



AFRICAN COFFEE SECTOR

addressing national investment agendas on a continental scale

Kenya Case Study

Sector study conducted by Agri-Logic and Valued Chain by assignment of
the Global Coffee Platform
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INTRODUCING NATIONAL COFFEE INVESTMENT AGENDAS FOR AFRICA



CHALLENGE:

- Currently Africa only supplies 10% of global coffee volumes, while coffee was first discovered in Ethiopia.
- In most African origins, yields are low, quality is inconsistent, and supply chains are inefficient.

OPPORTUNITIES:

- Buyers value certain coffees from Africa for their quality, and there is a potential to increase volumes to meet growing demand.
- Coffee may contribute to sustainable development in Africa's rural areas.

INVESTMENT AGENDAS:

- Greater understanding of challenges and opportunities in mainstreaming sustainable coffee production.
- Insight into required funding, return on investment, and possible public and private contributions.
- Insight into impact of investment based on quantitative research and stakeholder consultation. Benchmarks and analysis are based on 2015 data.
- Full reports available on the GCP website for Angola, Burundi, Cameroon, Côte d'Ivoire, Ethiopia, Kenya, Rwanda, Tanzania and Uganda.



CONTENT OF THIS REPORT

- Executive summary
- Positioning of coffee from origin
- Production areas in origin
- Supply & demand trend and
- Market interest in sustainability
- Value chain structure
- Farm level production systems
- Supply chain efficiency
- Differential competitiveness
- Cost of production
- Current farmer business case
- Production and price effects of investments
- Impact, cost and return per intervention
- Effect on farmer business case
- National sector business case
- Proposed public and private contributions
- Conclusion



INVESTMENT OPPORTUNITIES ANALYSIS

- The following slides describe the required investment (cost) and expected returns (revenue), as well as the expected impact on price, volume, quality and livelihoods.
- Investments are analysed on a sector level: total increased revenue in relation to total additional cost. On a sector level, all of these opportunities present a positive return on investment.
- Cost and benefits may not be attributed to the same actor in the value chain (e.g. government and buyers pay for farmer training, while the farmer gains most of the additional revenue from yield increase).
- Also, specific interventions may not lead to additional value creation, but to a redistribution of value within the chain (e.g. farmer grouping can lead to higher farm gate price, while export price and GDP contribution is not affected).
- Investment contributions are indicative based on stakeholder input. Investments and conditions to be negotiated within national public private platforms taking into account amongst others international competitiveness, governance, transparency and accountability assurance.



INVESTMENT AGENDA FOR THE KENYAN COFFEE SECTOR – EXECUTIVE SUMMARY

- **Coffee volumes in Kenya are declining**, and are currently around 45,000 MT per annum, or 0.5% of global production.
- The **sector is dominated by smallholder on less than 0.5ha**. These smallholders are required by law to join cooperatives. Larger estates exist and even though the number of farms is low, these **estates represent about 40-45% of coffee volume**. The volume share of smallholders is increasing, as estates are sold to real estate projects.
- **Cost of production are relatively high, and increasing** in line with cost in Brazil. This is a competitive disadvantage for Kenya compared to other African origins. Productivity is average to low, especially on small farms. Despite high private sector interest from European and American coffee buyers, **farmers are abandoning coffee in favour of other crops**.
- The sector is regulated by the Kenyan government, and 85% of coffee is sold through the Nairobi Coffee Exchange. Levies of 4% are in line with international benchmark, but licensing cost are reported to be high.



INVESTMENT AGENDA FOR THE KENYAN COFFEE SECTOR – EXECUTIVE SUMMARY

- There is **significant potential to increase coffee sector value** in Kenya through selective investment in farmer training, farm rejuvenation, use of inputs and farmer organisation building.
- Volumes could increase to ~75.000 Mt per annum. **The increased value largely flows into rural economy.**
- Coffee alone will not provide sufficient income for a full farmer household, under current conditions it appears unlikely that the gap to the poverty line can be met with agricultural activities. **It is unlikely that farmers will be lifted out of poverty in the short- to mid-term**, despite investments.
- Total programme investment amounts to an estimated 198 million USD over 10 years that would generate a return across the sector of >1 billion USD at current prices.



Resilience for improved yields and quality, supply chain efficiency for livelihoods

KENYA

POSITIONING OF KENYA

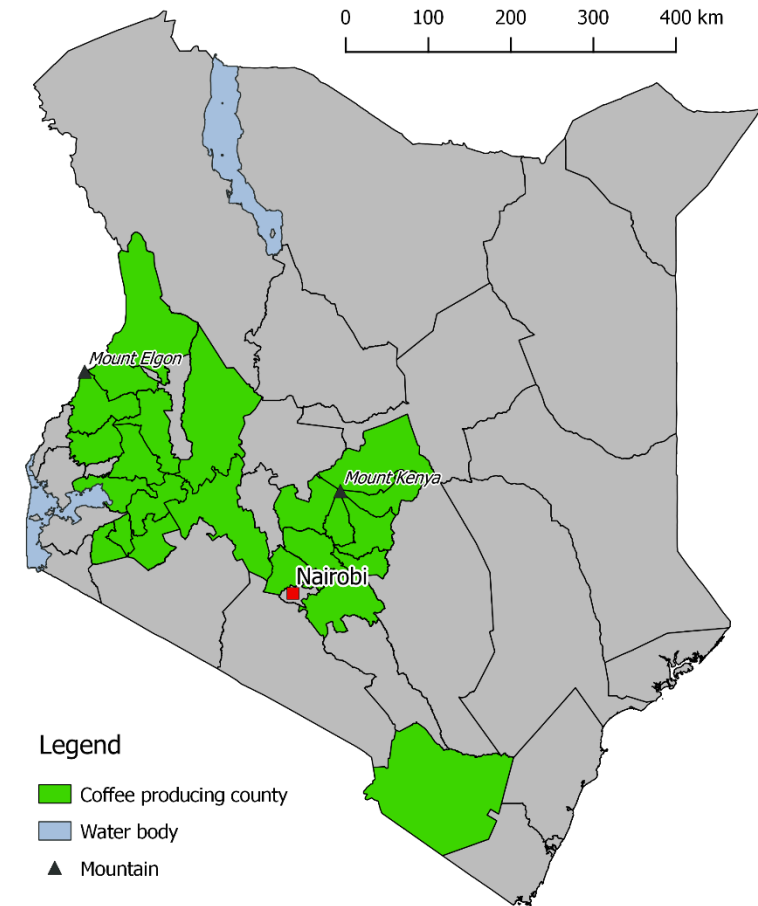


Item	Value
Total volume (3 year average)	45,800 Mt
% of global production	0.52%
% Arabica – Robusta	100% Arabica
% natural – semi-washed – fully washed	11% natural – 89% washed
Compound Annual Growth Rate of coffee production (2000-2015)	- 4.7%
Main export markets	USA, EU
Market segments	Rich flavour arabica
GDP	63.4 billion USD
GDP – agriculture	19 billion USD
GDP – coffee	0.22 billion USD

KENYA COFFEE PRODUCTION AREAS BY DISTRICT, TYPE AND SUPPLY LEVELS

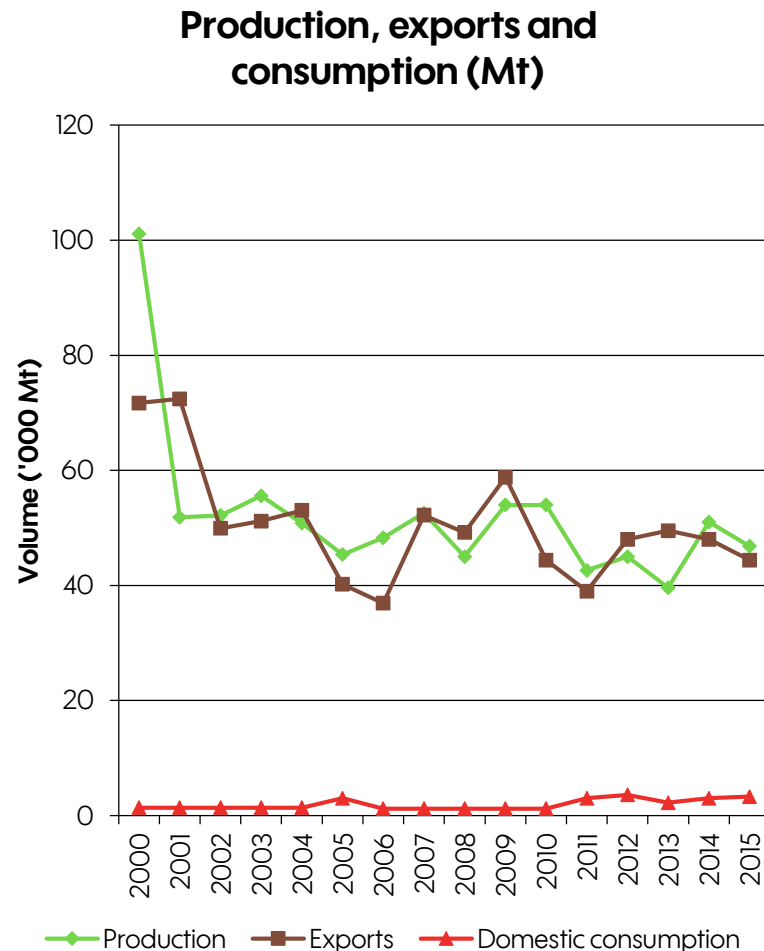


- Coffee grown around Mount Kenya is renowned for its quality.
- Bordering areas with Uganda experience a lot of smuggling, with Kenyan coffee cherries reportedly being stolen.
- Geographical Indications (GI) for coffee from Kenya are being considered, with a national trademark (Coffee Kenya) and regional indications (Murang'a and Nyeri). These are currently not legally protected.



