



Service Delivery Model Analysis

CMS | Kenya
Public report

August 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

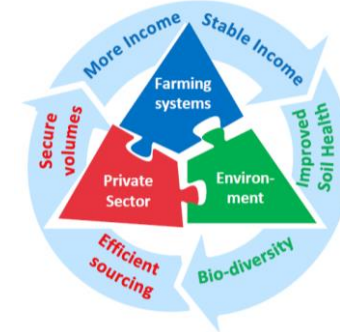
Period: 2020 -2024

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 efficiently securing supplies of coffee and other farm produce.
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- 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.).



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1. Executive Summary



2. The SDM



3. Business case for CMS and FCS



4. Farmer impact case



5. Annex





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STRATEGY

Objectives: Coffee Management Services Ltd (CMS) operates as a marketing agent in the Kenya coffee value chain for +200,000 smallholder farmers. Due to the high competitiveness of the sector, CMS's main objective is to retain their market share in terms of marketed volumes. CMS is currently working with farmers who are producing 30% of the total Kenyan production.

Quality and volumes: CMS aims to secure marketing agency contracts for large volumes of coffee, while simultaneously they focus on high-quality coffee as this allows them to tap into specialty markets and/or fetch higher prices for their clients.

Milling: Aside from operating as a marketing agent, CMS also has an association with 3 dry mills and a warehouse facility which also serves other producers in Kenya.

Sales channels: Out of the total volume of green coffee beans 59% goes through direct sales while 41% through the auction. Similarly, they market both certified and uncertified produce, of which certified green beans represent the largest share with 61%.



SERVICE DELIVERY MODEL

Farmer Engagement:

For CMS to collaborate with smallholders, they need to operate through Farmer Cooperative Societies (FCS) of whom the smallholder farmers are a members.

Service package:

CMS provides a wide range of services to FCS (and thereby to the farmers) of market access, dry milling through associates, storage, training, inputs, finance and sustainability interventions (this includes certification, diversification, gender interventions, climate change, landscape protection and food security).

Segmentation:

While CMS offers an extensive service package, the range of services is based on FCS (and farmers) performance in terms of production levels and on FCS loyalty in terms of consecutive years of marketing contract renewal with CMS.

Also the pricing can vary greatly between FCS based on the segmentation approach.

The Business case and Impact case

BUSINESS CASE		
200,000 # total farmers	\$6.5 mln VOLUME (kg green bean)	\$236,000 (6%) EBT and margin (%)
5,000 # farmers Regen Ag project	90,000 USD investment cost	82,000 USD annual return

- CMS is projected to maintain its volumes of marketed green beans due to the investment in farmer yields and loyalty, which allows them to secure marketing contracts for an annual volume of 6.5 million kg green beans. By selecting the productive farmers and providing services based on segment performances and loyalty, CMS can increase their marketing agency EBIT margin with 14% by 2026.
- Investing in a regenerative agriculture project for 5,000 farmers allows CMS 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 and dairy value chains.

NOTE: Figures presented are as per year 2026

	IMPACT CASE		
	UNCERTIFIED	CERTIFIED	CERTIFIED + REGEN AG
HIGH	\$ 658	\$ 921	\$ 2,875
LOW	\$ 387	\$ 733	\$ 2,757
YEARLY INCOME			TOTAL INCOME INCREASE
			337%
			612%

- All farmer segments can increase their income from coffee by an increase in productivity due to correct input use and input quantities, access to finance and training.
- All farmers have the ability to further close the gap to the poverty line and with the living income benchmark. However, only Segment 5 and 6 farmers manage to earn significantly above the poverty line.
- As a result of the free macadamia and avocado seedlings and guidance on dairy farming, Segment 5 and 6 farmers are projected to unlock new profitable income streams and to improve their resiliency to shocks (through climate change or price volatility).

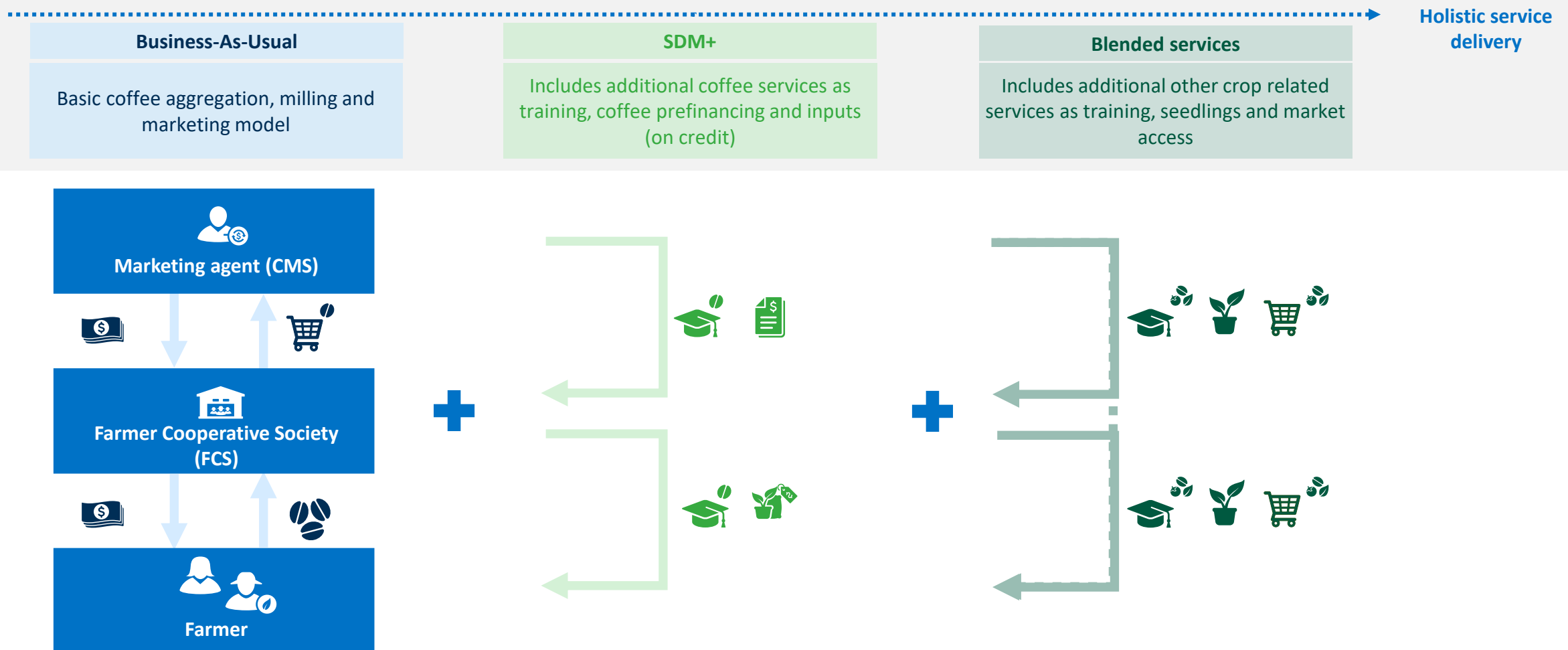
Insights and recommendations (1/2)

ACTOR	INSIGHTS	RECOMMENDATION
 CMS	- Currently, CMS's smallholder service delivery business model is loss making due to high training costs linked to large farmer numbers, numerous demoplots and promoter farmer trainings, limited farmer yields and fixed overhead expenses - Segmenting their FCS and farmers, allows CMS to focus on higher-performing farmers, and support them with a more extensive service package to further increase yields and award them for their loyalty through higher price markets. This can further increase profit margins of the smallholder service delivery model - The investment in regenerative agriculture is loss-making the first year, but quickly leads to a annual additional profit through increased coffee and inputs revenues. The additional value chains could also signify an opportunity for CMS to capture additional value as the marketing agent	- Although costly, these investments for CMS can pay off if adoption of GAP takes place and is well monitored. By following-up on a close level on the performances of farmers (through their FCS) and developing a tracking mechanism, CMS can provide even better and more tailored services to their FCS based by an updated segmentation strategy - By investing in additional value chains for regenerative agriculture purposes, CMS could capture additional value which it can invest in the GAP training and monitoring of the farmers - CMS could market macadamia, avocado and dairy at a commission while using the existing coffee aggregation structure. - CMS could provide finance or inputs to other value chains - Additionally, CMS could expand the scale of this pilot to more coffee farmers (>5,000) once it has seen the proof of potential at business and farm-level to generate even higher volumes of produce

Insights and recommendations (2/2)

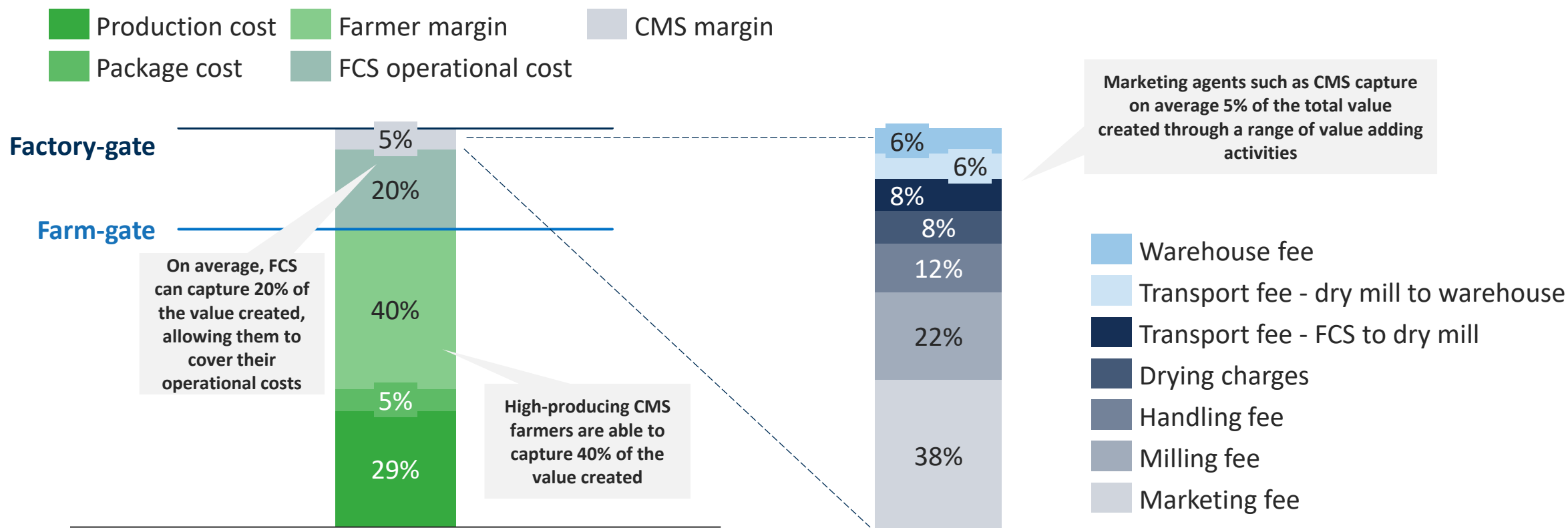
ACTOR	INSIGHTS	RECOMMENDATION
 FARMER	- Access to GAP training, soil testing, inputs, finance and markets has a clear positive impact over time on all farmers in total coffee income. Although labor and input costs are higher, the benefits of increased yield and prices are greater - Implementing regenerative agriculture practices and cultivating macadamia, avocado and dairy farming increases both coffee and other farm income significantly and outweigh the additional expenses already from year 1	- 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 - CMS could expand the scale of this pilot to more coffee farmers (>5,000) to create more impact at farm-level. Additionally, CMS could consider the set-up of an access to finance service specifically for regenerative agricultural purposes to enable loyal and high-producing farmers to invest in their own professional diverse farm
 FCS	Limited transparency of 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 costs with their 20% margin on green bean value and pass on the rest of the value to farmers	CMS could improve transparency by supporting research on FCS operations and by tracking FCS performances themselves. Additionally, CMS could support FCS professionalization and performance by providing training or strategic advice to make the FCS become more efficient and profitable

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.



While transparency in the value distribution in the coffee sector in Kenya remains limited, high-producing farmers who are awarded higher prices at specialty markets can capture a large chunk of the value creation of coffee

Added value by actor, USD per kg/green bean



Note: this value distribution graph specifically corresponds with the Segment 4 farmer, percentages for other Segments differ slightly but the overall picture remains

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CMS is a market leader who's main focus is on retaining their marketing agency share in coffee through providing specific service packages to farmer and FCS who are loyal and adopt GAP. They are capable and willing to pilot new approaches which can support their primary goals while continuing to support farmer livelihoods and the environment in which they operate



Goals & Aspirations

Aspirations

- *Quality service offering*– CMS aspires to maintain market share by providing high-quality services to farmers that address the needs of the farmers, while charging a fair price.
- *Quality coffee* – CMS aspires to market coffee that aligns with its corporate values and customer requirements.
- *Efficient milling and marketing* – CMS aspires to ensure an efficient milling and marketing service leveraging their existing infrastructure of associated dry mills, warehouses and connections with buyers.

Goals

- CMS aims to maintain their market share of 200,000 farmers and 30% of volumes



Where to Play

To offer quality services,

- CMS maintains year-round relationships with farmers and FCS by providing services that will help them improve their coffee yields, diversify their farm income and to provide access to finance.

To market quality coffee,

- CMS supports certification and provides training on GAP.
- CMS supports smallholders to restore soil health by adopting regenerative agriculture practices

To ensure efficient milling and marketing,

- CMS maintains a cordial relationship their dry milling and warehouse infrastructure associates



How to Win

Offer quality services

- Adjust service offering to FCS and farmers based on their loyalty and needs;
- Offer services at a fair price to farmers;
- Serve broader needs of farmers and capture business opportunities that go beyond coffee.

Market quality coffee

- Uphold certification practices
- Focus on adoption of GAP
- Market other crops from farmers and get them better prices and provide inputs and other goods tailored to farmer needs.

Efficient milling and marketing

- Create new partnerships with (local) off-takers, and input suppliers and showcase the potential to transform the business.



Capabilities Required

Critical capacities

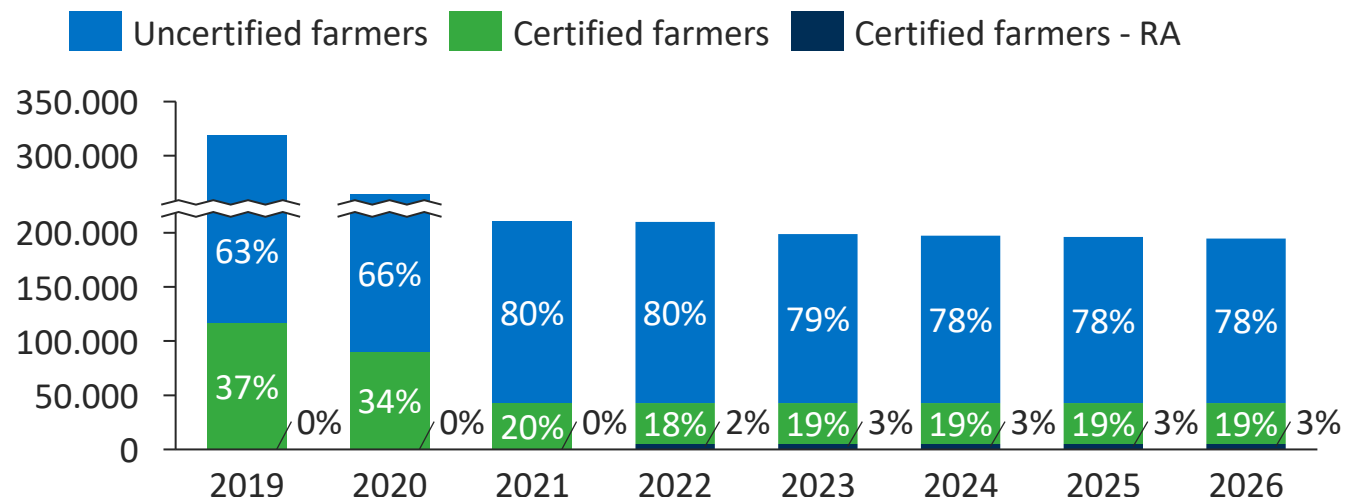
- **Knowledge and expertise** on smallholder service provision, especially to their market share and farmer productivity;
- **Network and collaboration** with government and value chain players (roasters, buyers) to develop market access for coffee and other crops;
- **Pilot experience, and vision** on diversification activities and continuous development to establish and tailor diversified service provision;
- **Ability to incentivize farmer behavior** to increase both farmer loyalty and adoption.
- **Ability to analyze and trace** the financial and environmental output of (to be) implemented interventions on farm and business level.

CMS is able to maintain its marketing agency volumes and improve the quality of coffee sourced by supporting farmers in the SDM with a range of services

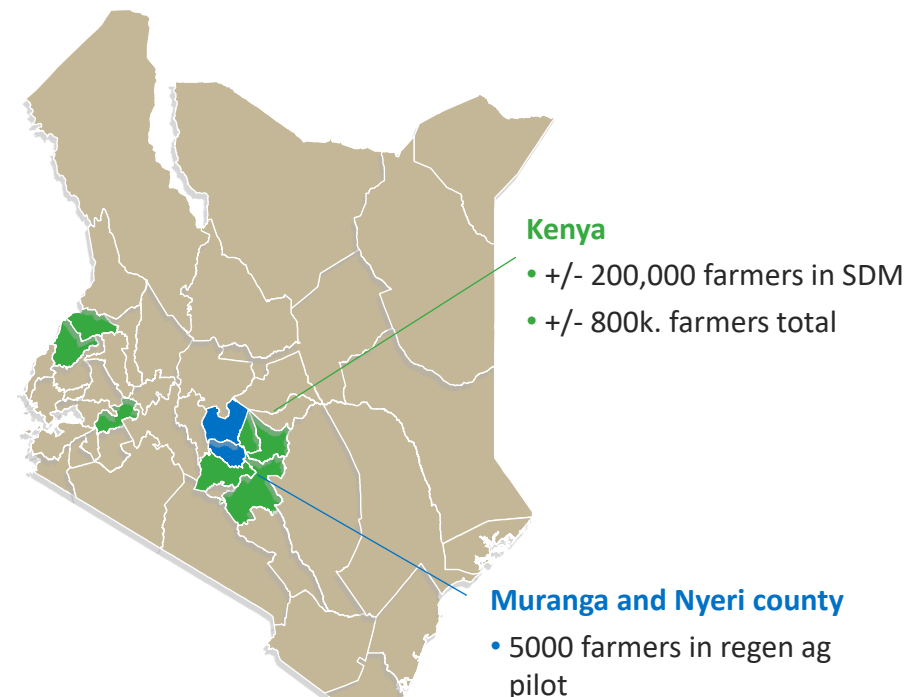
About CMS's farmer base

- CMS currently works with +/- 130 FCS, totaling to 210,000 Arabica coffee farmers, and several estates across Kenya.
- Of the 210,000 coffee farmers, 43,000 farmers are certified (Rainforest Alliance, Fairtrade, CAFÉ and CAS). A pilot for regenerative agriculture is started with 5,000 farmers of the certified farmers. The farmers in the regen ag pilot are located in two counties (Muranga and Nyeri) on the slopes of Mount Kenya in Kenya.
- CMS, in partnership with its associates, provides a [range of services](#) to their farmers, ranging from training to milling and marketing.
- Their service provision model is open to all farmers, there is no entry-requirement. However, farmers and cooperatives with good history and higher production levels receive more services (see the slide on [segmentation](#)).

