Service Delivery Model Analysis

Ugacof Ltd., Uganda

Case report

July 2021

Introduction of IDH and the SDM analysis

Importance of Service Delivery

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 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 (SDMs) are supply chain structures that 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 Farmfit analyzes these models to create a solid understanding of the relation between impact on the farmer and impact on the service provider's business.

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 Farmfit aims to inform the agricultural sector and catalyze innovations and investment in service delivery that positively impact people, planet, and profit.

Farmfit Intelligence

The data collected through this SDM analysis is aggregated with other data collected through Farmfit's interventions. The aggregation of these insights enables both the benchmarking of different SDMs and the ability to better identify trends and best practices. Farmfit Intelligence's learning takes place at three different levels:

1. Business- and farm-level: Under what conditions can SDMs and coalitions/partnerships of SDMs be effective, cost-efficient, resilient, and create a sustainable return on investment, at scale?
2. Enabling environment: What are the key barriers in the enabling environment that constrain the functioning of SDMs and smallholder agricultural markets?
3. Market-wide: How can SDMs and interventions improve the inclusivity, sustainability, and commercial viability of smallholder agriculture markets?

Introduction of IDH and the SDM analysis

Coffee Farmer Income Resilience Program (CFIRP)

In 2020, IDH developed new impact pathways to drive the organization's work. They are:

1. Better Income: more income, stable income and equitable income
2. Better Jobs: more remuneration, worker representation and health & safety
3. Better Environment: better water, soil and forest & natural ecosystem

All impact pathways are linked and often complementary. The proposed Coffee Farmer Income Resilience Program (CFIRP) centers around improvement of smallholder income through utilizing regenerative agriculture practices and is therefore aligned with the Better Income and Better Environment pathways. While most programs and projects are not intended to target all three elements within an impact area, the proposed program having regenerative agriculture practices as focal point integrates several elements due to the innovation and opportunity to support farmers in their income diversification efforts.

For Better Income, the CFIRP covers 1) more income through potential income increases, 2) stable income through income smoothing due to diversified income sources with complementary harvest/payment periods, and 3) equitable income through the commitment to improve outcomes for men and women, as well as improved environmental outcomes through regenerative agriculture, targeting soil health and agro-forestry.

For Better Environment , the Coffee Farmer Resilience Programme covers 1) soil health and 2) functional plant diversity. Results for our research in regenerative agriculture have been delayed, and therefore alignment between this impact pathway and regenerative agriculture will commence later in the year.

Thanks

IDH would like to express its sincere thanks to Ugacof Ltd. for their openness and willingness to partner through this study. By providing insight into their model and critical feedback on our approach, Ugacof Ltd. is helping to pave the way for service delivery that is beneficial and sustainable for farmers and providers.

Chapter overview

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

1. Executive Summary	• Situation and purpose of the analysis • Main findings, recommendations and potential next steps	Visit →
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3. Recommendations	• Overview of recommendations • Supporting arguments and analyses	Visit →
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1. Executive summary

This section:

- *States the current situation and the purpose of the analysis*
- *Lays out the main findings, recommendations and potential next steps*

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This SDM analysis aims to answer the question: "How can UGACOF increase SHFs' income and improve agriculture systems of farms it directly sources from, while securing and increasing current coffee volumes? "

Situation

UGACOF, **established in 1994**, is the Ugandan subsidiary of SUCAFINA. UGACOF is one of the **leading coffee processors and exporters in Uganda**. Located in Kampala, UGACOF has extensive knowledge of the internal and export markets and a **worldwide network of buyers for Robusta and Arabica coffee**. The Group's vision is to be the, **"leading sustainable 'Farm to Roaster' coffee company in the world",** where UGACOF's sustainability strategy is centred around:

- Farmer Centric: Farmer Hub **services are based on farmer needs**, inclusive, generate **shared value and increase living income**.
- Environmentally Friendly: Farmer Hub services are designed to **transition from degradation to regeneration**, reduce carbon emissions and promote smart-farming practices.
- Mutually Beneficial: Farmer Hub services **create a business case for the farmer**, are data-driven, and **incorporate services beyond coffee.**

The **Farmer Hub platform is the cornerstone** of UGACOF's sustainability strategy, and provides **entrepreneurial farmers** with access to **customized services to grow their businesses** to achieve shared and durable prosperity for all. These services include but are not limited to: coffee buying at farm-gate, access to finance, agronomy inputs on credit and certification.

Complication

Firstly, the overall aim of Farmer Hub is three-fold: to **partner with entrepreneurial farmers**, to **provide quality customer service**, and to **build long- lasting relationships** that support a transparent and traceable supply-chain. The **Farmer Hub platform is adopting a farmer-first approach** and works directly with a select number of enterprising farmers, often in complex rural and socio-economic environments.

Secondly, **coffee farmers in Greater Masaka (Uganda) do not reach optimum coffee yields** due to the use of **conventional cultivation methods**, cultivation on **degraded soils**, negative effects from **climate change**, and a lack of access to **finance**, **information/knowledge**, and **high-quality inputs**.

Finally, UGACOF aims to **secure and increase its sourcing volume** from farmers it currently directly sources from but lacks the knowledge on **how a transformation to Regenerative Agriculture will increase smallholders' livelihoods.**

Solution

The key question therefore is: **"How can Ugacof increase SHFs' income resilience and improve agriculture systems (e.g., soil quality) of farms it directly sources from, while securing and increasing its current volume of coffee in Uganda?"**

- Provision of services to farmers will enable them to reach a higher income from coffee, while adopting sustainable farm practices, which is imperative to continue cultivating coffee in the long-term.
- Strategic diversification will not only enhance farmer incomes but also holistically improve farm systems making farm income more resilient and improve women empowerment.
- Interventions to stimulate the transition towards regenerative agriculture will only be sustainable with adequate investments in increasing the access to finance, diversified markets and data sharing.

Based on the outcomes of the analysis, we have identified recommendations that should be prioritized by the SDM operator and other actors involved

Recommendation	Conclusions
Increase and sustain coffee yield and thereby farm income	• To increase coffee yield, Ugacof should support farmers: i) Restore soil health by implementing soil rejuvenation program; ii) provide complete package of services for transitioning to regenerative agriculture(RA) system; and iii) increase coffee plant density and renovate old trees. • This study assumes that without restoring soil health through a comprehensive program, the soil will continue to degrade. Restoring soil health through implementing comprehensive RA practices might be essential to arrest the coffee yield decline and gradually increase it. • Implementation of RA by farmers **involves significant investments, know-how and effort** on their part - Ugacof needs to work closely with farmers at entire farm level while ensuring the farm income from coffee is maintained or increased during the transition years.
Strategic crop diversification to make farm income resilient and empower women	• Strategic crop diversification as part of RA would require Ugacof to 1) select diverse crop portfolio that complement one another in an RA system; 2) successful transition to RA would enable farmers reach living income and achieve income resilience; and 3) tailor services to women to increase their participation in value-chains while improving their access to farm income. • Our analysis show the farmers implementing RA from Seg-2 to Seg-4 can **earn significantly higher total income than living income** of USD4,995 from their 6-acre farm • Crop diversification need to be gradually ramped up to reduce farmer investment and cashflow risks
Make adequate investments in diverse crop value chains and enable farmers to access finance	• Transitioning to RA will needs Ugacof to involve in: i) collaborating with financial institutions to enable farmers' access finance; ii) invest in crop value chains either alone or collaborate with other value-chain players; and iii) implementing suitable digital technologies to increase efficiency, reduce cost of the SDM and enable collaborating with VCPs. • The study reveals that farmers need an average of 3 years to implement an RA system and 7 to 8 years to fully transform to RA – while the cashflow from diverse crops (excluding coffee) is expected to be positive from year-2, the total farm investment needs peaks in year-3, hence **providing finance to farmers during initial 3 years can substantially ease the burden on their cashflows**. • While the advantages of RA on farmers are noted above, RA can benefit Ugacof in primarily in two ways i) increasing and sustaining coffee yield thus supply of coffee ii) providing opportunities for Ugacof to participate in other crop value chains that can **potentially result in additional income to Ugacof** which is considerable in comparison to the profit from coffee operations alone

For these recommendations we have identified the required next steps, potential partners to involve, as well as the need for technical, financial or other support

Recommendation	Actions required to execute this recommendation	Type of actor most strongly positioned for driving the service	Service providers and/or other stakeholders to collaborate with	Support required?	Next step to be taken
High priority					
Soil health restoration Demonstrate to farmers the critical need for soil restoration and chart out a plan to implement the same	1. Test and analyze soil to find the level of soil degradation 2. Establish demo plots to contrast conventional farm and RA farm 3. Explain to farmers the perils of not transitioning to RA	• SDM Operator (Ugacof) • Sucafina (parent company)	• Soil testing labs • RA experts from academia, individuals or other institutions	Yes, support is required: • Detailed soil restoration plan	• Plan to establish demo plots • Reach out to RA experts for making soil restoration action plan
Strategic diversification Select high potential crops and livestock that complement one another in a RA system and design services required to sustain them	1. Matoke, livestock, grass and bamboo play key role in a RA system and for income potential to farmer 2. Plan timeline of transition and prepare for launch of new services to farmers 3. Identify potential inputs and other service providers	• SDM Operator (Ugacof) • Sucafina (parent company)	• IDH program team in helping design new services • Organic and botanical input providers (compost and crop protection)	Yes, support is required: • Support in choosing suitable crops and analyzing market potential • TA on finalizing further value chain investments	• Undertake agronomic study of crop choice in a RA system • Experimental demo plots • Detailed implementation roadmap of diversification for a typical farmer
Farmer Finance Facilitate finance to farmers during initial 3 years can substantially ease the burden on their cashflows	1. Collect and curate farmer data essential for extending farm loans of right amount while reducing default risk 2. Identify suitable financing partners	• SDM Operator (Ugacof) • Sucafina (parent company)	• Finance consultant to provide insights on current farm data • Financial institution for access to finance	Yes, support is required: • For designing farm data collection system • Tap impact investors for co-funding or guaranteeing farm loans	• Analyse farmers income, cashflow pattern and credit behaviour • Develop a business proposal for collaborating with financial institution

Scoping

This section:

- *Strategy of Ugacof Ltd*
- *Scoping and segmentation of studied farmer base*

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Ugacof is well positioned to unlock high sustainability potential in Robusta coffee cultivation in Greater Masaka by using their experience and network for diversification, access to finance, and service provision

Goals & Aspirations

Aspirations

- *Secured supply* – Ugacof aspires to secure the supply of coffee to its factories, and maintain the current and future need for its local factory capacity.
- *Sustainable supply* – Ugacof aspires to increase the sustainability of its sourced coffee to align with its corporate values and customer requirements.
- *Efficient supply* – Ugacof aspires to ensure an efficient supply with the use of its existing infrastructure of factories, Farmer Hub and smallholders Ugacof sources from.

Goals

- Ugacof aims to increase its sourcing volume

Where to Play

To secure coffee supply,

- Ugacof creates and maintains year-round relationships with farmers that will help them diversify their farms and enable them to access banking services and finance.

To secure sustainable supply,

- Ugacof sets up innovation strategies (e.g., diversified sourcing, traceability by digitalization) that fit the local environment, its farmer needs and technical feasibilities.
- Ugacof supports smallholders to prevent harm to the environment or to re-enforcing the environment by regenerative agri-cultural practices

To secure efficient supply,

- Ugacof adapts 'a marketplace of agri-tech possibilities', ranging from tech-driven management platforms, IT infrastructures, farmer and partner communication models.
- Ugacof advances its infrastructure with the establishment of Farmer Hub.

How to Win

Secure supply

- Revisit service offering to farmers;
- Optimize utilise extensive upcountry assets;
- Serve broader needs of farmers and capture business opportunities that go beyond coffee.

Sustainable supply

- Adapt different business strategies that fit into the existing infrastructure, are adjacent to it, or new in the market and clients it serves or the products and services it offers.
- Source other crops from farmers and get them better prices, provide new digital banking services that pave the way for credit, and provide inputs and other goods tailored to farmer needs.

Efficient supply

- Set out to create additional profit centres that will be good for business and better for farmers.
- Create new partnerships with local banks, 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 sustain productivity and mitigate risks due to degenerative soils and climate change;
- **Network and collaboration** with government (e.g., UCDA) and value chain players (VCPs) to develop market access;
- **Network, pilot experience, and vision** on diversification activities and continuous development to establish and tailor diversified service provision;
- **Knowledge and expertise** on the building of Farmer Hubs, especially to increase professionalism and access to finance;
- **Ability to incentivize farmer behavior** to increase both farmer loyalty and adoption.
- **Ability to provide digital and banking solutions** to farmers to increase traceability and sustainability.
- **Ability to model and analyze** the financial and environmental output of (to be) implemented interventions on farm and business level.

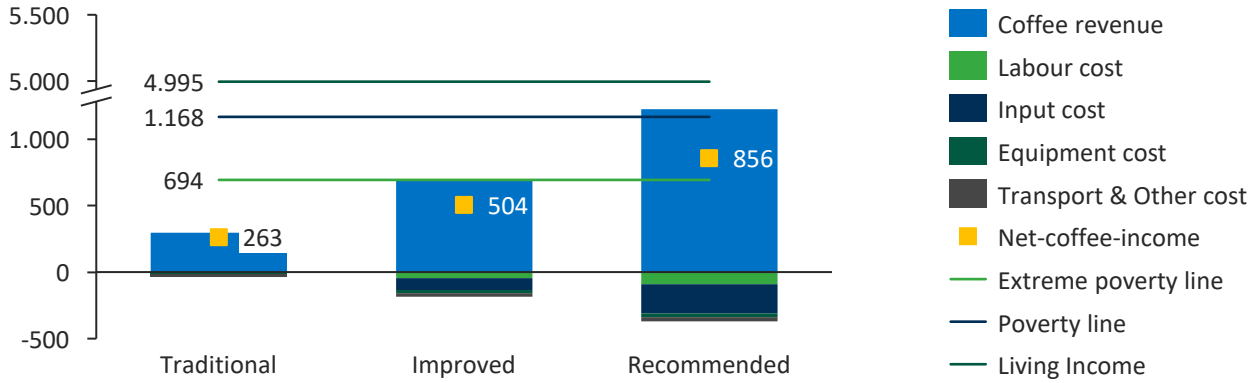
Sources: Sucafina (2019);

Go to Living income expl.→

The majority of Robusta coffee farmers in Uganda cultivate diversified crops, but lack of land, minimal use of inputs, and limited access to finance cause farmers to earn just above the poverty line.

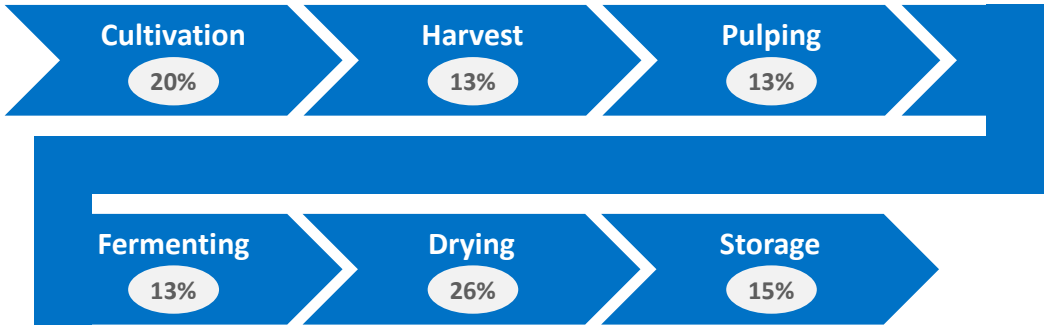
Traditional farmers need at least 19 acres (7.7ha) to earn a living income from coffee only

Annual coffee net income USD/acre of Ugandan coffee farmer compared to living income, and (extreme) poverty line.[3) & 4)]



Farmers can increase quality most by investing in GAP and Drying techniques

% of impact of key coffee processing activities on coffee quality.[2)]



Discussion

- In the Masaka area, there are **two coffee seasons** the main-season from **April to August**, and the fly-season from **November to February**.[5)]
- In Uganda, it is estimated that **1.8 million households grow coffee** with a proportion of female-headed coffee households of about 40%.[8)]
- In Uganda, **average coffee plot size is 0.6 acres**. 90% of farmers own plots of less than <1.25 acres representing **60% of coffee area in Uganda**.[6)]
- **~85% of coffee farmers** in Uganda intercrop their coffee trees with **bananas and other staple crops**.[7)]
- Coffee production in Uganda is characterized by **very low productivity (0.55 kg (GCE)/tree/year– 1.1 kg (GCE)/tree/year), due to minimal application of inputs**, **struggles with pests and diseases**, low replanting, and **on-farm drying** relatively common.[7)]
- Most **youth provide help to family farms** or **wage labor** in activities such as planting, weeding, spraying and harvesting, **due to lack of access to land** and **start-up capital**, and a negative attitude towards agricultural.[8)]

Traditional farmer is a coffee producer who only carried out basic agronomic practices almost exclusively using family labor. The/she does not apply fertilisers and/or manures consistently on his/her coffee garden nor practice effective pest and disease management.

Improved farmer is a coffee producer with significant adoption of recommended GAPs. This farmer applies less than the recommended amounts of fertilisers and/or manures, but carries out proper canopy management, and pest and disease management

Recommended coffee farmer is a coffee producer who adopts most GAPs and applies the recommended amount of fertilisers and/ or manure. This farmer carries out proper canopy and pest- and disease management thereby optimising production.