Sources: KCB, EU, interviews, TNS, AL and VC analysis

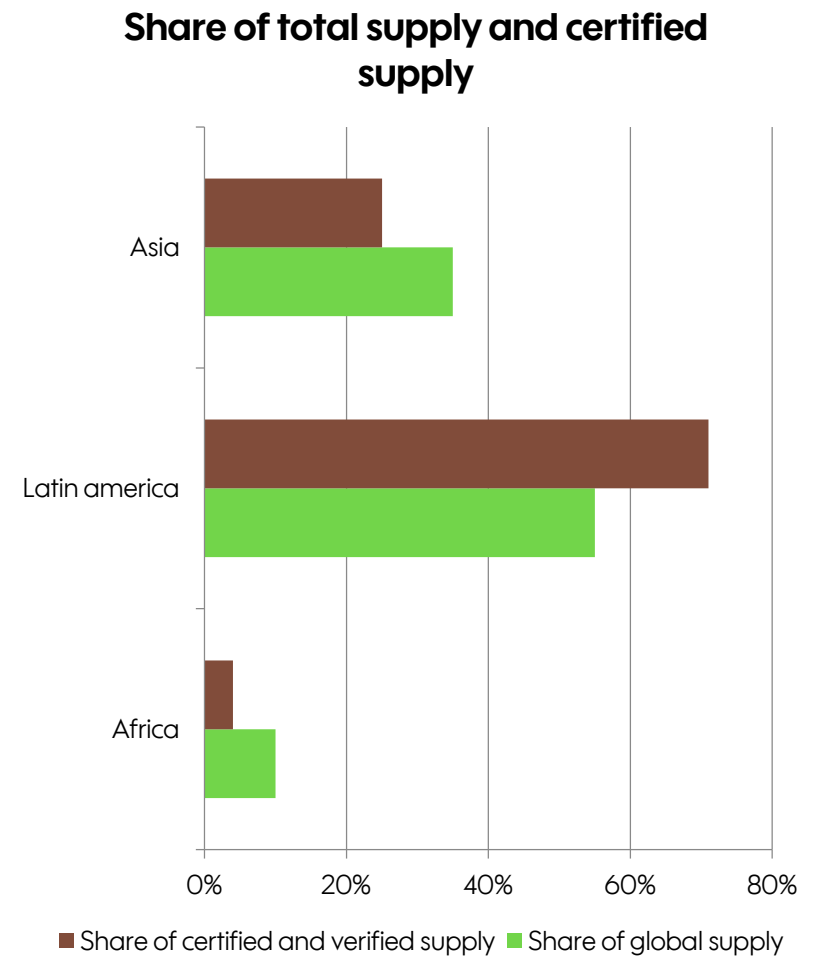
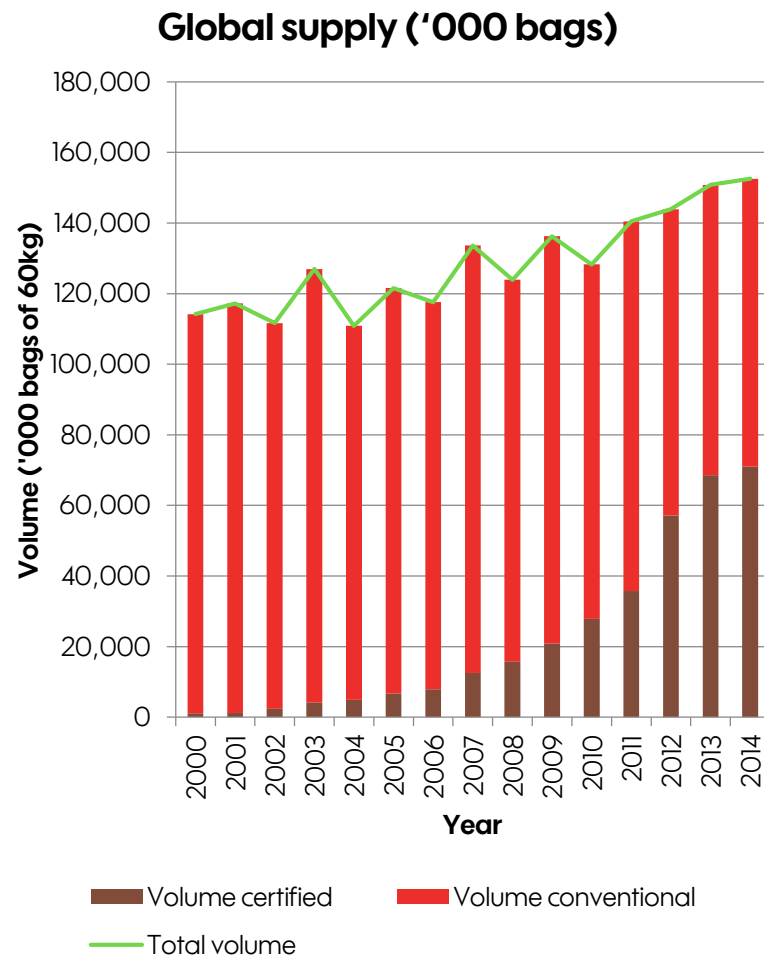
VOLATILE PRODUCTION VOLUMES, LITTLE DOMESTIC CONSUMPTION



- Coffee sector is in decline, with current volumes around 50.000Mt per annum, but largely volatile.
- Compound Annual Growth Rate is negative: -4.7%.
- The coffee crisis caused farmers to replace coffee with other crops. This affected both quantity and quality.
- Traditionally Kenya had a reputation for high quality arabica. The introduction of the ruiro 11 hybrid has affected segments of the market.
- Little domestic consumption, coffee is an export commodity.

Sources: USDA, REDD, interviews, AL and VC analysis

AFRICA LAGGING IN SHARE OF CERTIFIED SUSTAINABLE SUPPLY

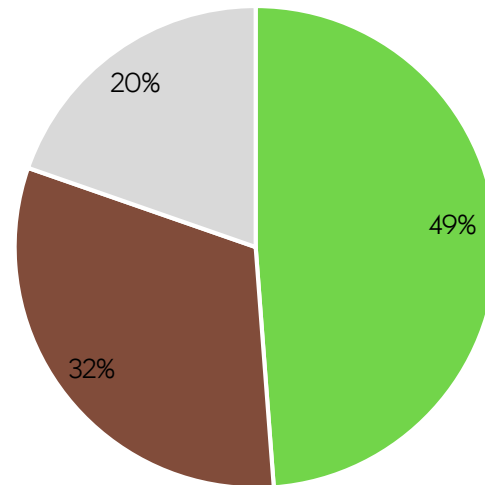


Sources: USDA, CTA, AL and VC analysis

HIGH MARKET INTEREST IN SUSTAINABILITY AND STAKEHOLDERS INVOLVED IN CHAIN



Kenya exports (% of total) and market interest to invest in sustainability in destinations



- Export to countries with high interest/investment in sustainability (USA, UK, Switzerland, Germany, Netherlands)
- Export to countries with medium interest/investment in sustainability (France, Belgium, Italy, Spain, Scandinavia)
- Export to countries with low/no interest/investment in sustainability (other markets)

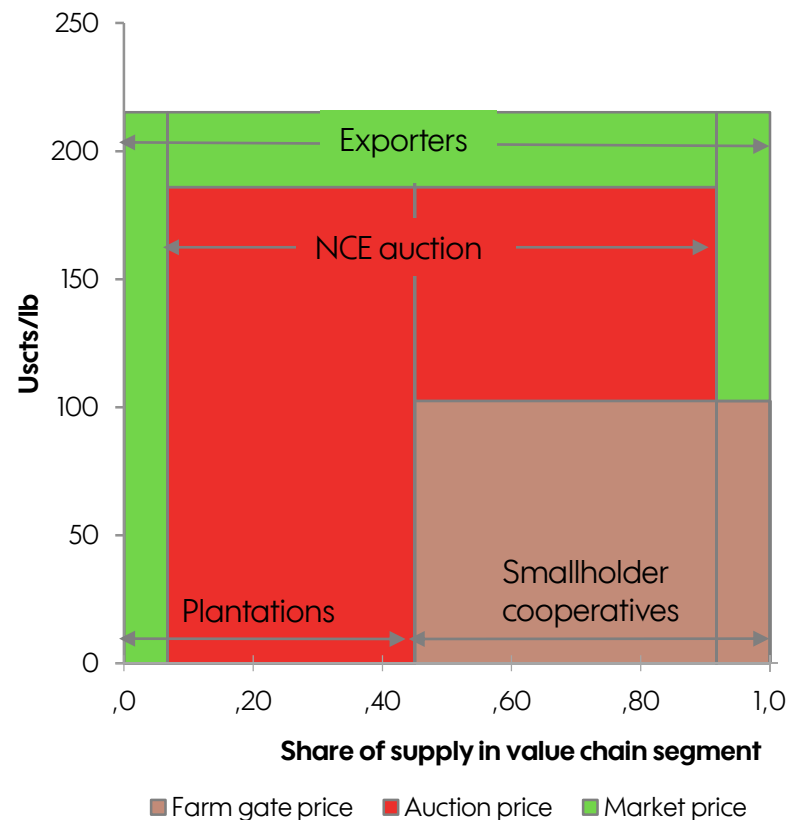
- With most of Kenyan coffee exported to US and EU, there is a high market interest in sustainability.
- 80% of coffee is exported to countries with a high or medium interest in sustainability.
- For good quality coffee, the margins are above average and can absorb certification premiums and sustainability investments.
- Certified coffee can be sold directly or via the Nairobi Coffee Exchange. Certification is part of the catalogue that describes lots for auction.