Scale of farmers over time



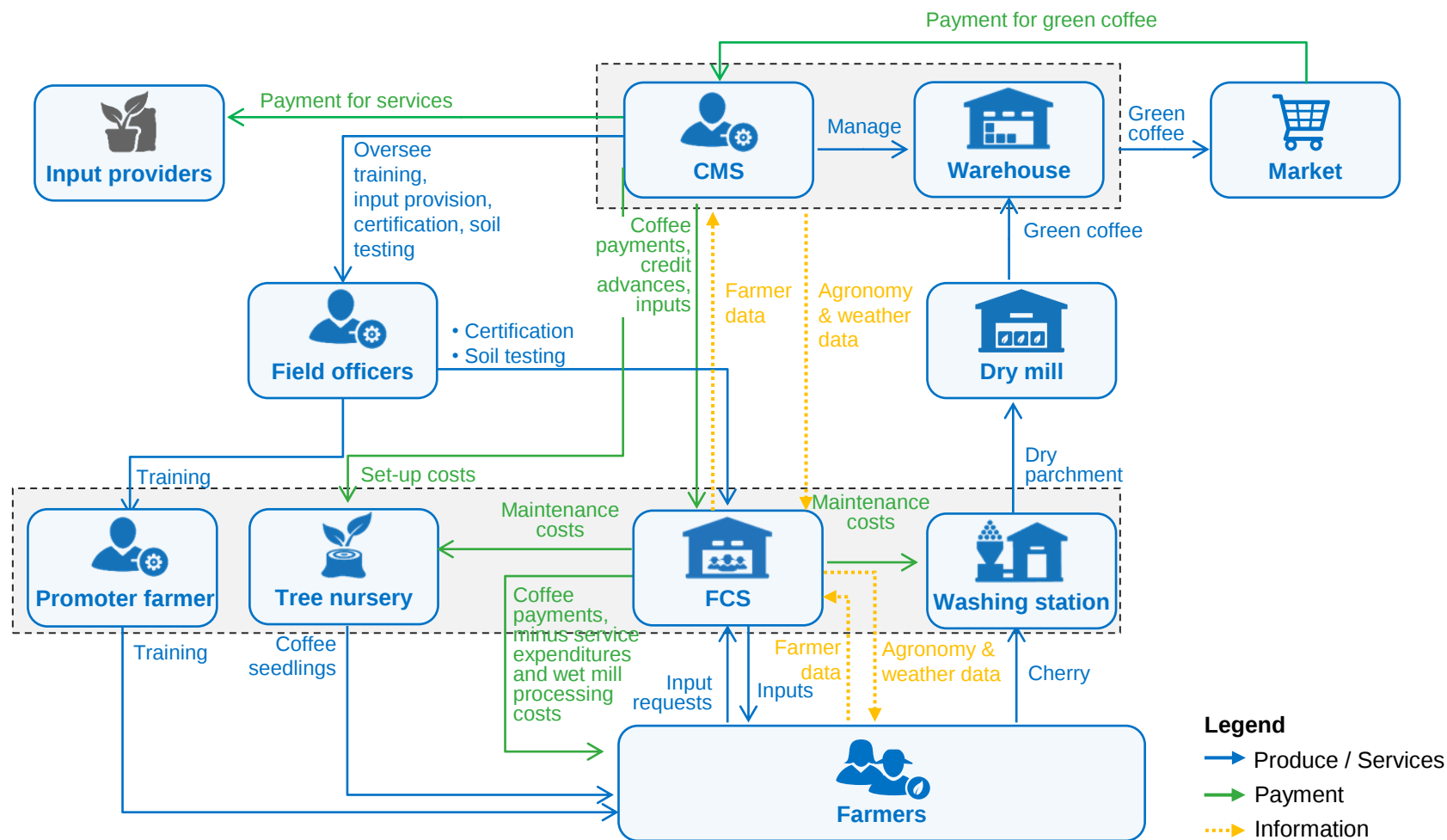
CMS's regen ag pilot focuses solely in the Mt Kenya region



CMS 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

Overhead (management, HR, legal, utilities, etc.)		Margin
Marketing agency contract sourcing	Milling - Farmers bring their cherry to the FCS, who after wet processing, bring the coffee to the dry mill - CMS has an association with three dry mills - Cup quality checks are performed at the wet mill and dry mill. Checks are made on Robusta content and defects	
	Marketing & Storage - Although farmers retain ownership of their coffee until it is sold at auction or to direct buyers, CMS operates as a marketing agent, who is contracted by the farmers to sell the coffee on behalf of them - CMS owns a warehouse which FCS can rent for storage before the sale and export of their sold coffee	
Supporting activities	Digitization - CMS uses an internal platform to collect farmer data (Integrity) [Future] CMS wants to develop an online marketplace where farmers can easily purchase inputs	
Farm services	Training & organization - CMS provides training to Promoter Farmers, who in turn train farmers on demoplots. The training is free of charge. Training topics are: GAP, farming as business, water harvesting, certification, climate resistant crops and production of food crops and dairy - CMS supports the FCS through training and co-financed purchases of wet milling infrastructure. - CMS pays for FCS to become certified, covers the annual audit costs and provides training on certification requirements on an annual basis	
	Inputs - CMS supports the set-up of coffee tree nurseries and pays for the salary of the nursery manager. This enables farmers to purchase quality coffee seedlings at a subsidized price - CMS provides input on credit, such as ground and foliar fertilizer, herbicides, insecticides, fungicides, lime and coffee seedlings - CMS performs soil and leaf analyses at farm level to determine which nutrients to add and the quantities required. - CMS provides farmers with macadamia and avocado seedlings	
	Finance - CMS pre-finances the farmers to enable them to purchase high-quality inputs and other coffee farm equipment - Up to 30% of the value of coffee sold in the previous year can be used for prefinancing	

The SDM is structured in the following way



Service description

- **CMS provides services to farmers through the FCS.** Their services include marketing, dry milling (through associations), warehousing, pre-financing coffee for input purchases, provision of training, certification and soil testing.
- **CMS field officers** provide training to Promoter farmers, follow-up on adoption of certification standards and manage the distribution of inputs to FCS.
- **The FCS coordinate service delivery to farmers** including coffee aggregation, wet milling, marketing, input order and distribution and access to finance.
- **Promoter farmers** train the farmers on a monthly basis on GAP on demoplots.
- **Farmers** sell their coffee through the FCS, who aggregates the cherries, organizes the wet milling process and arranges the transport to the final buyer or the auction (after dry processing and storage).
- Each FCS owns a **tree nursery** for the cultivation and distribution of coffee seedlings.

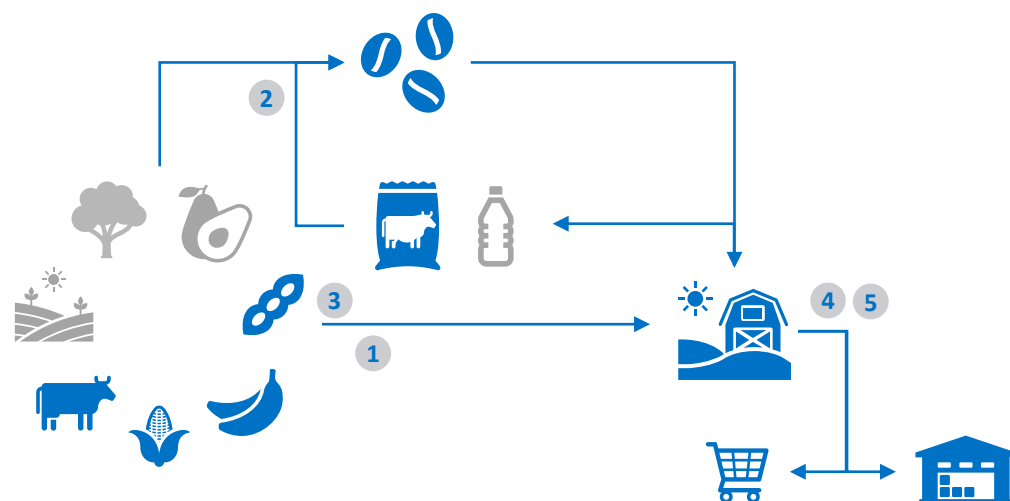
CMS engages with multiple actors both vertically and horizontally in the coffee value chain

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

The FCS segmentation corresponds with different farmer segments in the farmer analyses

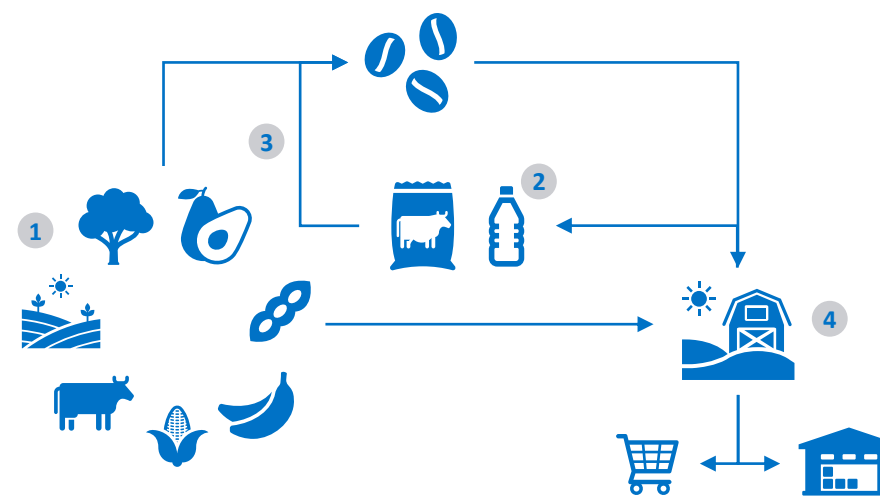
	 Segment 1	 Segment 2	 Segment 3	 Segment 4	 Segment 5	 Segment 6
Description	- Farmer is part of SDM - Farmer is not certified		- Farmer is part of SDM - Farmer is certified			
	Farmer belongs to low producing FCS	Farmer belongs to high producing FCS	Farmer belongs to low producing FCS	Farmer belongs to high producing FCS	Farmer belongs to low producing FCS	Farmer belongs to high producing FCS
Farm characteristics	- Coffee: 0.5 acre - Other crops: 1 acre - Coffee tree density: 660 trees/acre					
	• Coffee price: 30 KES/kg cherry	• Coffee price: 50 KES/kg cherry	• Coffee price: 45 KES/kg cherry	• Coffee price: 70 KES/kg cherry	• Coffee price: 100 KES/kg cherry	
	• Coffee yield: 1kg cherry/tree →3	• Coffee yield: 4kg cherry/tree →7	• Coffee yield: 1kg cherry/tree →3	• Coffee yield: 7kg cherry/tree →7	• Coffee yield: 2kg cherry/tree →5	• Coffee yield: 7kg cherry/tree →9
Diversified crop portfolio	     				     	
Service package	Business-As-Usual		SDM+		Blended services	

CMS 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. On top of using manure (of cows and bought), plant rests and grasses as mulch, farmers perform less weeding and slashing practices and use more fertilizers and agrochemicals and soil nutrients to activate soil life and improve fertilizer response;
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 CMS is an established marketing agent and large, knowledgeable player 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	Strength - CMS is part of a larger business ecosystem with an association with dry mills and warehouse. - CMS has a team of skilled agronomists and field staff having extensive experience in coffee sector - Over the years CMS has developed and continue to maintain a close relationship with the FCS management and coffee farmers across the country	Weakness - Low control on FCS loyalty as contracts with FCS need to be renewed annually - The role of coffee marketing agent is highly regulated in Kenya resulting in a narrow profit margins for CMS - Fierce competition can cause a barrier for CMS to further increase or maintain the number of farmers
External	Opportunity - Demand for organic, certified coffee is increasing globally - 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	Threat - High level of competition in the Kenyan coffee market that increases the risk of losing market share - 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 - Volatile global coffee prices - An increase in adverse weather events due to climate change is increasing crop losses and negatively impacting farmer incomes

3.1 About the context | Gender

While CMS is making strides on their gender journey, they can implement more practices to get clarity on gender targets and tracking KPIs

Where is CMS on its gender journey?



Current situation¹

- CMS is **gender intentional**. The company has a **documented gender policy** in place for their internal processes to ensure both women and men have equal access to all resources and to guide gender in farming operations. However, all departments can choose how to interpret the policy.
- CMS maintains a **gender disaggregated FCS and farmer database**. However, the **use is limited** in seeking to understand the unique needs and preferences of the male and female farmers they work with.
- While **services are provided to all farmers in an equal manner**, limited specific attention is given to adjusting the service delivery to address women's specific needs.
- CMS does not serve women only coffee FCS due to limited number of female farmers. But **CMS does market women only coffee**.

Best practices to implement in becoming transformative

- **Document the gender strategy** for clarity on goals and agenda. Establish KPIs (e.g., targets on the number of male and female farmers you are aiming to reach), develop a roadmap to get there and allocate resources to monitor and measure gender goals.
- 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.
- **Inclusive tailoring of services** by identifying women's needs and preferences in view of training times and location to ensure their participation, while also promoting coffee farming as a business to involve them

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 income for women
- Increase in the number of women accessing services
- Increase in women working as promoter farmers and managing demoplots

Sources: ¹Gender module responses from CMS

3.1 About the context | Food security

Coffee farmers are most food insecure between Jan and July as during these dry months food crop production is limited. Therefore, CMS has an opportunity to support more farmers with seedlings of other crops

Risks and opportunities		Measures taken by CMS	
Current situation	Food security risks and opportunities	Current measures and policies in place	Challenges and room for improvement
Food security • Prevalence of undernourished people in the total population (2019-2021): 26.9% ^{2), 9)} • Prevalence of moderate or severe food insecurity in the total population (2019-2021): 69.5% ²⁾	• Farmers are most food insecure for about 5 months mainly between Jan - Aug. These are dry months and thus difficult to grow food crops. • The main challenge is not production of the food crops but rather the post harvest handling which results in loss of production. • Average farmland size of 1,5 acre per household constraining farmers to grow food crops in sufficient quantities • 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	• Farmers grow beans, banana and maize for their own consumption, while any excess produce sold in local market • On livestock farmers are encouraged to keep dairy cows • Farmers receive trainings in family nutrition and climate resilient crops	• Average farmland size of 1,5 acre per household constraining farmers to grow food crops in sufficient quantities Cohesive crop diversification and mixed farming strategies can maximize crop yields • 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 • Seasonal distribution of cropping calendar of various crops will reduce production risk due to any single weather-related occurrence
Assets • Average farm size: 1 acre • Of which food crops: 50% • Land ownership: Farmers own land			
Health & Sanitation • The prevalence of stunting among children under five years age: 26% • National average dietary energy supply adequacy: 98% • Access to clean water: Yes • Access to sanitation: 29.1%			

3.1 About the context | Climate resilience

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

Climate risks exposure and impact			Measures taken by CMS		
Risk exposure		Farmer resilience and impact	Adaptation measures and policies in place	Challenges and room for improvement	
 Temperatures (change in) short- and long-term averages	Medium	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^{1,5}	Farmer resilience - Farmers are learning to adopt climate change mitigation practices such as mulching, growing shade trees, planting resilient variety of coffee plants - Farmers have diversified sources of income from dairy, beans and are further diversifying their crops planting macadamia and avocado	Strategy, measures and policies CMS 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	- Limited resources for investing in climate adaptation practices - Farmers are risk-averse to invest in diverse crops. - Developing alternate value chains for diversified crops in parallel to coffee which is attractive
 Precipitation (change in) timeliness and availability	High	Kenya is experiencing changes in the distribution, onset and cessation of rainfall seasons thus making it increasingly difficult to plan agricultural operations^{1,3,4}.	Impact Coffee farmers are highly susceptible for erratic rainfalls, increase in temperate and higher incidence of pests – the coffee yields may decline without climate change adaptation strategies. Farmers in lower altitude regions are acutely affected	Intelligence - Collect soil health data - Track temperature and rainfall patterns through 19 weather stations on farms	
 Climate extremes (change in) likelihood and severity of hail, floods, locusts, etc.	Medium	Increased Incidence of Dry Spells/Droughts & Increased Heat Wave Duration ²		Farm services - Regenerative agriculture practices - Agroforestry - GAP including water harvesting - Crop diversification training - Weather information services	

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

3.1 About the context | Enabling environment

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

Risk

Neutral

Opportunity

Definition	Situation	Impact on SDM
Technology <i>Technology availability, research & 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 ¹ .	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 ² .
Environment <i>Climate change, possibility of extreme weather, soil type, water supply and quality, pests and diseases. Potential environmental damages such as deforestation</i>	Coffee grown around Mount Kenya is renowned for quality, but low rainfall and uncertainty in predicting timing of various coffee development cycles ¹ can reduce production and quality. Disposal of effluents and off gases coffee processing driven mainly by use of traditional pulpers remains of concern ¹ .	Reduced coffee production levels limit the amount of quality coffee CMS can market and puts pressure on farmer livelihoods potentially affecting their loyalty to CMS.
Infrastructure <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. However, coffee farmers on Mount Kenya have limited connection to dry mills and markets due to poor infrastructure.	Poor infrastructure increases marketing agency costs for CMS.
Labor <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 ³ and most farmers manage their coffee farm with household labor.	n/a
Inputs & Financing <i>Availability of affordable, quality inputs and the necessary marketing and distribution mechanisms. Availability of credit. Enabling regulatory environment</i>	Farmers have difficulties accessing loans due to their lack of credit history and high risk profiles. There are many counterfeit inputs on the market at high costs, and many distributors try to access farmers to sell their product.	CMS provides qualitative inputs on credit to farmers (based on soil testing) to enable farmer's access to the right amount of quality inputs.

