize their return on investment

### Profit and loss of SMS's services ('000 \$/Year)

Average of revenues and expenses between 2020 – 2027



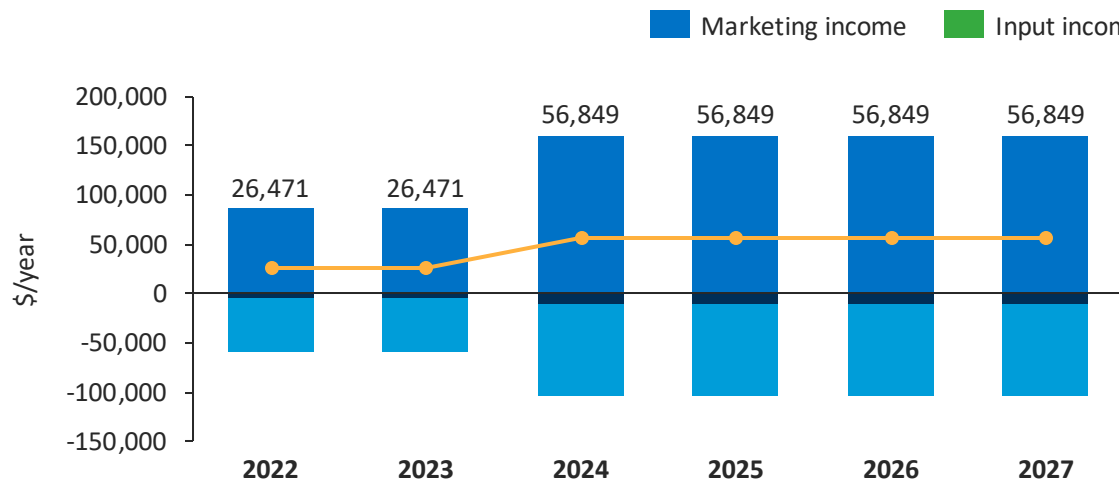
- Coffee marketing fees are regulated by the Kenyan government. This margin is sufficient to cover marketing related costs including salaries, licenses, warrants and registration of marketing contracts.
- Farmers are not required to pay for training services. The benefits from training are however expected to be implicit through better quality and volumes of coffee cherry and other crops produced.
- To ensure timely delivery of the right inputs, SMS intends to supply FCS with farm inputs including avocado and macadamia seedlings, crop protection and fertilizer at a margin.
- SMS intends to purchase and re-sell seedlings to the FCS. SMS doesn't intend to set-up a nursery but rather work to ensure FCS can secure the right seedlings from suppliers.
- Equipment services includes conducting of soil tests. The service is loss making due to the heavy salary burden relating to FOs involved in conducting the tests..

## FCS are segmented based on regions

	Central FCS	Western FCS
<b>Description:</b>	<ul style="list-style-type: none"> <li>Each FCS consists of baseline farmers (10% of membership), SDM farmers (15%) and SDM farmers practicing RA (75%)</li> </ul>	
<b>Membership:</b>	1,200	700
<b>Farmer segments:</b>	Segment 4, Segment 5, Segment 6	Segment 1, Segment 2, Segment 3
<b>% of active members:</b>	100%	100%
<b>Farmer loyalty:</b>	80%	80%

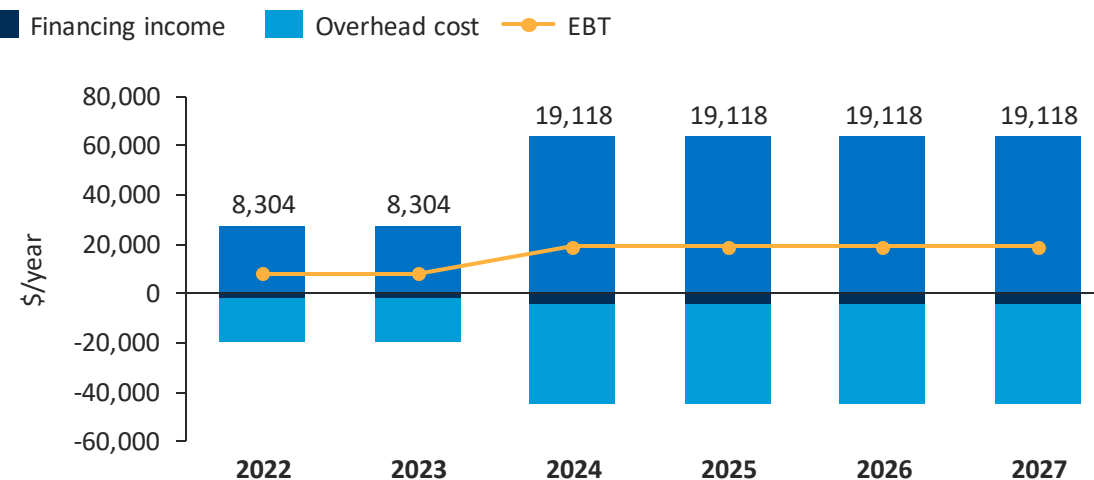
# While both the Central and Western FCS are profitable, performance is driven mainly by the number of farmers, productivity and quality of coffee produced

Profit and loss – Central Kenya FCS (\$/Year) (2020 – 2027)



	2022	2023	2024	2025	2026	2027
<b>EBT margin</b>	25.3%	25.3%	29.1%	29.1%	29.1%	29.1%
<b>EBT/farmer (\$)</b>	22.06	22.06	47.37	47.37	47.37	47.37
<b>EBT/MT sold (\$)</b>	0.32	0.32	0.37	0.37	0.37	0.37
<b>Clean coffee (MT)</b>	82.9	82.9	155.3	155.3	155.3	155.3

Profit and loss – Western Kenya FCS (\$/Year) (2020 – 2027)



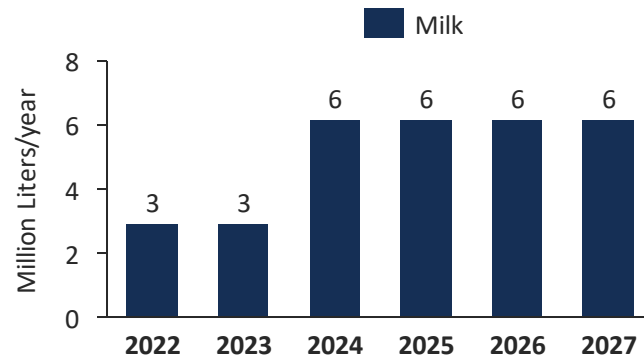
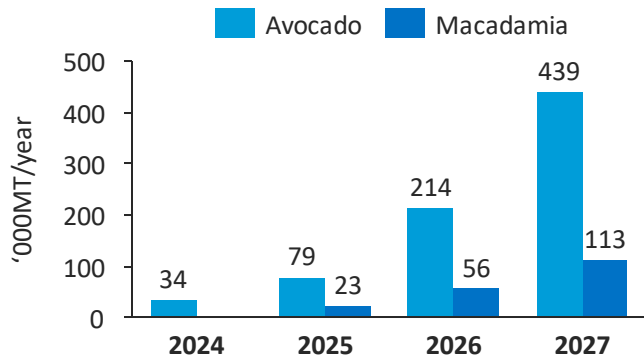
	2022	2023	2024	2025	2026	2027
<b>EBT margin</b>	24.5%	24.5%	24.5%	24.5%	24.5%	24.5%
<b>EBT/farmer (\$)</b>	11.86	11.86	27.31	27.31	27.31	27.31
<b>EBT/MT sold (\$)</b>	0.31	0.31	0.31	0.31	0.31	0.31
<b>Clean coffee (MT)</b>	26.8	26.8	61.7	61.7	61.7	61.7

- Farmers in Central Kenya have higher marketable volumes due to higher yields and better quality coffee cherry resulting from the favourable soils in the region.
- FCS overhead costs are estimated at \$0.12/Kg of cherry. This estimate is in line with the processing costs of a medium cost wet mill as estimated by Sauti ya Kahawa.

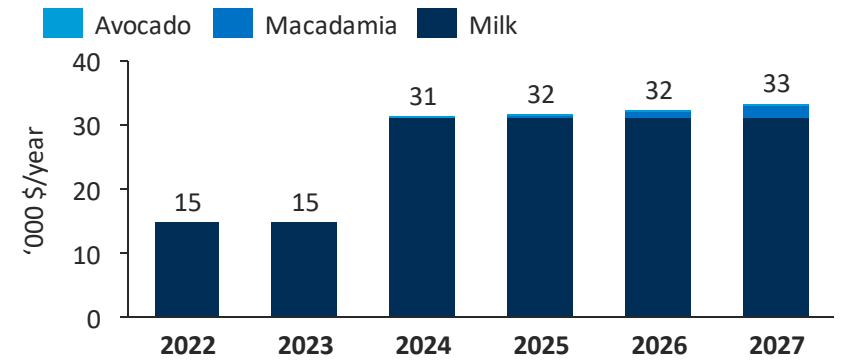
# FCS could increase their income by aggregating other produce from regenerative practices adopted. While per farmer production between the two FCS is the same, quantities aggregated vary with the FCS size

## CENTRAL FCS

Quantity of macadamia, avocado and milk aggregated ('000MT/year and Million liters/year)