Sources: OEC, , CSC, VC and AL analysis

COOPERATIVES AND PLANTATIONS SELL LARGELY VIA AUCTION



Value chain structure Kenya Arabica 2015



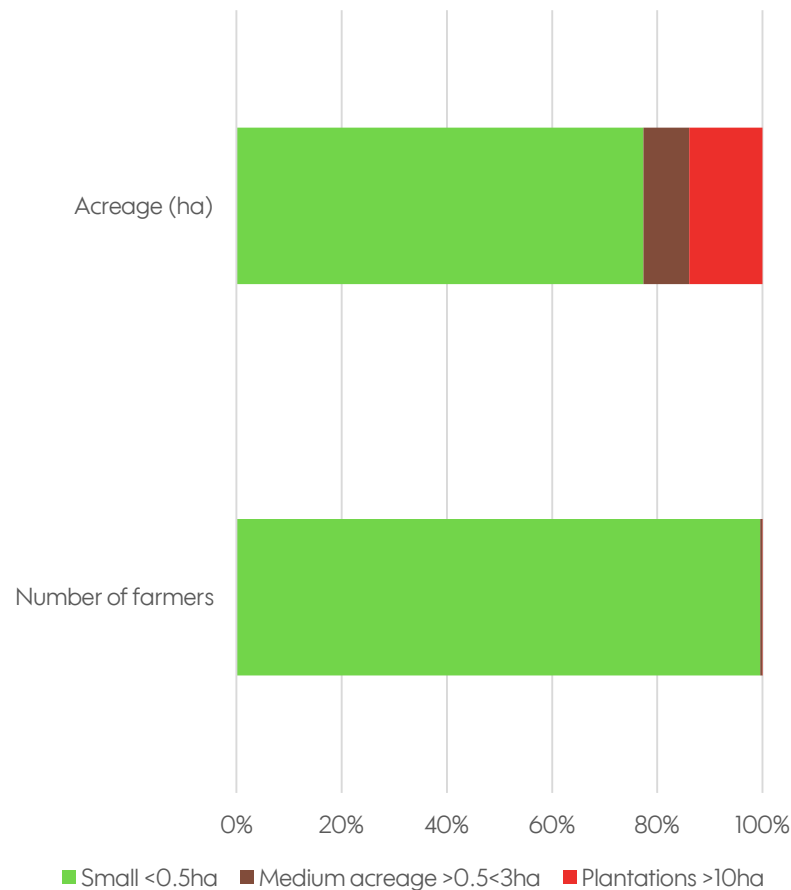
- About 55-60% of coffee is produced by smallholders. Any farm <2ha (5acres) is required to be a member of a cooperative. The market share of cooperatives is increasing as estates are sold to real estate projects.
- About 85% of coffee is marketed through the Nairobi Coffee Exchange. Prices and volumes are transparent.
- Direct export contracts are allowed and need to be registered. This accounts for about 15% of exports.
- Plantations and cooperatives generally own wet mills, and contract dry mills and/or agents to bring coffee to market. Officially the producers own the coffee until sold.

Sources: , NCE, FAO, interviews, AL and VC analysis

SECTOR CONSISTS PREDOMINANTLY OF SMALL-SIZED FARMS OF LESS THAN 0.5 HA



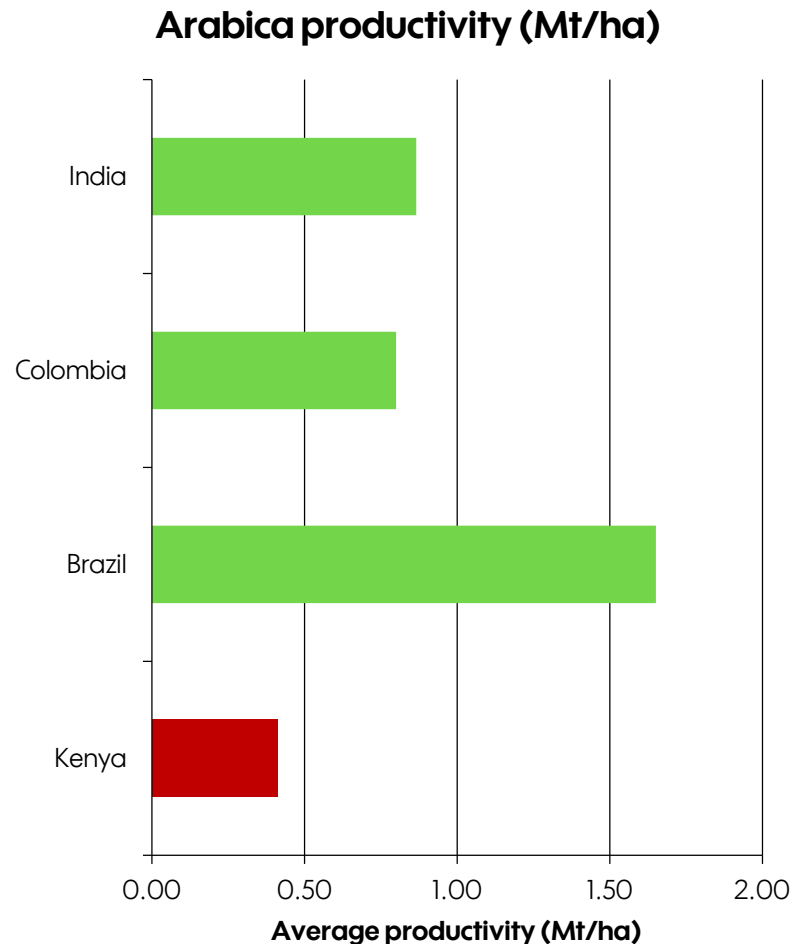
Nr of farmers and acreage distribution



- Smallholders with <5 acres (<2ha) are required by law to join a cooperative. KNBS indicates 800.000 smallholders organized in 600 cooperatives.
- Farms >5 acres (>2ha) are called estates and are allowed to market their coffee independently. It is estimated that about 3300 medium estates exist, and about 100 large estates.
- Land shortages are prevalent, farm sizes per household have come down significantly as plots are split between siblings when inherited.

Sources: KNBS, interviews, AL and VC analysis

CURRENT PRODUCTIVITY LEVELS ARE LOW- TO MID-LEVEL AND COULD GROW



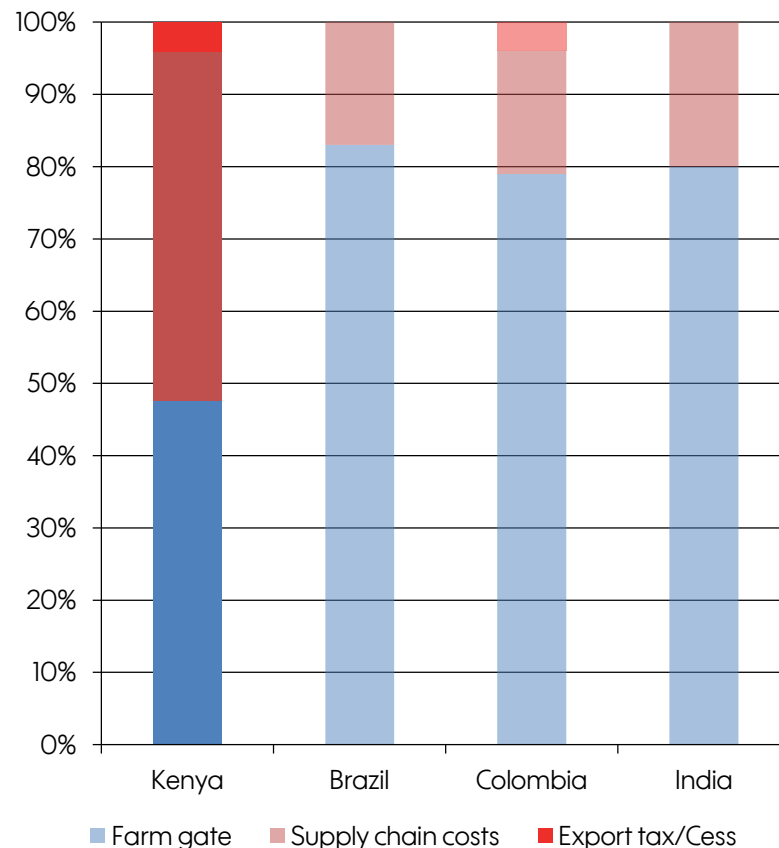
- Productivity of Arabica is on average 350-400kg green coffee per ha. This is far below market leader Brazil and other major origins.
- There is a large difference between estates and smallholders. Yields at estates are >600kg/ha whereas smallholders organized in cooperatives produce on average 300kg/ha.
- Productivity in Kenya could increase further, up to 1 Mt/ha appears to be feasible at least for estates. A major challenge however is the lack of research capacity and lack of success in developing new resistant varieties.