Sources: 1) Global Coffee Platform (2018); 2) Pitch FNC Innovation; 3) IDH (2020) - Income Driver Analysis; 4) World Bank DataBank (2011); 5) UCDA (2019); 6) CGIAR (2019; 7) FAO (2020); 8) ICO (2019);

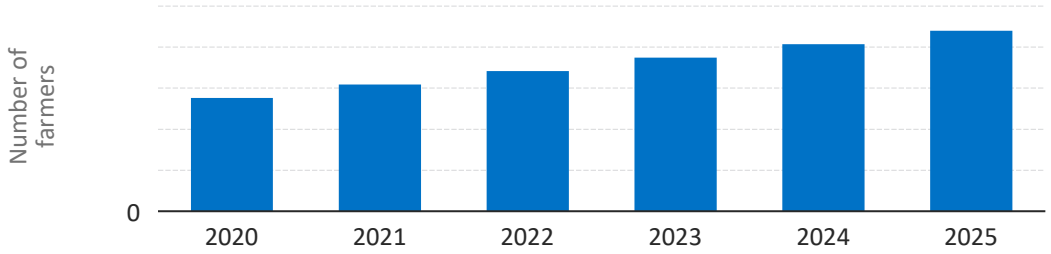
By a strict selection of farmers, Ugacof establishes a strong farmer base to source from and establishes a group to nudge learnings to the greater community through lead-farmers and collection centres.

Farmer base

- Ugacof currently directly sources from farmers in the Greater Masaka area of Uganda.
- Ugacof only provides services and directly sources from farmers who cultivate > 5 acres. Farmers with < 5 acres farmer can sell their coffee at farm-gate-price through registered farmers in the Program.
- Farmers in the SDM are engaged and trained with support from lead-farmers.

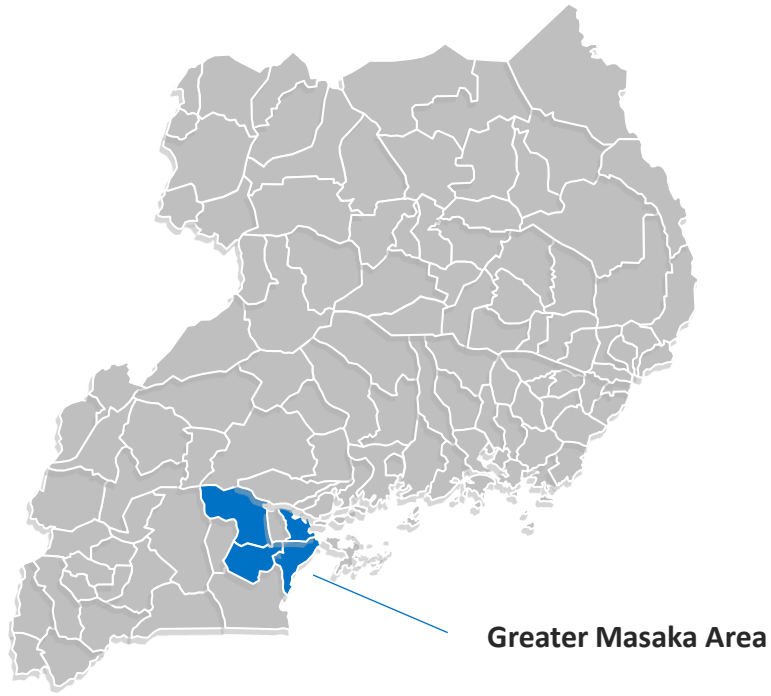
Scale of farmers

Number of farmers per year



Masaka is yet an unleveraged district for Ugacof

Scope of SDM analysis with indication of (total) Robusta farmer base.



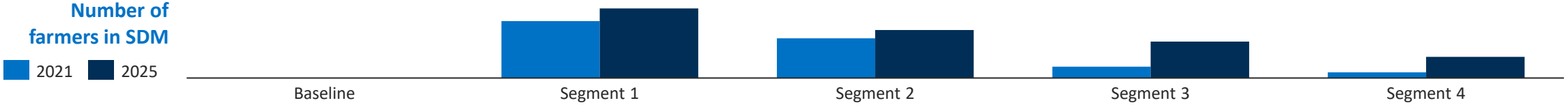
Sources: 1) CGIAR (2019);

The farmers Ugacof works with are segmented into four Segments, who differ in loyalty, adoption of GAP for coffee, and attitude towards Regenerative Agriculture

	Baseline	Segment 1	Segment 2	Segment 3	Segment 4
Description	• Farmer outside SDM and does not apply fertilizer/GAP. • No sales or interaction with Ugacof	• Farmer is part of the SDM and applies GAP/fertilizer • Loyalty = loose relation with Ugacof	• Farmer is part of the SDM and applies GAP/fertilizer • Loyalty = firm relation with Ugacof	• Farmer is part of the SDM and applies GAP/fertilizer • Loyalty = tight relation with Ugacof and entrepreneurial mindset.	• Farmer is part of the SDM and applies GAP/fertilizer • Loyalty = tight relation with Ugacof and entrepreneurial mindset.
Land size	• Coffee: 6 acres • Other crops: 3 acres	• Coffee: 6 acres • Other crops: 3 acres	• Coffee: 6 acres • Other crops: 3 acres	• Coffee: 6 to 10 acres • Other crops: 3 acres	• Coffee: 6 to 10 acres • Other crops: 3 acres
RA portfolio	*N/a*	*Cattle + grasses*	*RA + Trees*	*RA + Bamboo*	*RA + Bamboo (intensified)*
RA adoption	N/a	N/a	Y1 Y2 Y3 N/a N/a Y2 Y3 Y3 N/a	Y1 Y2 Y3 N/a N/a Y2 Y3 Y3 N/a	Y1 Y2 Y3 N/a N/a Y2 Y3 Y3 N/a
Services	• Limited uptake of services from others • No service uptake from Ugacof	• Training (+ Certification) • Fertilizer • Farm-gate price • Cash advance • Bean seeds	• Training (+ Certification) • Fertilizer • Farm-gate price • Cash advance • Bean seeds	• Training (+ Certification) • Fertilizer • Farm-gate price • Cash advance • Bean seeds	• Training (+ Certification) • Fertilizer • Farm-gate price • Cash advance • Bean seeds • Soil testing

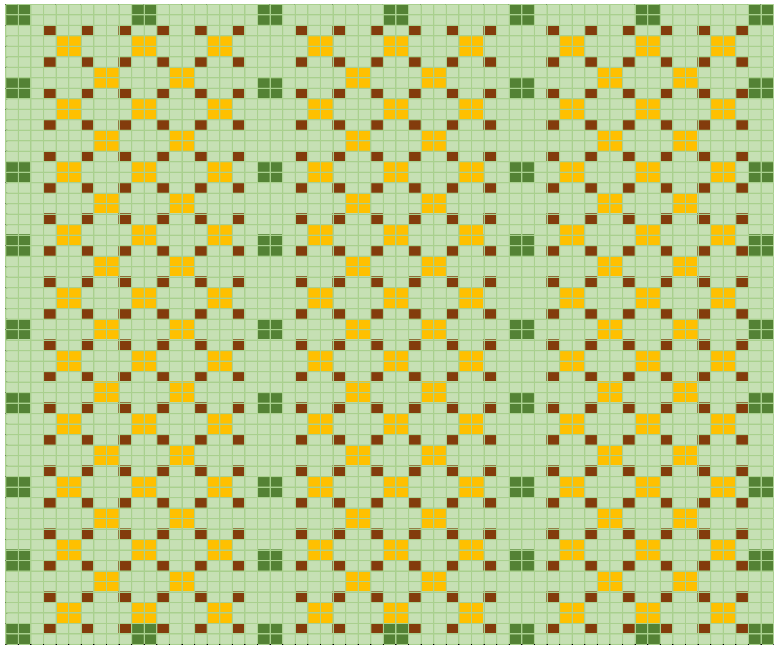
Go to RA Strategy →

Number of farmers in SDM



Farmers can implement different RA strategies to achieve a desired outcome and to align with governmental policies and guidelines for Robusta coffee cultivation

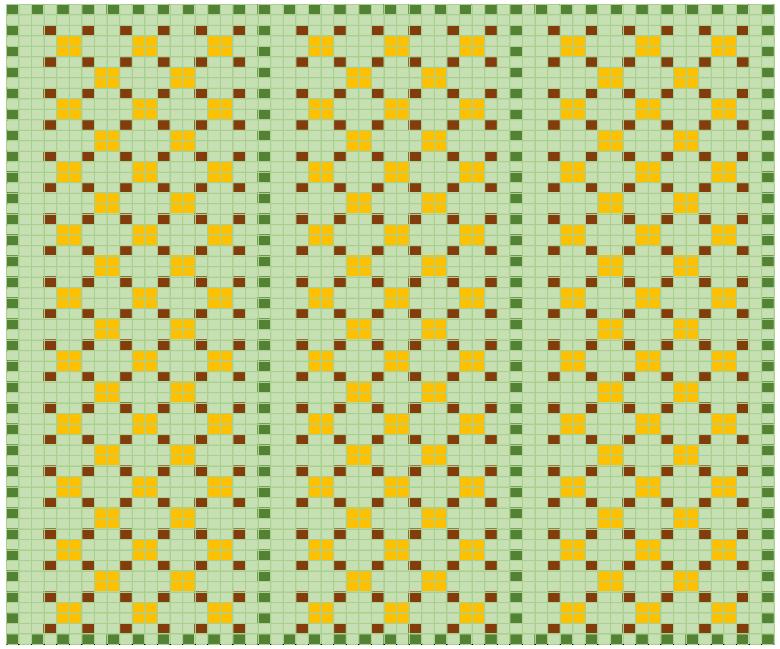
RA + Trees



Acre characteristics

- Coffee – 360 trees/acre
- Matoke – 144 trees/acre
- Ficus – 44 trees/acre
- Grasses – 4 acres (planted Y1: 70%, Y5: 30%, Y10: 30%)
- Beans – 2 acres (planted Y1: 70%, Y5: 30%, Y10: 0%)
- Cows – Y1: 2# Y2 onwards 4#

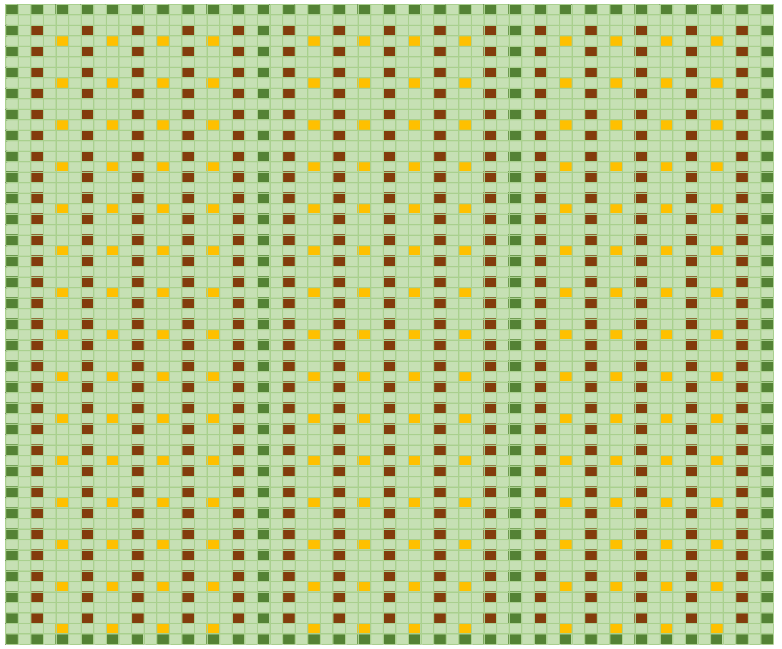
RA + Bamboo



Acre characteristics

- Coffee – 360 trees/acre
- Matoke – 144 trees/acre
- Bamboo – 176 trees/acre
- Grasses – 4 acres (planted Y1: 70%, Y5: 30%, Y10: 30%)
- Beans – 2 acres (planted Y1: 70%, Y5: 30%, Y10: 0%)
- Cows – Y1: 2# Y2 onwards 4#

RA + Bamboo *(intensified)*



Acre characteristics

- Coffee – 435 trees/acre
- Matoke – 180 trees/acre
- Bamboo – 176 trees/acre
- Grasses – 4 acres (planted Y1: 70%, Y5: 30%, Y10: 30%)
- Beans – 2 acres (planted Y1: 70%, Y5: 30%, Y10: 0%)
- Cows – Y1: 2# Y2 onwards 4#

3. Recommendations

This section:

- *Contains all the recommendations to improve the business model and overcome challenges*
- *Provides all the supporting arguments to back up the recommendations*

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Go to Pillar 1 →
Go to Pillar 2 →
Go to Pillar 3 →

The core recommendations are backed up by supporting arguments

[Key question] How can Ugacof increase SHFs' income resilience and improve agriculture systems (e.g., soil quality) of farms it directly sources from, while securing and increasing its current volume of coffee in Uganda?

[Solution] By ① enabling SHFs to transform to economically sustainable regenerative agriculture approaches; ② by supporting SHFs to improve income from diversification, and ③ by improving the infrastructure by increasing access to finance, diversified markets, and data/information sharing.

Recommendation 1:
Provision of services to farmers will enable them to reach a higher income from coffee, while adopting sustainable farm practices, which is imperative to continue cultivating coffee in the long-term.

Pillar 1

Recommendation 2:
Strategic diversification will not only enhance farmer incomes but also holistically improve farm systems making farm income more resilient and improve women empowerment.

Pillar 2

Recommendation 3:
Interventions to stimulate the transition towards regenerative agriculture will only be sustainable with adequate investments in increasing the access to finance, diversified markets and data sharing.

Pillar 3

Enabling SHFs to transform to economically sustainable regenerative agriculture approaches

Recommendation 1:
Supporting farmers to a higher income from coffee by adopting sustainable farm practices, which is imperative for farmers to continue cultivating coffee in the long-term.

Pillar 1

1.A

Improving and restoring soil health by implementing soil rejuvenation program will sustainably increase coffee yields and reduce production costs.

1.B

Services aimed at diverse crops and in maintaining farm income during transition years to regenerative farm system will cushion the impact both on farmers and Ugacof.

1.C

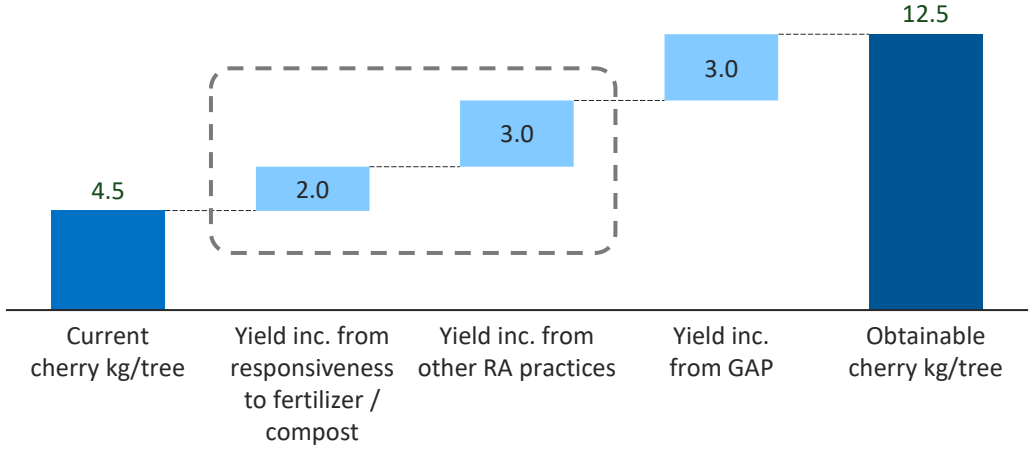
Renovation and rejuvenation of coffee plantations will increase average coffee yield and lead to better quality.

Go to Cherry yield-curve →

Restore soil health by implementing soil rejuvenation program that will sustainably increase coffee yield and reduce production costs

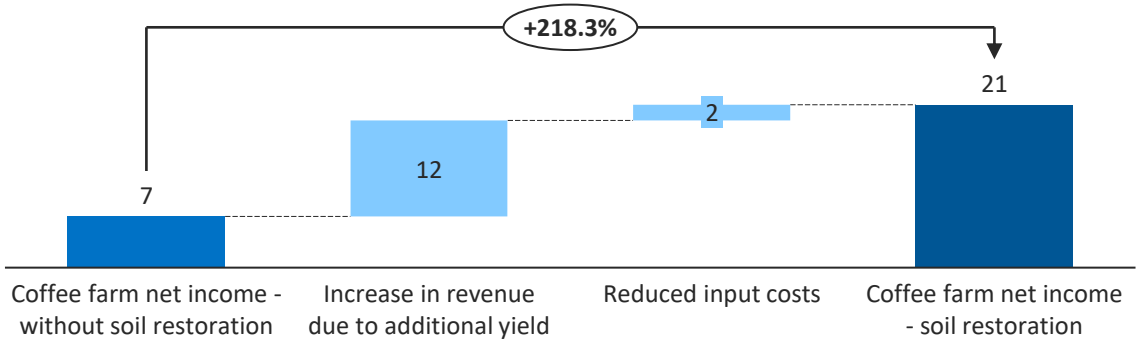
Coffee cherry yield increase resulting from soil restoration

Annual (main + fly) cherry yield in kg/tree of full mature coffee-tree



Restored soils significantly increase coffee yield and consequently farm net-income

Farm net income from coffee in year-5 without and with soil restoration in UGX/million [1)]



- Current coffee yields in the Greater Masaka region are an average of 4.5KG of cherry per tree, which is way below potential yields of nearly 15KG/tree in best managed farms – such low yield is commonly **attributed to soil degradation, lack of GAP, and lack of use of high quality inputs** over the years. Without restoring soil health through a comprehensive program, the soil may continue to degrade. Such extensive soil degradation has made the soil unresponsive such that chemical fertilizer application and GAP practices might not help improve the coffee yield
- While restoring soil health is crucial for improving the coffee yield and to **make soils responsive**, post-restoration, yield increase can be achieved by the application of compost and implementation of GAP and other RA practices such as mixed cropping, planting of shade trees, and maintaining crop cover over the entire farm for the most of the year.