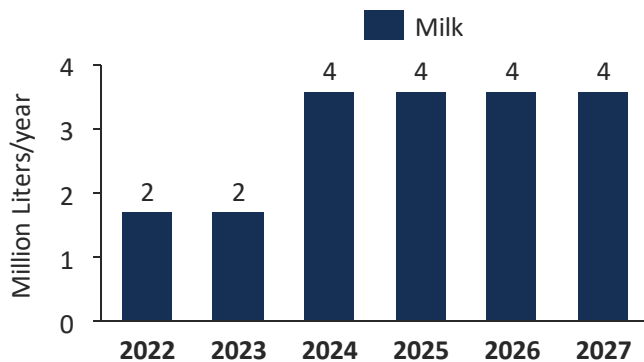
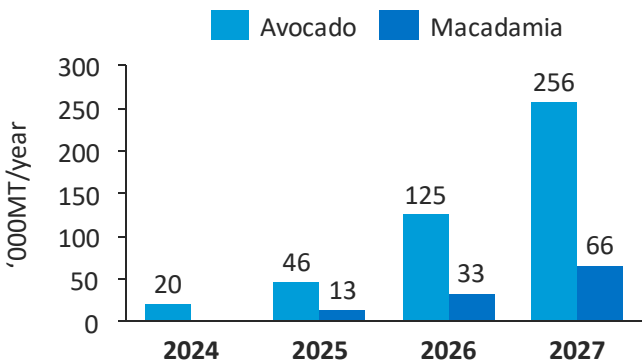


Potential revenue\* from marketing diversifying crops

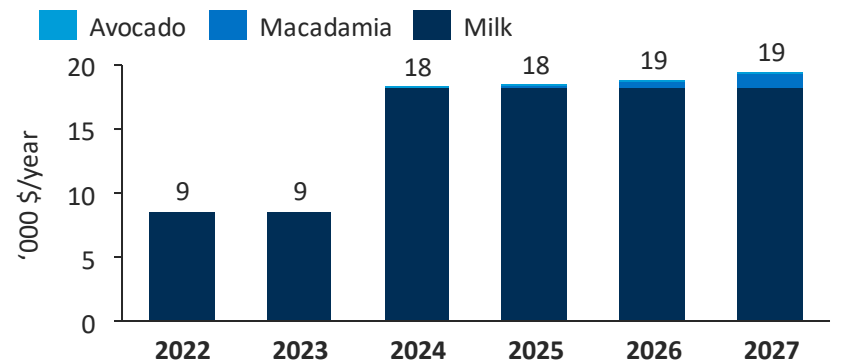


## WESTERN FCS

Quantity of macadamia, avocado and milk aggregated ('000MT/year and Million liters/year)








Potential revenue\* from marketing diversifying crops



\*Assumes FCS earns 2% of the total value aggregated based on the farm gate price. Farmer loyalty estimated at 50%



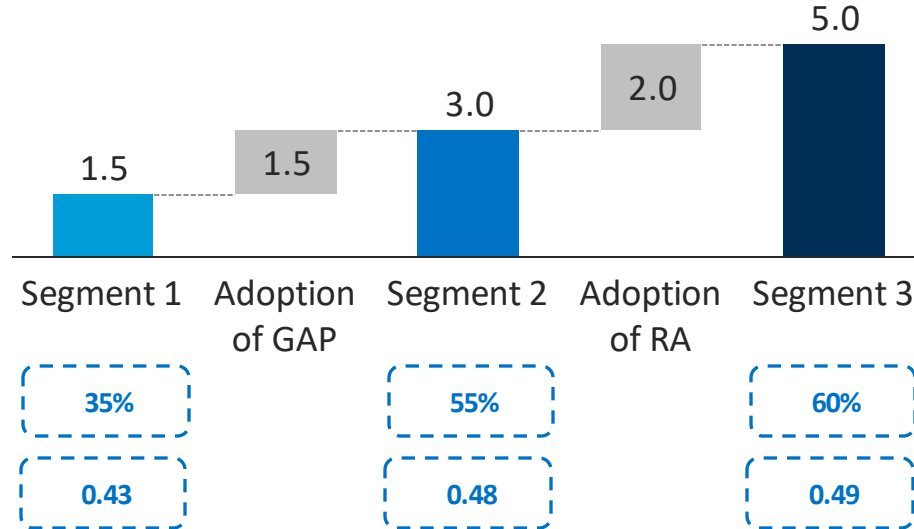
Throughout the report, you can click the corresponding icons on the right of each page to be taken to the first page of that chapter

	1. Executive Summary
	2. The SDM
	3. Business case for SMS and FCS
	4. Farmer impact case
	5. Annex

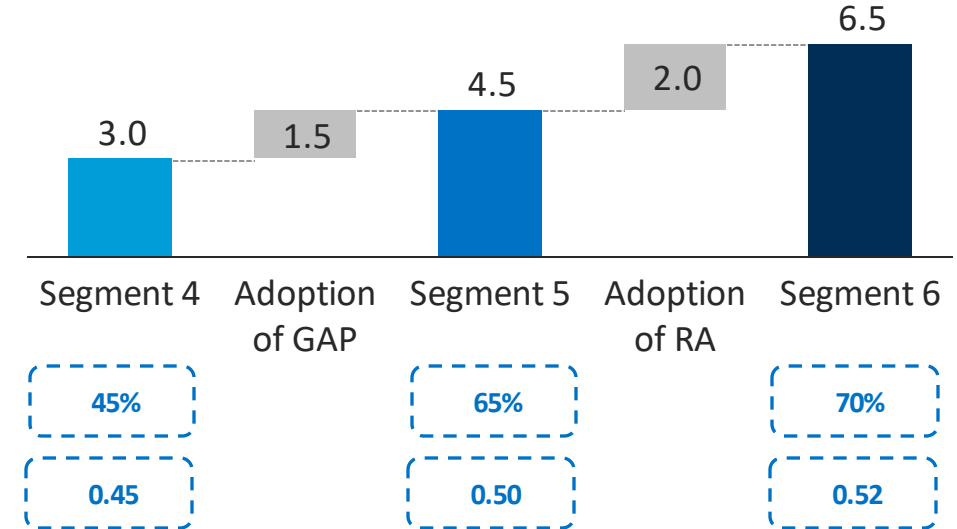


## Western and Central Kenya farmers can increase their yields up to 233% and 117% respectively, as a result of the service package offered by SMS and as they adopt RA practices

Western Kenya Farmer: Coffee yield increase – Kg cherry/tree



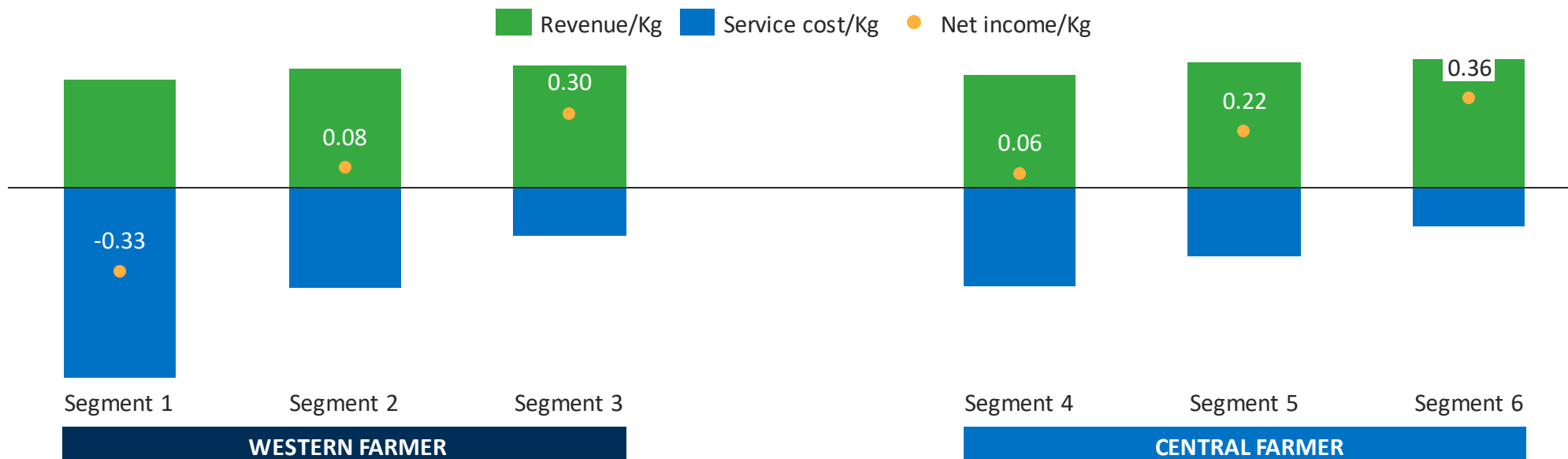
Central Kenya Farmer: Coffee yield increase – Kg cherry/tree



- The service package offered by SMS includes farmer training on GAP and RA, soil testing to ensure right input use, pre-financing of input to ensure farmers can access the right inputs at the right time, provision of seedlings for RA crops (macadamia and avocado). These services are offered through the FCS.
- While all farmer segments would typically have the same number of coffee bushes on their farms (600 bushes), yields vary considerably based on adoption of GAP and RA. Segment 1 farmers, who receive no training from SMS and thus adopt minimal GAP are only able to attain a yield of yield of 1.5Kg cherry/tree. This is half the attainable yield of farmers who adopt GAP.
- As a result of RA, farmers are able to increase their yield by 2Kg cheery/tree.
- Farmers in Central Kenya typically have higher yields then farmers in Western Kenya due to the better climate and soils in the region.
- The farm gate price is determined by the quality of coffee produced. Premium quality coffee, which has a higher cherry to green bean conversion, attracts a price of \$0.59/Kg while low quality coffee, which has a lower cherry to green bean conversion attracts a price of \$0.34/Kg. The farm gate price is a weighted average of the quality of coffee produced.