Sources: USDA, FAO, interviews, AL and VC analysis

SUPPLY CHAIN EFFICIENCY BELOW OTHER MAJOR ORIGINS



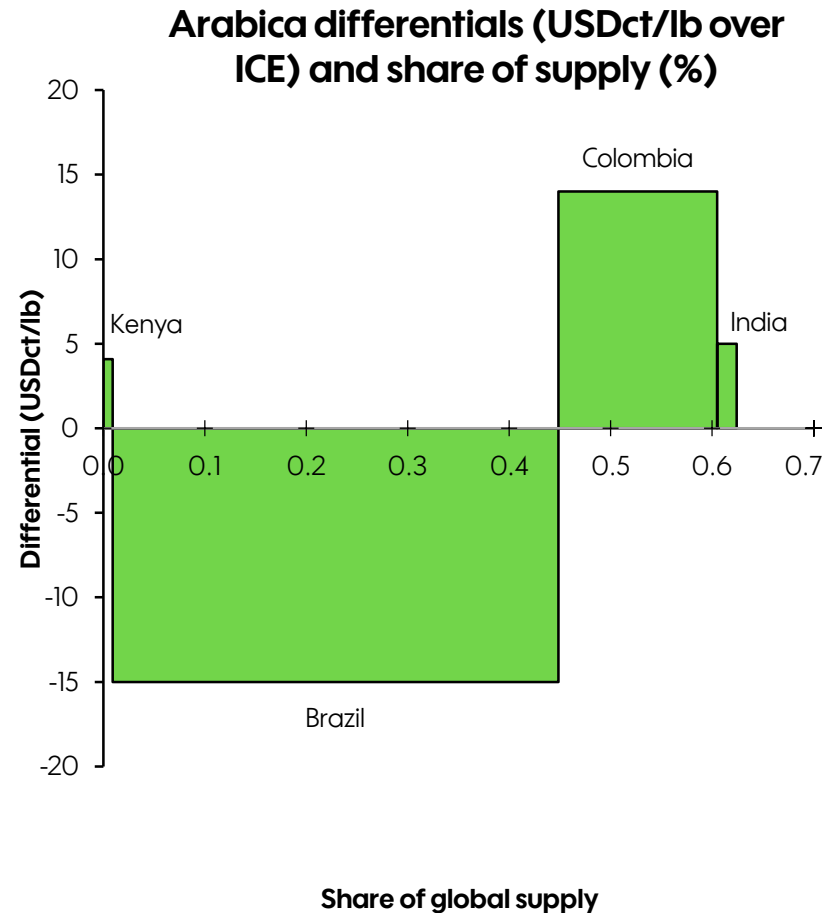
Value distribution Arabica (% of FOB price)



- Data on farm gate prices is inconsistent, with large variability between sources. Cooperatives and estates receive ~80% of FOB price for processed coffee, but the share that is passed on to the smallholder farmer varies largely between 20-70% of FOB.
- Farm gate price as share of FOB does seem to have increased, but farmers remain dependent on external facilities or cooperatives to process their cherry.
- A 4% levy is applied to all exports. This income is to be used for the marketing bodies, research and infrastructure.
- Several licensing fees apply in order to obtain required permits, which is not visible in displayed value distribution but according to research adds another 2-5% to the cost of supply chain actors. In his April 2016 State of the Nation address, the president announced that licensing fees and levies would be waived.

Sources: KNBS, NCE, FAO, interviews, AL and VC analysis

GOOD DIFFERENTIAL IN LINE WITH INDIA AND OTHER AFRICAN ORIGINS



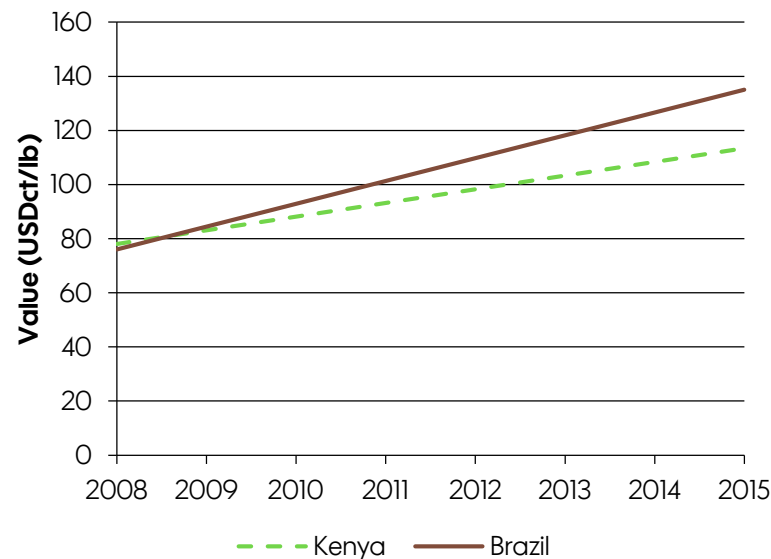
- Average differentials for Kenya arabica are +4 USDct/lb.
- Specific grades attract higher differentials. Consistency in quality could possibly improve differentials slightly.
- Kenya coffee is valued for quality over Brazil, and still competitive in price compared to other Arabica origins.

Sources: interviews, AL and VC analysis

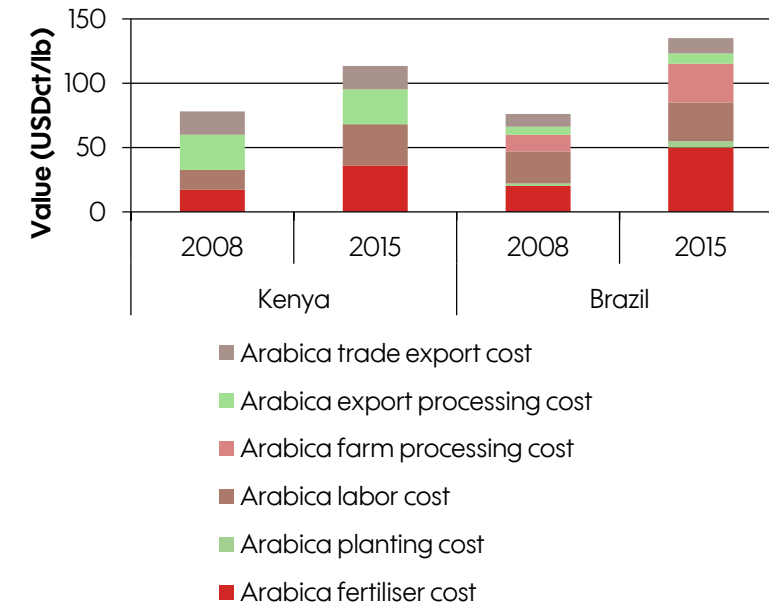
PRODUCTION COST ARE HIGH AND INCREASING, SPECIFICALLY ON FARM



Arabica cost of production (USDct/lb, ex household labour)



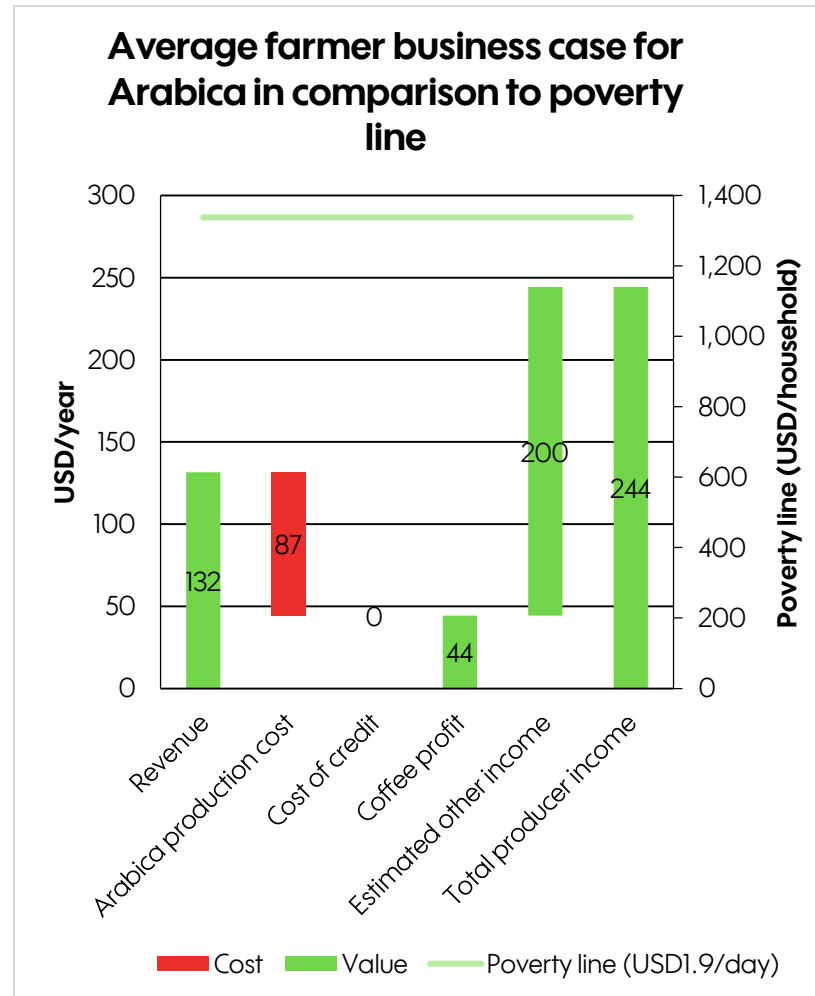
Arabica cost breakdown (USDct/lb)



- Increasing cost, especially labour and fertiliser, put cost of production in line with Brazil, and set cost above other East African Arabica origins.
- Cost increase is attributed to high labour cost and climatic challenges affecting both inputs use and yields.

Sources: Rozimina, Grolntel, interviews, AL and VC analysis

COFFEE FARMING IS NOT PROFITABLE FOR SMALLHOLDER FARMERS



- Coffee farmers in most cases just reach break-even on their coffee crop.
- Supply chain actors (cooperatives and agents) absorb most of the profit.
- With an average family-size of 4.4 people per household, net coffee income is far below the poverty line of 1.9 USD/capita/day (adjusted for purchasing power parity).
- Currently coffee is abandoned in favour of other activities.
- Farmer business case can be improved by passing on higher share of price to farmers, as well as increasing yields.