- On a net basis, the farm income from coffee increases 3x to 21 million UGX by year-5 due to the implementation of RA.
- As shown in the graph (above left), net income from coffee increases due to the coffee yield increase of nearly 3x (from 4.5Kg to 12.5KG/tree).
- RA implementation reduces the cost of fertilizer and crop protection due to the transition from chemical to organic inputs and by creating a resilient farm-system reducing the need for herbicides and pesticides.
- Once transitioned to RA, **foliar sprays** aid is used to supply specific plant nutrition helping achieve better yield and quality of coffee cherry.
- Moreover, reducing (eventually stopping- details in next slide) the usage of chemical fertilizers and chemical crop protection will have a salubrious impact on soil health, on water bodies avoid adverse effects on other flora and fauna which plays a major role in **maintaining biodiversity** on the farm and around.

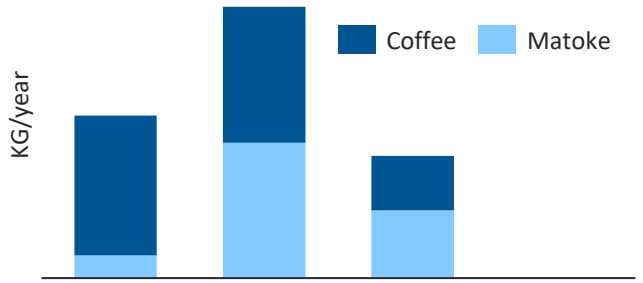
1) Calculation based on Segment 4. Seg-2&3 farmers follow similar patterns with a small difference in numbers.

Go to RA assumptions →

Restore soil health by implementing soil rejuvenation program that will sustainably increase coffee yield and reduce production costs

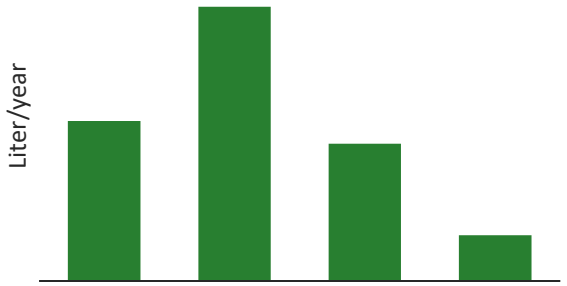
Total chemical fertilizer usage can keep reducing for a RA adopting farmer [1)]

Chemical fertilizer usage in kg/year of Segment 4



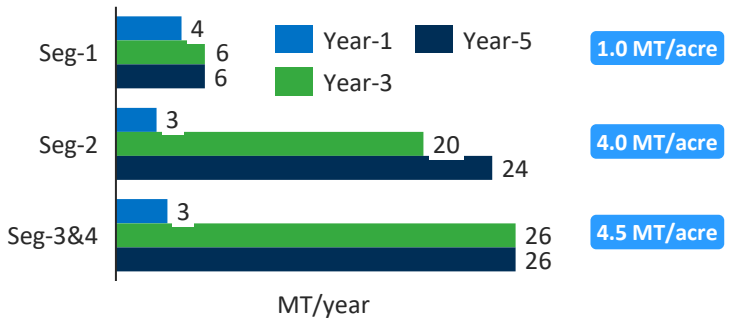
Chemical crop protection usage reduces significantly by year-7 for a RA adopting farmer

Chemical crop protection usage litre/year [2)]



Organic manure produced and applied on farm increases and reaches near optimal volume per acre application by year-3

Produced and applied organic manure in Mt/year per Segment



Farmers can further increase organic manure production by additional cow or two (from existing 4 cows)

- Without RA practices, a farmer has to apply 0.5KG and 1KG of chemical fertilizer for each coffee and matoke tree respectively. Our estimates indicate the usage of chemical fertilizer can be **reduced by 15-20% each year** while transitioning to RA system and by year 6 or 7 farmers can completely stop usage of chemical fertilizers
- On conventional farming methods, each acre of coffee and matoke plantation requires 2 litres of chemical crop protection per year. With RA this can reduce significantly by year-7.

Reduction in agrochemicals usage due to transition to RA

- Chemical fertilizers are substituted with organic manure produced on the farm. Organic manure has a **number of advantages over chemical fertilizers** in increasing the organic matter, living organisms, and water retention in the soil while balancing the soil PH, soil responsiveness and reducing soil erosion.
- With a full RA system (Seg 2 to 4) a farmer can produce nearly 5-6MT of mulch material from one flush of grass and bamboo tree dropping. After using it as mulch for a year, **a part of old mulch, fresh bamboo tree droppings and cow dung** from 4 cows can be dumped into a compost pit to make organic manure.
- In year-1 of RA, a farmer can make 3MT of organic manure which increases to nearly 20-25MT in year-3 and steady level of 26MT per year from year-5 onwards, which translates to nearly 4-4.5MT of organic compost availability per acre every year.

1) Seg-2&3 farmers follow similar patterns with a small difference in volume of fertilizer usage vis-à-vis Segment 4.
2) Usage of chemical crop protection similar across Segment 2, 3 and 4 farmers.

Provide services for diverse crop portfolio of the farmer that are part of regenerative farm system and reduce time required for reaching net cashflow positive from diverse crop portfolio

	Inputs	Market Access	Need for farmer finance	Cashflow positive year	Potential value chain investments
Beans	• Seeds • Fertilizer	• Ugacof • Value chain partner (VCP)	Low	Year 1	
Bamboo	• Seedings	• Local off takers • VCP	Medium	Year 3	• Furniture • Cooking
Bees	• Bee boxes • Bee handler	• Ugacof • VCP	Medium	Year 1	
Matoke	• Seedling • Fertilizers	• Local off takers • VCP	High	Year 4	• Processing plant
Grasses	• Seedlings	• Local market in adjacent county	Low	Year 1	• Silage making
Cattle	• Cows • Fodder supplements	• Local off takers • VCP	Medium	Year 1	• Milk chilling plant

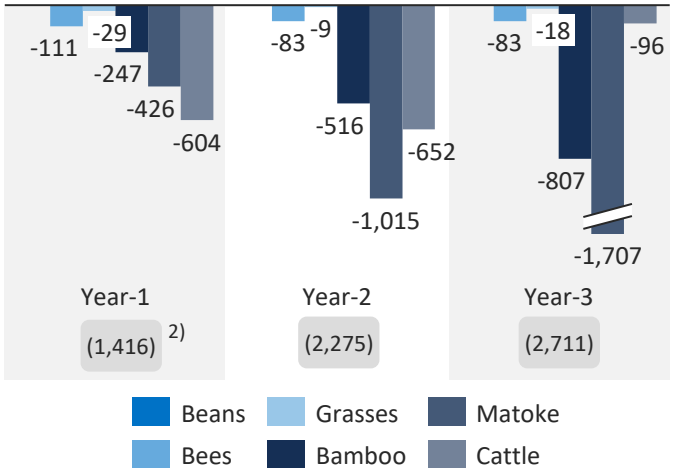
- Farmers may be less inclined to transition to RA system that **entails higher investments and farmer involvement** before they realize tangible benefits of the same, therefore it would be imperative for Ugacof to demonstrate the benefits of RA in a manner convincing to farmers by forming a coalition of lead farmers, village leaders, field agents that start believing in the benefits of RA.
- A well chosen mix of diversification activities would **reduce the duration of negative cashflow** (excluding coffee income) and enable farmers to invest in RA on their own. In the current plan, only in year-1 farmers would be net cash-flow negative from diversified crop portfolio.

1) Calculations based on Seg_4 farmers, as Seg-3 farmers has similar investment needs while seg-2 farmers requires ~20% less investments

2) Total of annual gross/net investment per farmer in USD/year

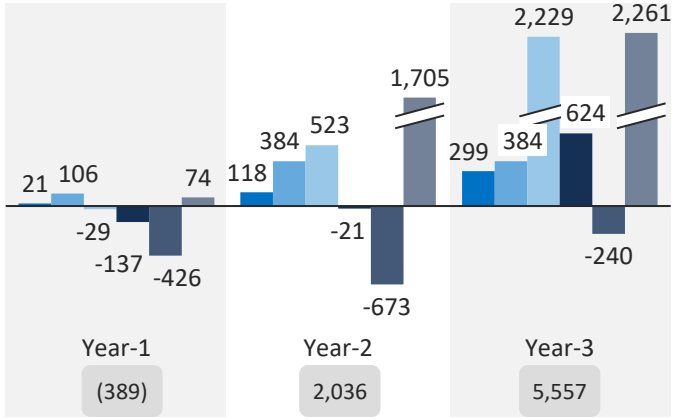
Gross investments per farmer [1)]

Annual gross-investment per crop in USD/year



Net investments per farmer [1)]

Annual net-investment per crop in USD/year



Services for RA

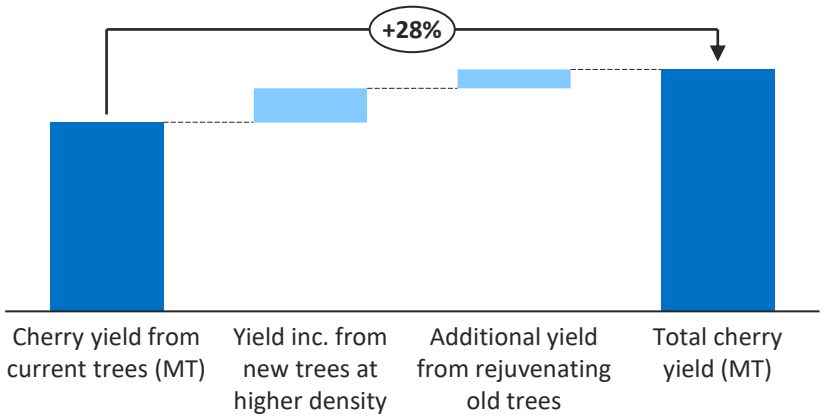
- Suitable diverse crops having market potential
- Mulching
- Organic manure making
- Crop activity calendar
- Pest management with reduced use of chemical crop protection
- Soil management to progressively reduce usage of chemical fertilizers
- Finance investments through partnering with banks
- Insurance for farmer investments
- Supply of chosen micro nutrients and botanical crop protection inputs
- Market linkages for all crops in farmer portfolio

Go to RA assumptions →

Renovation and rejuvenation of existing coffee plants and planting for optimum density will increase average coffee yield and total volume

Full RA transitioned farmers can increase total coffee yield from higher tree density ('develop' strategy) and rejuvenating of old trees

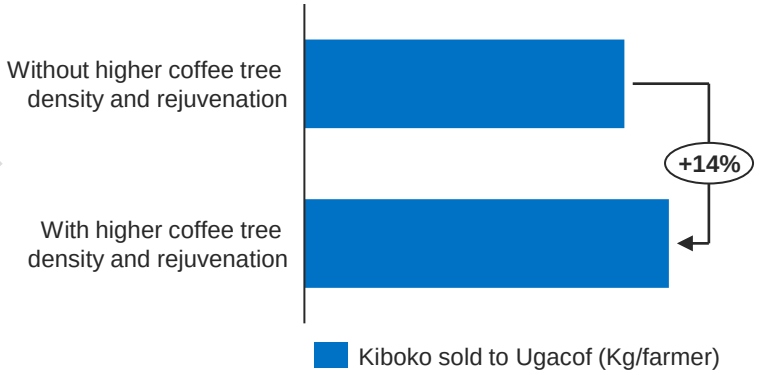
Total coffee cherry yield in kg/year in 5th year of a Segment 4 farmer



At constant farmer loyalty, a full RA transformation will result in bigger volume of kiboko supply to Ugacof

Develop strategy farmer will have higher volume of kiboko to sell to Ugacof [1)]

Total coffee kiboko yield [2)] in kg/year in 5th year of a Segment 3 / 4 farmer



- Farmers can intensify their coffee tree density from current 360/acre to 435/acre resulting in nearly 18% higher cherry production per acre. Planting new variety of coffee seedlings will further demonstrate to farmers the benefits of drought variety, pest resistant and higher yielding coffee plant varieties
- In addition, farmers can further increase their overall coffee yield from continually rejuvenating old and low yielding trees. We suggest farmers to rejuvenate 10% of their existing trees once every two years to improve overall yield without impacting short-term production

- A farmer with a higher tree density and fully rejuvenated coffee trees is estimated to produce nearly 14% higher coffee volume from the same farm. At constant farmer loyalty, the volume of kiboko sold to Ugacof will also be 14% higher than without the increased tree density and rejuvenation.
- The increase of total coffee volume produced by the farmer, while keeping the loyalty constant, will reduce the cost of service delivery by Ugacof per kg/kiboko sourced, improve the relationship with the farmer, and increase the income of farmers

1) Volumes at 75% farmer loyalty to Ugacof
2) Conversion rate of 1 kg cherry to yield 0.4 kg kiboko

Strategic diversification will enhance farmer incomes and make farm income resilient

Recommendation 2:
Strategic diversification will not only enhance farmer incomes but also holistically improve farm systems making farm income more resilient and improve women empowerment.

Pillar 2

2.A

A careful selection of adequate diversified income-generating activities complements coffee income.

2.B

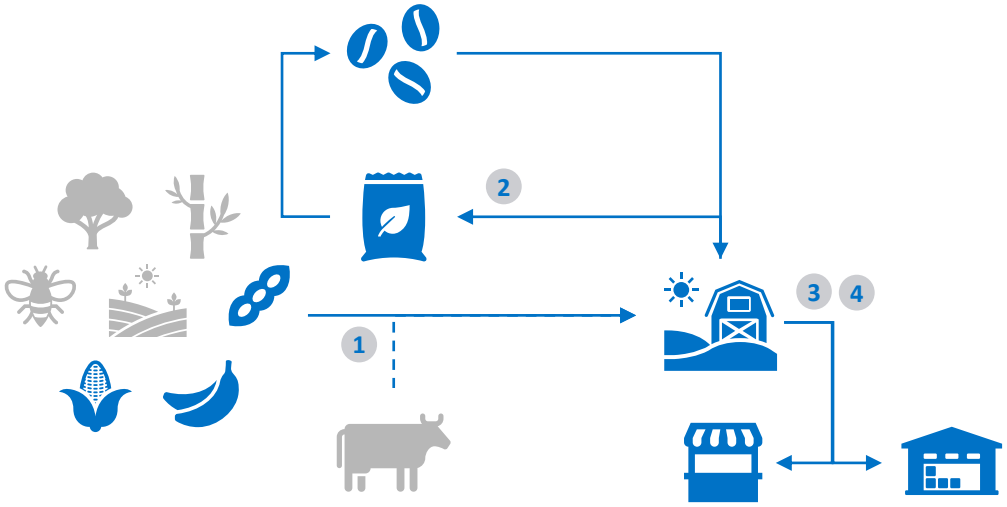
The implementation of an appropriate RA strategy enables farmers to close the gap to a living income, and increases income resilience to climate change and shocks.

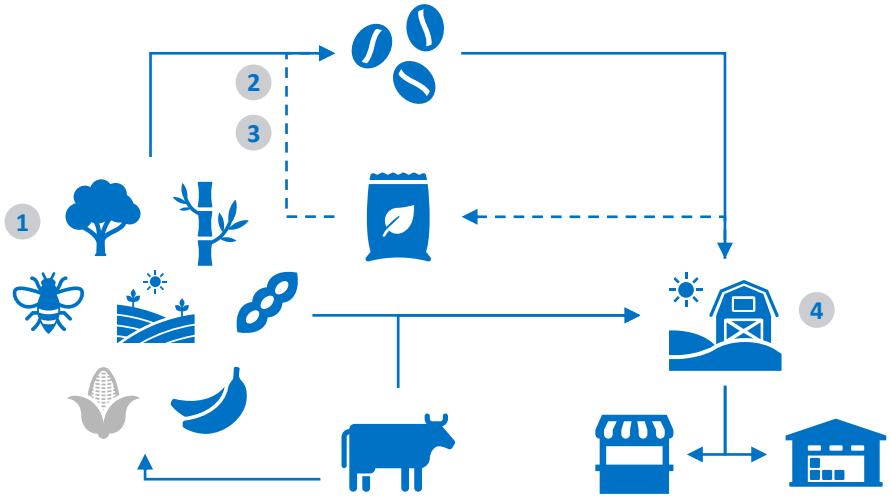
2.C

Tailored services to women SHFs will sustainably increase their empowerment and income, opening potential opportunities of women employment through the value-chain.

Go to RA assumptions →

By creating a closed system that regenerates the soil and decreases the usage of chemical inputs, a careful selection of adequate diversified income-generating activities complements coffee income.





Legend

- (Un) performed
- Coffee
- Matoke (banana)
- Maize / Beans
- Bees (honey)
- Bamboo / Agroforestry
- Grasses
- Fertilizer / Compost
- Cattle (milk)
- Farm
- (Local) market
- Off taker

Current farmer practices [1), 2)]

1. Diversified produce from beans, matoke, and maize is used for household consumption, and in some situations, farmers own cattle from which they consume the milk;
2. Chemical fertilizer and crop protection are used to stimulate and protect coffee trees' production;
3. Most of coffee and diversified produce is sold at local markets and to aggregators or used for household consumption;
4. Limited to no return of energy to the soil or to protect, feed, and fertilize farmer activities (coffee, diversified crop, and cattle).