## SDM farmers have higher returns per kg of coffee cherry produced as they benefit from increased performance (yield, quality) and lower input costs from right input use and adoption of RA. This justifies the business case for farmers to participate in the SDM

Coffee farm profitability in Year 10\* - \$ net income/Kg produced

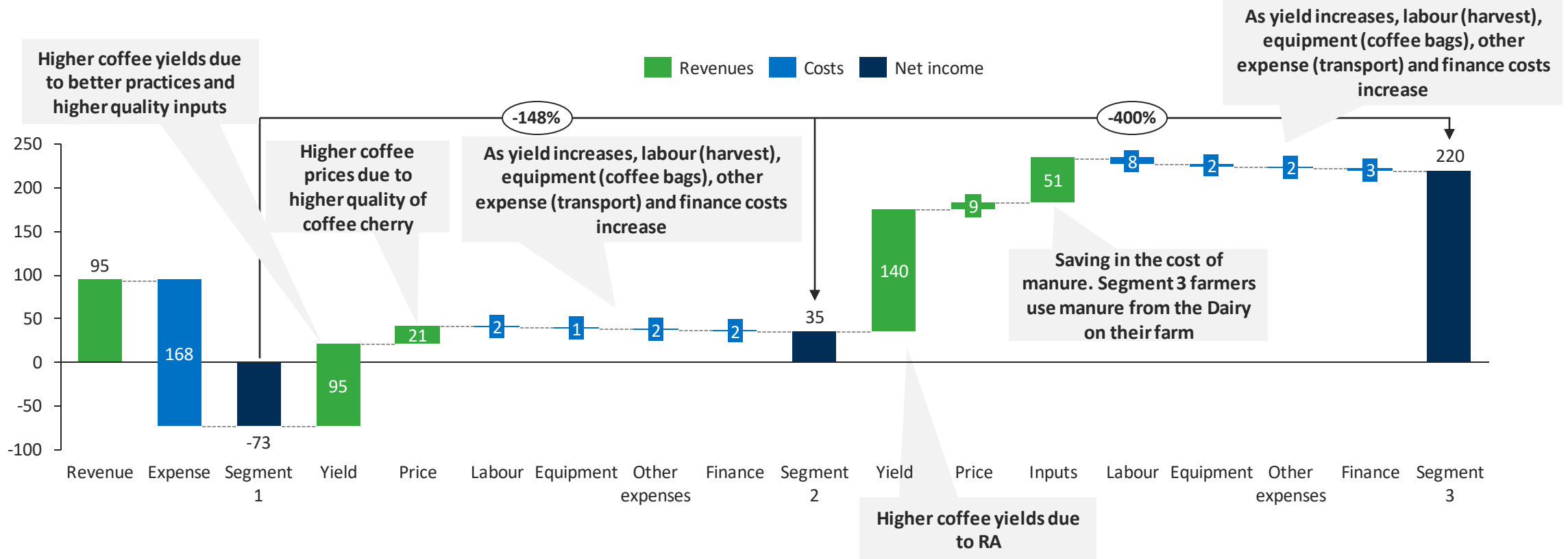


- Segment 1 farmers (non SDM Western Kenya farmer) is loss making as they minimal yields are not sufficient to cover their cost of farm investment.
- Segment 3 and Segment 6 farmers, both of whom practice RA, do not use any insecticide or herbicide on their farms. Instead of using herbicides, the farmers opt to manually weed their farms. Further, they apply manure, half of whose quantity is produced by the Dairy on their farms thus reducing their manure costs.
- Most of the farmers, across all segments, have grafted their coffee bushes with the Ruiru 11 variety, which requires no fungicide application.
- It is assumed that farmers provide 50% of the labour input required in their farms for the crop management and 75% for the harvesting.

\*Farmer is assumed to have been involved in the SDM for the last 10 year period.

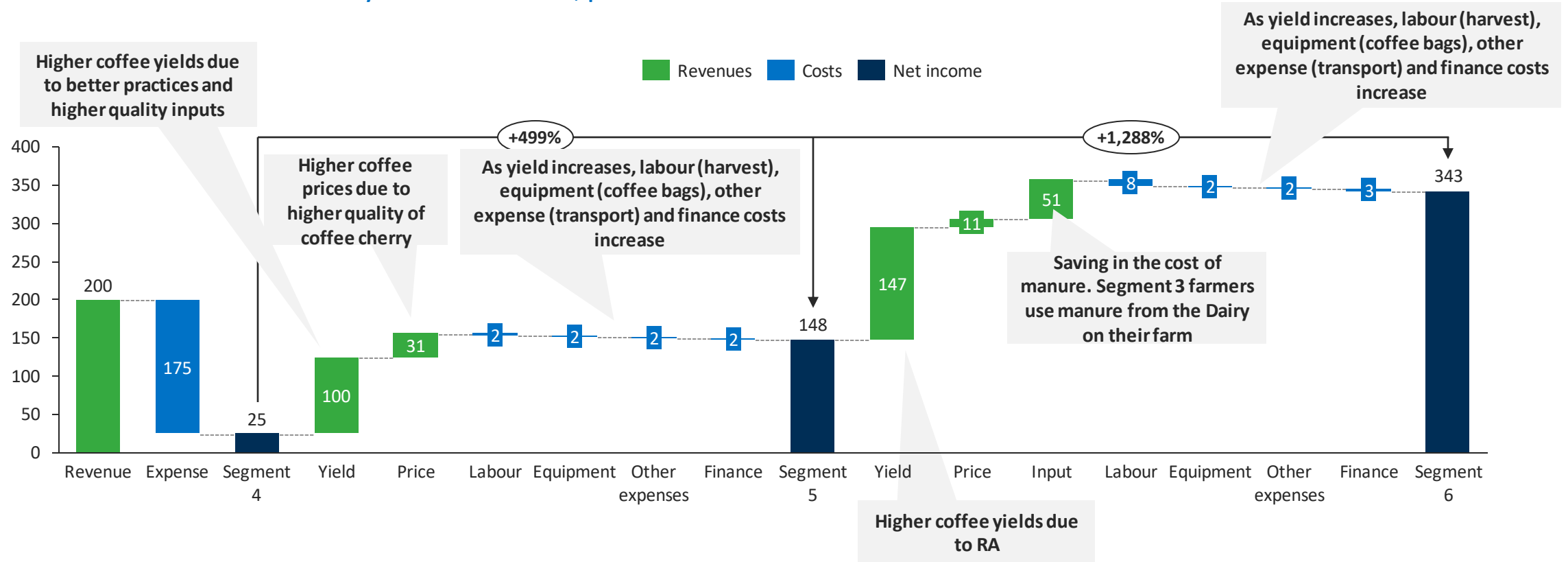
# Comparing net farm income of farmer segments 1, 2 and 3 demonstrates that Segments 2 and 3 can increase their total farm income by 148% and 400% respectively due to access to the SDM service package

Coffee net income drivers for Western Kenya farmers – Year 10 in \$ per farm



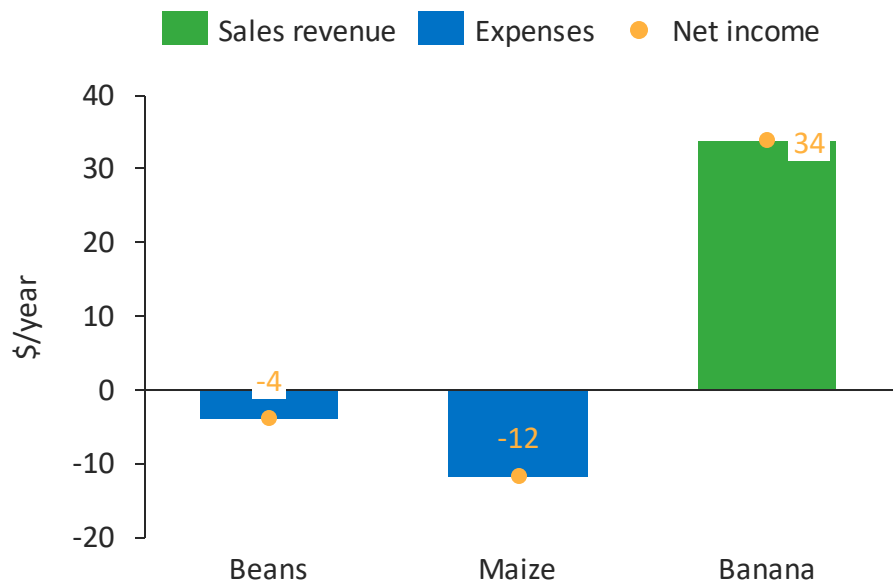
## Comparing net farm income of farmer segments 4, 5 and 6 demonstrates that Segments 5 and 6 can increase their total farm income by 499% and 1,288% respectively due to access to the SDM service package