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

3.1 About the context | Enabling environment

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

Risk

Neutral

Opportunity

Definition	Situation	Impact on SDM
Trading System <i>Organization of the system through which crops are traded from farmer to market, including the number and type of actors involved</i>	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.	CMS 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.
Pricing & Competition <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>	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. Prices are based on quality, which are in part heavily shaped by factors out of the farmers control such as post-farm processing, and volatile global coffee prices.	CMS focuses on quality and volumes (through their service package) to market green coffee to achieve high prices. These higher prices are shared by the farmer cooperatives and ultimately to farmers based on their individual farmer production. This can further secure farmer cooperative loyalty, and reinforces CMS's ability to market large volumes of coffee.
Institutional Stability <i>Stable political environment, peace and security in farming areas</i>	Regulation in the coffee value chain change regularly, as the importance of the coffee value chain in Kenya makes it naturally connected with governmental interference and sensitive to political changes.	In 2018, the regulations changed and coffee aggregating and processing companies such as CMS had to adjust their legal and operating structures.
Land Tenure <i>Existence of land ownership rights / regulations and their enforcement. Ease of purchasing/ transferring land</i>	There are no land tenure issues for the farmers. However due to land inheritance customs, farm size has heavily diminished for smallholders, with the baseline land size at approximately 1.5 acre.	In 2018, the regulations changed and coffee aggregating and processing companies such as CMS had to adjust their legal and operating structures.
Social Norms <i>Availability and quality of schooling and healthcare. Cultural factors. Potential social externalities like child labor, gender disparity</i>	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 ² .	n/a

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

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1. Executive Summary



2. The SDM



3. Business case for CMS and FCS



4. Farmer impact case

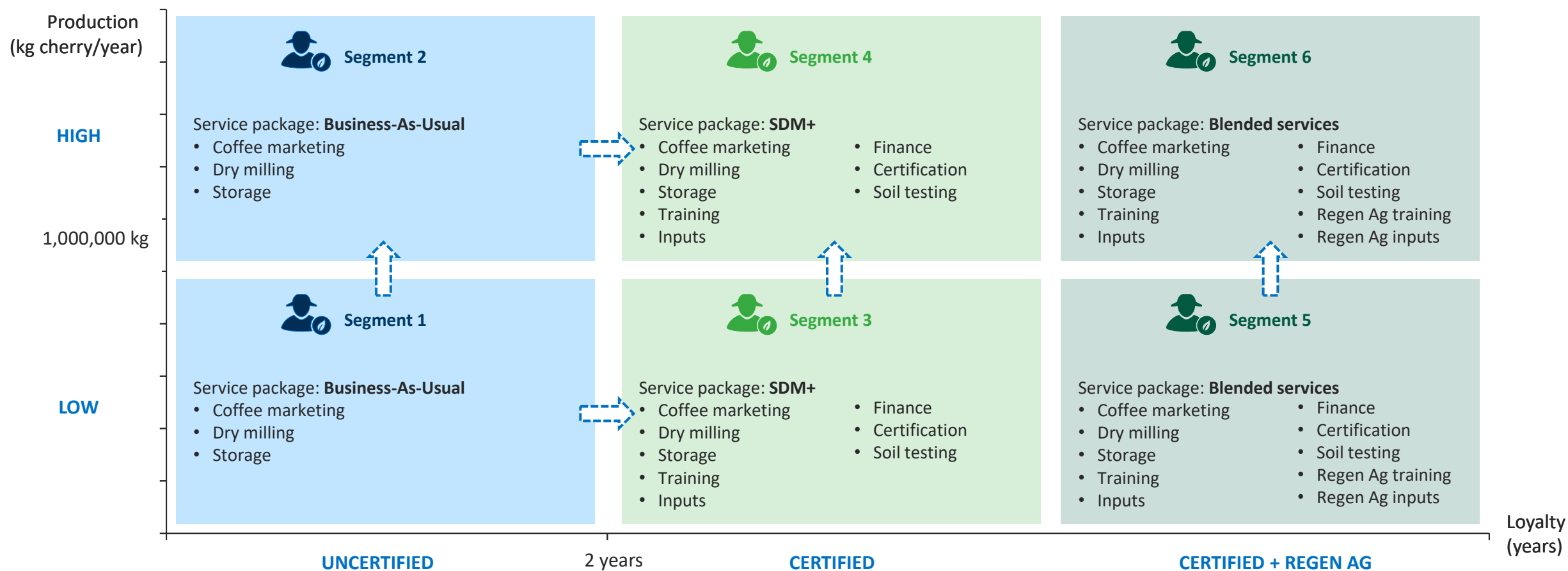


5. Annex



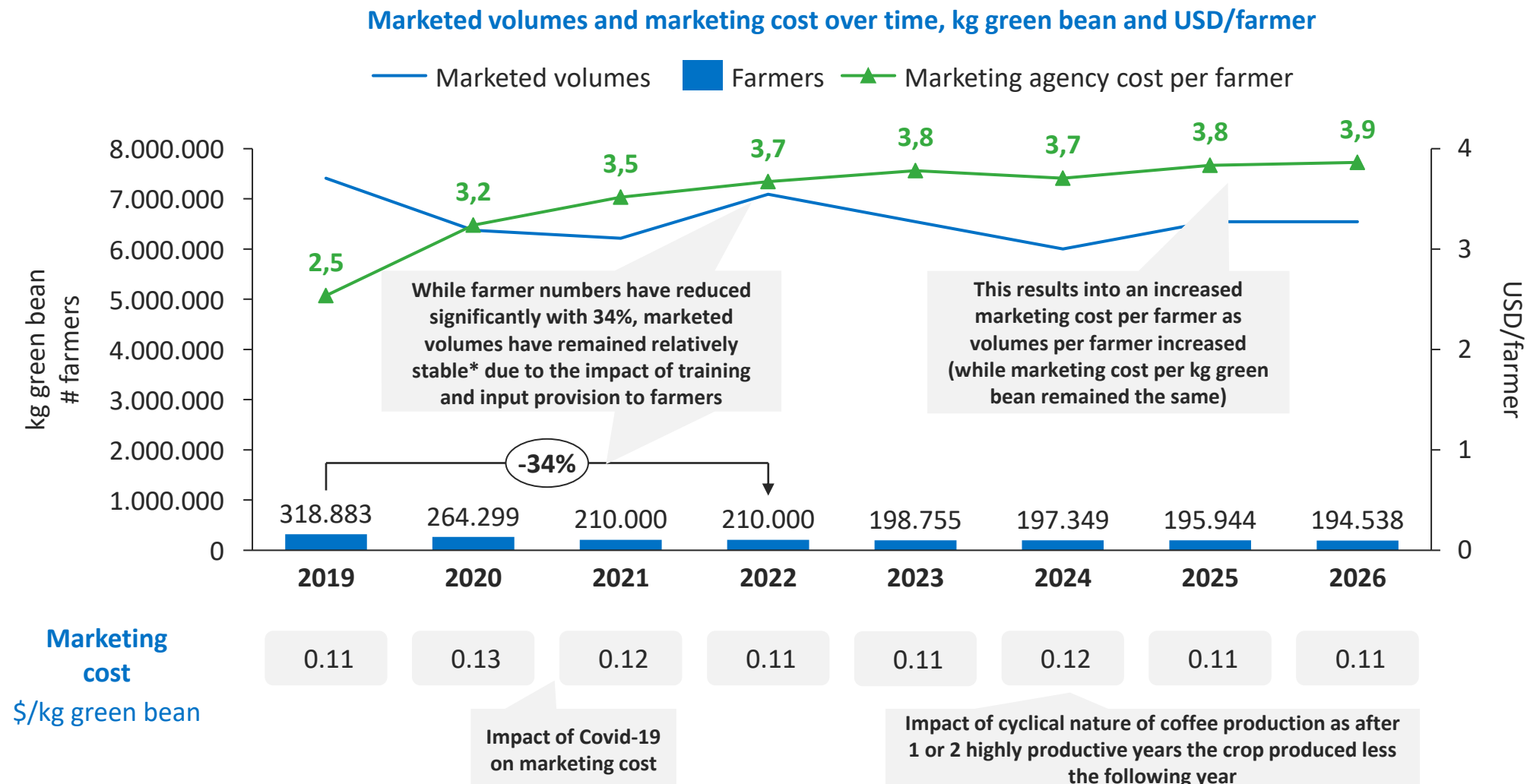
By segmenting FCS and farmers based on their behaviour, CMS can provide different service packages to address their specific needs

CMS provides different service packages to and implements specific pilot projects such as on regenerative agriculture or gender to Farmer Cooperative Societies (FCS) based on the production volumes and loyalty*. CMS's business objective (in order of priority) is to have more FCS graduate towards higher production volumes, have FCS become more loyal by renewing contracts and become certified.



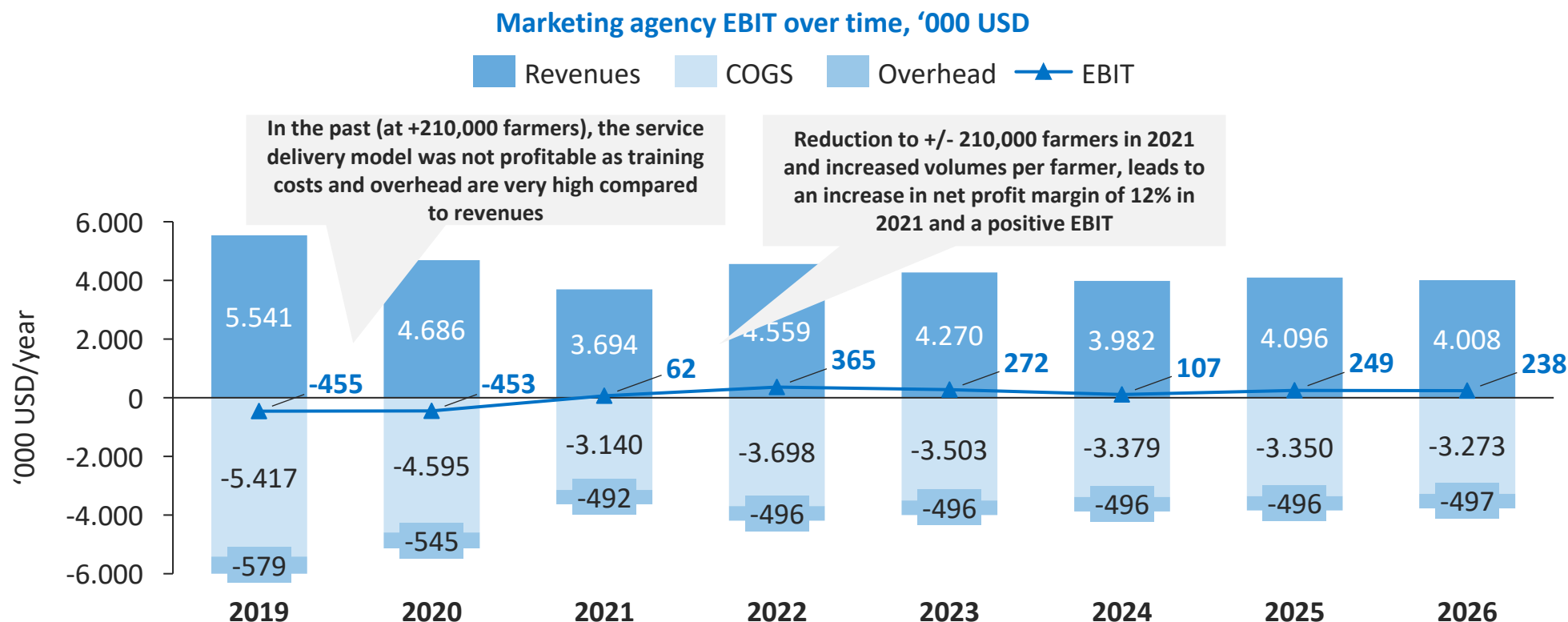
*Loyalty means the number of years FCS have renewed their annual marketing agency contracts with CMS. After 2 full years, the FCS is regarded as loyal and can receive a more extensive service package. This definition of loyalty is not to be confused with the loyalty rate used in the SDM methodology which is defined as the percentage of the volume sourced on the total volume produced indicating how much CMS can capture of the volume produced by the farmers/FCS as a sign of marketing loyalty. However, in the Kenyan coffee context loyalty rate is 100% as FCS are obligated to sell 100% of their production through the company they have signed a marketing contract with.

While CMS has reduced their farmer base over time, they were able to secure stable marketed volumes by providing the most extensive service packages to the highest producing and most loyal FCS (and their farmers)



* There is a clear decrease of 14-16% notable in years 2020 and 2021 due to the impact of Covid 19.

The selection of more loyal and higher producing farmers and investment into farmer yields have translated into more volumes marketed per farmer and increased profit margins, making the business profitable in 2021



Gross profit margin

2% 2% 15% 19% 18% 15% 18% 18%

Net profit margin

-8% -10% 2% 8% 6% 3% 6% 6%

EBIT per kg green bean (USD)

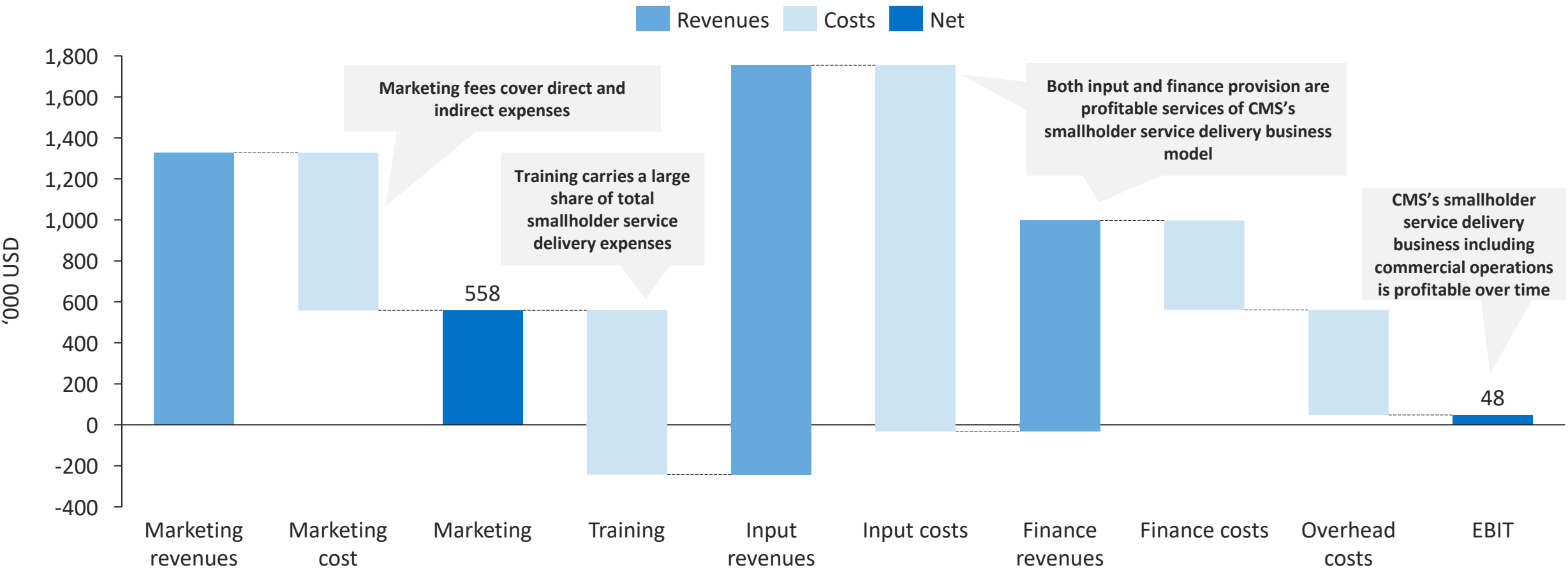
-0.06 -0.07 0.01 0.05 0.04 0.02 0.04 0.04

EBIT per farmer (USD)

-1.43 -1.72 0.30 1.74 1.37 0.54 1.27 1.23

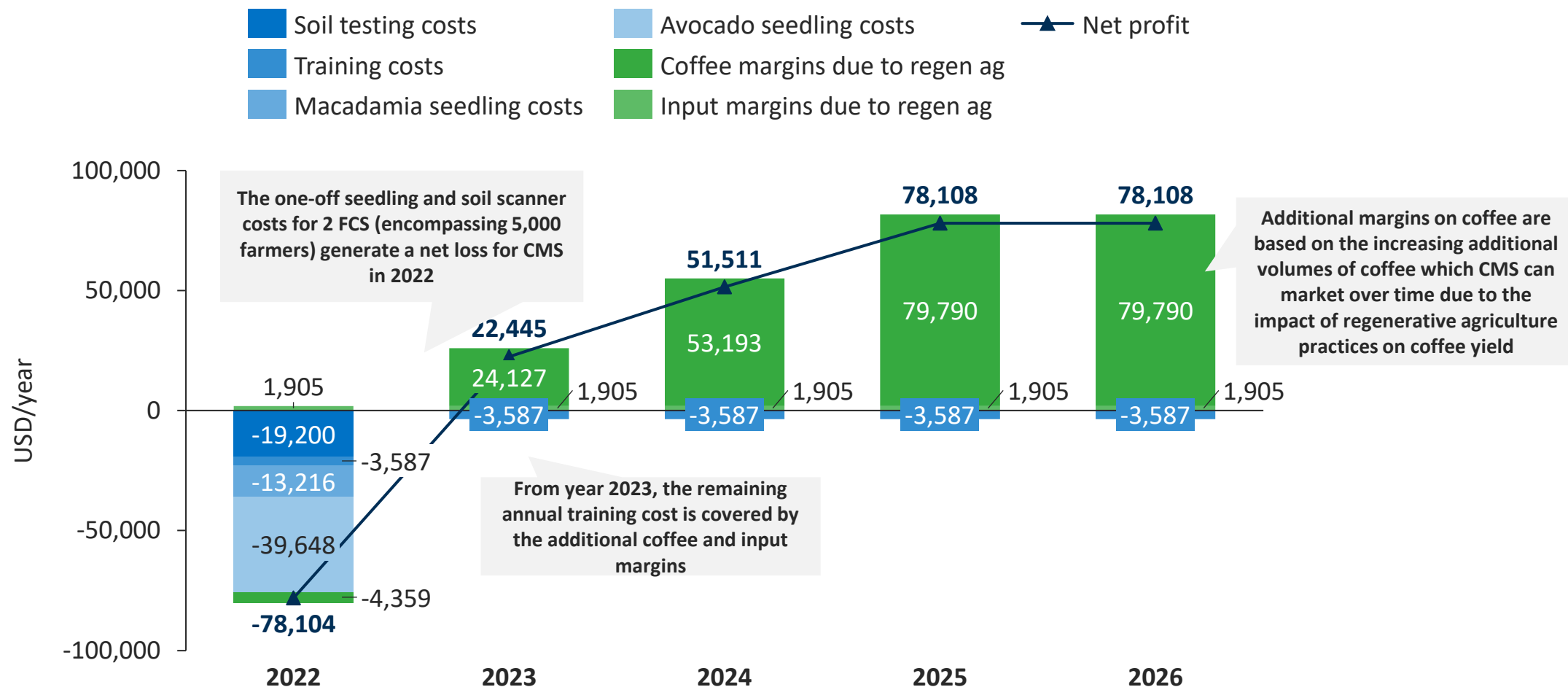
CMS’s smallholder service delivery business is profitable over time when it includes profit from its commercial marketing operations, while on a standalone basis the net profit of input and finance provision services do not outweigh the large overhead and training expenses

Profitability CMS’s smallholder service delivery model, annual average 2019-2026, ‘000 USD



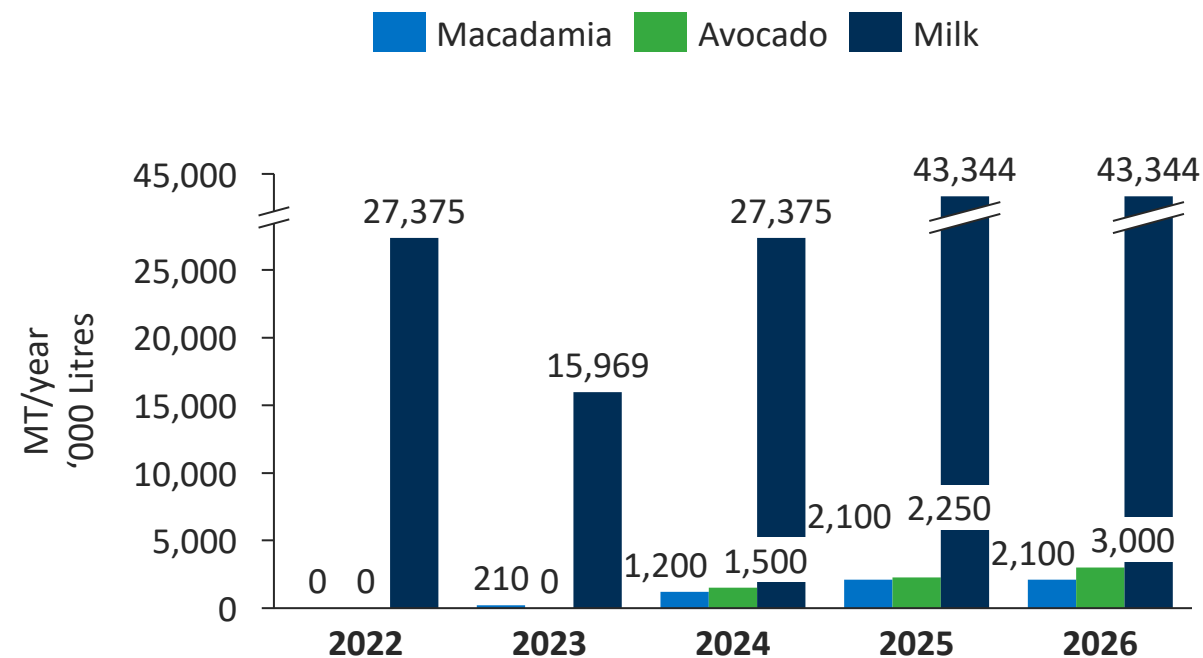
While in the first year CMS needs to make a significant investment in regenerative agriculture practices for 5,000 farmers to restore soil health, the additional profits from increased coffee volumes and input margins can outweigh costs from 2023 onwards

CMS additional costs and margins for supporting regenerative agriculture practices, USD/year



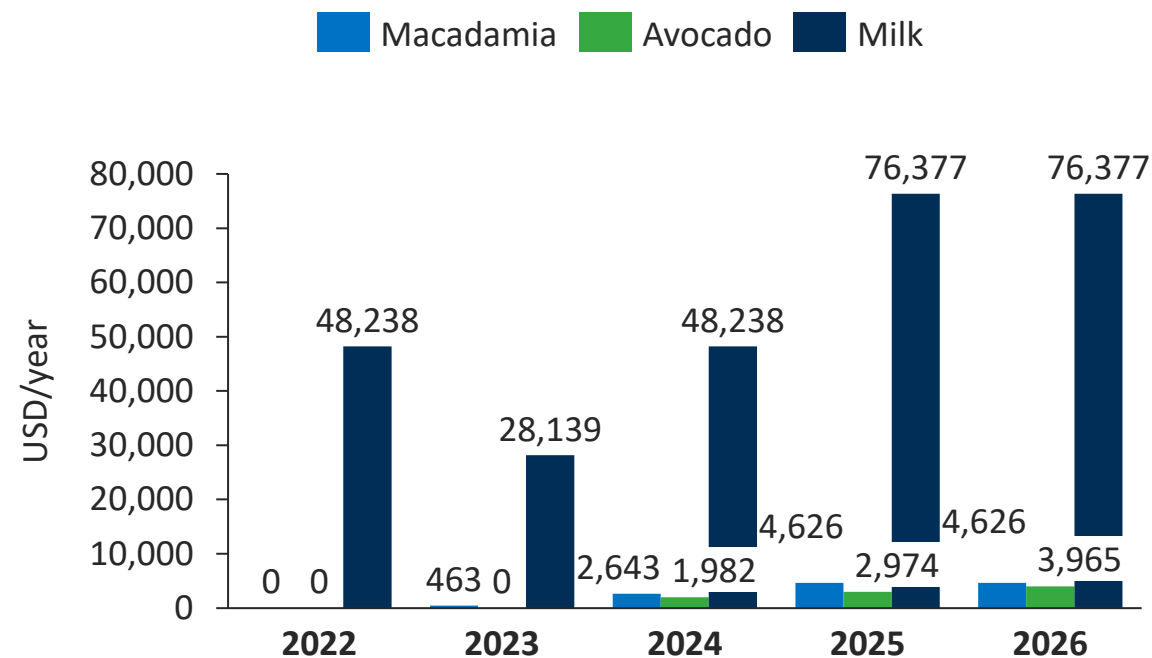
Investing in regenerative agriculture practices for farmers, could lead to a new profitable business opportunity for CMS by facilitating market access for macadamia, avocado and milk

Projected volumes of additional value chains, MT/year and '000 Litres/year



- The regenerative agriculture project of CMS entails support for 5,000 farmers on free macadamia and avocado seedlings and support on dairy farming.
- After 5 years time (by 2026), the 5,000 farmers are expected to produce a total of 2,100 MT of macadamia and 3,000 MT of avocado annually.
- While in dairy, farmers are expected to produce 43,344 thousand litres of milk throughout the year by year 2025.