Regenerative farmer practices

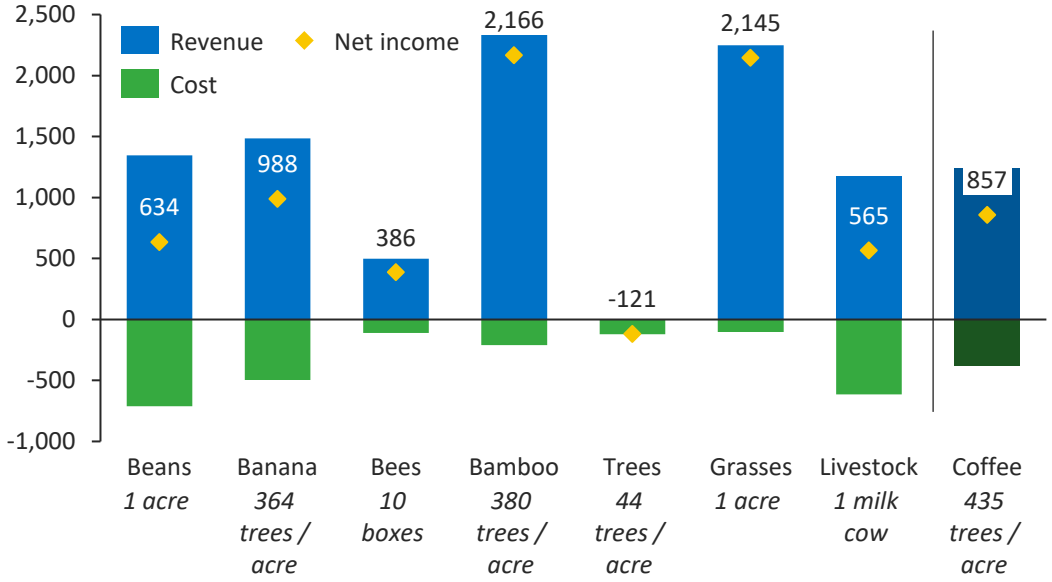
1. Farmers diversify their activities with the cultivation of bamboo/trees, matoke, beans. Cattle are raised for cow dung and milk. Bees are kept for their honey and to increase the fertility of coffee trees;
2. Residual of the diversified crops is used as mulch, is mixed with cow dung to produce organic compost, and hence reduces the need for chemical fertilizer;
3. Bamboo/agroforestry, cultivated in boundaries between acres reduces the spread of diseases, and beans/grasses are used as cover crops to reduce the growth of weeds, hence reducing the need for chemical crop protection;
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.

Sources: 1) NATHAN (2019) Farmer Segmentation Analysis; 2) Kilimo Trust (2020) Farmer Research & Market Systems Analysis Research;

By providing an additional income that outweighs income from previous other crop and off-farm income, a careful selection of adequate diversified income-generating activities complements coffee income.

Diversification activities provide significant additional net income

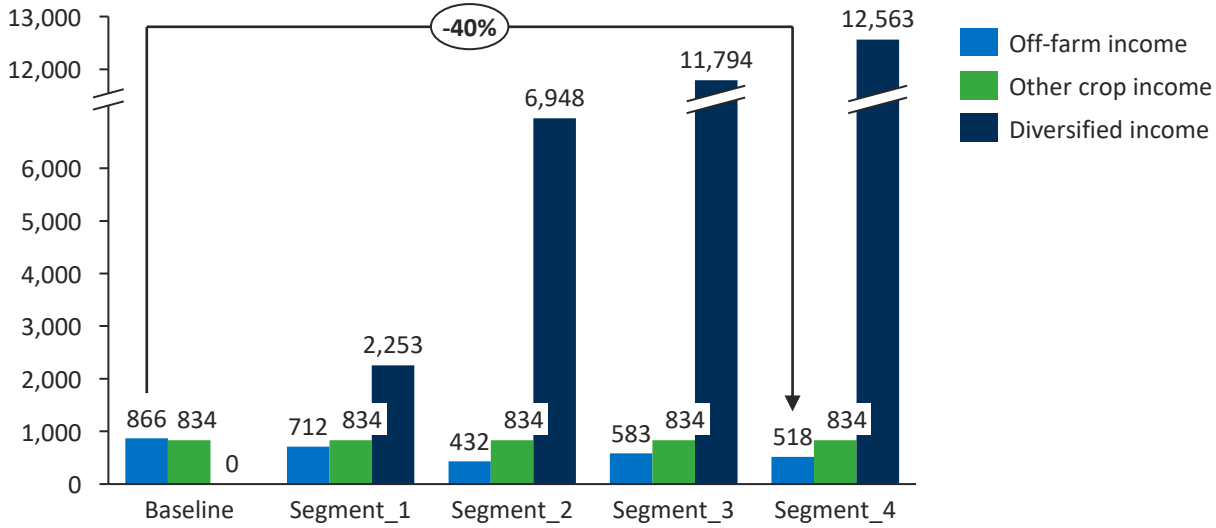
Mono cultivation of 1 unit mature diversification activity (USD)/year



- With 50% of the labor performed by the HH-labor, bamboo yields the highest net income per acre mono-cultivated crop.
- The Return on Investment (ROI) of the crops shows the highest ROI on grasses followed by bamboo, matoke, bees, and lastly coffee. However, the cultivation of coffee enables farmers to be part of the SDM and benefit from Ugacof's service provision.

Diversification of farming activities outweighs initial off-farm/other crop income

Average 10-year net-income from non-coffee related activities in USD/year



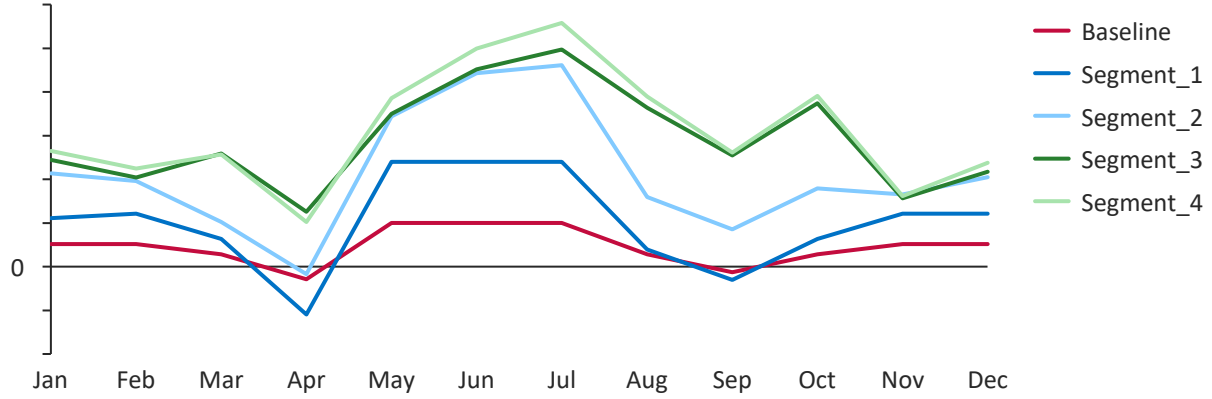
- The off-farm income decrease with -/- 40%, caused by an increased HH-labor requirement. However, this is outweighed by the income increase from diversified activities.
- Segment 2, who performs agroforestry, is outperformed by Segment 3 and 4, who performs agroforestry with bamboo.

Go to Per Segment Graph →
Go to Gender Assessment →

By dampening cash shortage and optimizing available labor usage, a careful selection of adequate diversified income-generating activities complements coffee income.

Performance of diversified activities dampens cash shortage in April and September

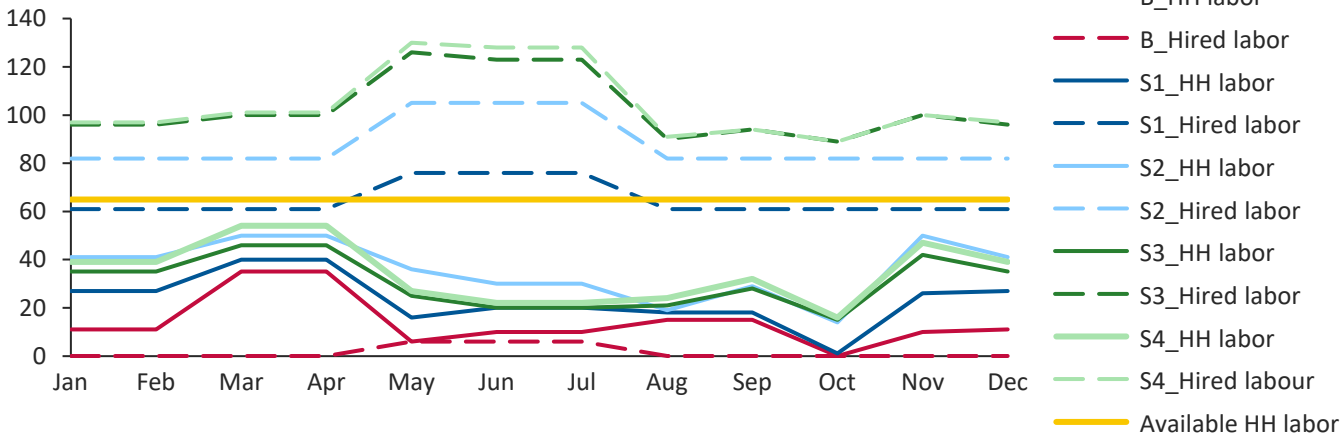
Average 10-year net cashflow from farming activities in USD/month



- Following the crop calendar, all Segments have cash surplus during the harvest seasons and cash shortage during the cultivation periods.
- Only those segments who implement RA do not become cash strapped during the year.
- Segment 1 farmers are more cash constrained compared to the Baseline, due to fertilizer application.
- All farmers, on 10-average, have an increased overall cash position compared to the Baseline farmer.

Performance of diversified activities required additional hired labor

Average 10-year labor need for farming activities in days/month

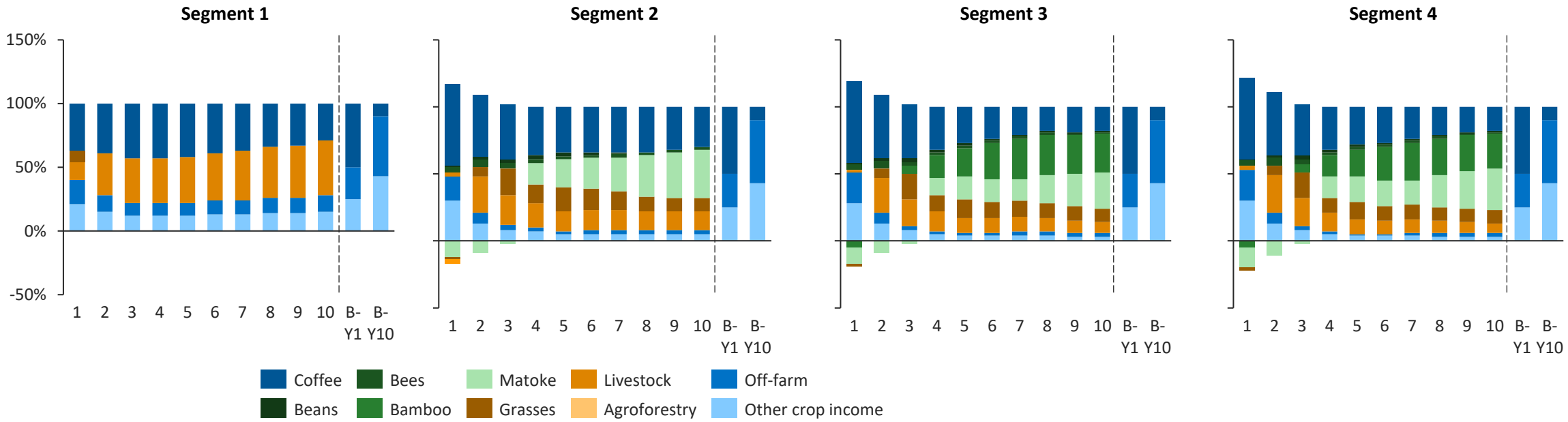


- The baseline farmer requires a maximum of labor during March and relies most on hired labor during the main harvest period from May until July.
- With the performance of diversified activities, the HH performs more labor during the fly and 1st wet-off season (Jan – Apr), compared to the main and 2nd wet-season (Aug – Dec).
- Every segment shows to have enough household labor to cover the labor needs of crop diversification

By performing RA, farmers will become more financial resilient to shocks, due to a diversified income portfolio.

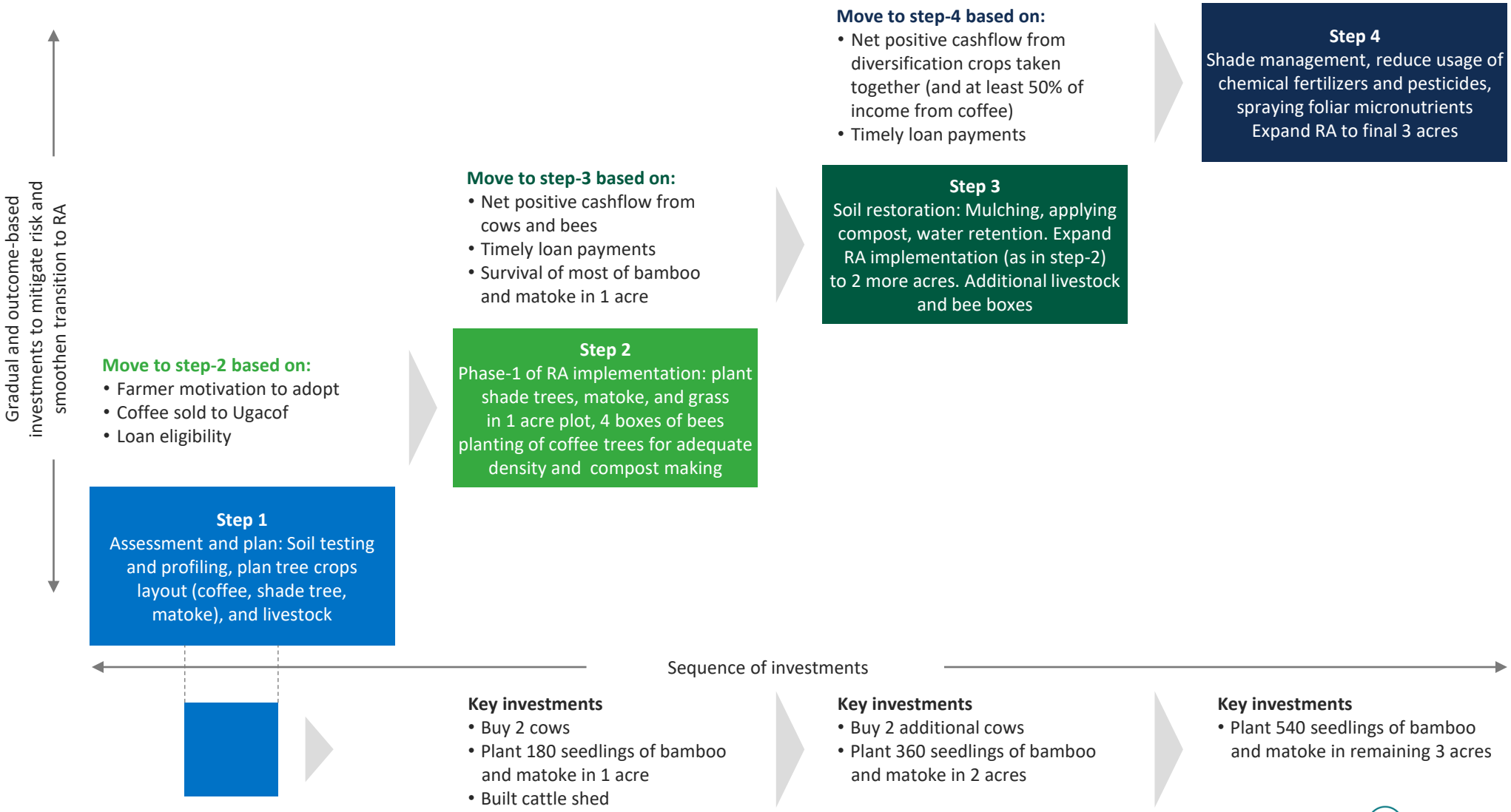
Income distribution from farming activities

Distribution of net income in 1st, 5th and 10th year of Segment in %/year compared to Baseline year 1 and 10

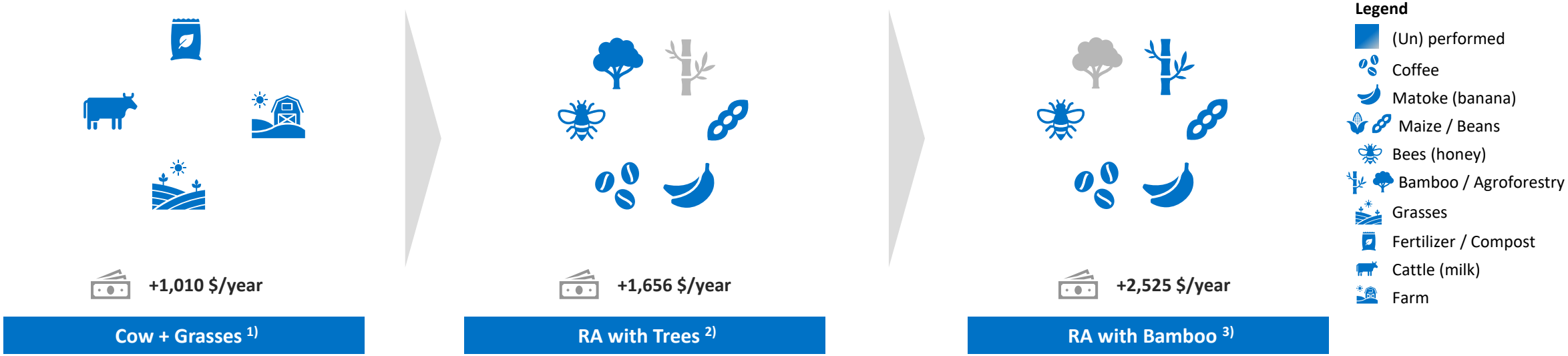


- Compared to the Baseline, all segments are able to diversify their income with other diversified activities.
- Although Segment 1 is able to diversify its income with livestock, Segment 2, 3 and 4 are able to diversify their income into four distinct income streams, and will therefore become less reliant on the cultivation of on single crop.
- With decreased reliance on a single crop as a source of income, SDM farmers become more resilient to climate change and climate shock that can lead to unforeseen crop losses.