Coffee net income drivers for Western Kenya farmers – Year 10 in \$ per farm



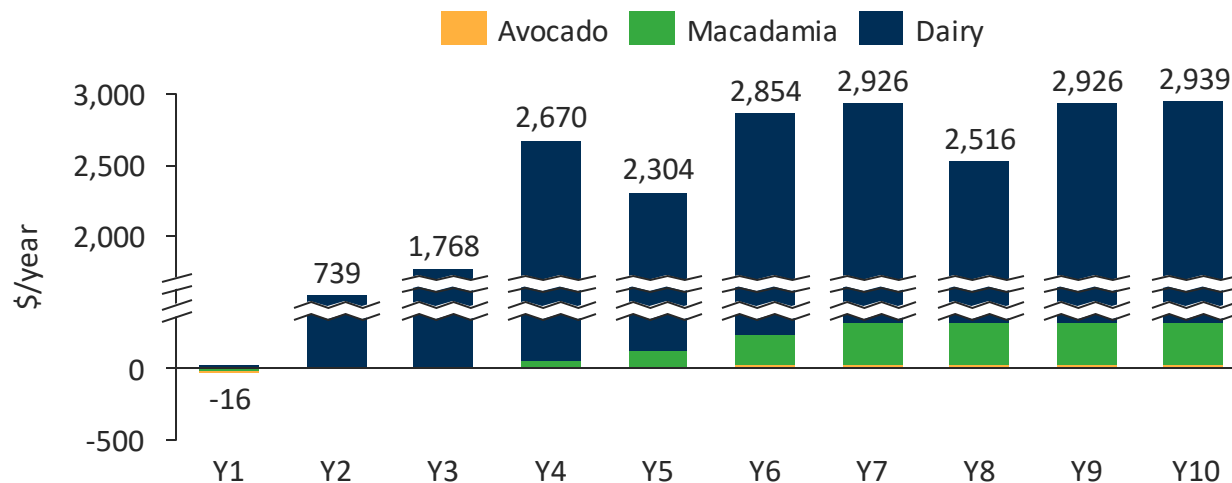
In addition to coffee, farmers typically cultivate a range of crops such as beans, maize and banana. These food crops are mainly produced for household consumption. As part of RA Segment 3 and 6 farmers grow macadamia, avocado and rear livestock in addition to the food crops

Revenue and cost from food crops – \$ per farm



Adopted by all farmers

Revenue and cost from avocado, macadamia and Dairy – \$ per farm/year

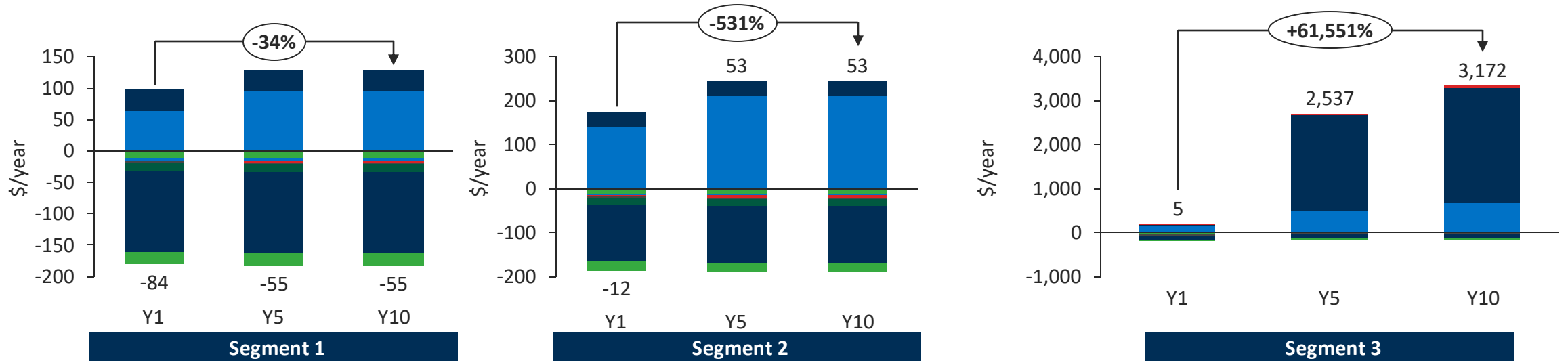


Adopted by Segment 3 and Segment 6 farmers only

- Beans and maize are 100% consumed by the farmer’s household. As such they do not generate any revenue. Farmers sell 80% of their banana production.
- Segment 3 and Segment 6 farmers do not recycle bean seeds when replanting and thus incur an additional input cost of \$4 unlike other farmer segments who recycle seeds.
- There’s minimal income in the first year of the SDM as farmers invest in the Dairy, macadamia and avocado. Avocado and macadamia trees mature after two and three years respectively thus no income is expected in the first year. However, cows are expected to produce milk after a few months of purchase leading to a positive income in year 1.
- Investment in Dairy is capital intensive (\$704 in year 1) and it is likely that farmers would require financial support to make such an investment in the absence of other internal sources of financing.
- In the long run, to sustain and increase the farm income from diversified crops, it is critical for tree crops to yield according to expectation with reliable market access for the produce.

## Adoption of GAP has potential to increase Segment 2 total farm income by 196% (from \$-55 to \$53) by the tenth year, in comparison to a Segment 1 farmer. Adoption of GAP and RA could enable the Segment 3 farmer to increase their total incomes by 5,850% (from \$-55 to \$3,127)

Total farm profitability – \$/year



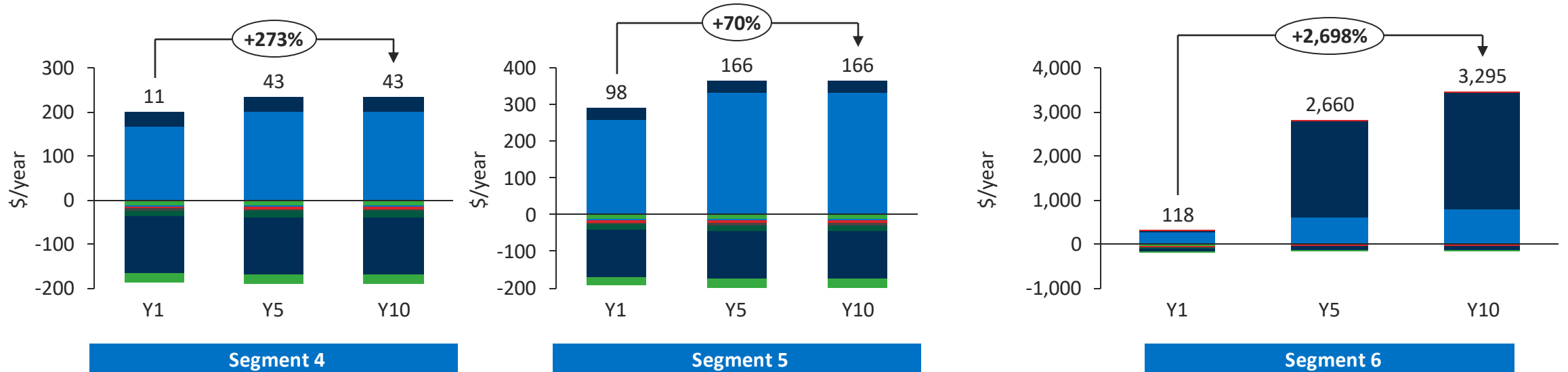
- Adoption of RA practices delivers the highest impact on total farmer incomes. Dairy farming, which accounts for more than 80% annually of the RA incomes, is the key driver for growth in farmer incomes.
- Projected farmer performance is highly dependent on their ability to fully adopt the GAP and availability of financing to invest on their farms.

**Adoption of GAP has potential to increase Segment 5 total farm income by 289% (from \$43 to \$166) by the tenth year, in comparison to a Segment 4 farmer. Adoption of GAP and RA could enable the Segment 6 farmer to increase their total incomes by 7,641% (from \$43 to \$3,295)**

Total farm profitability – \$/year

- Coffee revenue
- Input expense
- Other expenses
- Beans
- Banana
- Labour expense
- Equipment expense
- Finance expense
- Maize

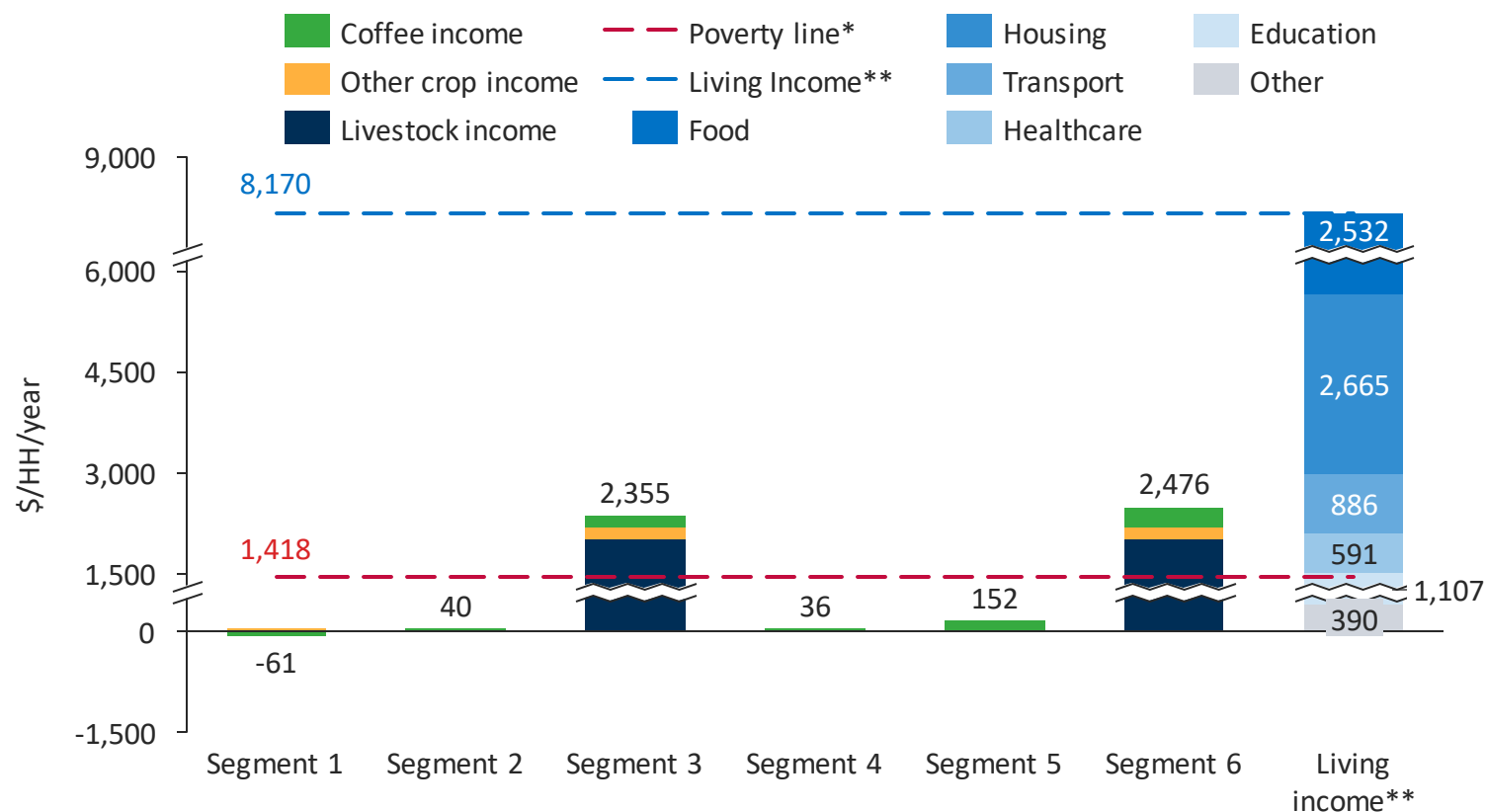
- Coffee revenue
- Dairy
- Labour expense
- Finance expense
- Beans
- Macadamia
- Input expense
- Maize
- Equipment expense
- Avocado
- Banana