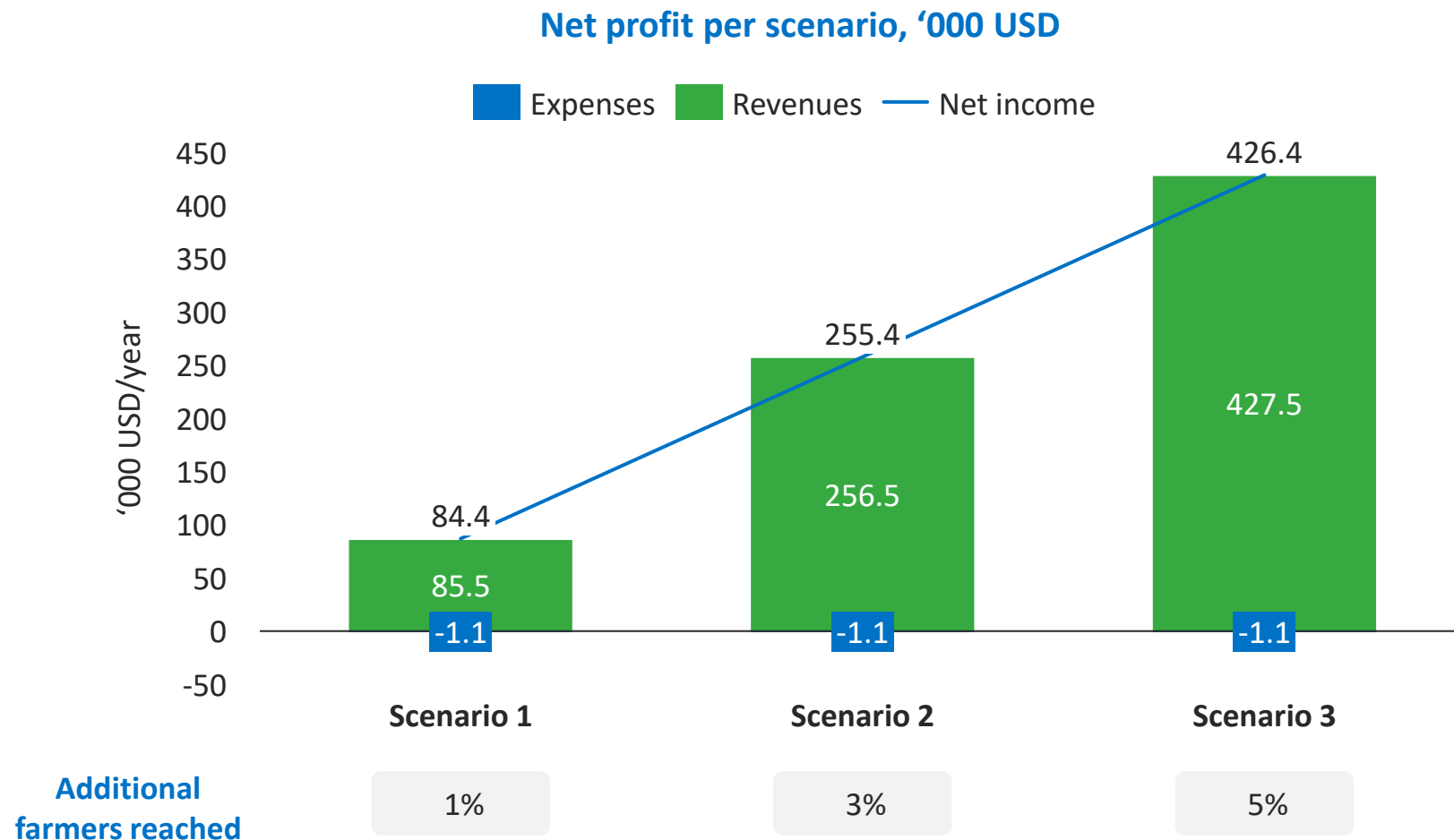
Potential marketing commission* of additional value chains, USD/year



- If CMS could tap into this market potential and play a role as marketing agent for these three value chains, they could generate an additional profit of 4,626 USD and 3,965 USD respectively for macadamia and avocado by year 2026.
- While in dairy, an additional profit of 76,000 USD could be generated by 2025.

* Based on a conservative net marketing margin of 2% of farm-gate price and a loyalty rate of marketable surplus sold or traded through CMS of 25% per value chain

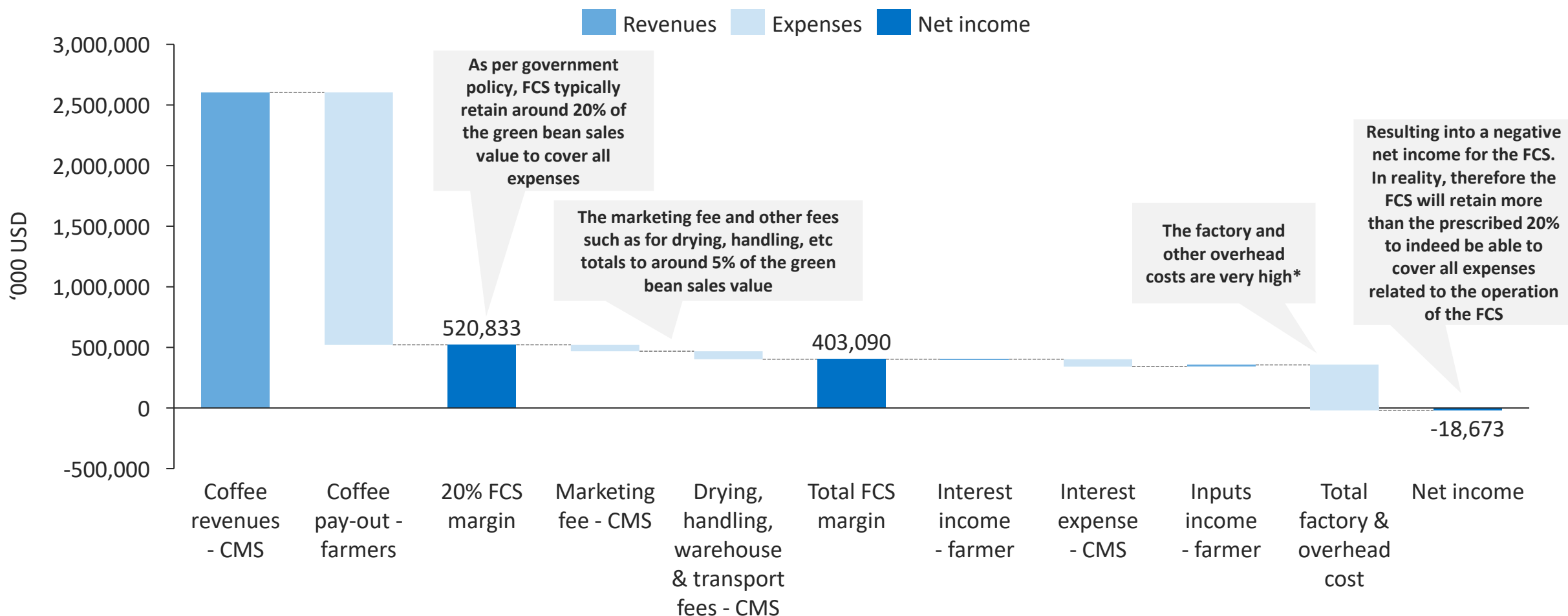
CMS has expressed interest in creating a digital platform to provide access to inputs to previously unreached farmers. This could be a profitable business for CMS if they build the input delivery structure upon the existing FC-farmer relationship as platform set-up costs are low compared to input margins



Note: calculations SDM financial model based on platform set-up costs of 10 million KES and annual operating costs (salary) of 5 million KES. Similar input margins apply as in the standard smallholder service delivery model.

Although FCS can only retain 20% of the coffee value to cover their total factory and FCS operations expenses, this does not appear enough to ensure continued operation. Hence the FCS might need to retain more to cover all expenses

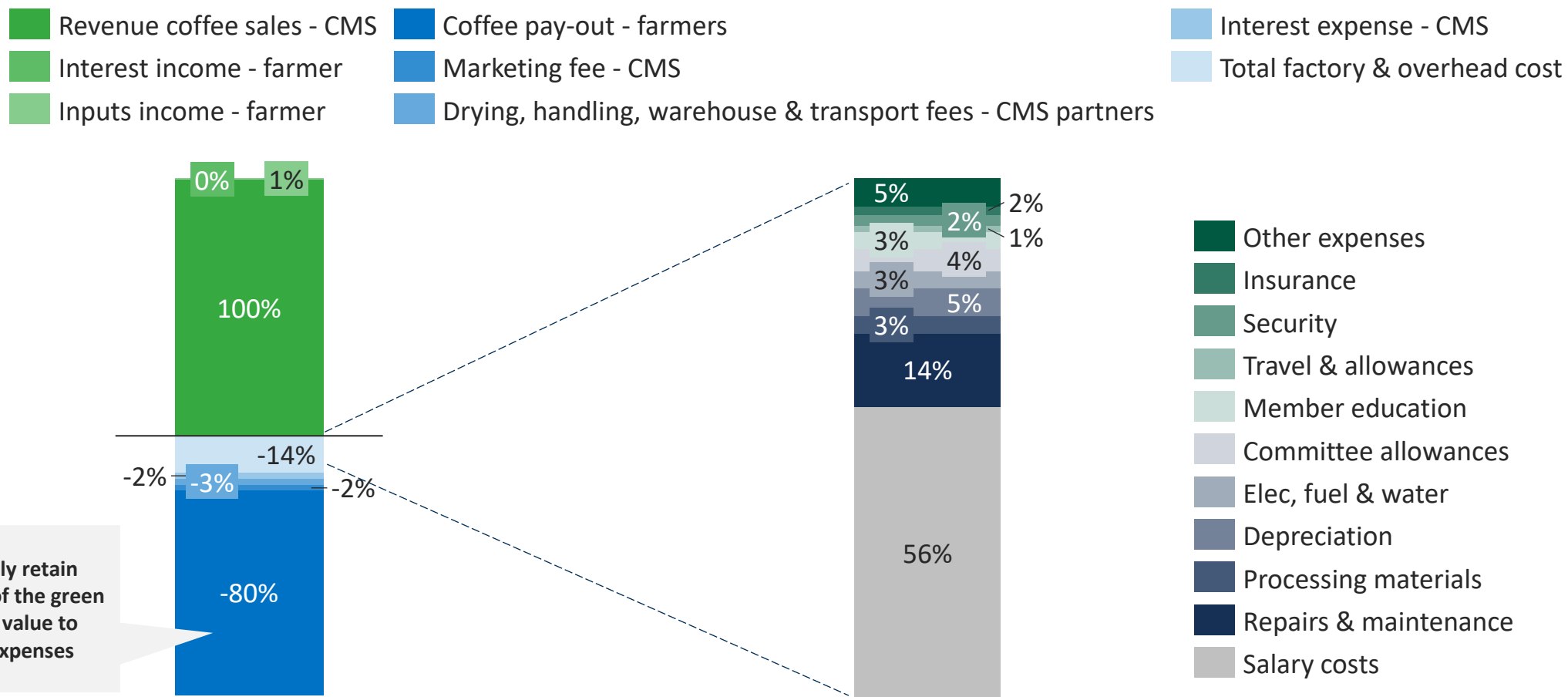
Revenues and expenses of a Segment 6 FCS with 1.5 million kg of cherry production, '000 USD/year



*calculations are based on % per kg cherry sourced. Percentages used from [Kenya Coffee Platform Economic viability study \(2021\)](#)

A more detailed breakdown of revenues and expenses to enable more transparency in the set-up of margins and fees

Detailed overview of revenues and expenses of FCS, in % of USD per kg/cherry



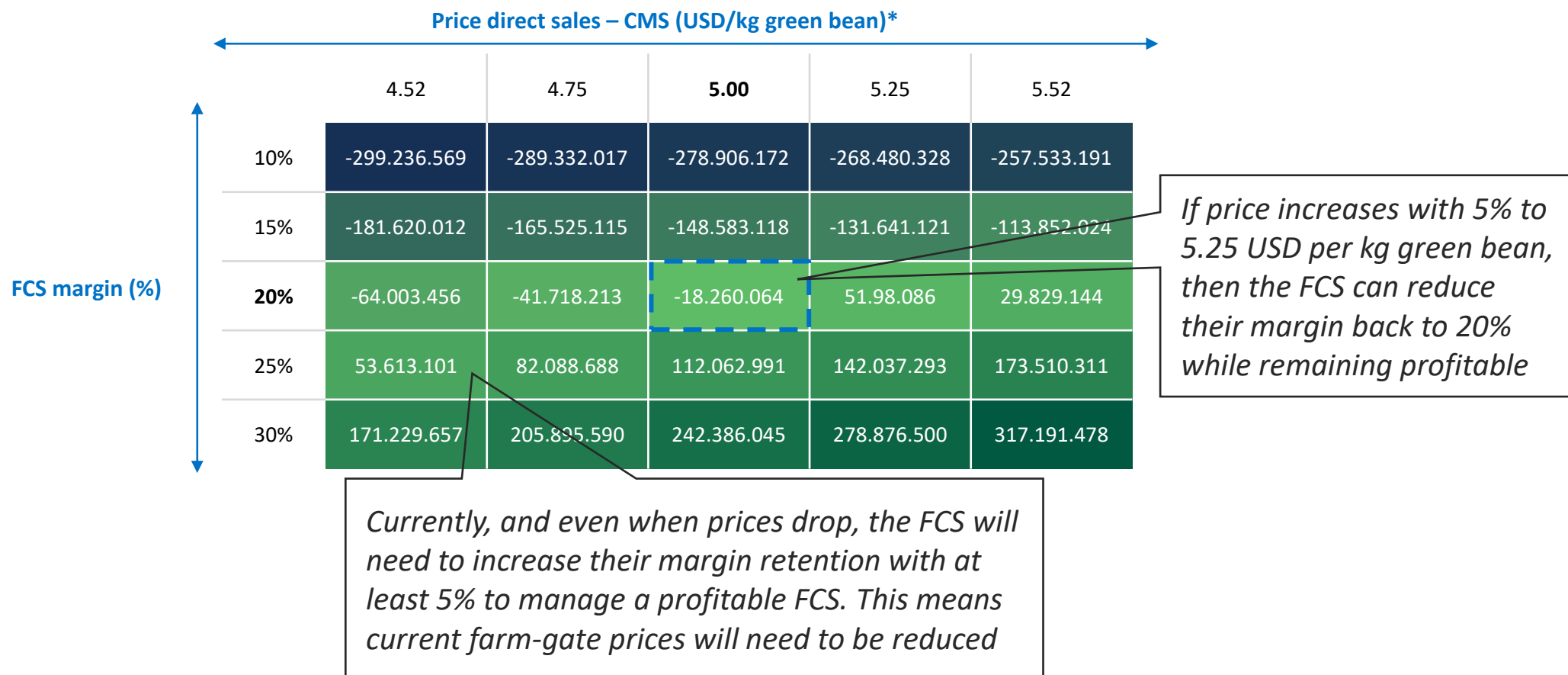
FCS typically retain around 20% of the green bean sales value to cover all expenses

Note: Percentages used from [Kenya Coffee Platform Economic viability study \(2021\)](#)

Segment 6 FCS can run a profitable business if they increase their margin retention or if the prices CMS obtains from their direct buyers increases with 5%. Increasing their retention margin directly impacts farm-gate prices

Sensitivity analysis, FCS, USD/year

Current FCS income per 1.5 million kg cherry





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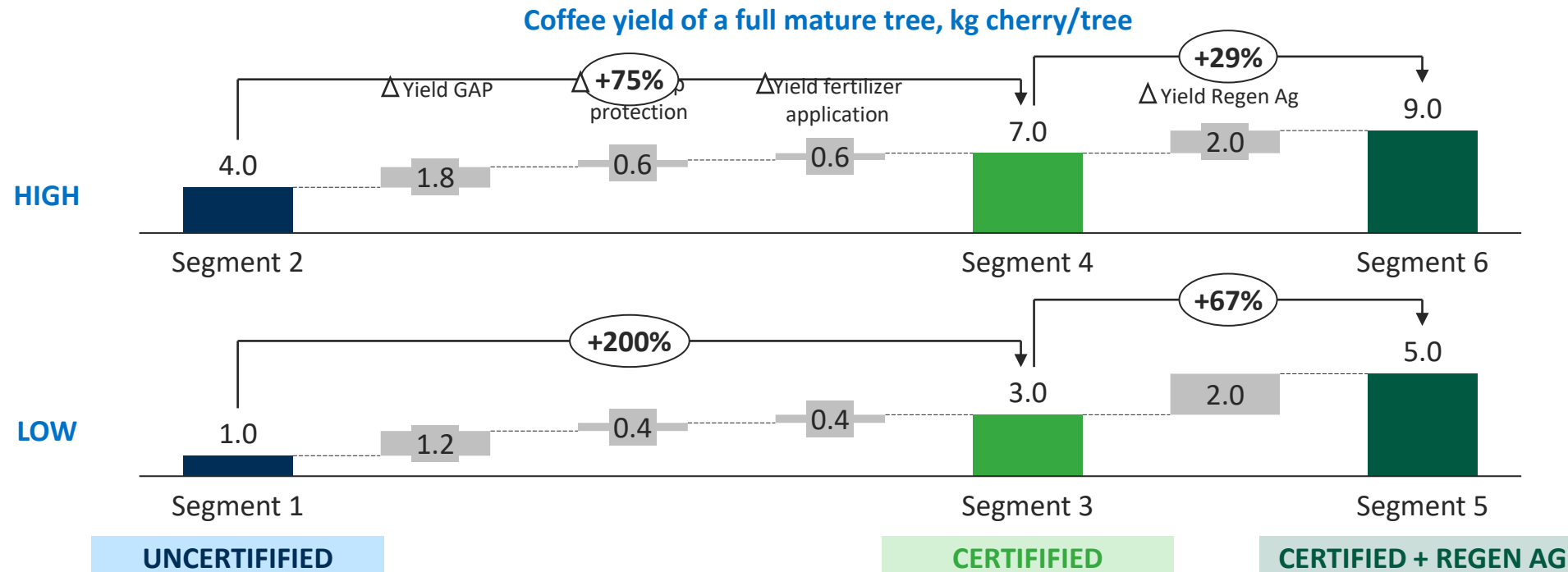
4. Farmer impact case