A clear phase-wise implementation road map for farmers, which is linked to expected outcomes from previous phases helps mitigate risk for farmers and ease them into a full-fledged RA system



Choosing the appropriate RA strategy enables farmers within Ugacof's SDM to increase the over all net-income from their farm and to close the gap to a living income.



- With the addition of milk cattle and grasses, a Baseline farmer will be able to increase its income by 1,010 $/year. It is important to note that the increase in the number of cattle will increase the emission of GHG.
- Although diversification with Ficus, as suggested by the UCDA, is providing an additional and resilient income of 1,656 $/year/acre, the RA strategy with bamboo has the highest additional value annually per acre with 2,525 $/year/acre.
- The implementation of each combination will enable the farmer to earn a living income, although the number of units and related investment differ per diversification strategy.

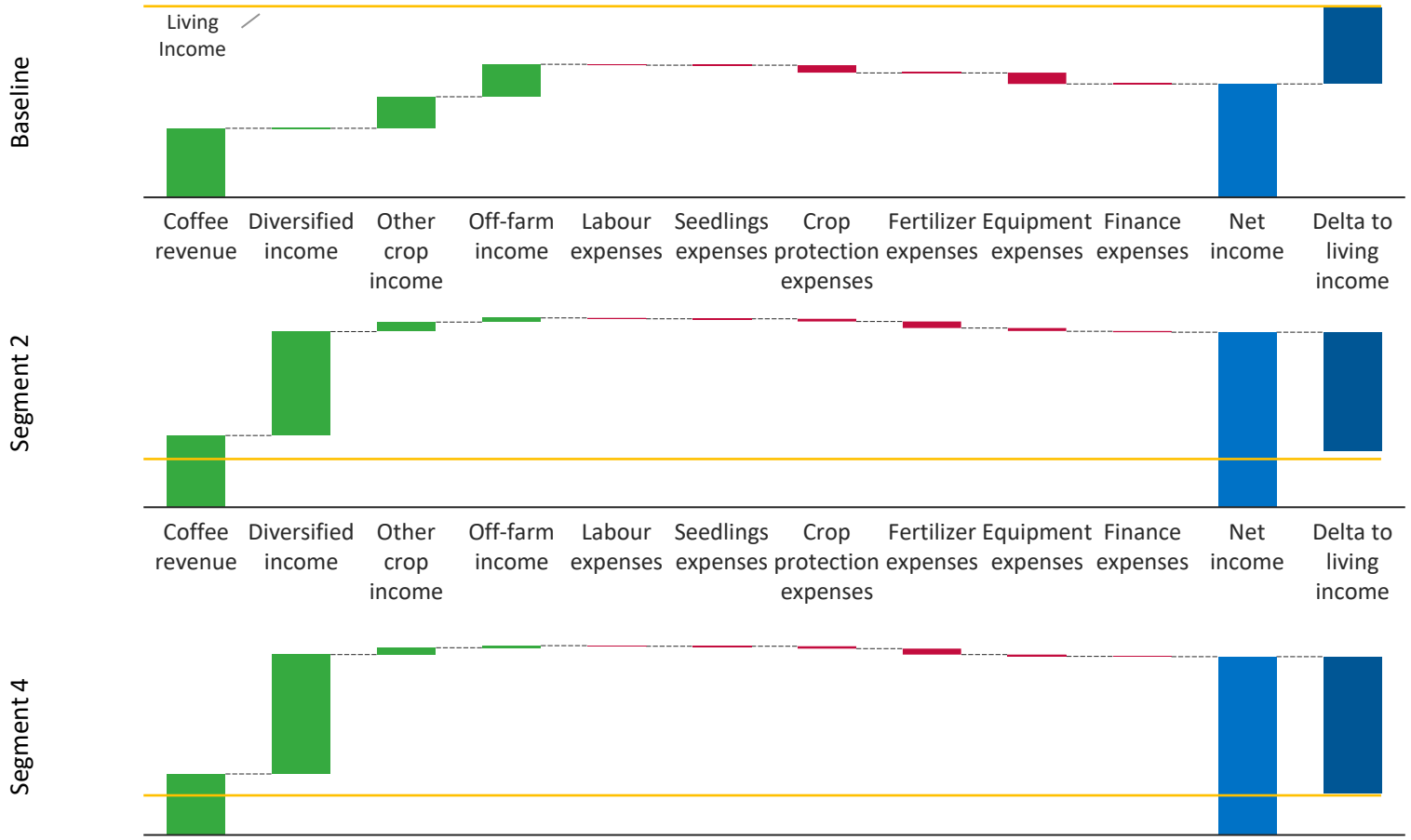
1) Estimation of per acre annual value creation based on a 10-year average of Segment 1 with 1 cow, 1 acres of grasses planted for 30% with grasses, and an organic compost ratio of 1 cow : 6 parts of grasses.
2) Estimation of per acre annual value creation based on a 10-year average of Segment 2 compared with the Baseline, on 1 acre with Agroforestry RA.
3) Estimation of per acre annual value creation based on a 10-year average of Segment 4 compared with the Baseline, on 1 acre with Bamboo RA.

Go to Per Segment P&L →
Go to Living income expl.→

Ugacof has a unique set of farmers in their Farmer Hub in Greater Masaka, who can earn a living income with the implementation of the suitable RA strategy.

Baseline, Segment 2 and Segment 4 net-income breakdown

Split by income and expense items per acre in USD/year after five-years in the SDM



- Baseline farmers have a gap of USD 2,010 to the living income of USD 4,995 [1)]. This gap will become bigger as coffee yields are going down due to further degeneration of the soil.
- Although compared to the Baseline the cost significantly increases for fertilizer and finance, the farmer who implements Agroforestry is able to close the gap to a living income. This positive delta will increase as soil becomes more fertile and less cost is born for fertilizer and crop protection.
- With the implementation of the RA portfolio including bamboo, the Segment 4 farmer is able to already close the gap to a living income in year 2. Shown in the graph, due to the transition from chemical to organic inputs, the Segment 4 farmer is able to decrease the cost for fertilizer compared to Segment 2, while yields remain comparable.

1) IDH – Living Income Driver Analysis (2020)

Go to Gender Scan →
Go to SDM Services →

By continuing Gender Awareness training and adopting crops with high women involvement in marketing, Ugacof can enable women increase their empowerment in the household and diversify their income

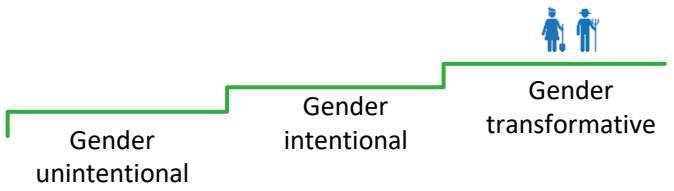
	Women involvement in activity			10-year average net-income distribution per diversification activity				
	Planting	Cultivation	Sales	Baseline	Segment 1	Segment 2	Segment 3	Segment 4
Coffee	Low	High	Low	38%	38%	35%	24%	25%
Beans	Medium	Medium	Low			1%	1%	1%
Matoke (banana)	Medium	High	Low			22%	17%	20%
Bees (honey)	Low	High	High			3%	2%	2%
Trees	Low	Medium	Medium					
Bamboo	Low	Medium	Medium				24%	22%
Grasses	Medium	Medium	Medium			13%	12%	11%
Cattle (milk)	N/a	Medium	Medium		36%	16%	11%	11%

Specific activity
Other

- Women are highly involved in the cultivation of coffee and matoke, whereas they are limited involved in the sales activity of those crops. This, in combination with the present limited involvement in household decision-making and medium control over income earned (see Gender Scan), shows the need to sustain investments to increase women's empowerment.
- By providing bean seeds to farmers (see Services), Ugacof can increase women's empowerment regarding bean marketing involvement, although beans represent a small part of the total household income.
- By continuing to provide gender awareness training on household decision-making (see Services) and stimulating the cultivation of crops with increase women's involvement in the sales activity, Ugacof can secure and enable increased women empowerment.
- By additional training on financial literacy and stimulating the enabling environment (e.g., mobile phone accessibility), women will become more enabled in their marketing involvement.

UGACOF and its farmers could benefit from directly implementing inclusive policies and services while lifting key barriers to women economic empowerment

Where is UGACOF on its gender journey?



UGACOF is gender transformative:

- *The IDH partner or platform takes a data-driven approach to understand the different needs and constraints of women and men, and when applicable, tailoring services to ensure either that men and women have access to resources, control over the benefits of those resources or are working in an inclusive workplace*

UGACOF could strengthen its gender strategy by:

- *Taking a data-driven approach to understand the different needs and constraints of women and men in its internal and external processes with the goal of ensuring that both women and men have access to resources, have similar control over the benefits of those resources and/or are working in an inclusive workplace.*
- *Exploring how tailored services could improve UGACOF's business case, especially for income diversification, and allow women to have more independence and control over resources or move into roles in which they can gain more.*

Best practices to implement

Ensure that market information, information about new associations, and leadership or market opportunities are **shared through communication channels used by both men and women.**

Include women tailored financial literacy in training (saving, budgeting, investment) to strengthen women's economic empowerment. Engender training methodology for new recruits.

Encourage association membership, leadership, and access **to decision-making based on participation in value chains** (e.g., through production) instead of access factors such as land titles

Develop a process of capturing, reporting and disseminating generated **knowledge and learnings** on gender.

Recruit women in groups that are already self organized. Foster women's leadership by encouraging the leaders of the women's groups to be lead farmers, particularly for secondary crops.

Continue and expand the use of mobile money transfer to women. This ensures autonomy, control of their income, and bolsters financial resilience.

Propose alternative credit scoring mechanisms to financial institutions to foster women's bankability, e.g., psychometric data that forecasts likelihood of default.

Barriers to be lifted

Economic: women's access and control of resources particularly finance is comparatively lower than that of men.
Practical: access to high quality inputs is a challenge to most women

Benefits to UGACOF

Using existing women leaders to attract more women is an **effective farmer recruitment strategy.**

Adapting training to women's capacities, literacy rates, time schedules and location leads to **improved yields and quality of produce**[1], mitigating risks of default.

Women's financial resilience is beneficial in household and community resilience and **fosters stable market and constant supply** chains[3].

Recruitment of women's groups is more likely to foster **higher loyalty levels** and **increased bankability**[2].

Higher probability of attracting impact finance from investors with a gender focus

1. Suri, T., Jack., W., (2016)., The long run poverty and gender impacts of mobile money; 2. IFC (2017)., Investing in women along agribusiness value chain; 3. Davies, M. Baars, M., (2017)., Link-up business case insights: Retrospective learnings from offering bank accounts to savings groups in Tanzania and Kenya; 4. Oxfam., (2016)., Women's Rights in the Cocoa Sector. Examples of emerging good practice

Improve the infrastructure by increasing access to finance, diversified markets, and data sharing

Recommendation 3:
Interventions to stimulate the transition towards regenerative agriculture will only be sustainable with adequate investments in increasing the access to finance, diversified markets and data sharing.

Pillar 3

3.A

Channelling long-term credit to eligible farmers by collaborating with financial institutions enable farmers in the SDM to invest in regenerative farm systems.

3.B

Investing in the sourcing of other crops and value-additions by Ugacof and other Value Chain Partners increases access to and demand of markets for diversified crops.

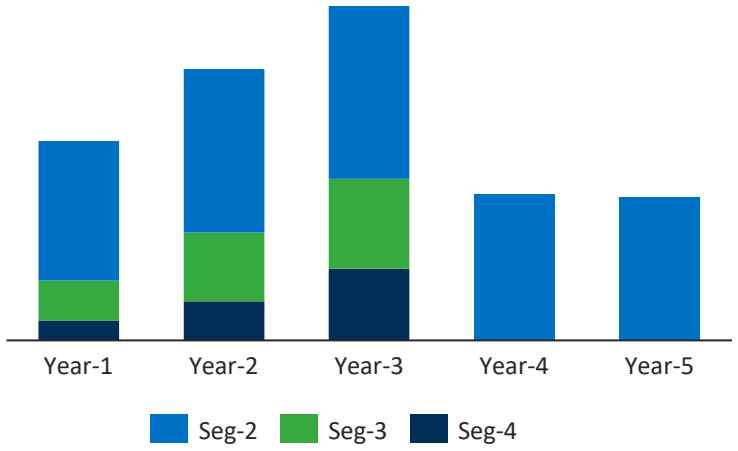
3.C

Implementing suitable digital technologies not only increases efficiency and reduces cost of the SDM, but also strengthens intra value-chain connections by connecting supply and demand of diversified activities.

Collaborate with financial institutions to channel long-term credit to eligible farmers to enable them to invest in regenerative farm systems

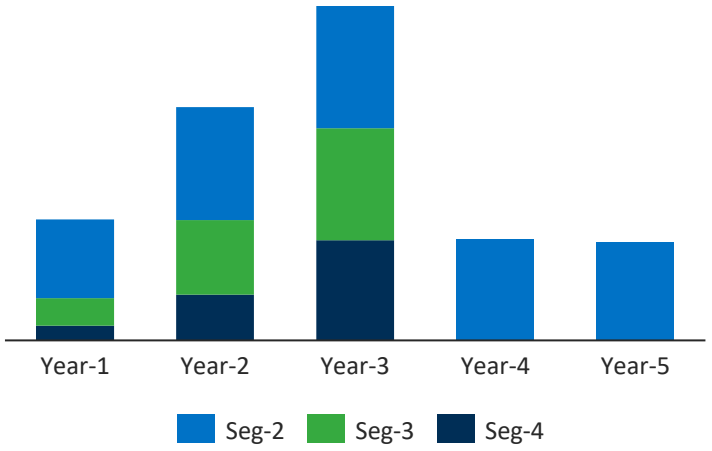
Number of farmers requiring access to loans to invest in regenerative agriculture system [1)]

Annual number of farmers per Segment/year



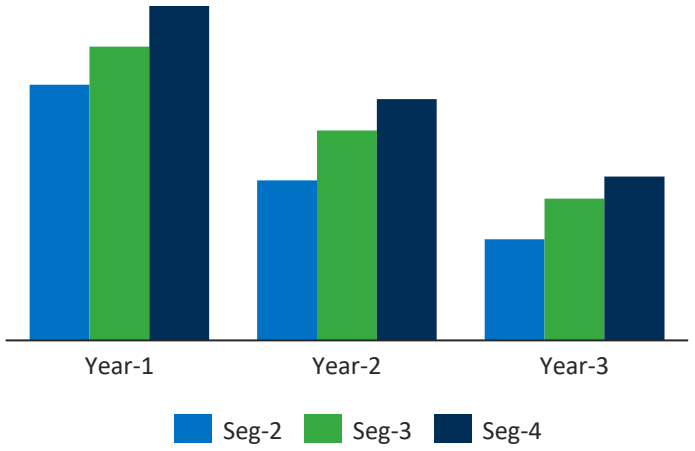
Financing [2)] for RA investment purposes peaks at year-3 of transition…

Investment need in USD (‘000)/year.



..while the outstanding farm loan for RA as % of total farm net income [3)] continues to shrink

Loan as % of farmer net-income/year



- Transitioning to RA, as shown in the investments slide, requires most of the investments **during the first three years,** while farmers’ net-cash flow from RA activities (excluding coffee net-income) would be negative only during year-1 and continues to improve every year.
- Per the current plan, farmer finance requirements are high during year-1 to year-3 and the number of farmers requiring finance peaks in year-3 (this includes prior year financed farmers with continuing finance needs).

1) After initial 3 years, only new Seg-2 farmers would start on RA transition process
2) Of the total RA investment needs only 50% is assumed to financed and remaining to be financed by farmers from their improving cash flows
3) Cashflow of diversified crops only and excludes coffee income. Total farm net income of inclusive of coffee income

- The aggregate amount of finance required for farmers peaks at year-3. A typical RA transitioning farmer can be loaned USD xyz in year-1 and USD xyzz during year-2 & 3 – **the gradual RA transition plan reduces the investment/cash flow# risk for farmer and portfolio default risk for a potential lender.**
- Cash flow and loan risk remain highest during year-1 with a negative farm cash flow (refer to investments slide) of nearly USD 400 in year-1 and ~20-25% of total farm net income. From year-2 onwards the farm cash flow turns positive and loan amount as % of total farm net income continues to shrink considerably
- After the initial 3 years, although loyalty to and service uptake from Ugacof might change, farmers do not require financing for further RA.