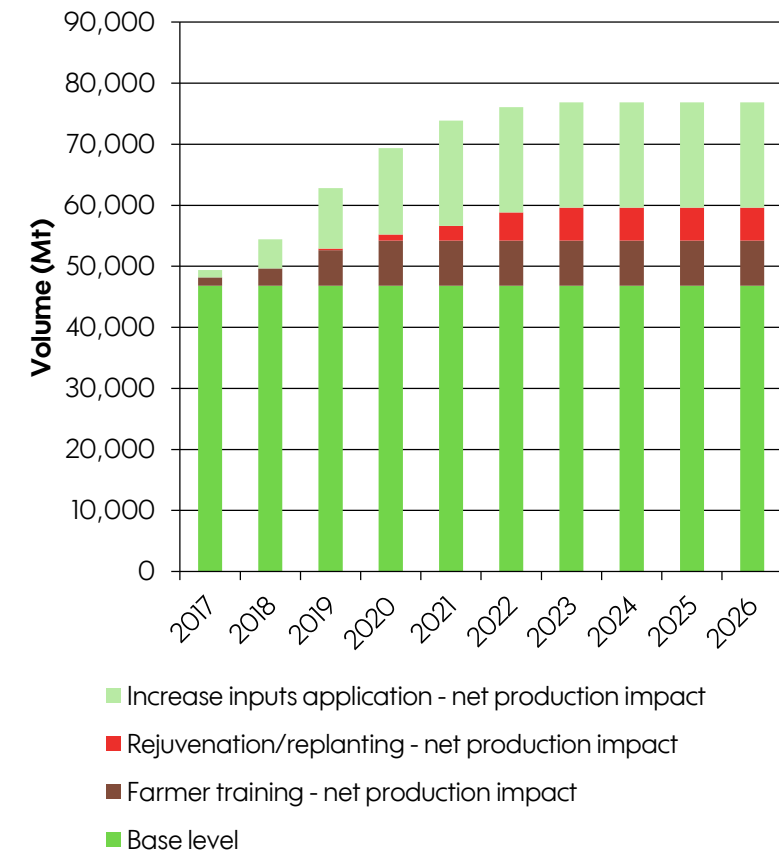
Sources: Interviews, AL and VC analysis

MODELLING INVESTMENT OPPORTUNITIES – PRODUCTION EFFECTS



- Modelling 4 opportunities:
 - Farmer training
 - Rejuvenation/replanting
 - Increasing input application
 - Farmer organisation building
- A combination of first 3 interventions could increase total production to ~75.000 Mt.
- These productivity interventions are interrelated and can not be implemented separately.

Production effect of investment opportunities

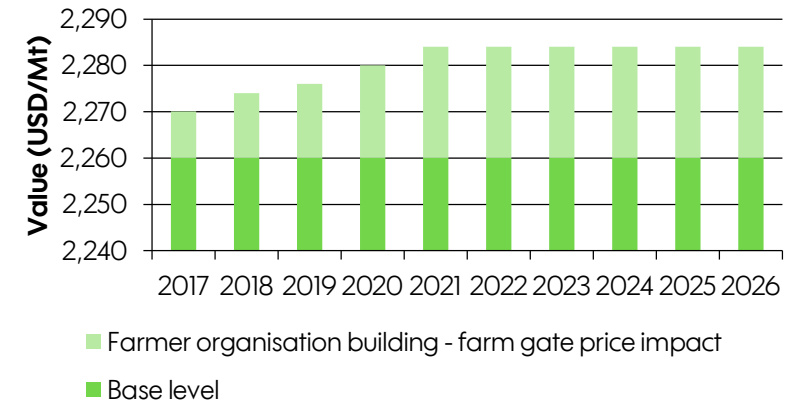


MODELLING INVESTMENT OPPORTUNITIES – PRICE EFFECTS

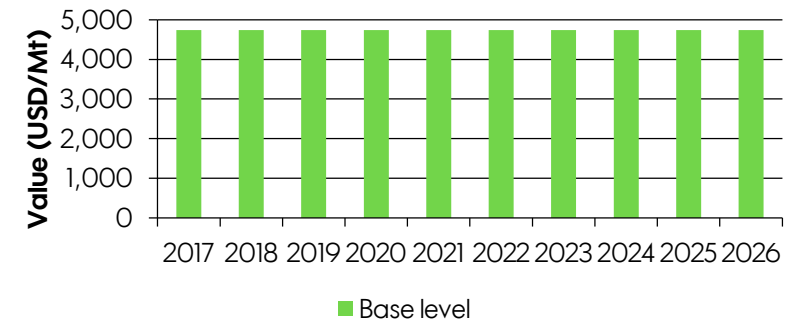


- Assuming weighed average base price stable over time.
- Farmer organisations, if well managed, can add significant value to the farm gate price as a result of improved efficiency.
- Export price would not be affected by these interventions.
- Detailed models for the first 4 opportunities which show a positive business case are shown on the following pages

Farm gate price effect of investment opportunities



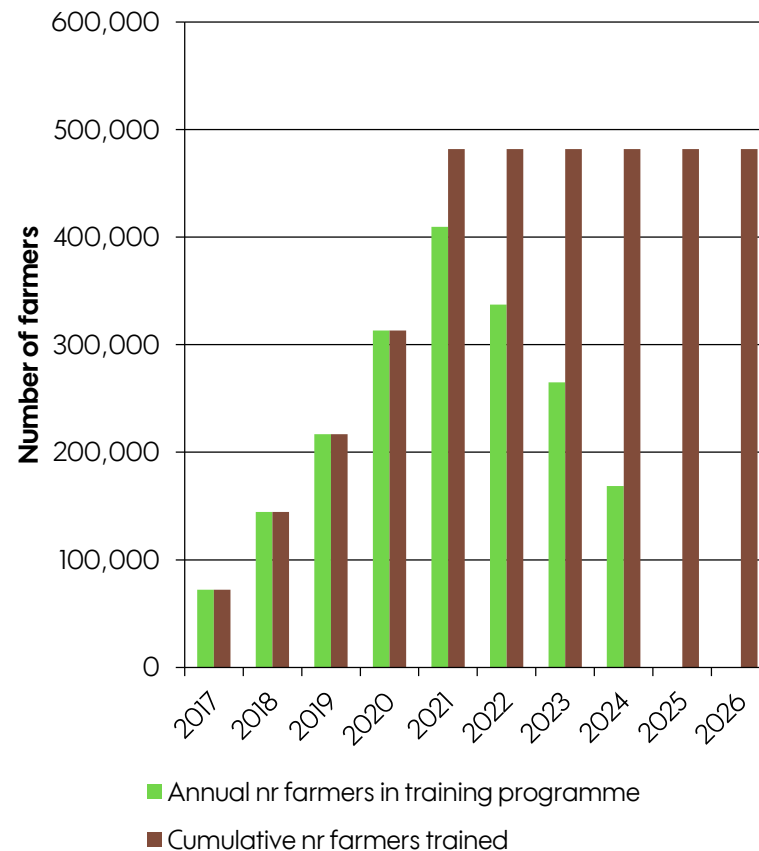
Export price effect of investment opportunities



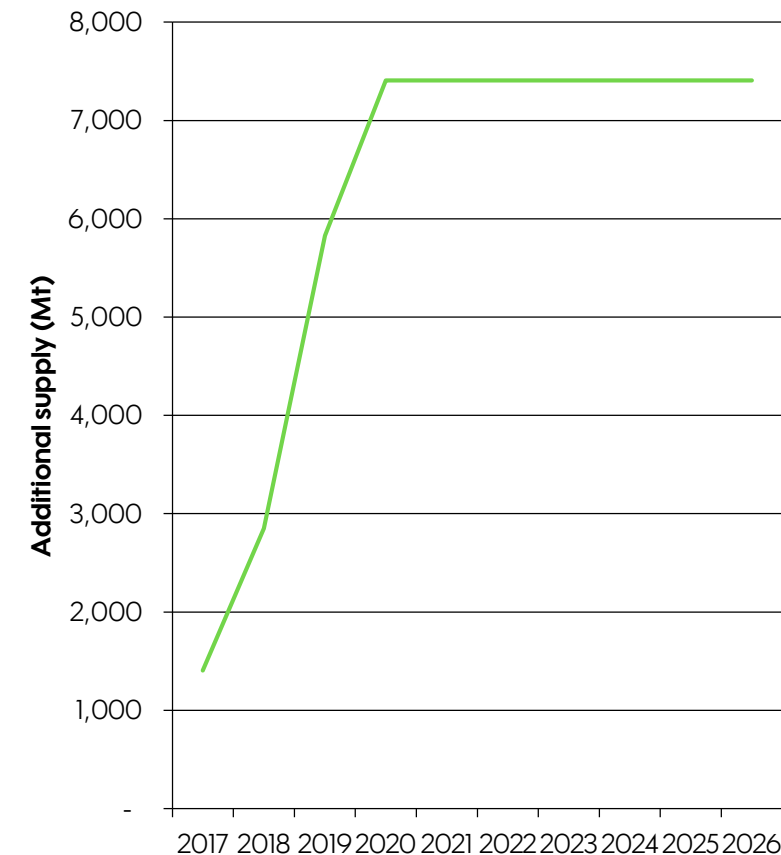
FARMER TRAINING INVESTMENT CAN GROW CURRENT SUPPLY BY 15%



Number of farmers enrolled in training program



Additional supply from farmer training programme (Mt)