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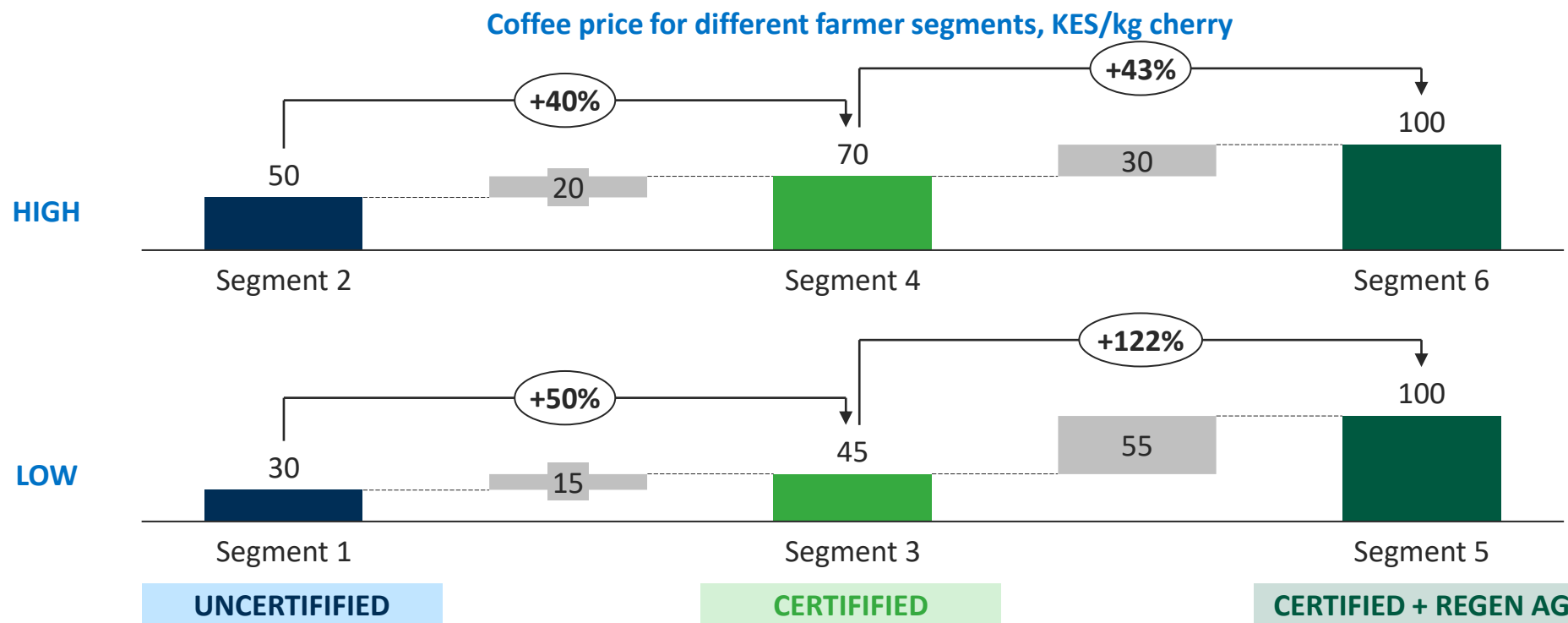


By providing segmentation-based service packages, including GAP training, input provision and training on Regenerative Agriculture practices, Segment 3,4,5 and 6 farmers can profit from increased coffee yields



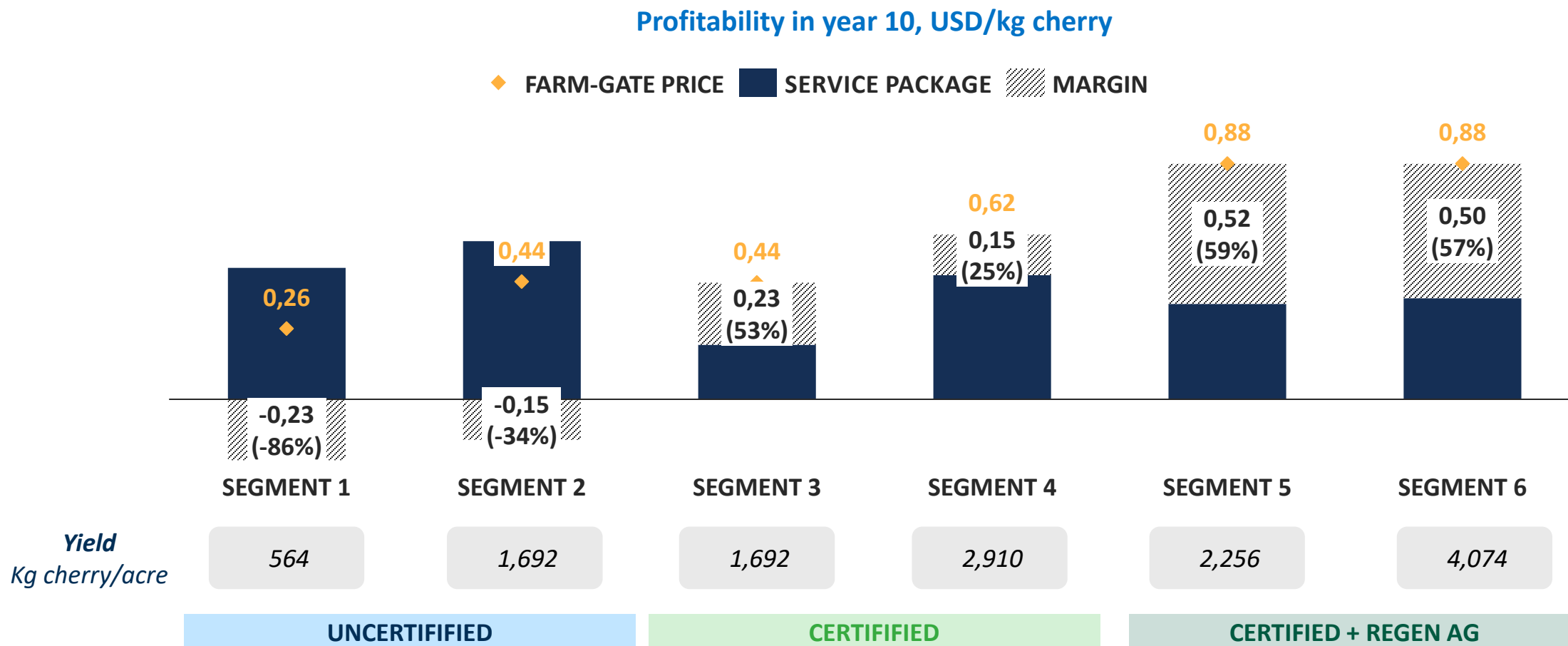
- Segment 1 and Segment 2 farmers averagely yield 1 to 4kg of cherry per tree, which is way below potential yields of 7 kg of cherry per tree in well-managed farms – such low yield is commonly attributed to lack of GAP and lack of use of high quality inputs over the years.
- Access to the SDM+ service package entail that farmers are informed of the right amounts of agri-inputs needed due to soil testing, can apply quality agri-inputs due to pre-financing and are trained on the application of GAP on pruning, weeding and harvesting.
- However, without good soil management intensive coffee cultivation may lead to soil degradation and decreasing yields. Maintaining or restoring soil health and can be achieved by the application of compost, EM fertilizers, implementation of RA practices such as intercropping, planting shade trees, mulching and maintaining crop cover over the entire farm for the most of the year.
- Coffee yields for Segment 3 and Segment 4 farmers are 3 to 7kg of cherry per tree on average, while their yield could reach up to 5 to 9kg cherry/tree if the additional regenerative agriculture practices are implemented.

FCS (and their farmers) who are more loyal and provide higher volumes or address a specific specialty market such as certified coffee, can profit from increased coffee prices of 40% up to even 122%



- Coffee prices are respectively 40 and 50% higher for Segment 3 and 4 farmers, compared to Segment 1 and 2 farmers, due to the improved quality of coffee sourced by having access to GAP training and better inputs.
- Secondly, CMS awards those FCS (and thus farmers belonging to the specific FCS) who supply large volumes of coffee and those who are considered loyal with higher price market linkages, as the consistency and security allows CMS to negotiate better price deals with their buyers.
- Segment 5 and 6 farmers, who are part of the regenerative agriculture pilot FCS, receive even higher prices (43% to 122%) as incentive to apply the regenerative agriculture practices and as award for their loyalty.

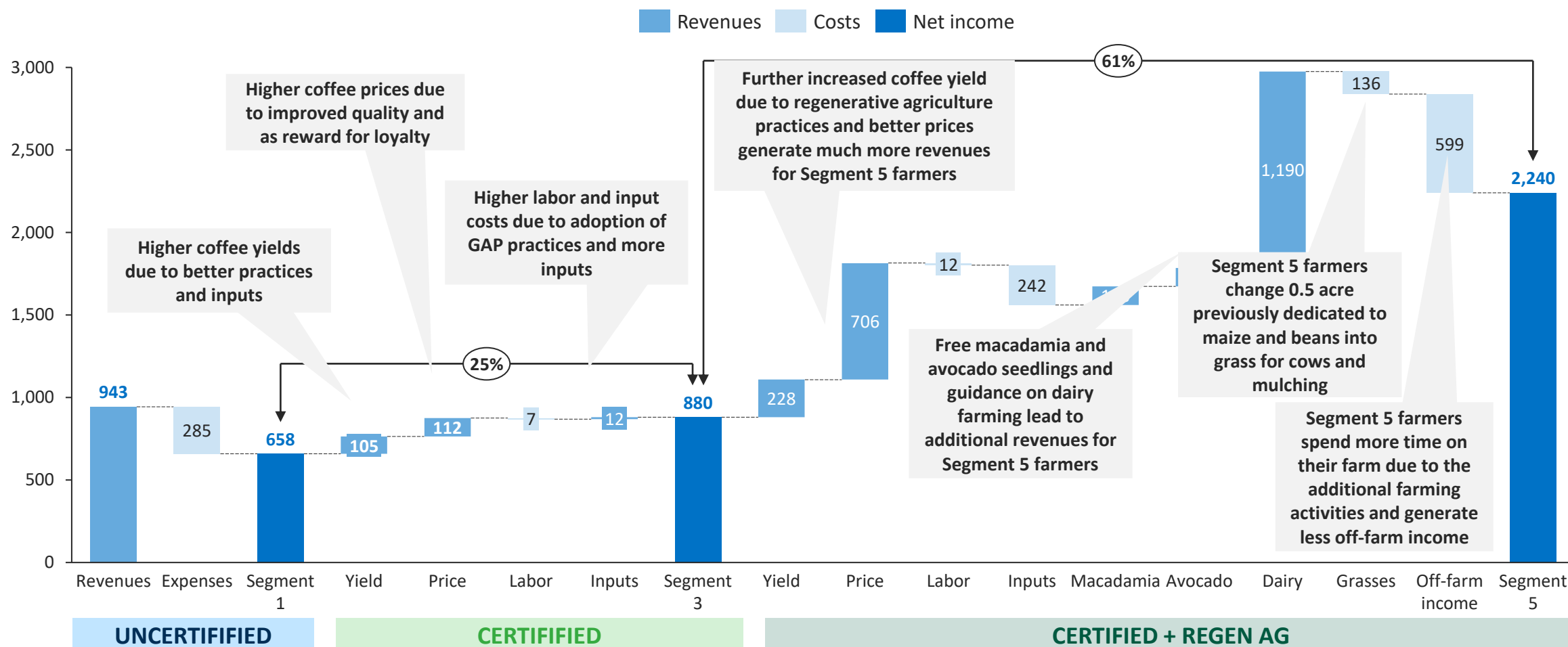
Compared to Segment 1 and 2 farmers, who appear to be loss-making, more loyal CMS farmers earn an additional 0.46 to 0.75 USD per kg cherry. The Segment 3 farmers see the smallest increase due to higher expenses, coupled with sub-optimal adoption and resulting yields, while Segment 4 farmers the highest



Comparing net farm income of farmer segments 1, 3 and 5 demonstrates that Segments 3 and 5 can increase their total farm income with 25% and 61% respectively due to the access to specific service packages

Net farm income for farmer Segment 1,3 and 5 split by revenue and expenses drivers,

10-year average, USD/year

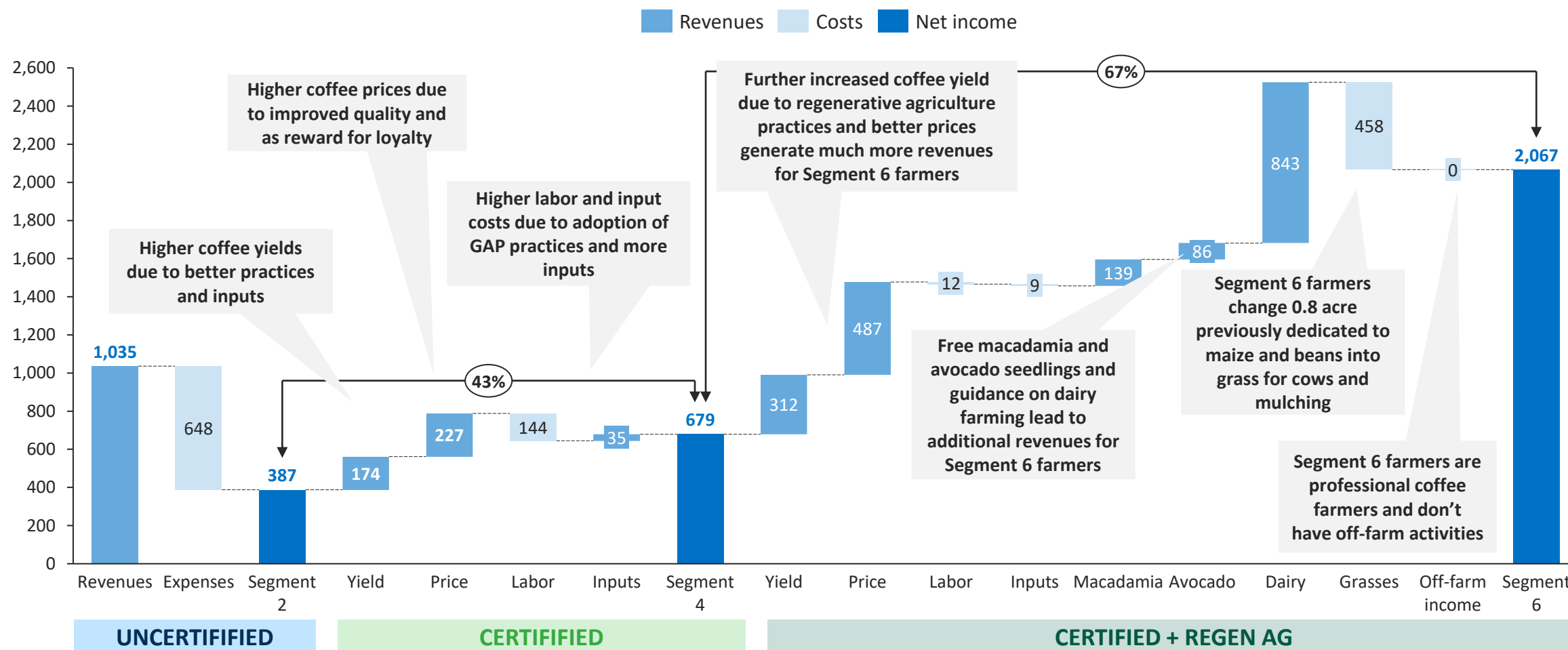


Note: In previous sustainability projects, CMS has supported the setup of seedling nurseries for shade trees. Therefore, the assumptions for the Regen Ag farmer segments 5 and 6 include free macadamia and avocado seedlings by CMS to demonstrate the potential impact of these trees as shade trees on the coffee farm.

Comparing net farm income of farmer segments 2, 4 and 6 demonstrates that Segments 4 and 6 can increase their total farm income with 43% and 67% respectively due to the access to specific service packages

Net farm income for farmer Segment 2, 4 and 6 split by revenue and expenses drivers,

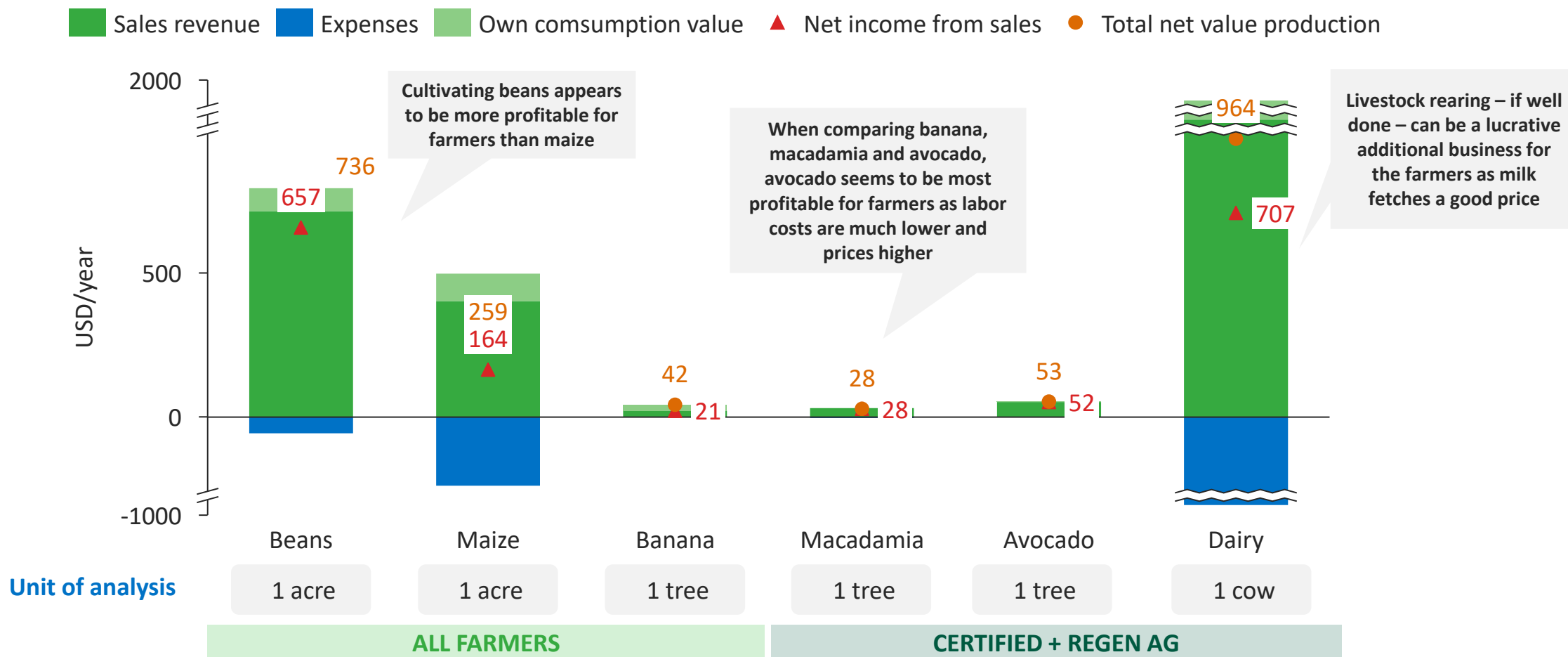
10-year average, USD/year



Note: In previous sustainability projects, CMS has supported the setup of seedling nurseries for shade trees. Therefore, the assumptions for the Regen Ag farmer segments 5 and 6 include free macadamia and avocado seedlings by CMS to demonstrate the potential impact of these trees as shade trees on the coffee farm.