By participating in the SDM, farmers become increasingly bankable, which has the potential for the farmers to overcome the barriers to finance their transition to RA

	Relationship	Potential [1]	Security	Potential [1]	Social Impact	Potential [1]
Seg_1	• Little communication with field officer • Low perspective on long-term relation • Track-record on fertilizer credit /cash advance.	−	Farmers are part of Ugacof's certification survey to collect multiple data-points, which can be used to determine production potential of farm (multiple crops).	− +	• Direct interaction with but little technical assistance • Fertilizer credit update with 4 months repayment • Only necessary uptake of training	−
Seg_2	• Fine relation with field officer • Medium perspective on long-term relation • Track-record on fertilizer credit /cash advance.	+		− +	• Direct interaction with and technical assistance • Fertilizer credit update with 4 months repayment • Uptake of all training	+
Seg_3	• Good relation with field officer • High perspective on long-term relation • Track-record on fertilizer credit /cash advance	+ +		− +	• Direct interaction with and technical assistance • Fertilizer credit update with 2 months repayment • Uptake of all training	+
Seg_4	• Good relation with field officer • High perspective on long-term relation • Track-record on fertilizer credit /cash advance	+ +		− +	• Direct interaction with and technical assistance • Fertilizer credit update with 2 months repayment • Uptake of all training • Potential to function as collection station for coffee from farmers outside the SDM	+ +

	Financial				Monitoring & Accounting	
Seg_1	• 4C and RFA certified • Profitability increase from GAP and fertilizer • Long-term profit pressure due to soil degradation and climate change (temperature increase) • Cash flow depended on coffee crop calendar	− +	Seg_3	• 4C and RFA certified • Profitability increase from GAP, fertilizer, diversification, and farm expansion • Long-term profit forecast due to soil regeneration and climate change adoption • Decreased cash flow volatility from	• Transactions (trading, fertilizer, cash advance) are collected to built a track-records in CropIn • Farmers are paid-out with the use of mobile money, with dual-approval process from farmer and field officer • Quarterly visit of field officers with farmers	+ +
Seg_2	• 4C and RFA certified • Profitability increase from GAP, fertilizer, and diversification • Long-term profit forecast due to soil regeneration and climate change adoption • Decreased cash flow volatility from	+	Seg_4	• 4C and RFA certified • Profitability increase from GAP, fertilizer, diversification, farm expansion, and intensified tree-density • Long-term profit forecast due to soil regeneration and climate change adoption • Decreased cash flow volatility from		

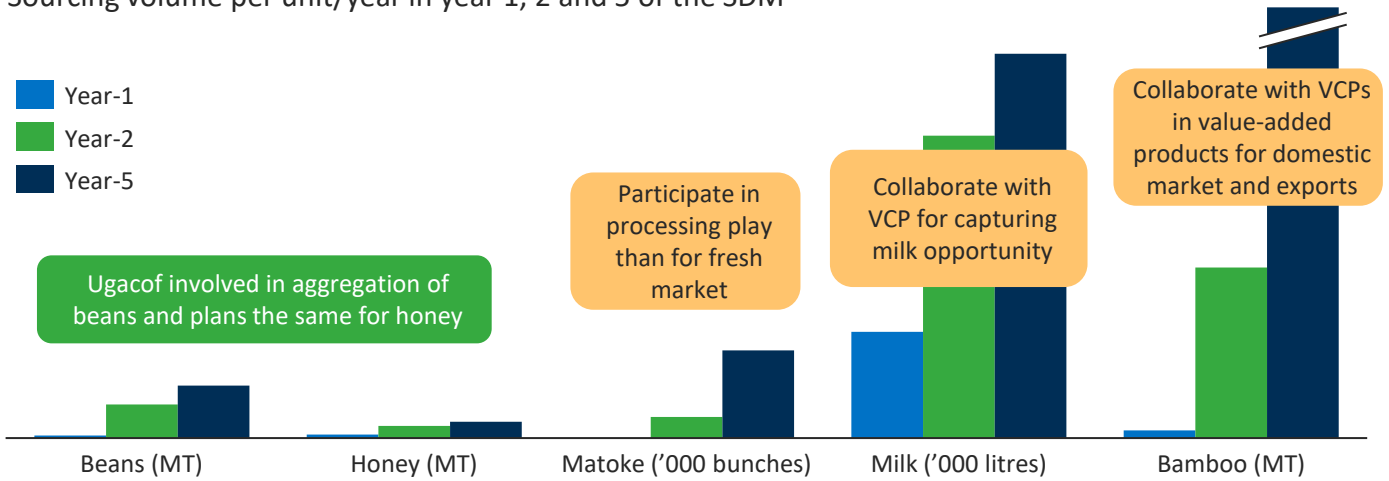
1) Indication of bankability potential of farmer segments based on current SDM services and current and future farmer behaviour and performance.

Go to SDM assumptions →

Ugacof can consider investing in value-addition to other crops and collaboration with VCPs to increase access to markets for diversified crops

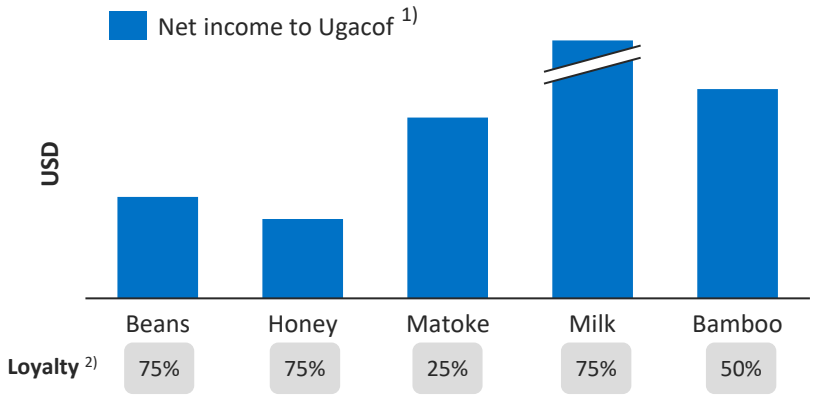
A diversified crop portfolio of a RA adopted farmer enables Ugacof and other VCPs to collaborate on value addition avenues for number of crop value chains

Sourcing volume per unit/year in year 1, 2 and 5 of the SDM



The milk value chain has the highest income potential to Ugacof/VCPs while other crops have potential for profits

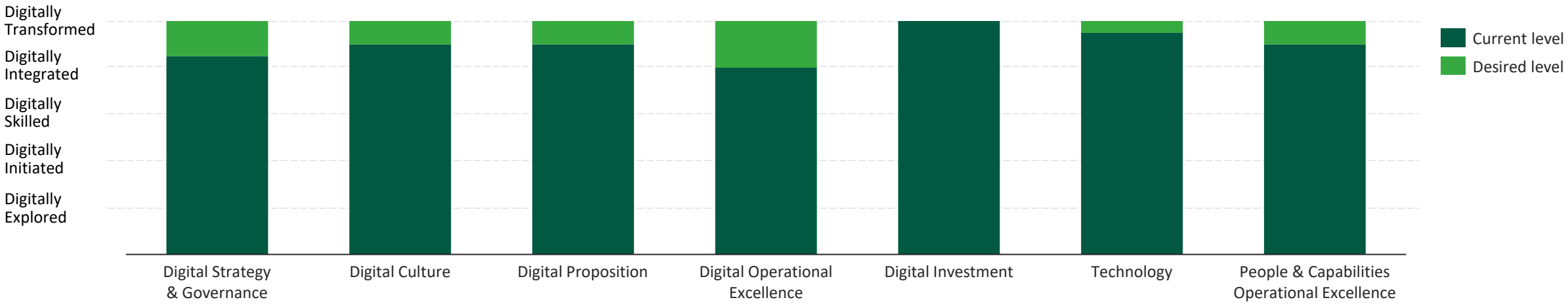
Sourcing volume per unit/year in year 5 of the SDM



- **Beans and Honey**: Ugacof is already involved in aggregating kidney beans and supplying it to an off-taker. Honey, being a high value produce per unit of volume, might be suitable for Ugacof to invest in to perform basic processing and supplying activities for domestic and export markets. For both beans and honey, Ugacof expects a high loyalty (75%) from farmers and with the produce being less perishable it may be less risky **for Ugacof to participate in.**
- **Matoke**: Matoke is a perishable produce and already has a high involvement of local traders and markets. Hence, we expect farmer to be able to sell to other off takers than Ugacof, resulting in a low loyalty. In consideration of such factors, we believe Ugacof is better positioned to supply matoke to a processor rather than a fresh market or directly increase the involvement in value-adding investments
- **Milk**: Milk is produced throughout the year and its demand/price remains stable compared to other produce in the farmer portfolio On the flipside, milk is highly perishable and requires higher value chain investments to build a reliable supply chain involving farm gate collection, chilling, and distribution to bulk users. Nonetheless, even a partial value chain involvement at just farm-gate collection and partnering with a VCP for other activities can still potentially be lucrative for Ugacof. Even at 10% net margin over farm-gate price, milk can provide the **highest income potential to Ugacof among all other options**.
- **Bamboo**: In terms of output volumes, Bamboo will be the most prolific and low value per unit. The harvested bamboo clumps may range from low quality to high quality. Given these factors, we suggest Ugacof to only participate in high quality and high value use value chain

1) At a net income margin of 10% of farm-gate price. Margins can vary and depends on number of factors
2) % of marketable surplus sold or traded through Ugacof

Digitally mature, Ugacof should ensure that not only its internal organization but also its farmer-base and other stakeholders stay aligned with and equipped to work with future digital innovations.



Results	Risks & key barriers	Recommendations
The digital maturity assessment for Ugacof shows the organization is very digitally maturity: • Overall Ugacof can rely on IT support and architecture from the mother company and hence is facilitated in all aspect of digitization • There is a clear strategy and priority on management level, supported with sufficient investment budget to realize ambitions, according to the interviewees • The people and culture is supportive of digitization and a clear roadmap is developed to move Ugacof in the right direction • Ugacof is testing and trying different advanced technological solutions to identify which could benefit the Ugacof organization, and its stakeholders/clients, even more	• Possible large dependency on Sucafina's IT architecture and IT/Cyber support shows some threat and vulnerability to Ugacof specific activities and flexibility, although country directors are highly involved in the establishment of the IT strategy. • Digital/financial literacy and access to digital/finance solutions (e.g., mobile phones, stable/cheap internet, mobile money) of Ugacof's farmer-base might slow down the movement towards the *digital farm*. • Governmental policies need to become supportive of and safe-guarding Sucafina/Ugacof's IT strategy. • Ability to hire the right people with the right skills to accommodate the digital agenda of Ugacof	• Continue with the focus on digitization from a strategic perspective, including the embedding of the ERP-system, connecting to IoT, training on farmer digital literacy, and increasing access to digital solutions/finance. • Ensure employees from all layers of the company are onboarded with the digital agenda, to avoid a lack of alignment and working at different speeds • Develop a simplified digital roadmap for everyone in the company to fully understand and identify key milestones. This will increase the adoption of the digital agenda, onboard all relevant stakeholders, and provide a frame-work where in the long-turn implementation of the strategy is safe-guarded.

To assess the digital maturity the DMA tool was filled in based on answers given and expert judgement from the IDH interviewees. For all questions, the average score given is shown in the dashboard as the result. See annex for definitions of maturity variables.

By reducing complexity of service provision and stimulating intra farmer-group learning, while establishing intra value chain connections, Ugacof can reduce cost, increase transparency, and improve service provision.

Innovation	Description	Ugacof	Farmer	Stakeholders
Bundled solution providers	**Bundled solution provides solutions that bundle multiple digital agricultural services** (e.g. market linkages, digital finance and digital advisory services) and deliver a **fully integrated digital value proposition to smallholder farmers and other agricultural value chain intermediaries**. The idea is that the services that are bundled together have some type of complementarity which will increase the added value to the people and organizations using them, **also allowing for less complexity in dealing with different service providers**.	• Cost reduction • Increasing scale or replication and transparency • Quality improvement of provided services	• Reducing complexity of service uptake • Increased effectiveness of service received	• Increased effectiveness of interaction with farmers due to value-chain driven approach on farm-level
Peer-to-peer education platforms	**Participatory (peer-to-peer) education platforms provide a platform with the possibility to interlink farmers directly**, so that farmers' questions can be answered by other farmers facilitating the learning and helping to **create a community amongst farmers.**	• Cost reduction • Quality improvement of provided services	• Synergising community strength • Stimulus to become lead farmers	• Bottom-up approach to incentive knowledge sharing to reduce cost.
Access to e-market/e-commerce services	**Access to e-market/e-commerce services** enables the clients to **access online virtual trading marketplaces**, where buyers and sellers are present, **with little to no human intermediation helping them to reach customers** more easily or access produce from different suppliers in a single e-marketplace.	• Cost reduction • Quality improvement of provided services	• Increased market demand for diversified crops	• Reduced effort for sourcing reducing cost and increasing sourcing volumes
End-to-end integration	End-to-end integration is a **type of digital market linkage solution that includes the use of digital technology and human agents to link both sides of the market**, from farm input providers to retailers with the objective of **formalizing and combining fragmented and sometimes informal value chains**. The idea is that by **using digital tools for integration (instead of simply doing so through non-digital ways) actors are able to increase efficiency, reduce costs and increase their reach through the use of digital.**	• Cost reduction • Increasing scale or replication and transparency • Quality improvement of provided services	• Increased available data amount • Access to formalized value chains to strengthen bargaining position	• Increase resilience of interaction with other VCPs' farmer-base
Managing ERP	Managing ERP enables access to a **fully integrated package of digital supply chain services, including operational analytics, value chain intelligence and tools for managing smallholder farmers and agent field forces.** It includes functionalities of some other use cases, but the type of service providers and the focus of the products provided tend to be different **aiming to support business in their professionalization.**	• Cost reduction • Increased transparency • Quality improvement of provided services	• Increased effectiveness of service received	• Increased effectiveness of interaction with other VCPs

Potential value of innovation High | Medium | Low

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4. Annex

This section includes the following subchapters:

Back to Chapter overview

4.1 About the context

Understanding the context of the SDM

This section:

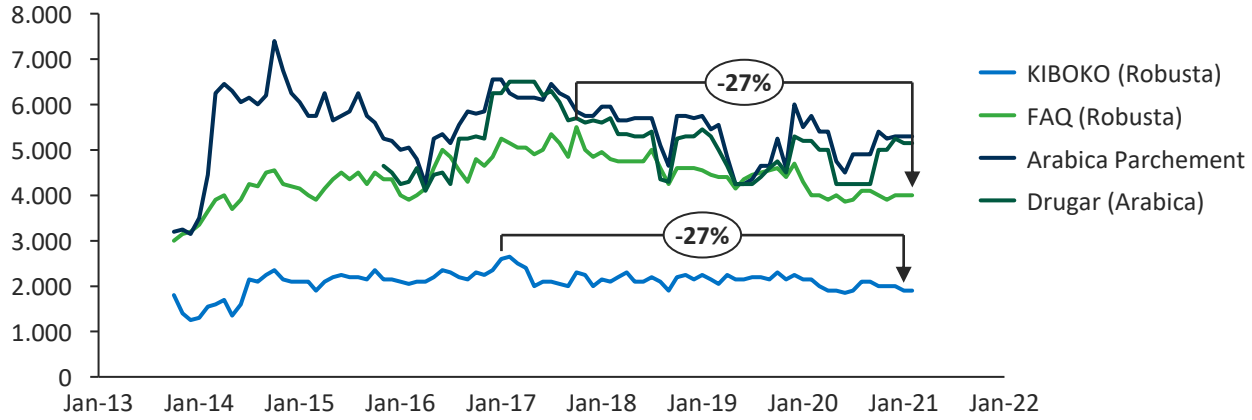
- *Describes the Robusta Coffee market and value chain in Uganda*
- *Analyses the enabling environment and key sustainability risks*

Back to Chapter overview →

Due to oversupply from Brazil and concerns over lower demand due to COVID-19, the coffee price for dried cherry (Kiboko) and unsorted hulled coffee (FAQ) dropped significantly.