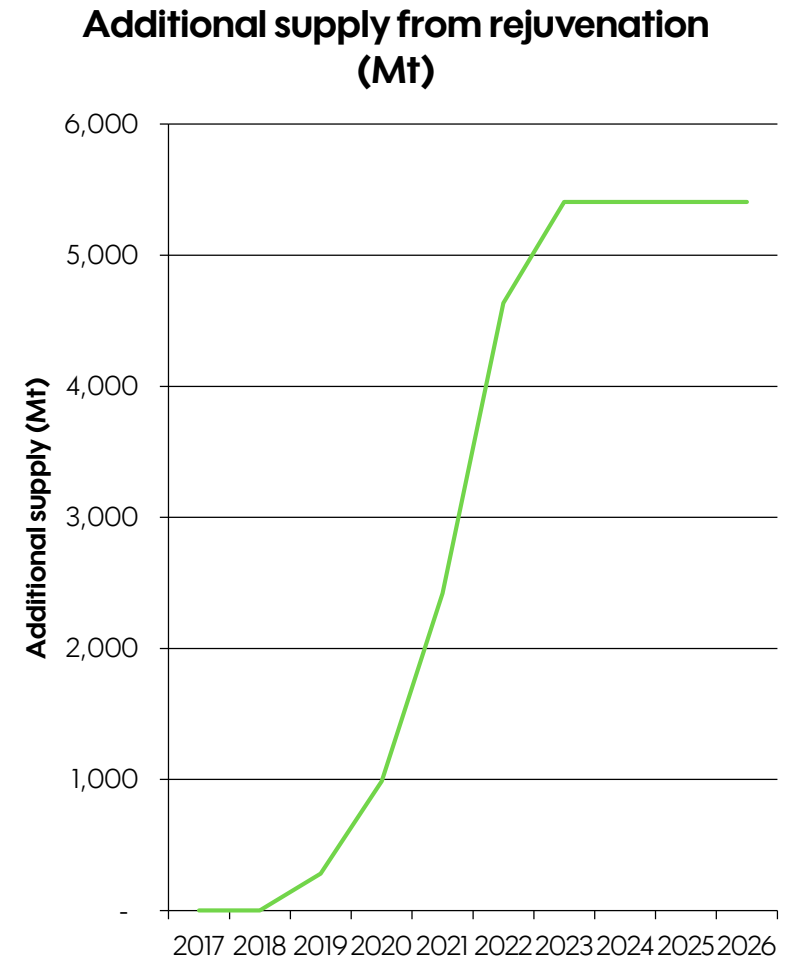
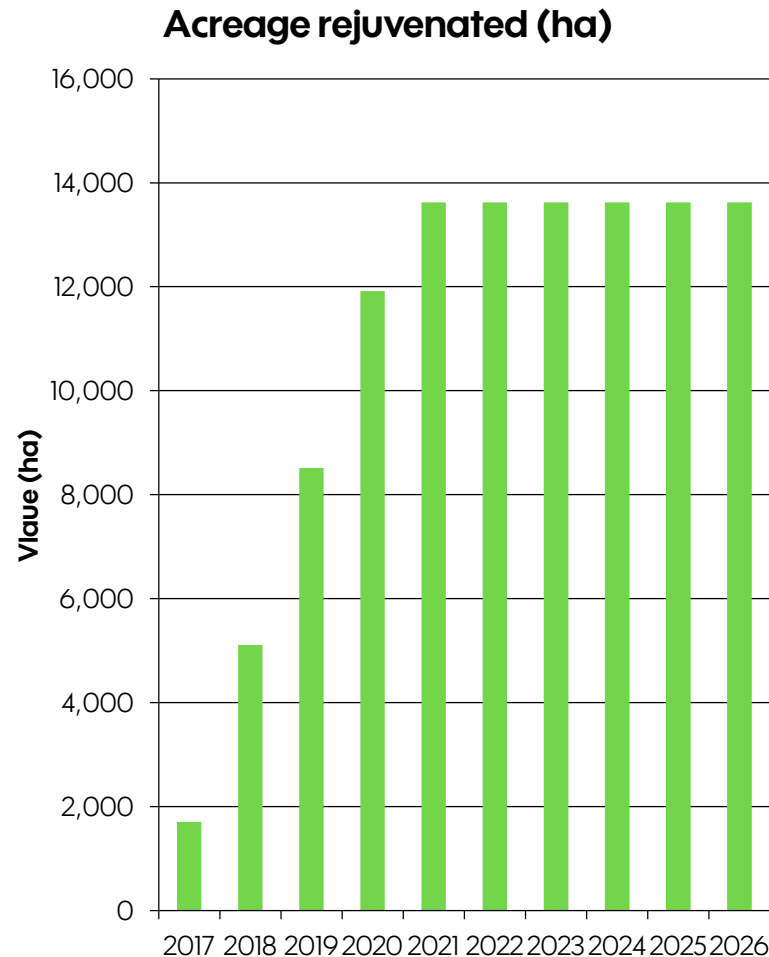
FARMER TRAINING OFFERS GOOD RETURNS ON INVESTMENT



- For training on Good Agricultural Practices to be effective it needs to be participatory, intensive and should run for at least 4 years.
- Farmer training can build on existing cooperatives structure, although training capacity is not currently present in cooperatives so capacity building would be part of this investment.
- Against this background we budget 75 USD/farmer/year in training costs, assuming 60% of the farmers to be motivated, the investment would total 145 million USD over 10 years.

Indicator	Value (10 years)
Cumulative nr of farmers reached	482,040
Additional volume coffee per annum in steady state (Mt)	7,408
Total investment	\$ 144,612,000
Total return	\$ 293,814,698
NPV (10%)	\$ 74,896,890
NPV (20%)	\$ 42,127,717
Investment per farmer	\$ 300

REJUVENATION INVESTMENT TAKES A WHILE TO SHOW EFFECTS...



RETURN ON INVESTMENT IS POSITIVE FOR THOSE THAT CAN AFFORD



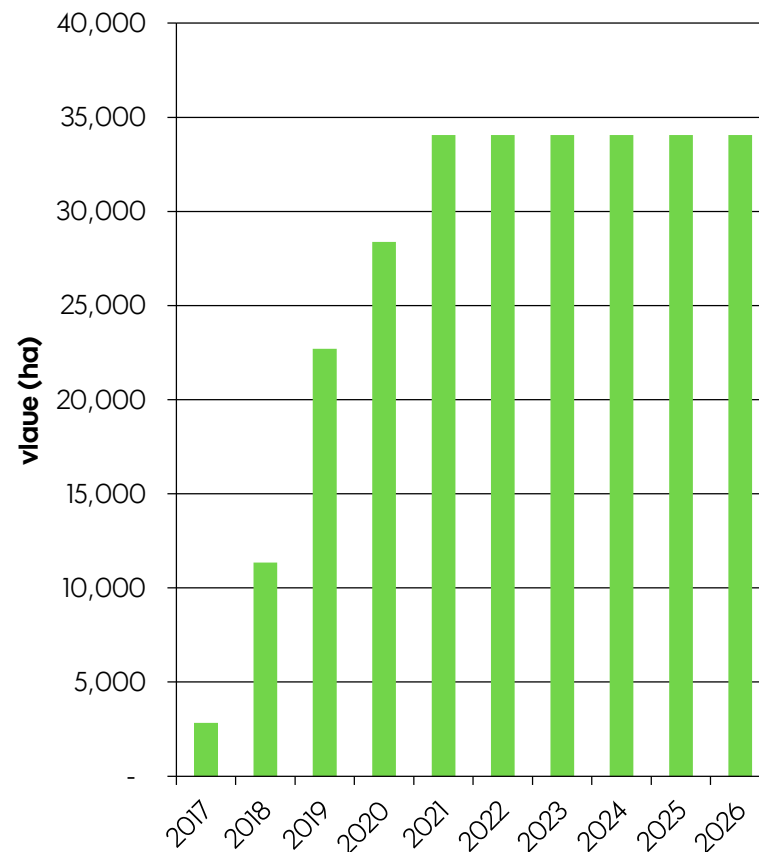
- Replanting is necessary, especially with estates moving away from coffee. However with current low farmer incomes, the investment is not likely coming from the farmers and adoption rate is estimated at 20%.
- Some existing projects have realized good results with community or cooperative nurseries, and grafting support. These are relatively cost efficient methods of rejuvenation.
- Return on investment is excellent for those producers that can afford or get access to finance, but due to low expected adoption rates the overall volume effect is ~10%.
- Replanting can also increase resilience with resistant varieties.

Indicator	Value (10 years)
Cumulative acreage replanted (ha)	13,620
Additional volume coffee per annum in steady state (Mt)	5,407
Total investment	\$ 2.451,600
Total return	\$ 142,081,653
NPV (10%)	\$ 67,943,544
NPV (20%)	\$ 36,018,641
Investment per ha	\$ 180

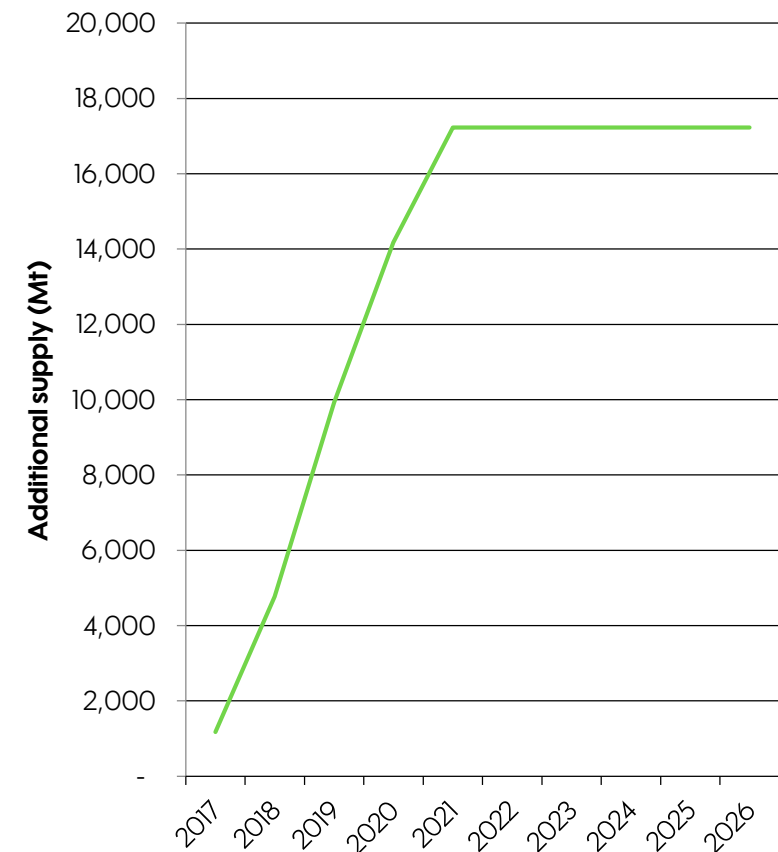
INPUT SUPPLY INVESTMENT HAS LARGE IMPACT