# Only farmers who practice RA (Segment 3 and 6) can earn more than the poverty line of \$1,418, although they remain heavily reliant on diversified farm income. None of the farmers can close the gap to a living income of \$8,170

Total farm income, 10-year average, and and gap to living income benchmark, in \$



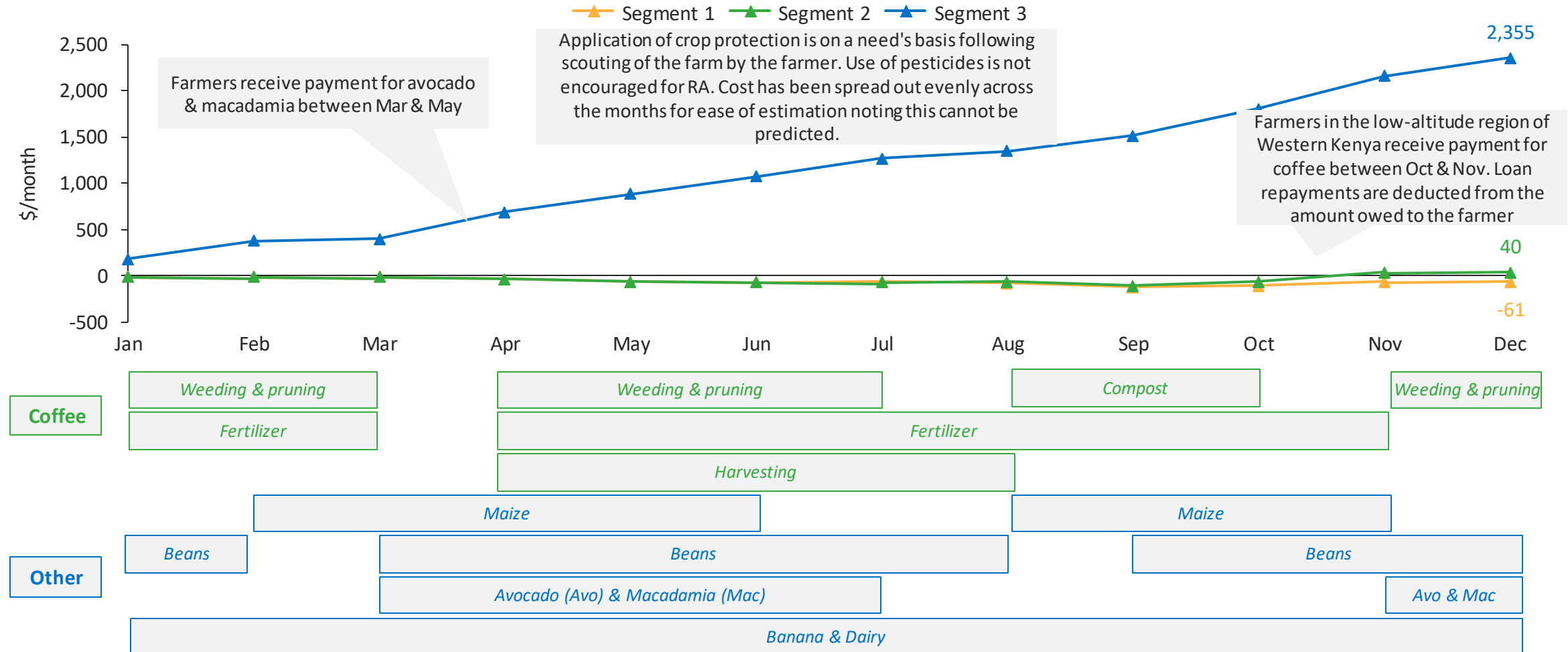
- Coffee income alone is not sufficient to get the farmers above the poverty line.
- Income from livestock is the main driver for the Segment 3 and 6 farmers getting above the poverty line.
- Although, on average, Segment 3 and 6 farmers can earn in excess of the poverty line, this is only attainable in the third year of being in the SDM based on annual projected incomes.
- It is important to note that the current living income benchmark is not differentiated for urban or rural living. Assuming the rural living income is half of the benchmark, all the farmers would still fall short of the living income benchmark.
- Despite improvement in coffee productivity and crop diversification options, land size of 0.75 acres is a critical limitation for farmers to reach living income.

\*The Worldbank poverty line was adjusted to a household of 5 members and a PPP conversion factor of 46.41 KES per \$.

\*\*The living income benchmark is based on the family composition of 2 adults and 3 children with 1.7 FTE. The data was based on the living wage for a standard family from Wage indicator (2019) and corrected for inflation.

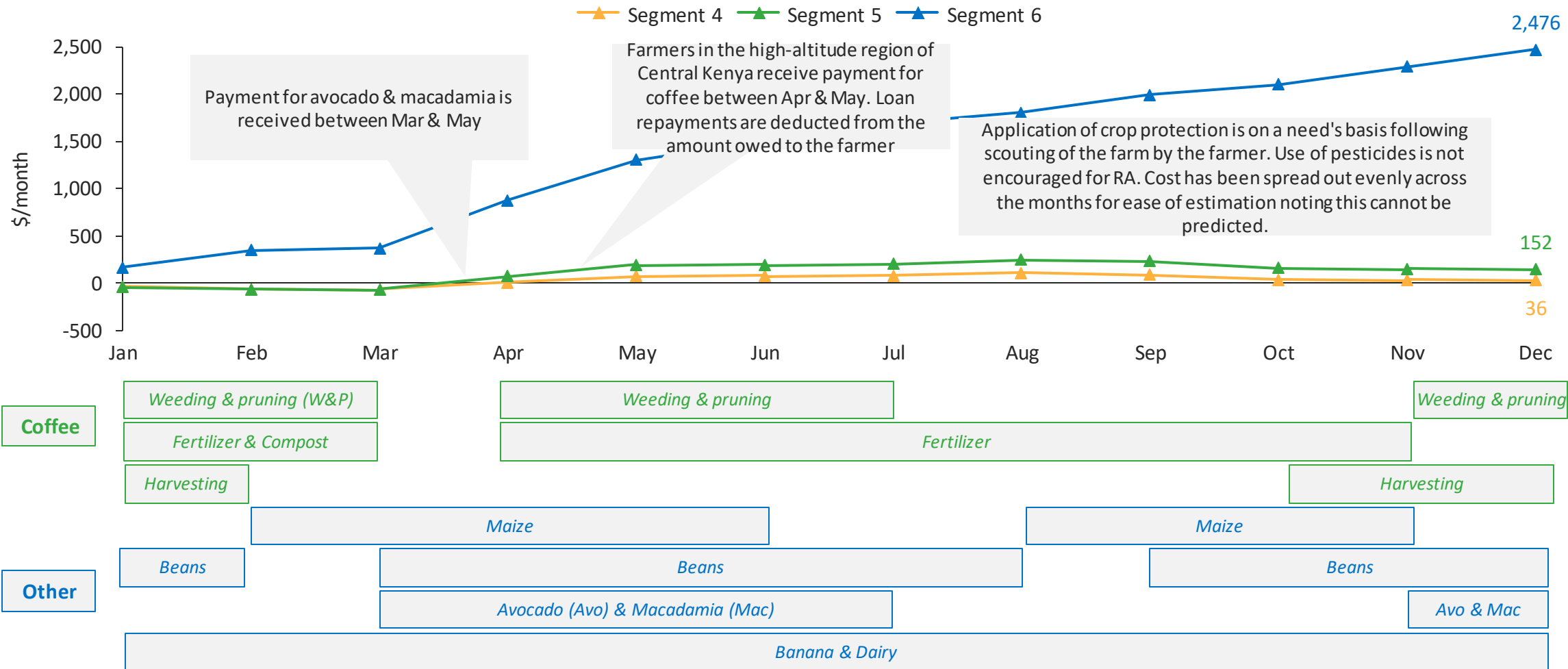
## Although Segment 1 and 2 returns are similar, attaining the projected income is more realistic for Segment 2 farmers as they receive support for investing on their farms

Cumulative cashflow of Segment 1, 2 and 3 farmers, 10-year average, \$/month








# Income for farmers practicing RA is much higher due to diversification income. As a result, these farmers (Segment 3 and 6) are cash positive throughout the year