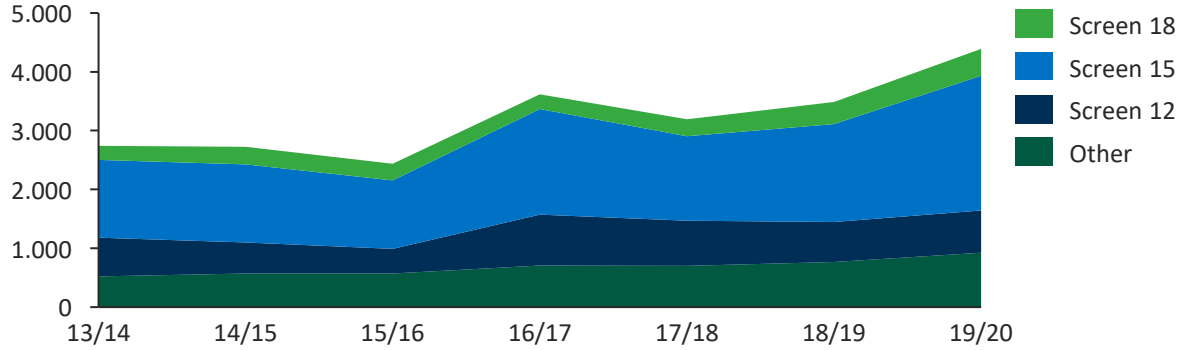
Farm-gate-price for Robusta Kiboko and FAQ have dropped 27% compared to their highest point in consecutively 2017 and 2018

Uganda coffee farm-gate-price of KIBOKO, FAQ, Arabica Parchment, and Drugar (UGX/kg).[6)]



The growing export volume of Robusta exists predominantly of Screen 15 coffee beans

Robusta coffee export in 60kg-bags by type between 2013/14 and 2019/20 (1,000 60-kg bags).[6)]



Discussion

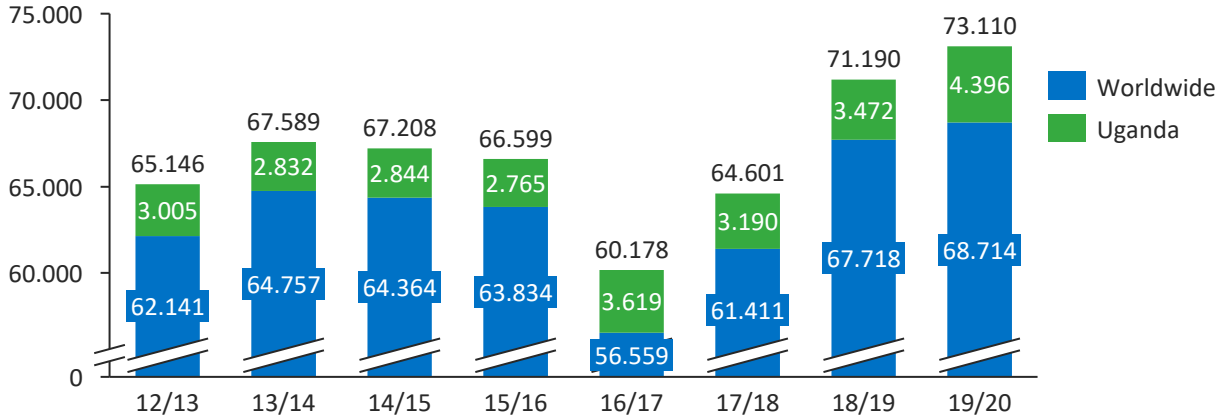
- **Farmer lack the incentive to invest in existing practices and technologies in order to cultivate high quality coffee** (ripe, undamaged, and washed when processed), although this can be sold for substantially **higher prices than lower-quality coffee**. This lack is caused by a **long supply chain of intermediary traders and processors retaining the majority of the additional value**.[1)]
- The share of EU imports of Ugandan coffee has declined from 75% to 60% in recent years as the **importance of less traditional importers in non-mature markets in Eastern Europe, North Africa and Asia**.[2) & 3)]
- The global market is becoming **increasingly competitive and has experienced over-supply from major producers such as Brazil and Vietnam**. Since 95% of Ugandan coffee is exported, any trends and changes in the international market will have a direct impact on the prices and conditions of farmers and enterprises back home.[3)]
- This coffee season 2020/21, global coffee prices have been **dropping due to concerns that the COVID-19 pandemic will lessen demand, combined with oversupply from Brazil this season**.[5)]
- Recent low prices causes **farmers to stock their dried beans in expectation of the price to rise again**. Farmers may give up on commercial coffee production into other short-term crops they presume more profitable and less demanding.[4)]
- Due to increasing demand for organic coffee, larger producers have been providing necessary training for farmers to grow more organic **products with organic fertilizer**.[5)]

Sources: 1) ATAI (2020); 2) CGIAR (2019); 3) FAO (2020); 4) The Independent (2021); 5) Tridge (2021); 6) UCDA (2021);

Uganda faces an increased risk of coffee oversupply in coming years, due to the implementation of their coffee expansion plan to quadruple their coffee production by 2025.

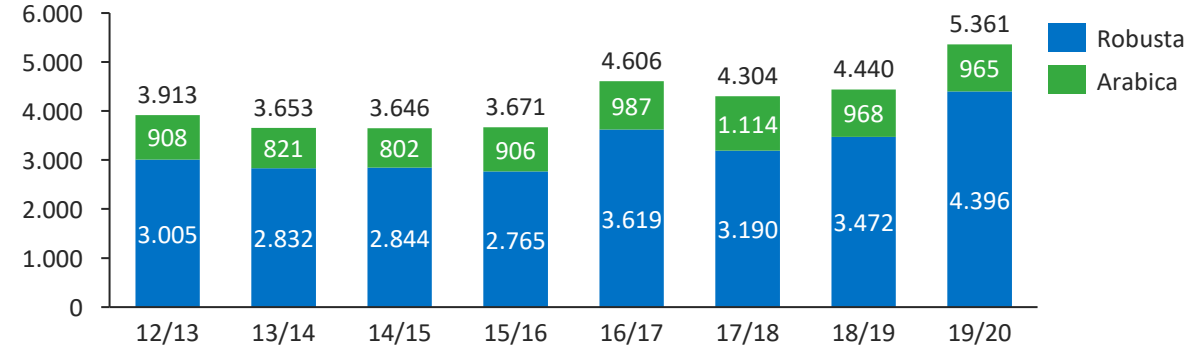
Uganda's market share in Robusta coffee slowly increased from 5% to 7%

Robusta coffee production world wide and Uganda 2012/13 to 2019/20 (1,000 60-kg bags).[1)]



Uganda produces Robusta and Arabica in a stable ratio of 4:1

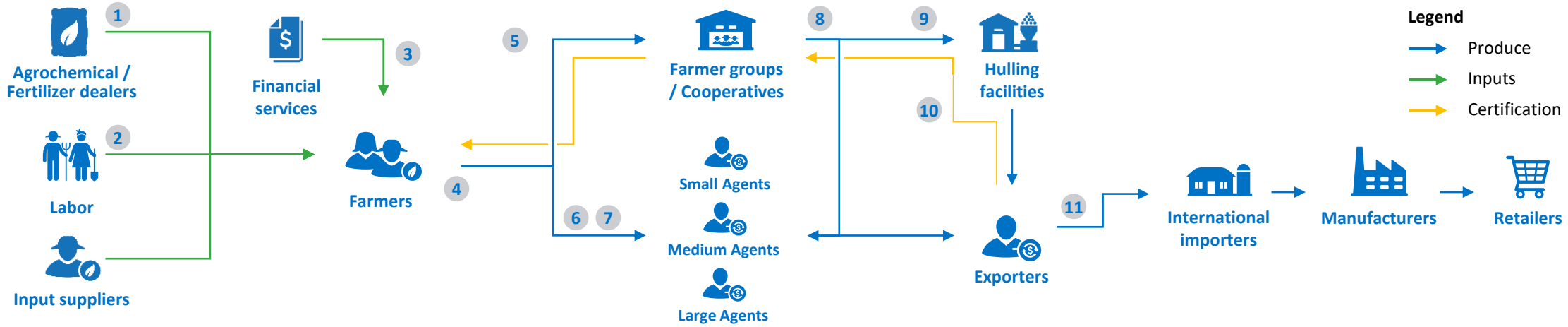
Robusta and Arabica production in Uganda 2012/13 to 2019/20 (1,000 60-kg bags).[3)]



- Coffee is the **major cash crop of Uganda**, both in terms of foreign exchange earnings and employment creation.[2)]
- Uganda is **producing 4-5 million 60-kg bags**, which is 47% of African Robusta supply and 9% of African Arabica supply. The Ugandan Coffee Development Authority aims to **increase production to 20 million bags by 2025**.[7)]
- Annually, **Uganda exports 95% of the total coffee production** for earnings between **350-400 million USD**.[5)]
- **Robusta Coffee (Nganda and Erecta)** is grown in the low altitude areas of Uganda, and is **less susceptible to pests and disease**, thus, needs **less fungicides and pesticides than Arabica**, and remains **productive for up to 40-50 years** without replanting.[2)]
- Since 2009, the National Agricultural Research Organization (NARO) has released **10 varieties of coffee that are high yielding** and **resistant to Coffee Wilt Disease,** with yields varying from **2,200 to 4,900 kg/ha**.[2)]
- In their expansion program, **the Ugandan government distributes seedlings**, with **131 million being used** on the 157 million available seedlings in 2017. The effects of this intervention will be seen **after 3 – 4 years, when coffee trees reach their matured age**.[8)]
- With **certified volumes for Robusta (~1%)** and Arabica (~9%), Uganda is lagging behind the **world average of 25% of total volume**.[4)]

Sources: 1) Statista (2020); 2) UCDA (2019a); 3) UCDA (div.); 4) Coffee Barometer (2019); 5) CGIAR (2019); 6) FAO (2020); 7) IDH (2020) - Income Driver Analysis; 8) UCDA (2019);

Cash-strapped farmers sell their dried/wet coffee to middleman, resulting in farmers missing the opportunity to increase their livelihood by investing in inputs, certification, and farmer organizations.



Inputs	Cultivation	Aggregation	Processing	Manufacturing / Retail
Share of FAQ [6]	37%	47%	16%	

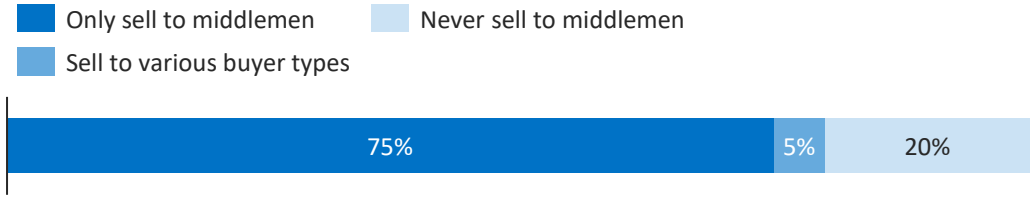
1. Coffee production is operated on small plots, with limited use of inputs.[2]
2. Women provide most of the coffee labor, but they are often excluded from farmer groups, training, and marketing decisions. Man take most management, input and marketing decisions.[1]
3. Farmers use informal finance to buy inputs. Due to a lack of collateral, farmers are not able to access formal finance.[1]
4. ~1.3M farmers cultivate Robusta out of total of 1.8M coffee farmers in Uganda.[3]
5. <10% of farmers are members of cooperations,[3] but about 50% of the harvest in red or dried cherries is sold to farmer groups.[1]
6. Immediate cash needs lead to side selling to middleman, even before harvest. Middleman are often from the community, provide credit for coffee on trees, and pay immediately, but don't offer quality premiums.[1]
7. ~15k Small Agents (15t/annually), ~2k Medium Agents (50t/annually), and 200 Large Agents (>150t/annually operate in Uganda. Small and Medium agents buy primarily Kiboko (dried cherry), and sell FAQ (green bean).[3]
8. Farmer groups sell to exporters or middleman. Payments may be lagged, quality is bulked but some groups can be certified.[1]
9. Agents pay for hulling services but some may own or lease small-scale hulling facilities (~537 active outside Kampala).[3]
10. Although ~20% of coffee is cultivated according to certified requirements (e.g. Fairtrade, Rainforest, 4C Certification),[1] only ~1% of Robusta coffee is exported as such,[4] and increased cost of compliance to certification requirements dampen the aimed increase in income.[5]
11. Due to the liberalization of Uganda's coffee industry, the market consists of >75 exporters, although top 10 exporters control >70% of the market.[4]

Sources: 1) CGIAR (2019); 2) FAO (2020); 3) Enveritas (2020); 4) UCDA (2019); 5) Coffee Barometer (2019); 6) UNDP (2012);

With middlemen close to monopolizing the connection between farmers and coffee exporters, farmers stay constraint to improve their practices due to limited access to inputs, finance, and training

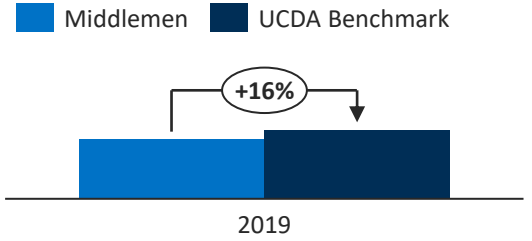
Middlemen are the primary buyer for smallholder coffee farmers in Uganda [1)]

% of farmers surveyed



Prices received by the farmer

$/kg kiboko per average of year 2019



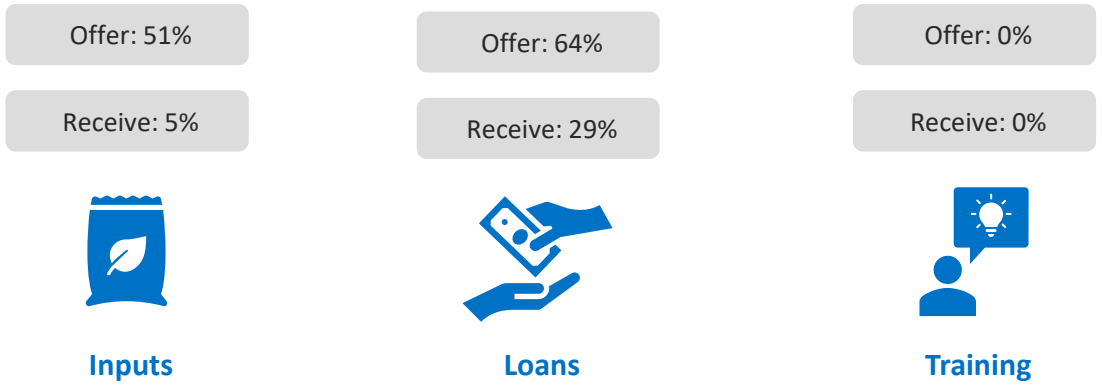
Loan characteristics

Interest %, size, and reason for off take

Interest % [2)]	**4%/month**
Avg. loan size	**600,000 UGX**
Reasons for loan	**Coffee, school fees, medical, basic living**

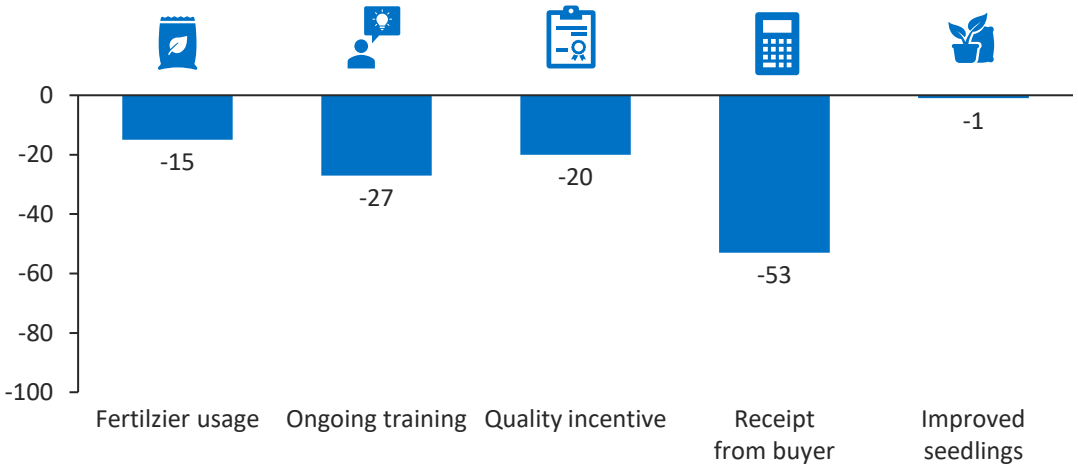
Middlemen provide limited access to services to farmers …

Services middlemen are willing to offer farmers and share of farmers who receive those services from middlemen



… compared to access to services by farmers who never sell to middlemen [1)]

Difference between farmers who only sell to middlemen and those who never sell to middlemen (values are absolute percent changes)



1) Enveritas (2020);
2) Interest rates agents say they provide to sellers from Enveritas (2020) study

By promoting research, production, quality, and marketing of coffee, the UCDA stimulates the improvement of the enabling environment of coffee farming and the sustainability of coffee farmers' farms.

Uganda Coffee Development Authority (UCDA)

UCDA is established as a public Authority and its mandate is **to promote and oversee the coffee industry** by supporting research, promoting production, controlling the quality and improving the marketing of coffee in order to optimize foreign exchange earnings for the country and payments to the farmers. [1)]

To guide UCDA's aimed transformation of the coffee industry has formulated the following Roadmap: [3)]

Demand & Value addition

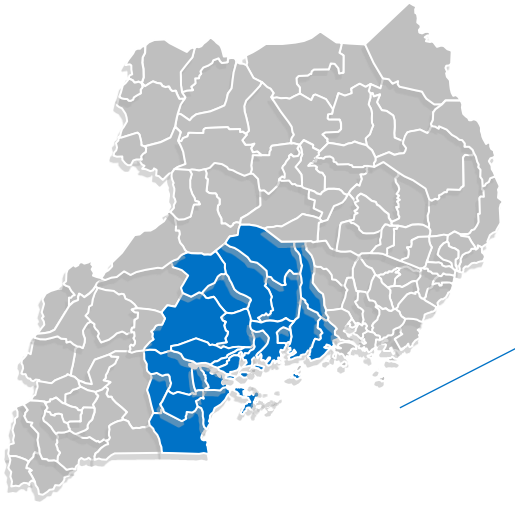
- Build structured demand through country-to-country deals (focussed on China)
- Brand Uganda coffee to drive demand and improve value by up to 15%
- Support local coffee business for value addition, including primary processing and a soluble coffee plant

Production

- Strengthen farmer organisation and producer co-operatives to enhance commercialization for smallholder farmers and ensure broad access to extension, inputs, finance, and aggregation
- Support joint ventures between middle-class owner of underutilized land an investors to develop coffee production
- Provide and promote concessions for coffee production on large underutilized tracts of land

UCDA advices to cultivate Ficus trees to facilitate shade to coffee trees

Recommended shade trees for Central Uganda [1)]



Shade trees (Central Uganda) [2)]

- Ficus natalensis
- Ficus mucuso

Enablers

- Improve quality of planting material (seeds and seedlings) through strengthened research and multiplication of improved varieties
- Improve access to quality inputs by reducing counterfeiting (fertilizer, pesticides, herbicides) from current 40-60%
- Develop coffee finance programme to provide financing to farmer organizations (including on-lending to smallholders), coffee business, and investors

Sources: 1) UCDA (2021); 2) UCDA Robusta Handbook (2019); 3) UCDA Roadmap (2017)