Acreage with enhanced input use (ha)



Additional supply from input use (Mt)



INPUT USE STILL LOW, BUT COULD GROW AS FARMERS' EQUITY INCREASES



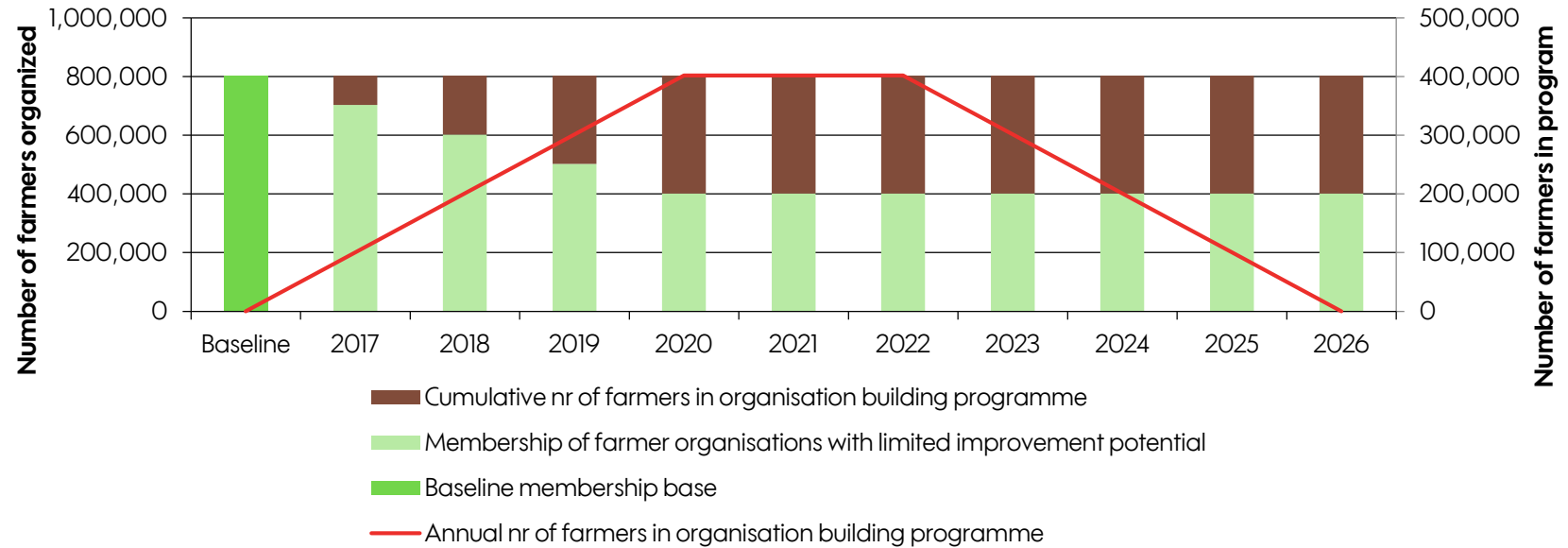
- Small-scale farmers tend to be risk averse as one failed crop is enough to undermine their living conditions.
- Fertiliser investment can be risky, but farmers would have to finance 20%-30% from equity.
- Limited extra use of inputs can be promoted to match risk appetite of farmers and generate additional production.
- Only farmers that are part of the training programme should make use of the additional input supply investment to ensure optimal use.
- Several projects in Kenya have successfully demonstrated use of organic fertilizer from on farm livestock.

Indicator	Value (10 years)
Acreage using additional inputs in steady state (ha)	34,050
Additional volume coffee per annum in steady state (Mt)	17,228
Total investment	\$ 20,217,188
Total return	\$ 632,833,365
NPV (10%)	\$ 336,917,079
NPV (20%)	\$ 204,195,305
Investment per ha per year	\$ 75

STRENGTHENING COOPERATIVES IMPROVES SUPPLY CHAIN EFFICIENCY



Number of farmers in farmer organisations

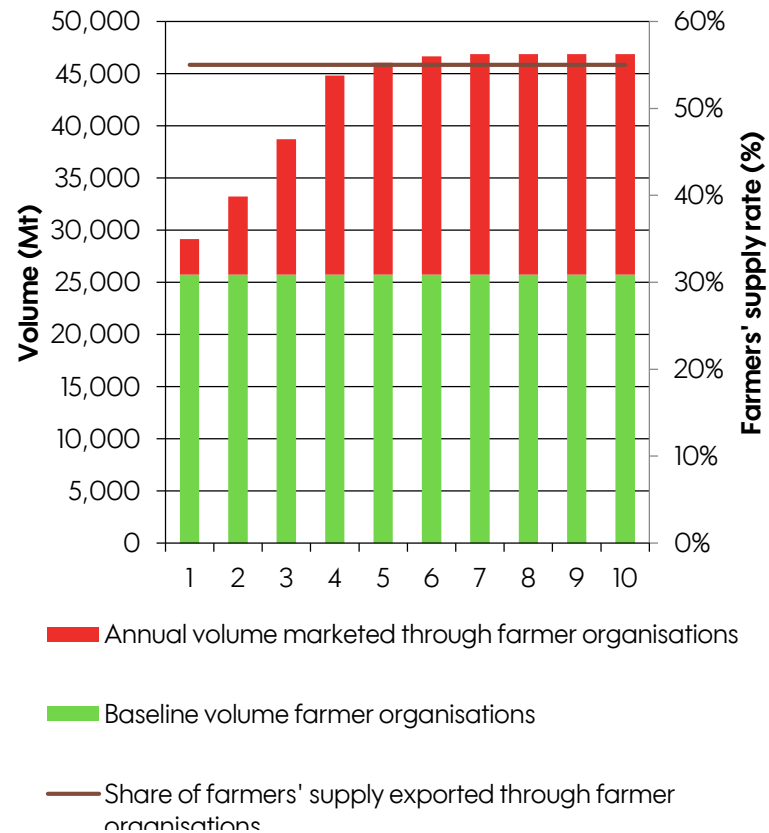


- Smallholders with <5 acres (<2ha) are required by law to join a cooperative. KNBS indicates 800.000 smallholders organized in 600 cooperatives. We estimate that about 50% of these cooperatives has the need and potential to improve.
- Main objective of the farmer organisation building program is to improve supply chain efficiency: better utilization of processing assets and increase of farmer share of coffee price.

COOPERATIVES WILL INCREASE VOLUMES FOLLOWING INCREASED FARM YIELDS



Volume marketed through farmer organisations (Mt) and farmers' supply rate (%)



- Expert judgements from the sector set the investment in improving farmer organisations at around 20USD/farmer/year.
- Since smallholder are currently only allowed to sell through cooperatives, the supply rate is not expected to change.
- Productivity improvements from other interventions help to grow supply through cooperatives.

COMMERCIALY, INVESTMENT IN FARMER ORGANISATIONS IS NOT VIABLE



- Improved supply chain efficiency through cooperatives can significantly increase farm gate price.
- This investment does not create additional value at sector level, but rather redistributes existing value in the chain with improved farm gate prices as a result.
- Donors that do not seek a commercial return on their investment would be required for this type of intervention.

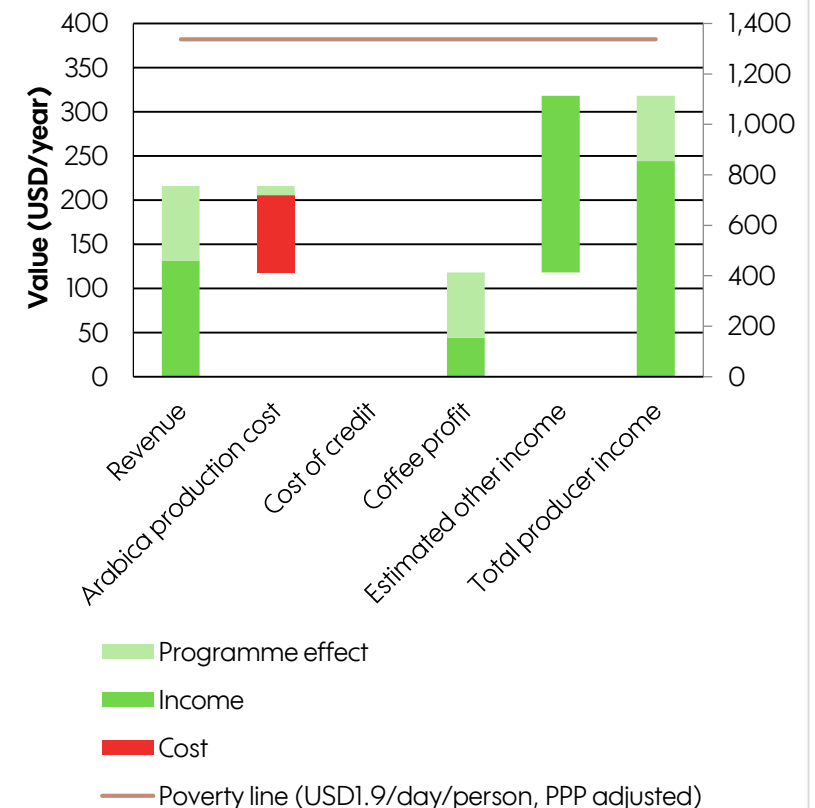
Indicator	Value (10 years)
Number of farmers in improved farmer organizations in steady state	800,000
Volume of coffee marketed through farmer organizations in steady state (Mt)	46,872
Additional farm gate value per annum in steady state	\$ 507,163
Total investment	\$ 31,131,750
Total value redistribution	\$ 3,745,785
NPV (10%)	\$ -20,168,346
NPV (20%)	\$ -15,266,565

SIGNIFICANT POSITIVE IMPACT ON FARMERS, BUT POVERTY PERSISTS



- The 4 combined interventions show a positive impact on the farmer business case, improving revenues by 64% from both price and yield improvement, and increasing profit by factor 2.6.
- Total producer income would then increase to 318 USD/household per year.
- This however is still not sufficient for a full farming family in relation to the poverty line (value of home consumption of other crops not factored in).
- To lift farmers out of poverty, further income is needed but seems currently unlikely.
- The business case for medium to large estates is significantly better than the business case for smallholder farmers.