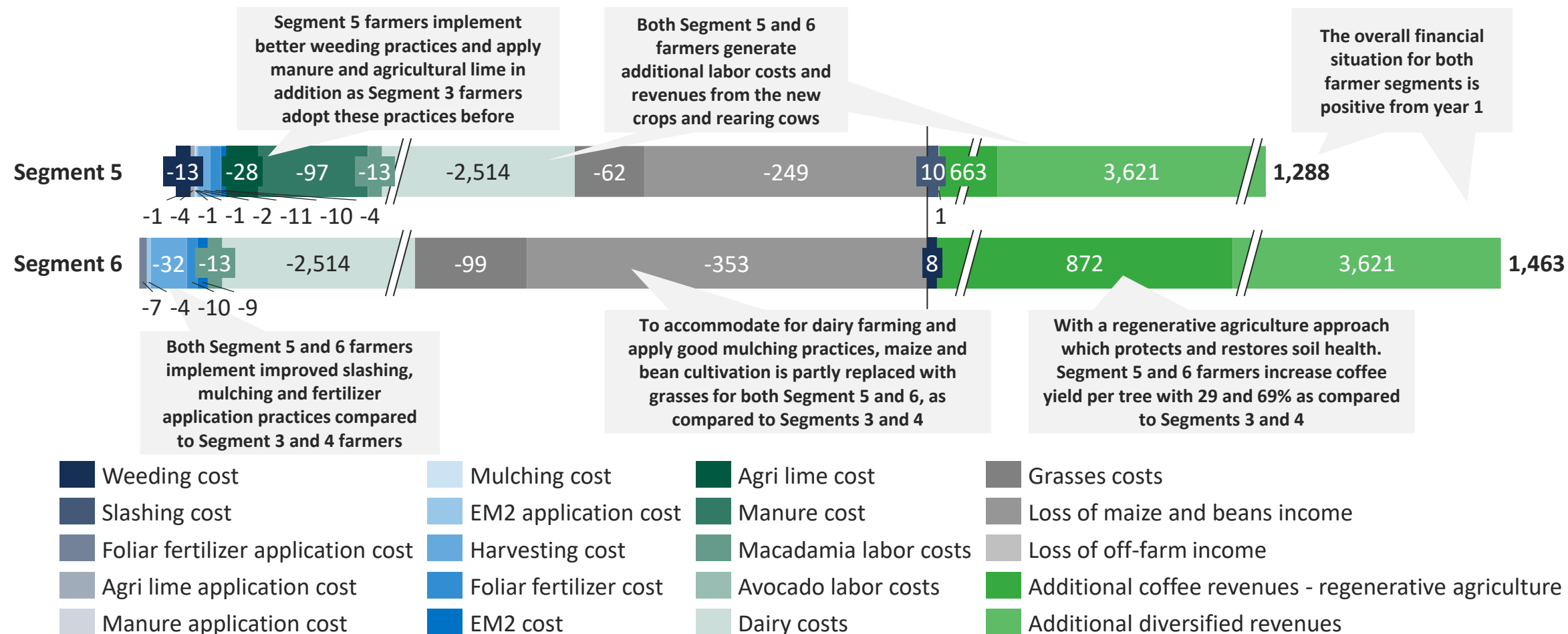
Despite farmers' small land sizes of 1.5 acres, farmers typically cultivate a range of crops such as beans, maize, banana and coffee. Segment 5 and 6 farmers are supported by CMS to grow macadamia, avocado as well and rear livestock

Net income from sales, own consumption value and total net value production for diversified activities, USD/year



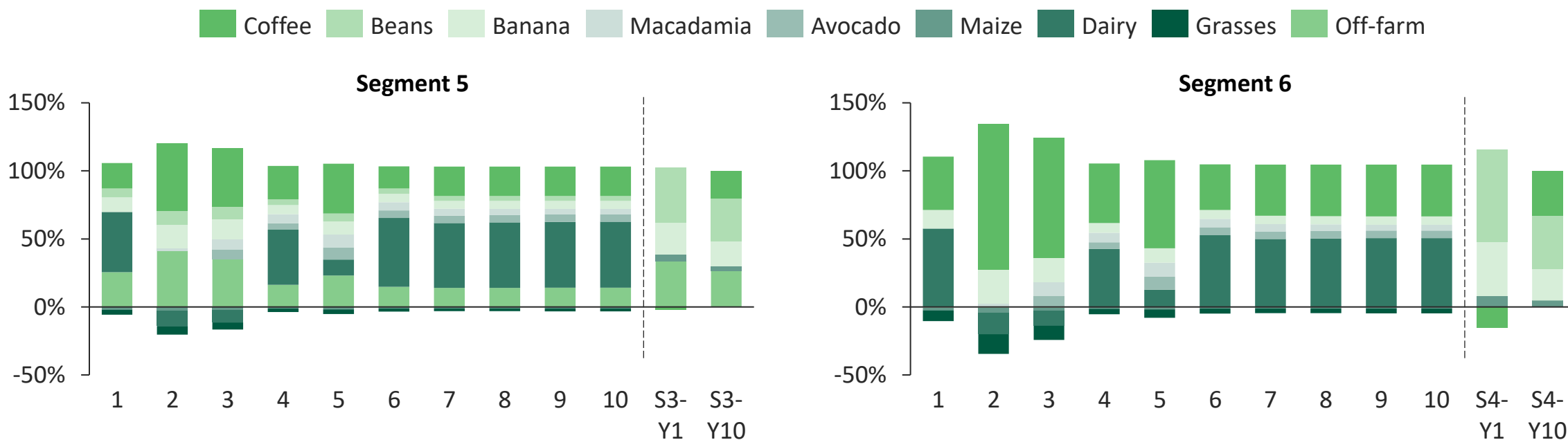
Although implementing Regenerative Agriculture practices requires more labor and inputs costs for coffee, and additional labor cost for cultivating macadamia, avocado and rearing livestock (mainly feed), the additional revenues from both coffee and new sources clearly outweigh costs

Additionality costs and revenues regenerative agriculture approach, year 5, USD/year



By providing free macadamia and avocado trees, which function as shade trees and at the same time are profitable and for which market opportunities exist, and by providing guidance on livestock rearing, CMS supports Segment 5 and 6 farmers' income resiliency

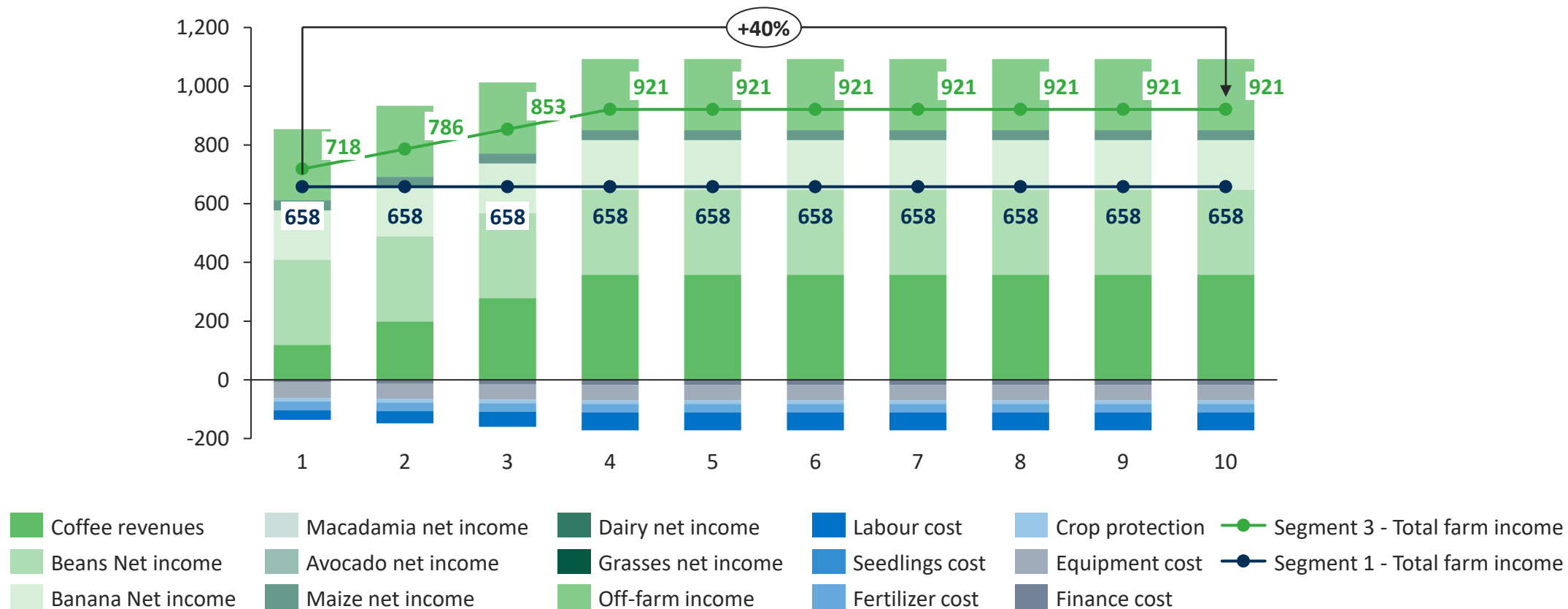
Net farm income distribution of farmer Segment 5 and Segment 6 compared to Segment 3 and 4 year 1 and 10, in %/year



- Compared to the Segment 3 and Segment 4, who are currently already growing beans, maize and banana, both segment 5 and 6 are able to diversify their income even more with other activities such as macadamia, avocado and dairy.
- Segment 5 and 6 farmers decreased reliance on a single crop as a source of income, makes them more resilient to climate change and climate shock that can lead to unforeseen crop losses.

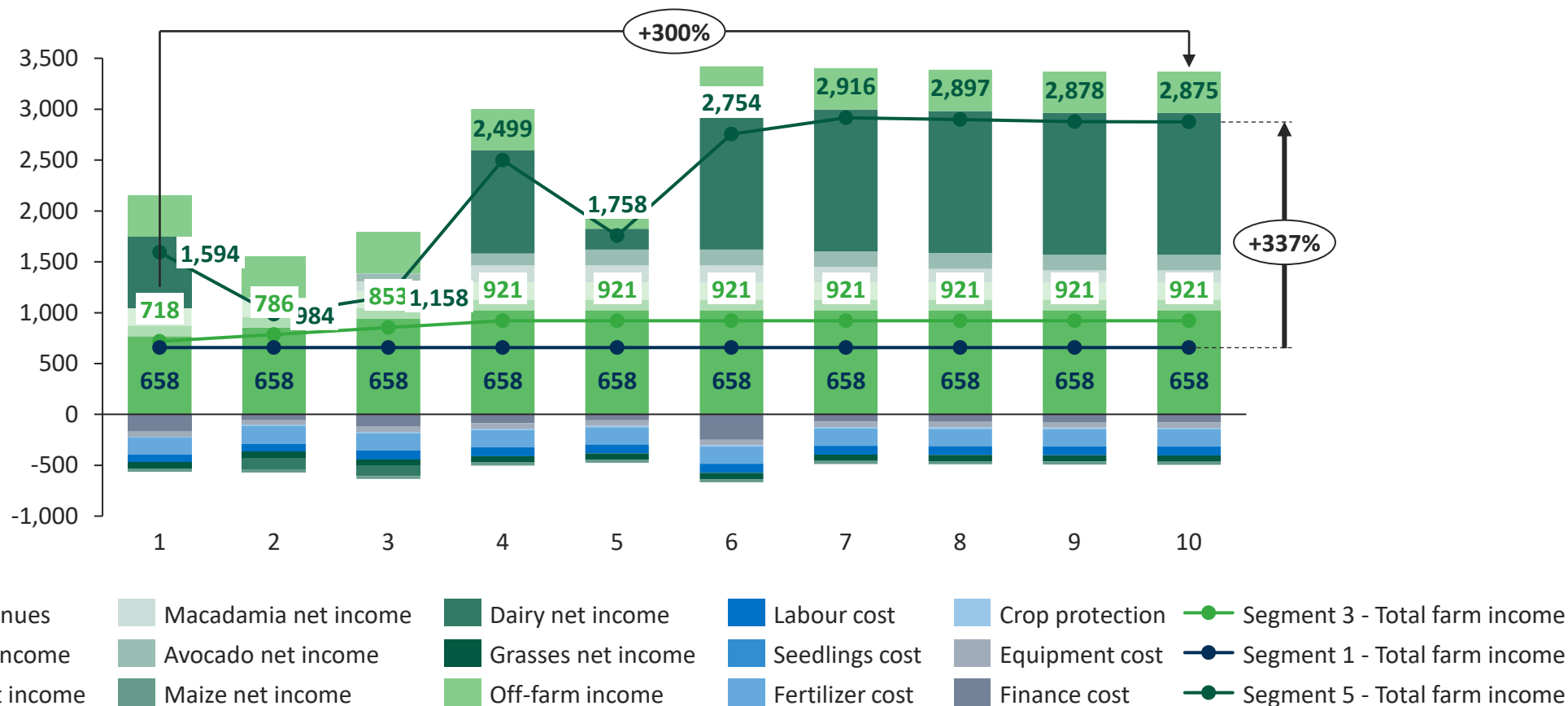
Segment 3 farmer can increase their total farm income with 40% in 4 years time by their access to coffee GAP training, inputs on credit, soil testing and better coffee pricing

Total farm net income of Segment 3 farmers, 0.5 acres dedicated to coffee, USD/year



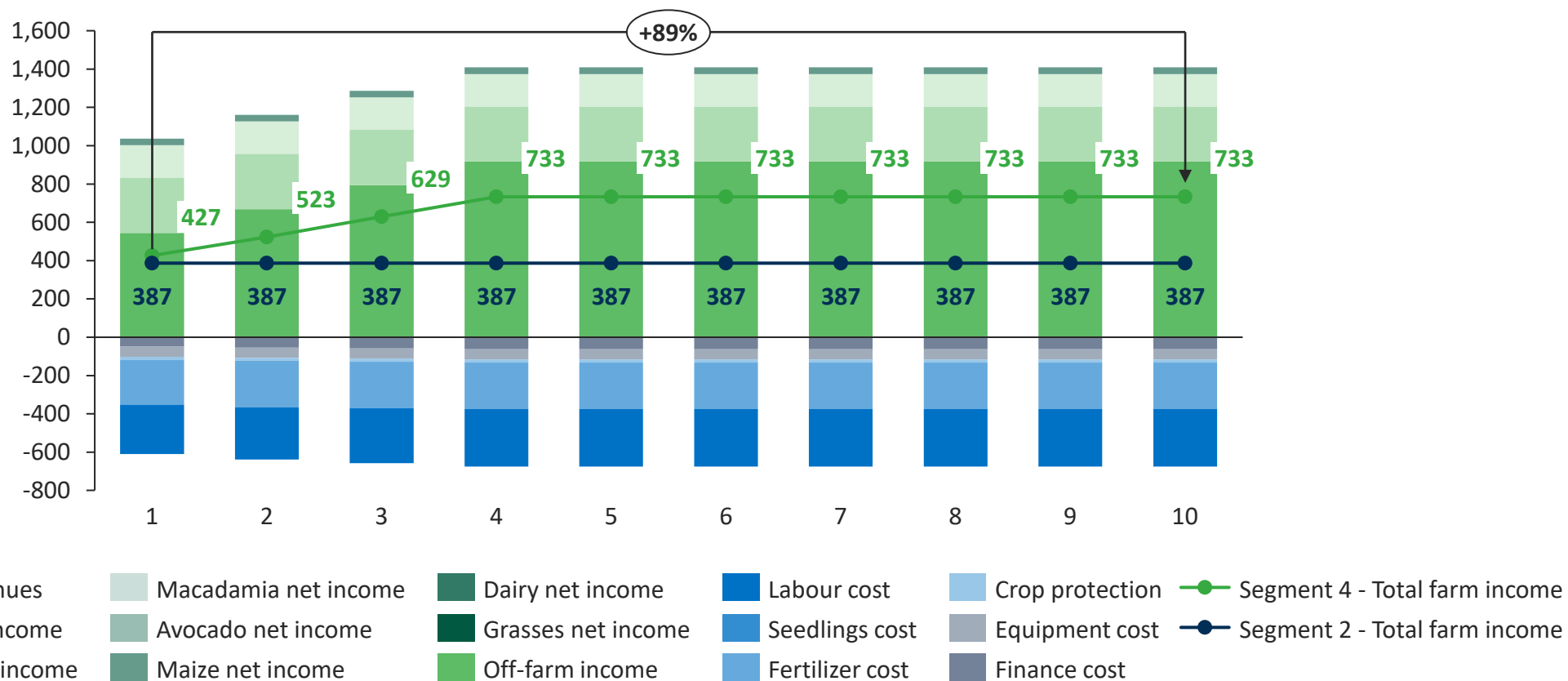
Segment 5 farmer can increase their total farm income with 337% in 10 years time by their access to blended service delivery (for both coffee, macadamia, avocado and dairy) and better coffee pricing. Due to expansion into and scale up in dairy farming the first 5 years of farm income are heavily fluctuating

Total farm net income of Segment 5 farmers, 0.5 acres dedicated to coffee,
USD/year



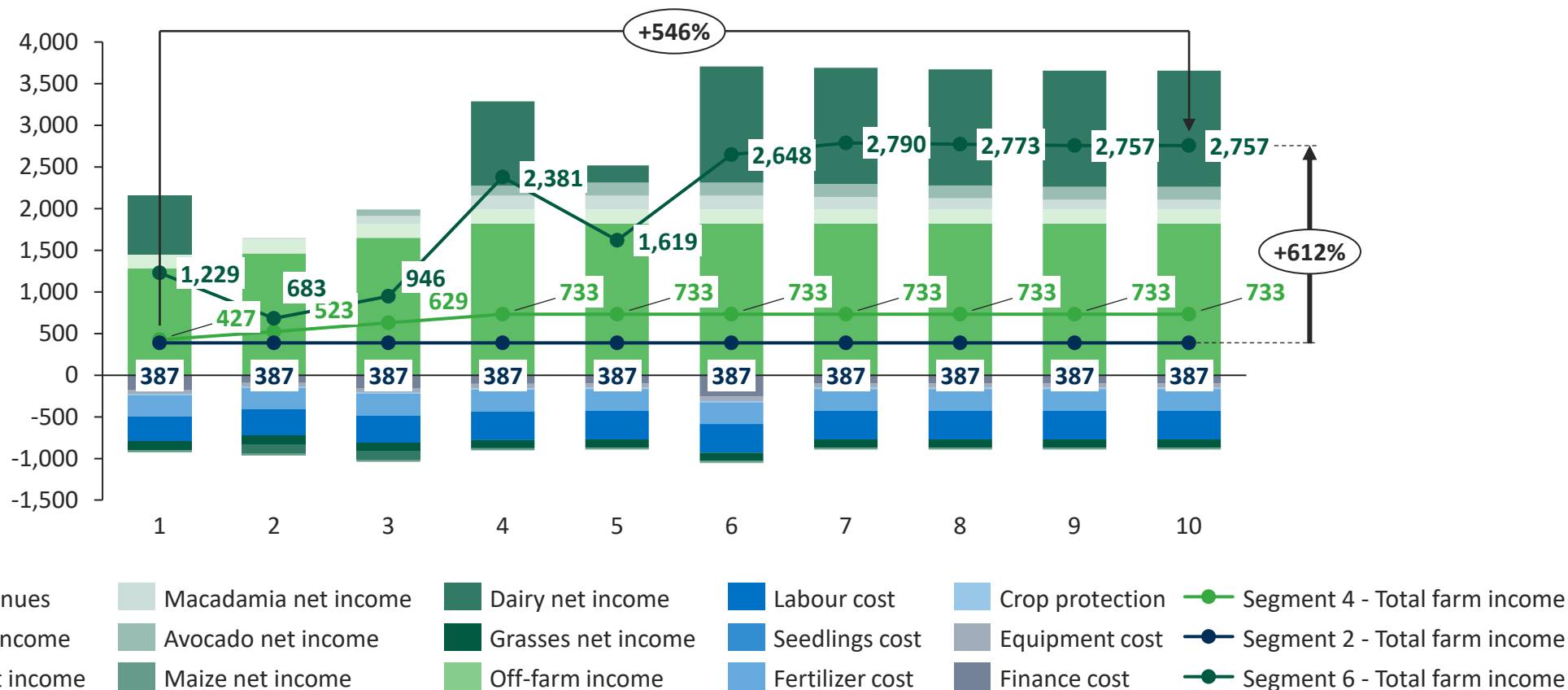
Segment 4 farmer can increase their total farm income with nearly 90% in 4 years time by their access to coffee GAP training, inputs on credit, soil testing and better coffee pricing