Cumulative cashflow of Segment 4, 5 and 6 farmers, 10-year average, \$/month



Throughout the report, you can click the corresponding icons on the right of each page to be taken to the first page of that chapter

	1. Executive Summary
	2. The SDM
	3. Business case for SMS and FCS
	4. Farmer impact case
	5. Annex



Summary

The SDM

Business case

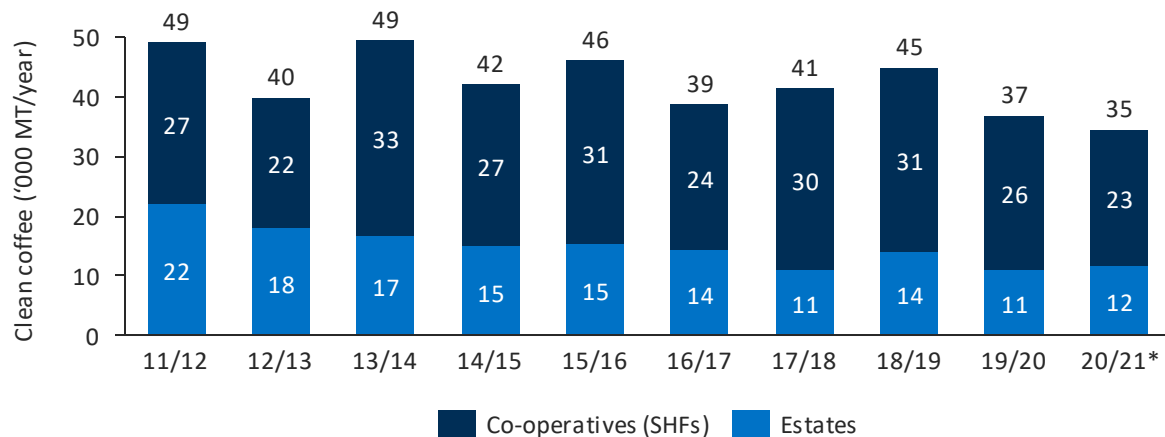
Impact case

Annex

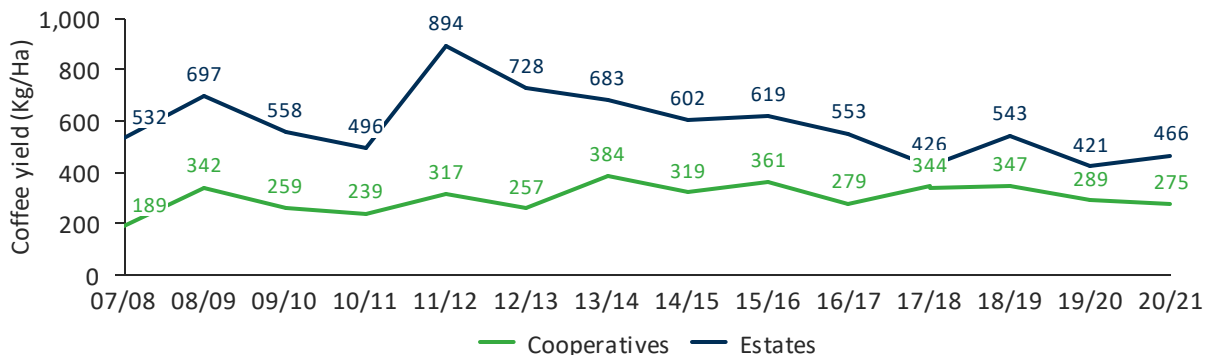
## Kenya has historically produced some of the highest quality arabica coffees in the world, remarked for their acidity, intensity, and complexity of flavour

Kenya's coffee production (2011 – 2020)<sup>4</sup>

Co-operatives (land size <2 Ha) and estates production volumes



Coffee yield (2007 – 2020)<sup>4</sup>



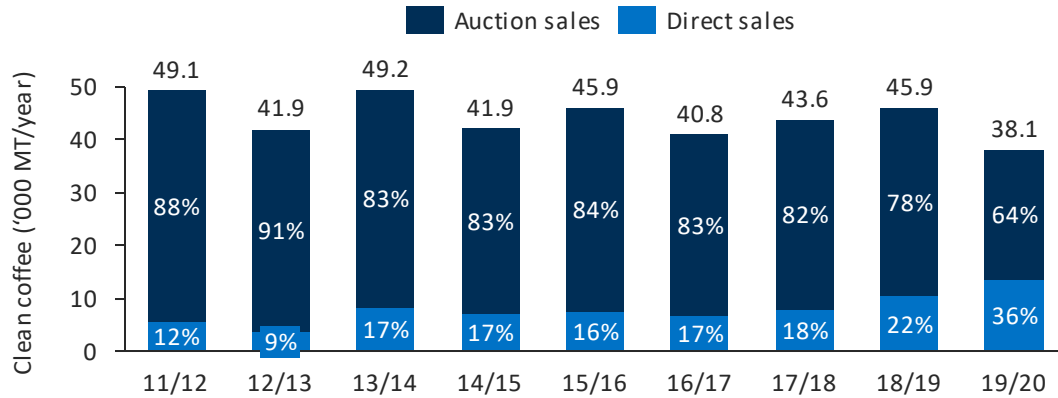
- Globally, coffee is produced in over 60 countries. The **top five producing countries:** Brazil, Vietnam, Colombia, Indonesia and Ethiopia **account for 75% of the global production**<sup>1</sup>.
- Although **Kenya** is famed for her **specialty coffee**, the country's **production is estimated at 0.5% of the total global output**<sup>1</sup>.
- Kenya predominantly produces **Arabica coffee** (c.99% of total output) which is **highly demanded** globally due to its exceptional taste.
- **Kenya coffee is produced under two systems:** smallholder farmers (SHFs) who predominantly operate farms with coffee tress occupying below two Ha and are affiliated to **co-operative societies (FCS)** and **coffee estates**, which are individually managed coffee plantations of two Ha and above. 70% of the country's production is from SHF<sup>2</sup>.
- Kenyan coffee is **mainly grown under rain-fed conditions** although some large estates rely on irrigation. Use of **shade tress to mitigate effects of climate change is becoming increasingly popular** in coffee production<sup>1</sup>.
- Kenya's peak production was at an all time high of 129,000 MT during the 1987/88 season<sup>3</sup>. However, **production and productivity has been declining** mainly due to adverse weather, urbanisation, inadequate use and application of inputs and increase in competition from other horticultural crops<sup>2</sup>.
- **Widespread pests and crop diseases** have pushed farmers away from older coffee tree varieties towards **disease resistant varieties** including Batian and Ruiru 11<sup>2</sup>.

Sources: <sup>1</sup>International Coffee Organization, <sup>2</sup>Coffee Directorate Yearbook 2019 – 2020, <sup>3</sup>Sauti ya Kahawa Strategic Plan 2018 – 2022, <sup>4</sup>KNBS – Economic Survey

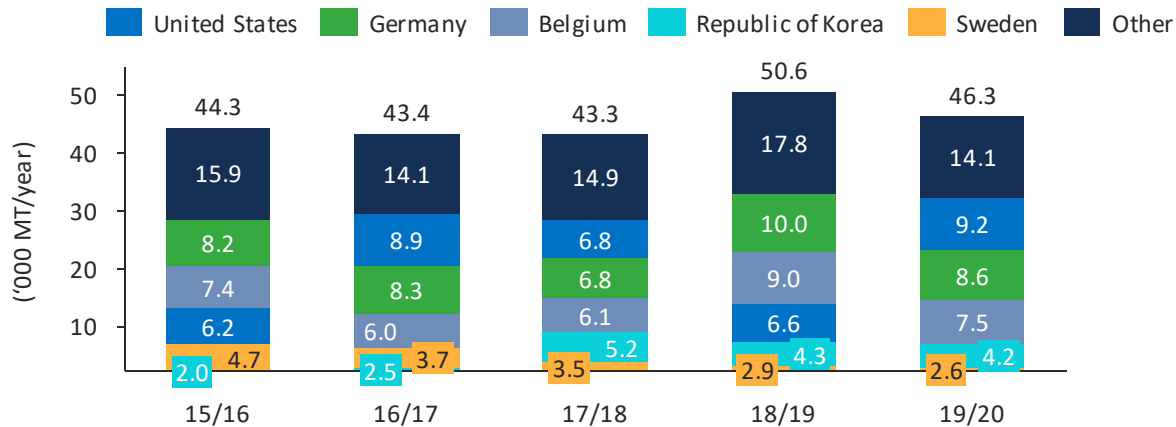
\*20/21 figures are provisional. The coffee year runs from October to September

# There's minimal value addition on coffee locally. Over 90% of exports are in green bean form and value addition occurs in exporting destinations.