Improved farmer business case for Arabica in comparison to poverty line

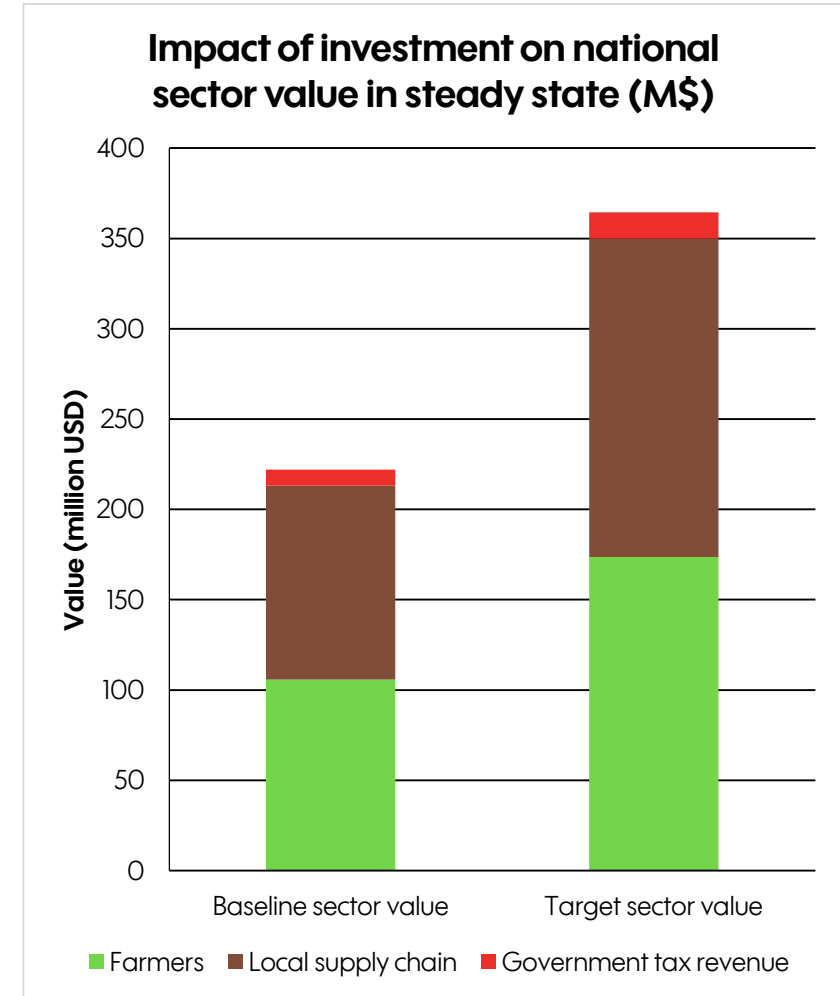


NATIONAL BUSINESS CASE: SIGNIFICANT INCREASE IN SECTOR VALUE FOR ALL



Summary	USD over 10 years
Total investment	\$ 198,412,538
Total return	\$ 1,068,729,715
NPV (10%)	\$ 457,561,793
NPV (20%)	\$ 265,866,332

- Investment in coffee can significantly increase the sector value for all actors in the value chain. The majority of value flows into the rural economy.
- As productivity improves, local supply chains benefit, primarily from additional supply.
- Additionally, an improved supply chain efficiency should bring additional value to farmers.

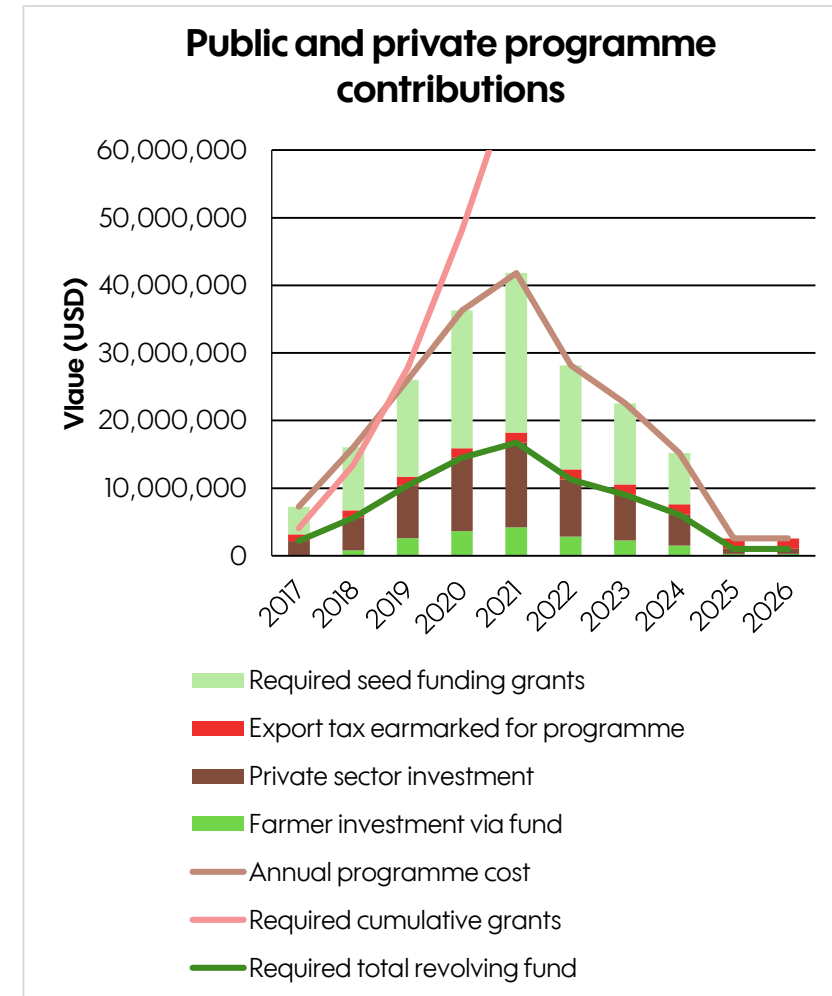


INVESTMENT SHARED BY NATIONAL GOVERNMENT, PRIVATE SECTOR, GRANTS



- A large share (54%) of the investment should come from grants.
- This could also be invested by Kenyan government in addition to reserving part of export tax.
- This will be initial seed funding to fill the funding gap and allow investment in farmer organisation building.
- This can however leverage industry funding by attracting roasters and banks.
- Due to low profitability, only a small portion of farmers would be able to invest.

Summary	Value
ACF revolving fund size	\$ 16,731,420
Required grant funding	\$ 106,716,206
Required grant funding %	54%
Required national budget (% export tax)	50%



Contributions are indicative based on stakeholder input. Investments and conditions to be negotiated within national public private platforms taking into account amongst others international competitiveness, governance, transparency and accountability assurance.



CONCLUSIONS

- The coffee sector in Kenya is in decline, and would need investments of both private and public sector if it is to be revived. Currently farmers are abandoning coffee in favour of other crops.
- There is significant potential to increase coffee sector value in Kenya through selective investment in farmer training, farm rejuvenation, use of inputs and farmer organisation building. Volumes could increase to ~75.000 Mt per annum. The increased value largely flows into rural economy.
- Coffee alone will not provide sufficient income for a full farmer household, under current conditions it appears unlikely that the gap to the poverty line can be met with agricultural activities. It is unlikely that farmers will be lifted out of poverty in the short- to mid-term, despite investments.
- Total programme investment amounts to an estimated 198 million USD over 10 years that would generate a return across the sector of >1 billion USD at current prices.



Sources

Global Coffee Platform, Olam, GrolIntelligence, The Economist, Coffee Sustainability Catalogue, Varqa, Rozimina

Data

Kenya National Bureau of Statistics, Nairobi Coffee Exchange, US Department of Agriculture, Food and Agriculture Organisation, International Coffee Organisation, USAID, 4C Association, UTZ Certified, Agri-Logic

About the Global Coffee Platform

The GCP is a collaboration between the 4C Association and the Sustainable Coffee Program of IDH – The Sustainable Trade Initiative. The Global Coffee Platform is an inclusive multi-stakeholder sustainability platform aligning the activities of a diverse network of stakeholders to set into action the global commitments made through Vision 2020 and create a thriving and sustainable coffee sector.

About Agri-Logic

Agri-Logic – management, consultancy and research – operates where agricultural production, development, international trade and consumer markets intersect. We combine a thorough understanding of farm level reality and commodity trade with scientific research skills and a track record in sustainability strategy design and implementation, to help clients deal with sustainability challenges and market requirements.

About Valued Chain

Valued Chain is an independent consultancy. We support organizations in understanding their value chain and stakeholders, identification and mitigation of risks, and realization of opportunities. We believe in integrating commercial objectives with sustainability of the business and its stakeholders. Working from Amsterdam and Lagos, we connect Europe and Africa.