Total farm net income of Segment 4 farmers, 0.5 acres dedicated to coffee,
USD/year



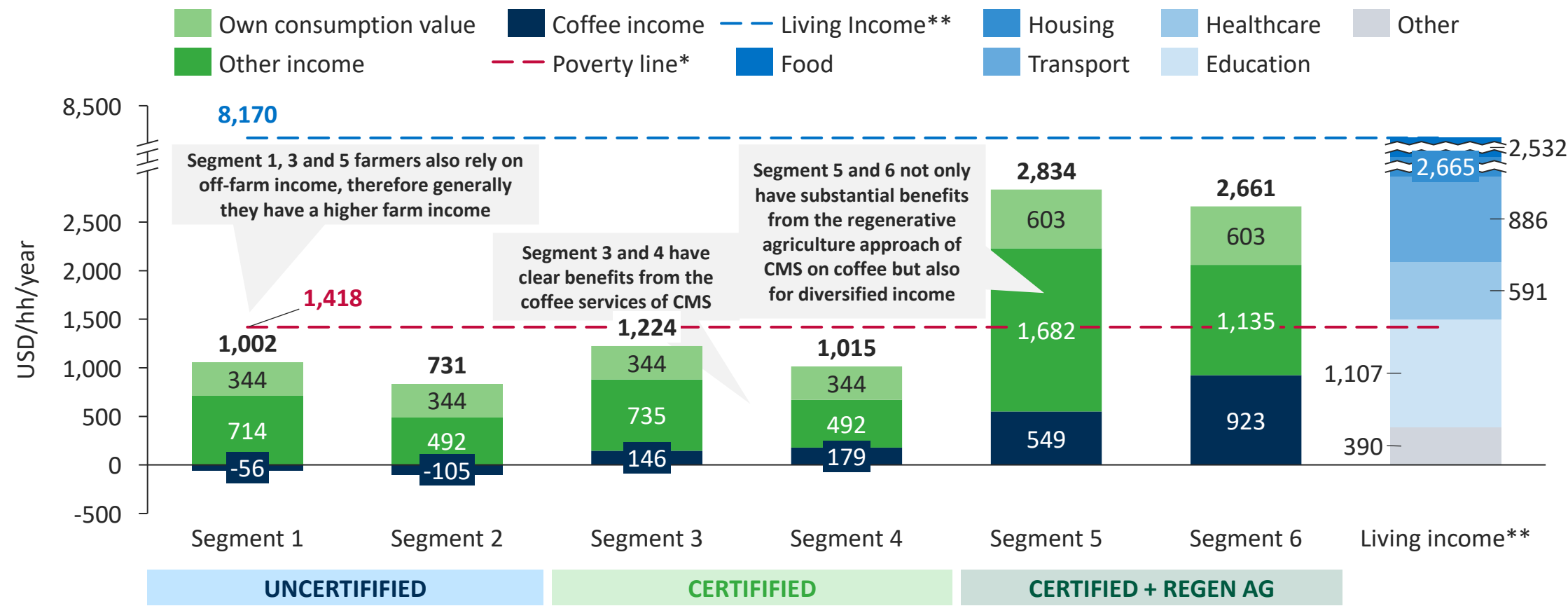
Segment 6 farmer can increase their total farm income with 612% in 10 years time by their access to blended service delivery (for both coffee, macadamia, avocado and dairy) and better coffee pricing. Due to expansion into and scale up in dairy farming the first 5 years of farm income are heavily fluctuating

Total farm net income of Segment 6 farmers, 0.5 acres dedicated to coffee,
USD/year



Only Segment 5 and 6 farmers who receive both coffee and blended services from CMS can earn more than the poverty line of 1,418 USD, although they remain heavily reliant on diversified farm income (and off-farm income for Segment 5). None of the farmers are able to close the gap to a living income of 8,170 USD

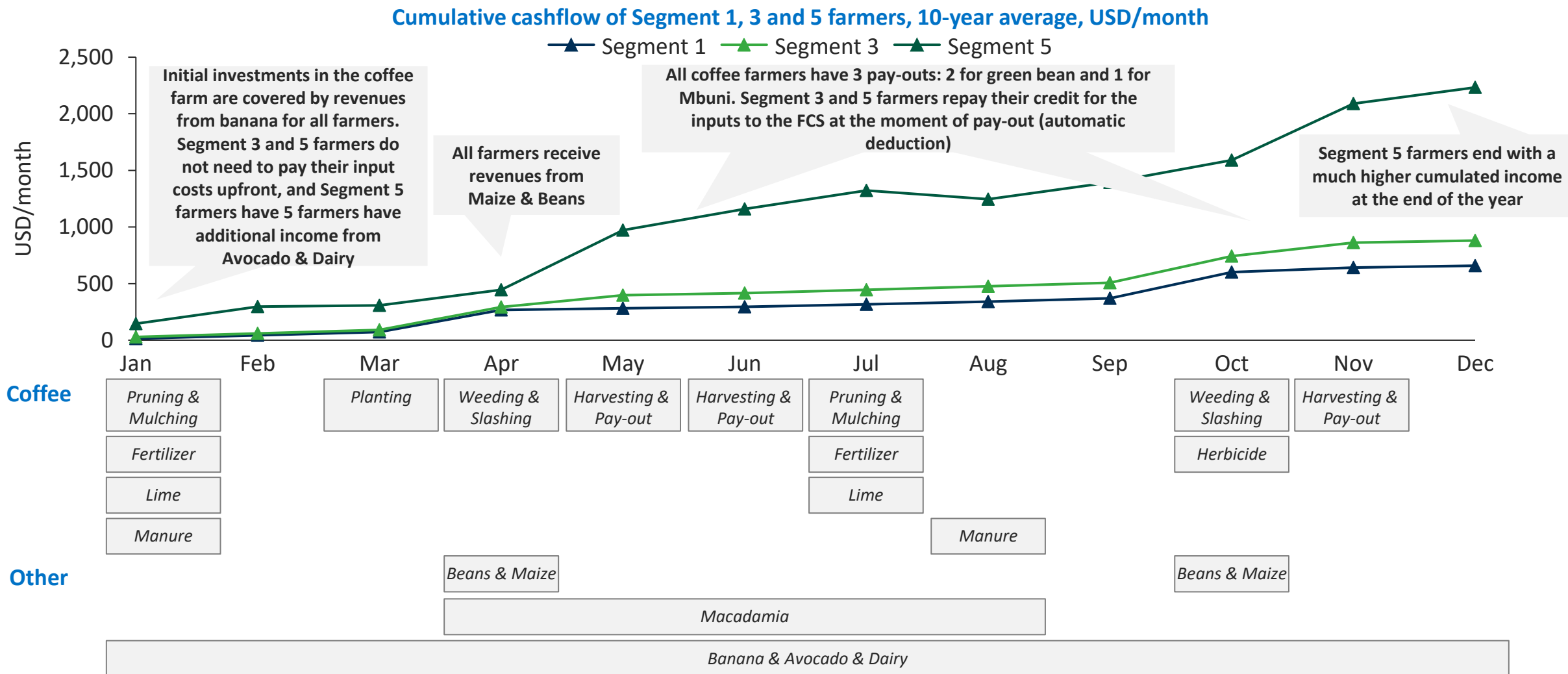
Total farm production value for different farmer segments, 10-year average, USD/year



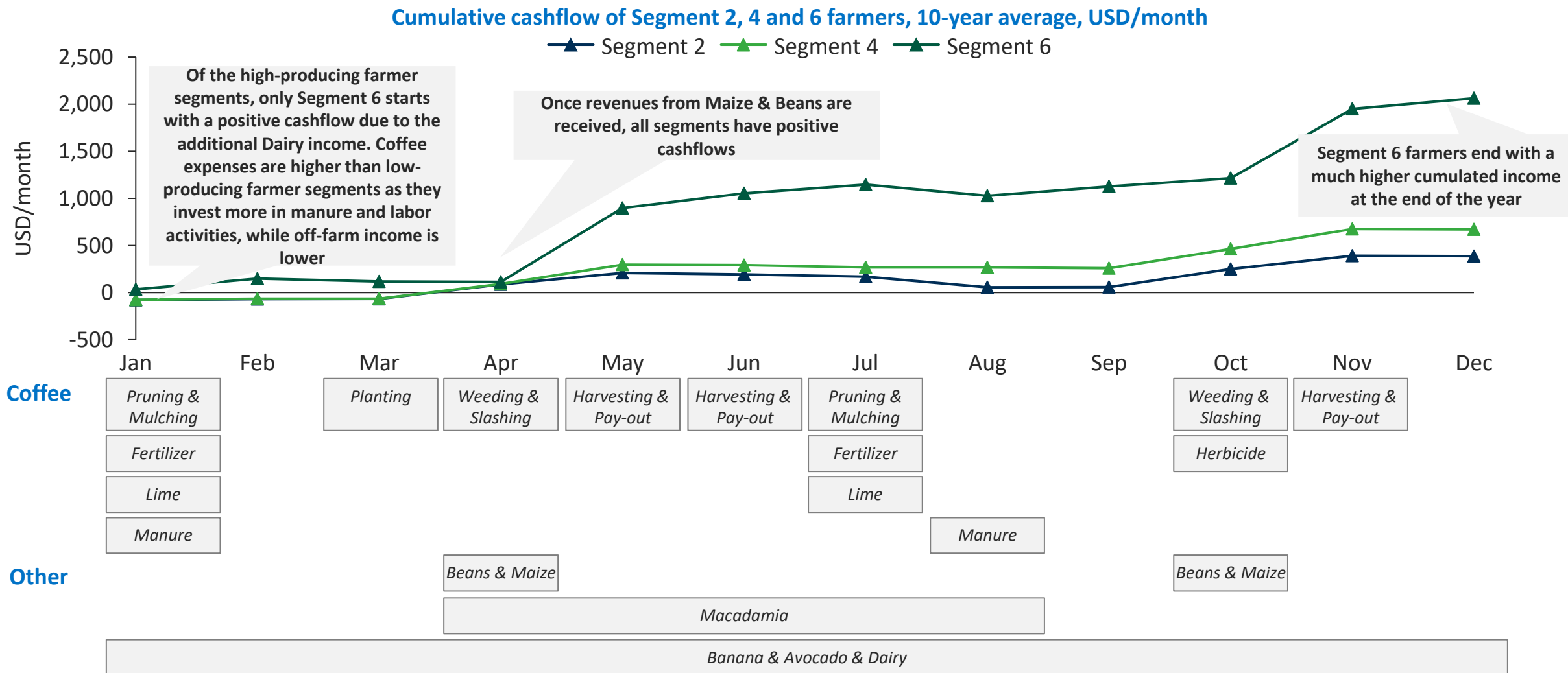
*The Worldbank poverty line was adjusted to a household of 5 members and a PPP conversion factor of 46.41 KES per \$.

**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.

While all low-producing coffee farmers appear to have a positive cashflow throughout the year, Segment 3 and 5 farmers experience more stability due to the access of inputs on credit, higher coffee revenues and additional revenues stream for Segment 5 farmers



High-producing coffee farmers generally rely more on coffee income and therefore struggle more to finance all labor activities to comply with GAP and inputs. While segment 4 and 6 farmers both clearly benefit from receiving inputs on credit in January and July, Segment 6 farmers also benefit of new income sources



The gap to a living income for the Segment 6 farmers could be closed further if farmers invest in the regenerative agriculture approach and simultaneously achieve the highest obtainable yield of 9kg of cherry per tree

The **net income of a Segment 6 farmer including own consumption value** amounts to **\$1,699** in the **first year of the SDM**. The table below shows the feasible improvements for each of the income drivers* to increase this income towards the level of the living income benchmark. This benchmark is **\$8,170**, so **an income increase of 79% is required**.

	Baseline assumption	Max obtainable assumption	Corresponding income	Remaining LI gap	Effectiveness	Feasibility	Comment / explanation
Farm size (Acre)	0.5	1.5 (+200%)	\$ 1,049 (-38%)	87%	Low	Medium	SDM farmers own on average 1.5 acre of farmland, so they could convert this into coffee cultivation. However, this means they would not have the additional income of diversification and would be worse off.
Yield (kg cherry/tree)	7	9 (+86%)	\$ 1,999 (+18%)	76%	High	High	Through GAP training and adoption of Regenerative agriculture practices, the farmers can significantly increase their yield per tree (see slide 38).
Price (\$/kg cherry)	0.88	0.88 (-)	\$ 1,699 (-)	79%	Low	Low	Farmers are already assumed to be awarded by CMS with the highest price market linkages.
CoP (\$/kg cherry)	0.38	0.38 (-)	\$ 1,699 (-)	79%	Low	Low	Coffee farming is a labor-intensive crop and there are currently no practical implementations to further reduce labor cost without impacting yield and quality.
Other income (\$/year)	1,349	2,311 (+71%)	\$ 2,660 (+57%)	67%	High	High	SDM farmers are supported to implement a regenerative agriculture approach which is highly profitable for the farmers

When the feasible improved values for Other income and Yield can be obtained simultaneously, the farmers could reach an income of \$2,960. Generating an income increase of 74% and resulting in a remaining living income gap of 64%. This demonstrates that the proposed regenerative agriculture project would present the best approach for farmers to close the LI gap.

* The different income drivers influence the family income through the following simplified formula: $\text{Total household income} = \text{Farm size} \times \text{Yield} \times \text{Price} - \text{Cost of production} + \text{Other income}$



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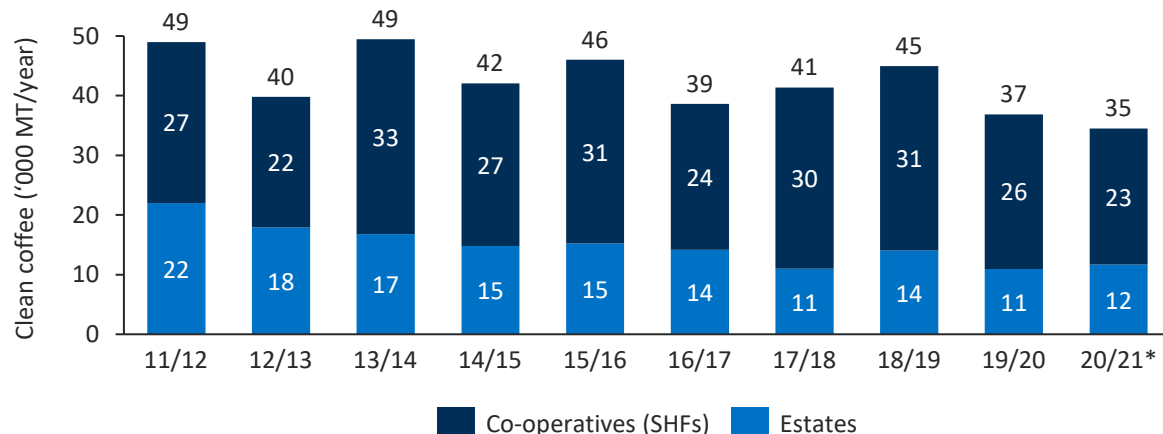
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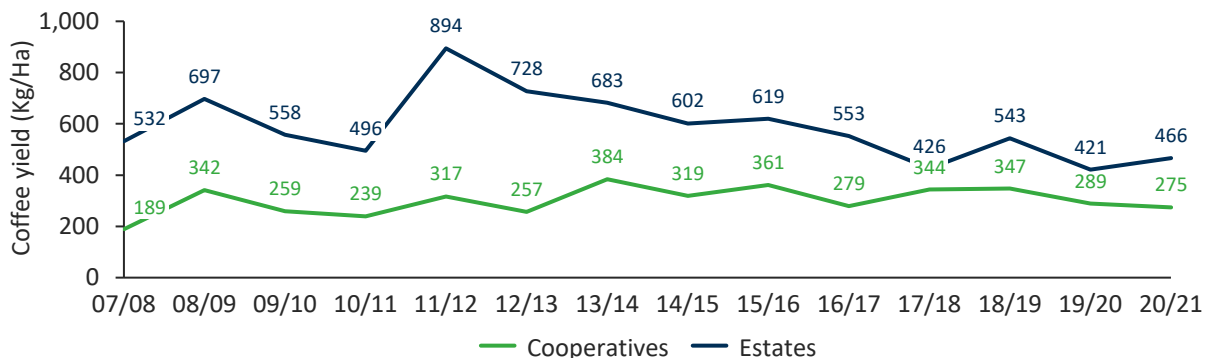
Kenya has historically produced some of the highest quality arabica coffees in the world, remarked for their acidity, intensity, and complexity of flavour

Kenya's coffee production (2011 – 2020)⁴

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



Coffee yield (2007 – 2020)⁴

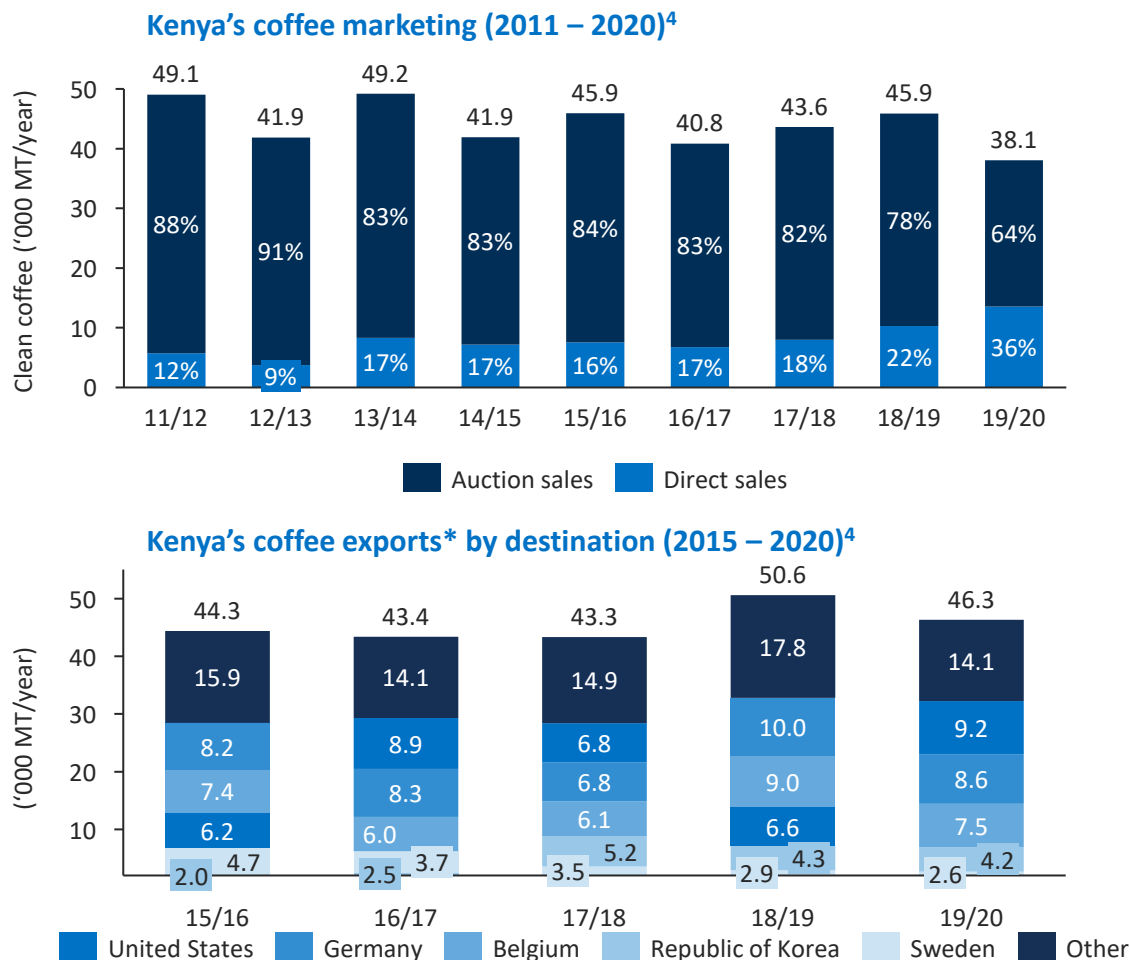


- Globally, coffee is produced in over 60 countries. The **top five producing countries**: Brazil, Vietnam, Colombia, Indonesia and Ethiopia **account for 75% of the global production**¹.
- Although **Kenya** is famed for her **specialty coffee**, the country's **production is estimated at 0.5% of the total global output**¹.
- 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 SHF².
- 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 production¹.
- Kenya's peak production was at an all time high of 129,000 MT during the 1987/88 season³. 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 crops².
- Widespread pests and crop diseases** have pushed farmers away from older coffee tree varieties towards **disease resistant varieties** including Batian and Ruiru 11².