## Kenya's coffee marketing (2011 – 2020)<sup>4</sup>



## Kenya's coffee exports\* by destination (2015 – 2020)<sup>4</sup>

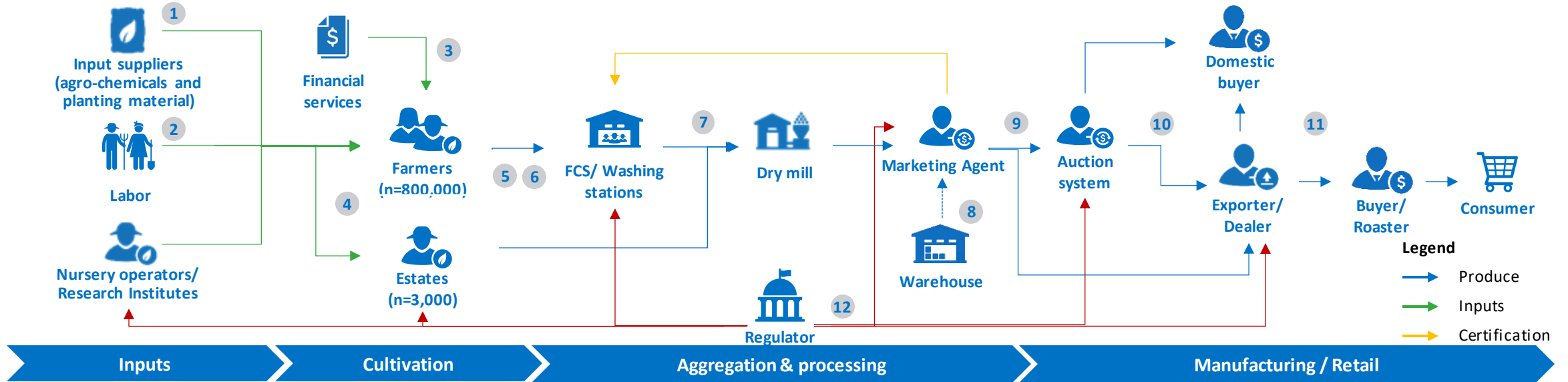


- **90% of Kenyan coffee is wet processed** at washing stations owned by FCS and estate farmers, with the balance dried into buni<sup>1</sup>.
- During dry milling, wet processed coffee is milled, polished, graded and classified. **Kenya has an estimated installed dry milling capacity of 400,000MT which translates to a 10% capacity utilization** at current production<sup>2</sup>.
- Kenya has two coffee **marketing systems: Central auction system**, which was established for price discovery and is managed by the Nairobi Coffee Exchange Management Committee **and direct sale**<sup>1</sup>.
- **Green coffee is offered for sale by a licensed marketing agent** on behalf of the estate and SHF. Ownership of **coffee remains in the hands of the producer until it is sold**<sup>1</sup>.
- Marketing **agent fees are regulated** by the government and **must not exceed 3% of the gross coffee sale proceeds**. Marketing agents are **required to pay the coffee producers within seven days** of receipt of the coffee sale proceeds<sup>3</sup>.
- **FCS are required to pay at least 80% of sale proceeds to farmers**<sup>1</sup>.
- In 2019/2020, **98% of coffee exports were in green bean form**. **c.66% of exports went to the top 5 destinations**<sup>3</sup>.

Sources: <sup>1</sup>International Coffee Organization, <sup>2</sup>Sauti ya Kahawa – Study of Coffee Processing in Kenya, <sup>3</sup>Kenya Coffee Act, <sup>4</sup>Coffee Directorate Yearbook 2019 – 2020

\*volumes inclusive of green bean and roasted/ground coffee

# While the highly regulated setting of the Kenyan coffee value chain allows for, market control remains in the hands of a few key players



1. Coffee production is operated on small plots, with limited use of inputs.
2. Women provide over 60% of the workforce in farms and wet mills, but they are often excluded from farmer group membership, training, access to inputs and marketing decisions –as men have the ownership.
3. Due to a lack of collateral, smallholders are not able to access formal finance independently, therefore FCS access loans through SACCOs.
4. Kenya’s 800,000 smallholder coffee producers produce the majority of Kenya’s coffee (70%). The remaining 30% are produced by Kenya’s 3,000 large-scale farm estates.

5. Smallholders are legally obliged to be member of Farmers' Cooperative Societies (FCSs). These FCSs are the vehicle through which smallholders access key services such as credit, farm inputs, and secondary processing services. Members combine resources for the common goal of growing, processing and marketing their coffee and all costs are shared before the final payment to farmers is made.
6. Dry mills remove the husks from the parchment, grade and bag the green coffee.
7. Warehouses store the coffee and provide a title or warrant. This warrant is needed to retrieve the coffee from the warehouses once it is sold.
8. Marketing agents manage the entire sale process (including money and physical coffee ownership transfer).

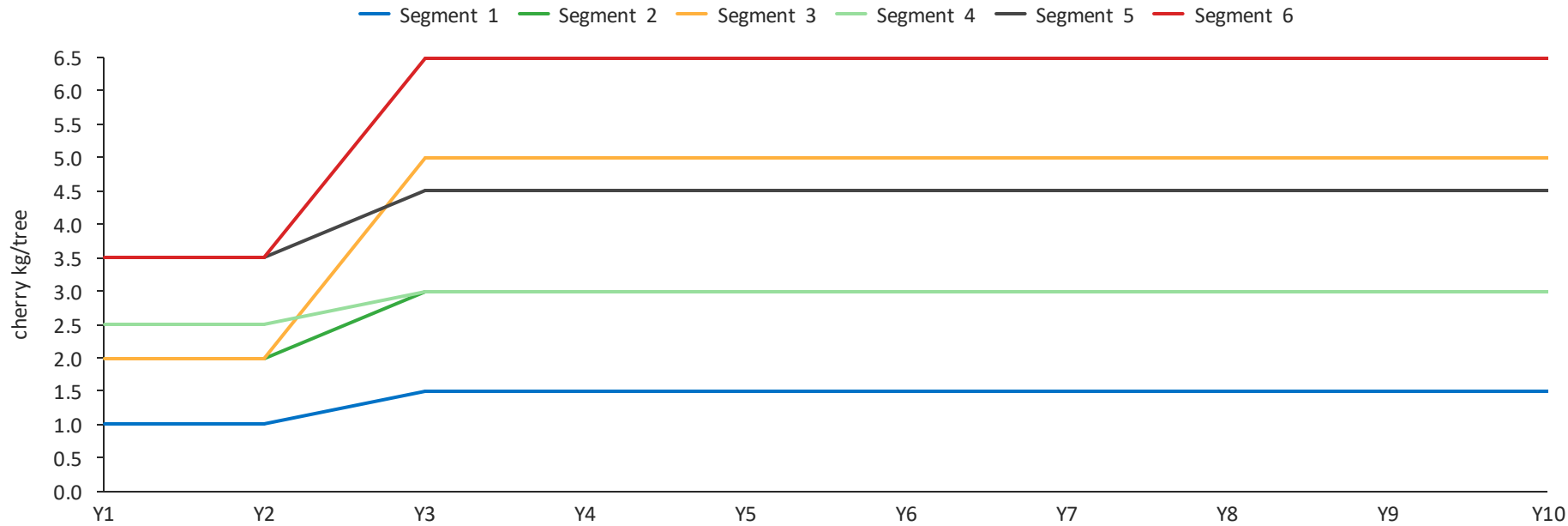
9. Nairobi Coffee Exchange holds auctions and verifies the auction process is correctly executed.
10. Roasters/traders/exporters purchase green coffee at auction for roasting or to trade and export the coffee outside Kenya.
11. 95 % of the coffee is exported and 32% of that coffee that is certified.
12. Policies and regulations cut across the entire coffee value chain in Kenya.

Sources: [Kenya Coffee Platform Economic viability study \(2021\)](#), IDH IKF EA coffee Programme 2021, IDH Coffee income diversification Study Kenya 2020

# Coffee cherry yield-curve from GAP, correct application crop protection and fertilizer, and regenerative agriculture practices

## Farmer yield curve of coffee cherry kg/tree

10-year projection of cherry kg/tree due to GAP, crop protection, fertilizer and regenerative agriculture





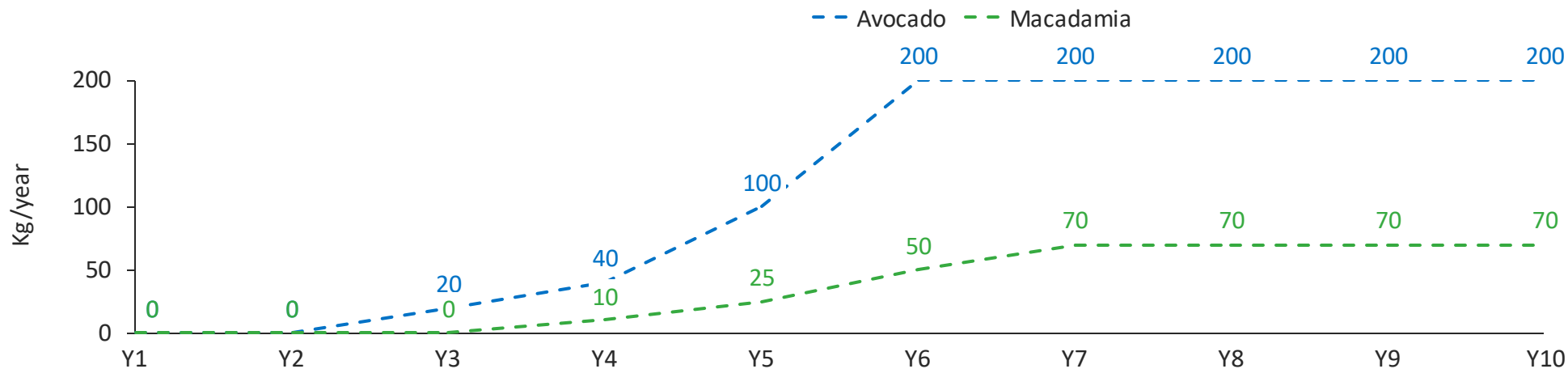
## Farmer P&L Assumptions

Variable	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
Coffee Farm size (Acre)	0.25					
Total farm size (Acre)	0.75					
Farm size for other crops (Acre)	0.5					
High quality production (%)	35%	55%	60%	45%	65%	70%
Farm-gate price (\$/kg cherry)	0.43	0.48	0.49	0.45	0.50	0.52
Tree-density (Trees/acre)	660					
Coffee tree intensification	No					
Sales channel (%)	100% SMS					
Proportion of mbuni	6% of total production					
Mbuni price (\$/kg mbuni)	0.68					
Maximum amount pre-financed by FCS	0%	30%		0%	30%	
Ground fertilizer (Kg/acre/year)	300					
Foliar fertilizer (Litre/acre/year)	1		2		1	
Manure (Kg/acre/year)	9,000					
Insecticide (Litre/acre/year)	0.2		0		0.2	
Herbicide (Litre/acre/year)	2		0		2	
Household size	5					

## Farmer P&L Assumptions

### Yield curve of avocado and macadamia

10-year projection of yield since year of planting



- Maximum avocado and macadamia yield is 200Kg/tree/year and 70Kg/tree/year respectively.