Sources: ¹International Coffee Organization, ²Coffee Directorate Yearbook 2019 – 2020, ³Sauti ya Kahawa Strategic Plan 2018 – 2022, ⁴KNBS – 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.

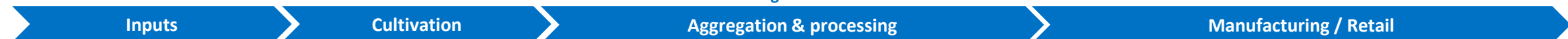
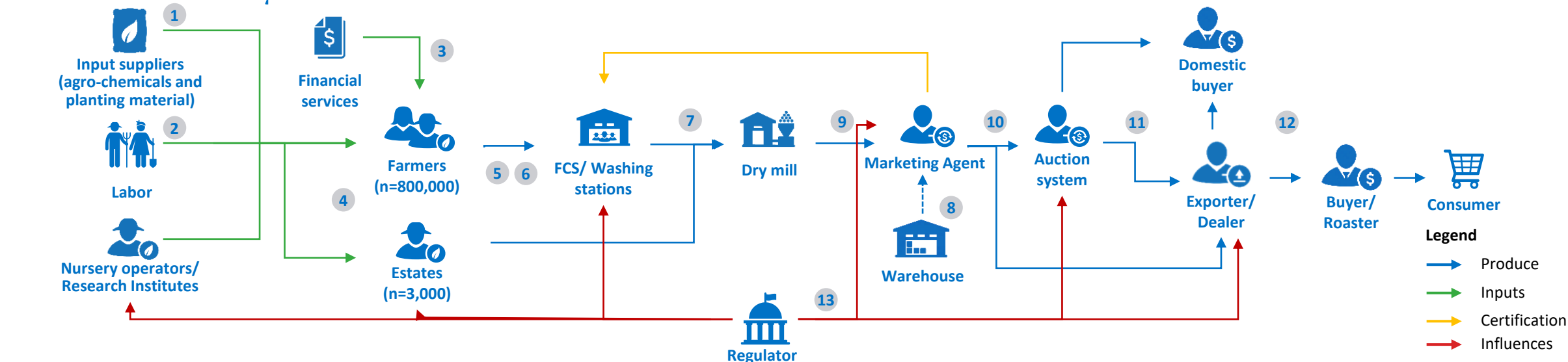


- **90% of Kenyan coffee is wet processed** at washing stations owned by FCS and estate farmers, with the balance dried into buni¹.
- During dry milling, wet processed coffee is milled, polished, graded and classified. **Kenya has an estimated installed dry milling capacity of 400,000MT which translates to a 10% capacity utilization** at current production².
- 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**¹.
- **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**¹.
- **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 proceeds³.
- **FCS are required to pay at least 80% of sale proceeds to farmers**¹.
- In 2019/2020, **98% of coffee exports were in green bean form**. **c.66% of exports went to the top 5 destinations**³.

Sources: ¹International Coffee Organization, ²Sauti ya Kahawa – Study of Coffee Processing in Kenya, ³Kenya Coffee Act, ⁴Coffee 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



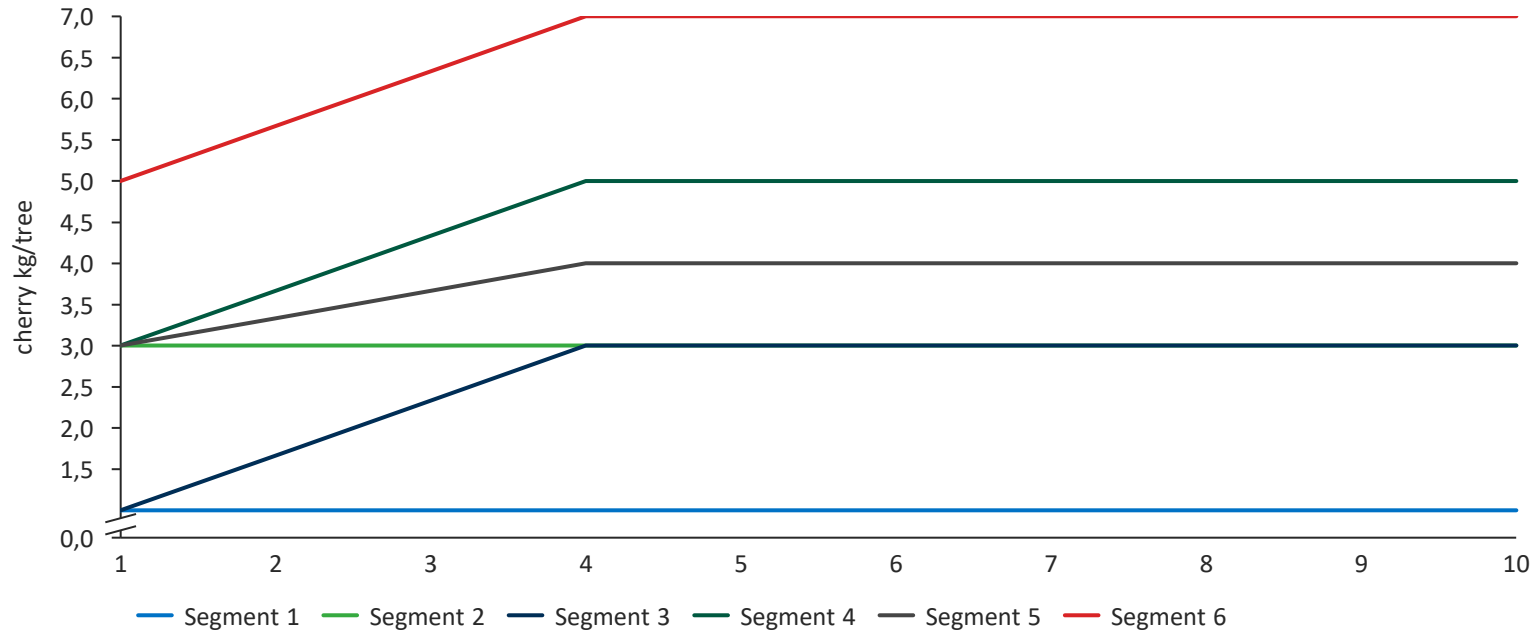
1. Coffee production is operated on small plots, with limited use of inputs.
2. Women provide over 60% of the workforce in farms and wet mills, but they are often excluded from farmer group membership, training, access to inputs and marketing decisions – as men have the ownership.
3. Due to a lack of 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).
10. Nairobi Coffee Exchange holds auctions and verifies the auction process is correctly executed.
11. Roasters/traders/exporters purchase green coffee at auction for roasting or to trade and export the coffee outside Kenya.
12. 95 % of the coffee is exported and 32% of that coffee that is certified.
13. 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



- SDM farmers receive training on GAP and have access to the right inputs which allow the farmers to increase their yield with 60% and 20% respectively.
- Additionally, the regenerative agriculture practices which CMS supports its farmers to implement would allow them to increase their coffee yield with 10% due to the planting of shade trees and using more adequate inputs.

Farmer P&L Assumptions

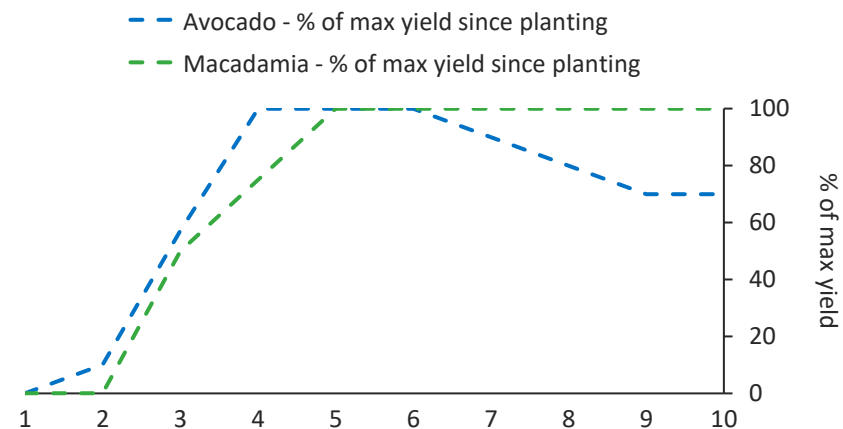
Variable	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5	Segment 6
Coffee Farm size (acre)				0.5		
Total farm size (acre)				1.5		
Farm size for other crops (acre)				1		
Farm-gate price (KES/kg cherry)	30	50	50	70	100	100
Tree-density (trees/acre)				660		
Coffee tree intensification				No		
Post-harvest loss (%)	6	6	6	3	6	3
Sales channel (%)				100% CMS		
Cherry to Mboni				60% conversion ratio		
Mboni price KES/kg mboni				80		
Maximum amount pre-financed by FCS			30%			
Ground fertilizer (kg/acre/application)				90		
Foliar fertilizer (l/acre/application)	0	2	0	2	2	2
EM (l/acre/application)	0	0	0	0	2	2
Agricultural lime (kg/acre/application)	0	325	0	325	325	325
Manure (kg/acre/application)	0	6000	0	6000	6000	6000
Herbicides (l/acre/application)				1		
Fungicides (l/acre/application)	0	0.1	0	0.1	0.1	0.1
Insecticides (l/acre/application)	0	0.1	0	0.1	0	0
Off-farm income as total income	50%	0%	50%	0%	30%	0%
Household size				5		

Farmer P&L Assumptions

	Yield	Own consumption	Post-harvest loss	Price (KES/kg)	Labor costs (KES/acre)	Input costs (KES/acre)
Beans	900 kg/acre	90kg	0%	100	6400	50
Banana	24 bunches/tree	50%	0%	200/bunch	0	0
Macadamia	70 kg/tree	0%	0%	50	4000	0
Avocado	200 kg/tree	2%	0%	30	0	0
Maize	1440 kg/acre	270kg	2%	40	23000	2000
Cows	15l/cow/day	2l/day	0%	40 per liter		83000/cow/day

Yield curve of avocado and macadamia

10-year projection of yield in % of max yield since year of planting



RA financing strategy	1	2	3	4	5	6	7	8	9	10
Coffee	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Beans	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Banana	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Macadamia	CMS	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Avocado	CMS	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Maize	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer
Cows	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer	Farmer

SDM P&L Assumptions

Variable	2019	2026
Total FCS numbers	166	132
Segment 1	142	108
Segment 2	2	11
Segment 3	9	6
Segment 4	13	5
Segment 5	0	1
Segment 6	0	1
Female farmers	27%	n/a
Software	131000 USD	
Office costs	32000 USD	
Communication Costs	76000 USD	
Bank Charges	163000 USD	
Total milling volumes	10,702,293 dry parchment 12,000,000 dry parchment	
Kg dry parchment to green bean ratio	22%	
Proportion estate farm vs smallholders	35%	
Total marketing volumes	8,347,789 green bean 9,360,000 kg green bean	
Number of demofarms	1000	610
Field officers per farmer	4000	
Promoter officer per farmer	70	
Exchange rate	113.5 KES/USD	

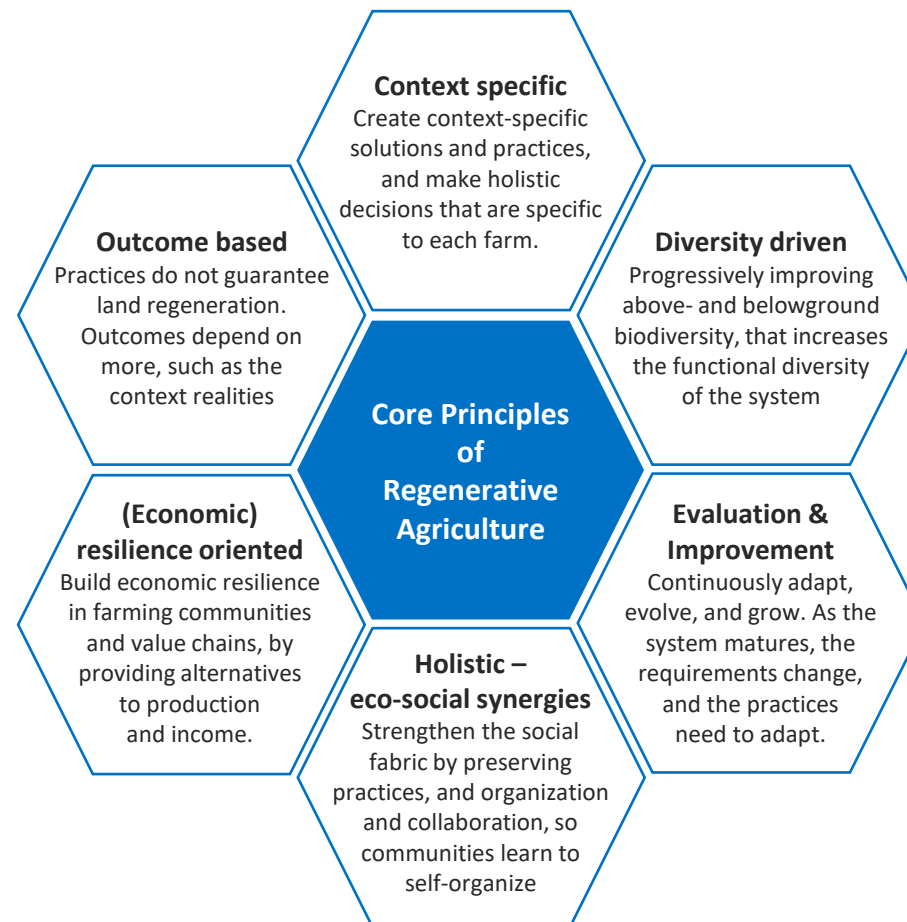
Variable	2022
Marketing fee	0.10 USD/kg green bean
Milling fee	0.06 USD/kg green bean
Handling fee	0.03 USD/kg green bean
Drying charges	0.02 USD/kg green bean
Transport from FCS to dry mill	0.02 USD/kg green bean
Transport from drymill to warehouse fee	0.02 USD/kg green bean
Warehouse fee	0.02 USD/kg green bean
Marketing fee	0.10 USD/kg green bean
Milling fee	0.06 USD/kg green bean
Auction price through CMS	4 USD/kg green bean
Direct buyer price through CMS	5 USD/kg green bean
Internal inspection cost	108 KES/certified farmer
Audit costs	96 KES/certified farmer
Certification support costs	23 KES/certified farmer
Ground fertilizer margin	13.4 KES/kg
Foliar fertilizer margin	264.84 KES/l
Herbicides margin	510.27 KES/l
Insecticides margin	431.14 KES/l
Fungicides margin	1118 KES/l
Agricultural lime margin	-2.49 KES/kg

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



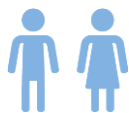
Regenerative Agriculture ²⁾

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: 1) [CGIAR \(2019\)](#); 2) [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.



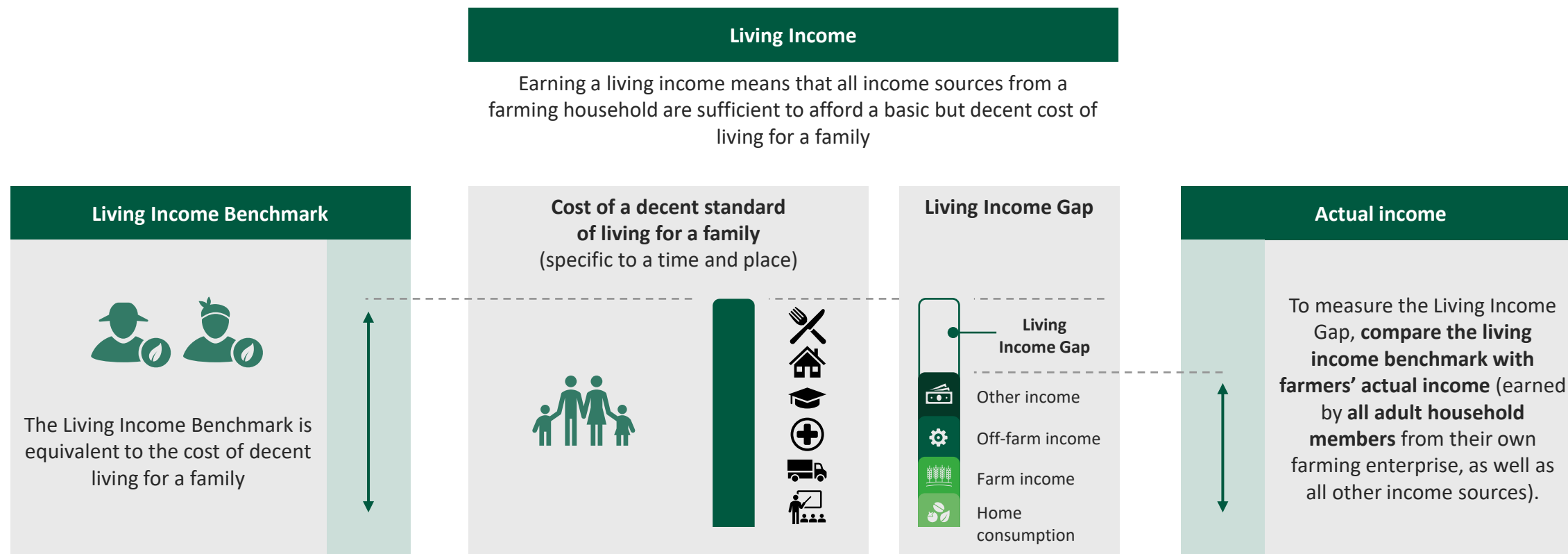
Gender transformative

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



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

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