Crop	Yield/Season (Kg)	Season(s)	Own consumption (%)	Post-harvest loss (%)	Price (\$)	Labour costs (\$/acre)	Input costs (\$/acre)
Beans	S1, S2, S4 & S5: 490Kg/acre S3 & s6: 700Kg/acre	2	100%	0%	0.85/Kg	25.36	25.36
Maize	563	2	100%	0%	0.34/Kg	25.39	40.58
Banana	20 bunches/year	–	20%	0%	2.11/bunch	0	0
Macadamia	70Kg/tree	–	0%	0%	0.85/Kg	2.11	15.64
Avocado	200Kg/tree	–	2.4%	0%	0.02/Kg	4.23	12.68
Cows	20 Litres/cow/day	–	2Litres/day	0	0.25/Litre	0	947.72/cow/year

Variable	2019	2027
Total SDM FCS numbers	5	5
# Western Kenya FCS	2	2
# Central Kenya FCS	3	3
Western Kenya FCS size	700 members	
Central Kenya FCS size	1,200 members	
Annual salary increase		
Overhead cost increase		
Total milling volumes		
Milling volumes increase	2% annually	
Kg dry parchment to green bean ratio		
Total marketing volumes		
Milling charge		
Handling charge		
% of NCE sales	80%	
Auction sale price		
Direct sale price		
Number of demo farms	143	
Promoter officer per farmer	35	
Exchange rate	118.3 KES/USD (\$)	

# As a holistic agricultural approach that retains or if needed restores ecosystems, Regenerative Agriculture provides a theoretical and practical implementation pathway towards Climate Smart Coffee



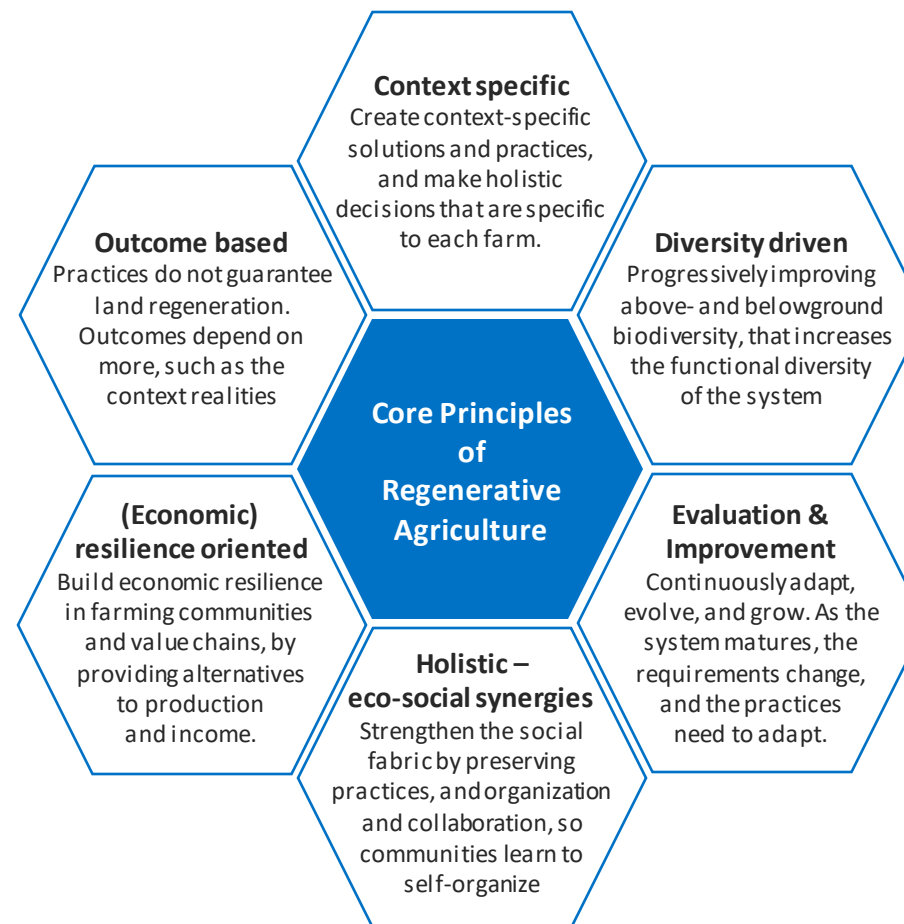
## Climate Smart Coffee<sup>1</sup>

Climate smart coffee (CSC) production sustainably increases productivity, enhances resilience to climate risk, and reduces or removes greenhouse gas emissions (GHGs). Many of the interventions that make up CSC already exist worldwide and are used by farmers to cope with various production risks, and can take place at different technological, organizational, institutional and political levels.



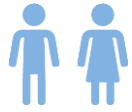
## Regenerative Agriculture<sup>2</sup>

RA is an approach to farming that uses soil conservation as the entry point to regenerate and contribute to multiple provisioning, regulating and supporting ecosystem services, with the objective that this will enhance not only the environment, but also the social and economic dimensions of sustainable food production. A healthy soil is the basis for RA and therefore degraded agricultural soils should be restored to healthy soils.



Sources: <sup>1</sup>CGIAR (2019); <sup>2</sup>Schreefel et al. (2020); IDH (2020) – Deep dive: Regenerative Systems in Kenya and Uganda

## IDH has adopted the following definitions to define the extent to which a gender lens has been integrated by partners. IDH aims for all its projects to be intentional and for some to be transformative.



### Gender unintentional

No steps taken to understand the different needs and preferences of men and women, or target gender gaps/barriers.



### Gender intentional

Considers the different needs and constraints of women and men and takes some steps to create gender equality. Such projects adapt to the needs of women and men without seeking to change gender norms or barriers.



### Gender transformative

Understands the different needs and constraints of women and men and address the root causes of gender inequality. A gender transformative approach needs to foster changes in **individual capacities (agency)**, **gendered norms and expectations (relations)**, and **institutional rules and practices (structures)**.

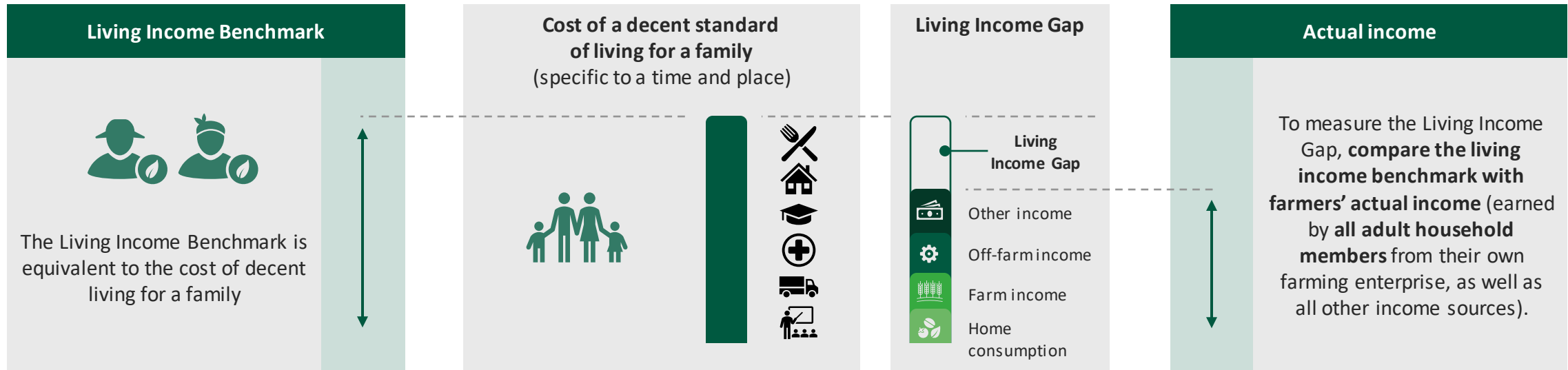
### Why we believe investing in women can work for business

- By tailoring goods and services to the needs of women, companies can reach a large and often underserved market, potentially increasing revenues from service provision or enhancing their supply security.
- If women had similar access to and control of productive resources as men, yields of female farmers could increase by up to 30 percent. Higher farm yields and incomes create greater business opportunities for companies working with those farmers.
- Companies that are committed to gender equality outperform their peers. Improving gender diversity in the workplace can improve a company's financial performance by up to 25 percent.
- When companies are seen to invest in gender equality, this has the potential to lead to higher levels of farmer and/or worker loyalty. Conversely, unequal opportunities for women can negatively affect companies' reputations which can lose businesses customers as well as workers.

## Living income benchmark methodology

### Living Income

Earning a living income means that all income sources from a farming household are sufficient to afford a basic but decent cost of living for a family



### Next steps

Once gaps are identified, you can take action through a smart-mix of solutions that include: delivering bundled services to farmers, adopting better procurement practices, collaborating with and beyond your trade partners, innovating through brand and consumer engagement, and embracing transparency

# Contact details



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