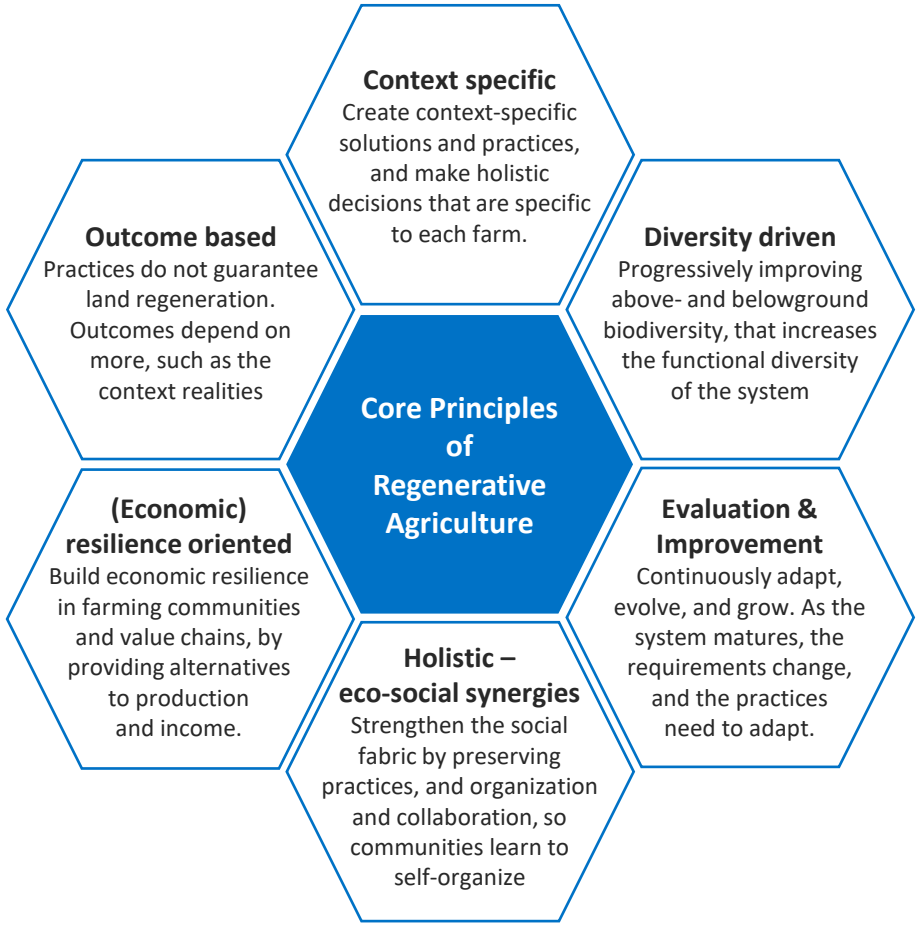
As an holistic agricultural approach that retains or if needed restores ecosystems, Regenerative Agriculture provides a theoretical and practical implementation pathway towards Climate Smart Coffee

Climate Smart Coffee [1)]

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

Regenerative Agriculture [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

Governmental practices stimulating sustainable agricultural practises do not outweigh limiting factors such as lack of owned land, limited access to finance, and an unorganized value chain.

Risk *Neutral* *Opportunity*

Definition	Situation	Impact on SDM
Technology	• Farmers who use mobile money sell a larger proportion of their coffee to buyers in high-value markets.[9)] • 10% of smallholders in Uganda own a bank account, and 21% has access to mobile money.[14)] • In 2019, 46% of farmers is connected to 3G networks.[18)]	• Access to mobile money and 3G will enable to increase financial access.
Environment	• Index-based weather insurance lacks adoption due to weak regulations, weather data quality and a lack of local adaptation and capacity building.[10)] • Uganda is the 14th most vulnerable country and the 48th least ready country – meaning that it is very vulnerable to, yet unready to address climate change effects.[16)]	• Worsening and less predictable environment increase the risk of harvest losses and instable sourcing volumes.
Infrastructure	• The main roads that connect Kampala to some of the main Robusta growing districts are in good condition, making it easy to transport coffee to factories in Kampala.[11)] • Uganda scores 3.3 (Sub Saharan Africa: 2.9) on the Infrastructure Index.[13)]	• Poor infrastructure puts pressure on profitability of SHF and lowers quality of the coffee bean.
Labor	• Coffee farming is labor intensive around harvest season, particularly in intercropping systems. Farmers rely on family and seasonal labor from their communities, but labor availability is low, leading to difficulties of getting sufficient (decently priced) labor.[15)]	• Limited access labor hampers the possibilities of farmers to expand their operations.
Inputs & Financing	• The majority of smallholders save informally by VSLAs or keep it at home,[11)] and access finance trough SACCOs.[8)] • Coffee production is operated on small plots, with limited use of yield-enhancing inputs.[11)]	• Limited access to finance causes farmers not to reach full potential.

Definition	Situation	Impact on SDM
Trading System	• The majority of coffee farmers sell their Kiboko (dried cherry) to Agents, who process the Kiboko to green beans, which are sold to exporters.[17)] • <10% of farmers are members of a cooperation.[1)]	• Unorganized coffee value chain exposes farmer to the risk of selling at to low prices.
Pricing & Competition	• Price is set the global coffee market and is depended on the world coffee supply.[11)] • The high competition of agents results in a high price transmission to farmers and timely payments at sale.[7)]	• Although prices are dropping, farmers do receive fair portion of the price.
Institutional Stability	• Institutional capacity to respond to challenges is low and regulations are often not enforced despite the political importance of coffee.[1)] • Mobile Money solutions in Uganda suffer from unclear and changing regulation.[2)]	• Governmental focus on sustainability enhances access of farmers to high quality seedlings and increase of yield.
Land Tenure	• 80% of agricultural land is under customary tenure that is undocumented,[2)] facilitating the rise in land-grabbing.[3)] • Growing cities, oil and gold production, and expansion of estate crops increasing the risk of smallholder coffee producers being driven off their land without legal means or ways to benefit from increasing land prices.[3)]	• Informal land tenure, gender relationships, and poor market access are disincentives for CSC adoption.
Social Norms	• Coffee traditionally falls under the ownership of men, the cultural norms favour male inheritance, and females can often only access land through marriage.[12)] • Women in Uganda are more likely to be illiterate than men, leave school earlier [4)], receive a lower share of the coffee income and have less decision making power.[5) & 6)]	• Unequal distribution of value to labor limits farmer households to achieve full potential, and secure sourcing volume.

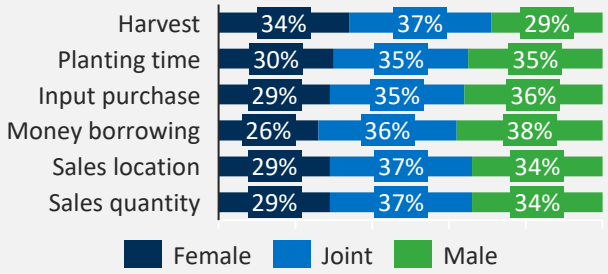
Sources: 1) CGIAR (2019); 2) World Bank (2018); 3) USAID (2016); 4) Uganda Bureau of Statistics (2016); 5) Ochago (2017); 6) Bolwig (2012); 7) Baffers (2006); 8) Schmidt (2017); 9) Sekabira (2017); 10) Ntukamazina (2017); 11) FAO (2020); 12) UNDP (2015); 13) World Bank (2017); 14) CGAP (2016); 15) FAO (2012); 16) Dutch Ministry of Foreign Affairs (2019); 17) Enveritas (2020); 18) GSMA (2020)

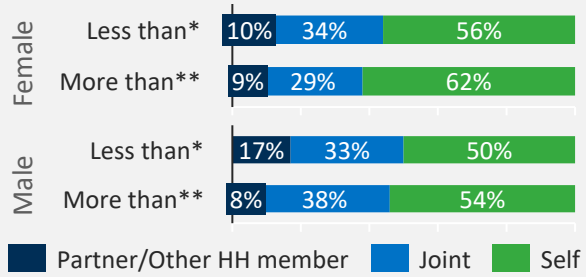
← Back to Recommendations

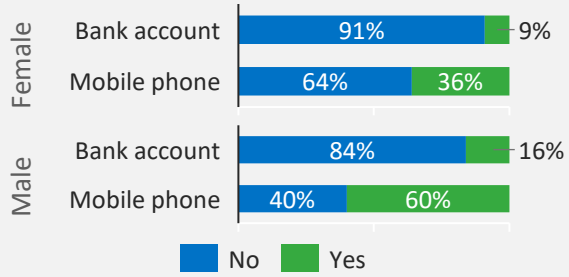
Gender inequality sustains in Uganda's coffee sector, as women's involvement in sales decision-making remain low and farm-activities remain focussed on (diversified) crop cultivation.

Gender Dynamics

Category	Decision making	Earnings control	Connection though bank / phone
Data	**Women's involvement in decisions** [5]	**Control of income earned by wife or husband in rural areas** [1]	**Ownership and use of bank accounts and mobile phones in rural areas** [1]







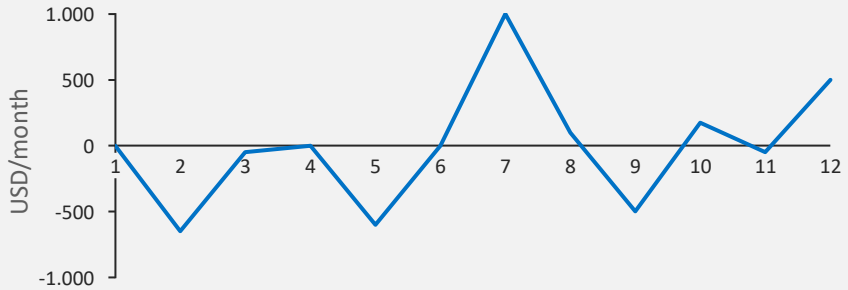
Category	Description of involvement	Detailed description of risk	Expected Impact
Involvement in household activity	**Activities undertaken:** • Of the female population in rural areas 11% had no education, whereas 51% had only some primary education. [1] • Of the 75% females who are working, 60% is performing rural labor and 12% is performing elementary work. [1]	• Disproportionate load of unpaid care work • Limited time to engage in productive and/or economic activities (time poverty).	• Women's exclusion of effective participation in agricultural value chains. • Lower Farm yields • Unsustainable agricultural value chains
Involvement in farm activity	**Activities undertaken:** [2] & [4] • Women provide 58% of the fieldwork and harvesting (e.g. planning and seed sourcing; land preparation; nursery management; planting, weed and pest management; fertiliser application and pruning). • 72% of post harvest handling is provided by women (e.g. harvesting, sorting, fermentation, washing, drying and bagging). • Processing and marketing (e.g. transportation, collection, milling and selling) is predominately performed by men.	• Role of women invisible in agricultural value chains, increasing the risk of mis-alignment of service provision to intended target audience. • Although the majority of value is created during the field and harvest and harvest handling stage, because men sell the crop, men exercise control over these funds.	• Increasing need to empower women on decision making on their income, as this will improvement their social and economic status and the level of resources allocated to their children. • Focus on economic empowerment of women to benefit no only individual women but also their children, household and communities.

Sources: 1) DHS Program (2016); 2) Farm Africa (2021); 3) Specialty Coffee Association (2018); 4) Coffee Quality Institute (2020); 5) CGAP (2016);

*Person who decides how cash earnings are used if person's earns are less than other HH-member.

**Person who decides how cash earnings are used if person's earns are more than other HH-member.

Scale and income of diversified activities are not sufficient to increase smallholders' financial resilience to secure food, as cash flows remain unstable during the year.

Farmer's overall Food Security status		
Category	**Cash-flow (Stability & Access)**	**Food Security (Access & Availability)**
Data	**Cash flow** [8] Ugandan coffee farmers are mostly cash strapped in February, March and September due to farm expenditures and school fees 	**Food Security** [2) / 9)] • **Prevalence of severe food insecurity in the total population** (2017-2019): 20.6% • **Prevalence of moderate or severe food insecurity in the total population** (2017-2019): 66.3%

Category	Assets (Stability)	Market (Availability)	Health & Sanitation (Utilization)
Data	• **Ownership**: 71% of smallholders has individual ownership.[7)] • **Farm size**: In Uganda, 24% has up to 0.5ha, 22% has 0.5-1.0ha, 20% has 1.0-2.0ha, and 10% has 2.0-3.0ha.[7)] • **Crop farm size**: 0.6 acres [10)] • **Other crops:** In Uganda, 1-4 crops are grown for consumption by 50% of smallholders (> 5 by 49%).[7)] The majority of farmers in Greater Masaka diversify with banana (60%), maize (52%), and/or beans (38%).[8)] • **Animals**: In Uganda, 60% of smallholders has livestock, of which the majority rears chicks, goats, cattle, and/or pigs.[7)]	• **Per capita food production variability**: 3.4 [1)] • **Global production**: Uganda was ranked 8th worldwide in 2020 based on coffee production estimated at 5.62 million 60kg bags. Brazil is leading with 69 million 60kg bags. [5)] • **Export vs Import**: Uganda is a net exporter of coffee. The country exported ~90% of its produced coffee in 2018.[6)]	• **National average dietary energy supply adequacy**: 90% [2)] • **Access to clean water**: Yes. At least 49.1% of Ugandan have access to basic drinking water services.[3)] • **Access to sanitation**: 18.47% of the population has access to at least basic sanitation services.[4)]

Sources: 1) FAOstat (2015); 2) FAOstat (2017-2019); 3) IndexMundi (2019a); 4) IndexMundi (2019b); 5) Statista (2020); 6) FAOstat (2018); 7) CGAP (2016); 8) Kilimo Trust (2020) - Farmer Research & Market Systems Analysis Research; 9) FAO (2020); 10) CGIAR (2019;

Intensifying rainfall, increasing frequency of floods, and less reliable cropping days increased the risk of crop loss resulting in farmers limiting possibilities to invest in high quality inputs and diversification.

Climate risks exposure and impact

Risk exposure

Temperatures
(change in) short- and long-term averages

Medium risk

Significant increase at a rate of 0.52°C per decade over de past 30 years, and an expected increase by 1.7°C-1.8°C until 2050.[1) & 2)]

Precipitation
(change in) timeliness and availability

High risk

Projected increases in total annual precipitation by 2050 to +11.5% (South-East).[1)] Increase in precipitation during December, January and February/

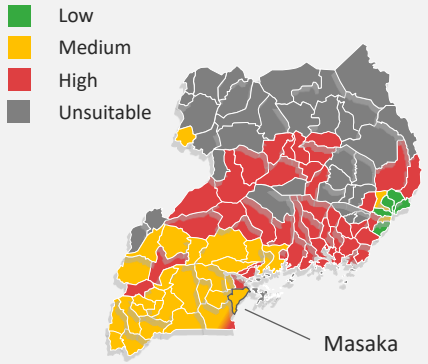
Climate extremes
(change in) likelihood and severity of hail, floods, locusts, etc.

Medium risk

Increase in the frequency and intensity of droughts and floods in recent years.[2) & 3)]

Farmer resilience and impact

Urgency of climate adaptation [1)]



Masaka needs an systemic adaptation where climate is most likely to remain suitable but with substantial stress to current production systems. Adaptation requires a comprehensive change of and system redesign, along with external support with better adapted varieties, diversification and financial mechanisms.[1)]

Measures taken by Ugacof

Current measures and policies in place

Strategy, measures and policies

- Ugacof sees climate as a business risk affecting the organization on social, environmental and financial aspect.
- To sustain coffee cultivation in Masaka, Ugacof aims to develop a Service Delivery Model that supports smallholders in their transformation to regenerative agriculture.

Intelligence

- Collects and monitors soil data;
- Pilots on crop diversification;

Farm services

- Certification and Demo-gardens to incentive and train farmers on GAP and crop diversification.
- Input provision to increase soil fertility
- Credit provision to financially enable farmers to transform their business

Challenges and room for improvement

- Limited data available on farm-level soil fertility and responsiveness to inputs.
- Lack of access to finance the transformation to regenerative agriculture.
- Aged farmer-base with limited persuasion of youth to take-over and transform the farm.
- Limited utilization of commercialization possibilities of diversified crops.

Sources: 1) CGIAR (2019); 2) Dutch Ministry of Foreign Affairs (2019); 3) Ministry of Water and Environment (2015); 4) CGAP (2016);

4.2 About the SDM

Understanding the SDM's strategy, business model and financial performance

This section:

- *Describes the current strategy of Ugacof Ltd.*
- *Details proposed improvements as included in the main recommendations*
- *Assessing the SDM's financial performance and opportunities for improvement*

Back to Chapter overview →

← Back to Recommendations

Ugacof invests in the continues tailoring of provided production and supporting services to adequately support smallholders in their transition towards regenerative agricultural cultivation of Robusta coffee

Overhead (management, HR, legal, utilities, etc.)

Core-business

Quality control & Processing

- Extension officers check quality visually 1-2 days before, and by taking samples during procurement. Certified coffee is separately packed and stamped.
- After transporting the Kiboko to Ugacof's mills in Kampala, the coffee is hulled, processed and transported to the harbour for export.

Sourcing

- Ugacof sources Robusta coffee from farmers in Greater Masaka with their extension officers as sales-managers, and only pays with mobile money.
- Extension officers are trained on commerce, coffee quality, alternative crops, financial literacy, and regenerative agriculture in the future.

Production activities

Services

Fertilizer Yara (credit)

- Facilitating purchase of fertilizer on credit
- Timely repayment facilitates loyalty indicator and unlocks additional services.

Gender awareness and equality

- Provision of gender sensitization training on e.g. household decision-making
- Engagement with the entire household e.g. inviting both spouses to farm agronomy training, introducing crops that stimulate the integration of women, and making it obligatory for both spouses to sign loan agreements
- Identification of lead farmers with dedicated land to the wife, to stimulate higher adoption of these practices in the wider community

Training

- Extension officers and lead farmers provide training to farmers with Farm Management Plan, regenerative agriculture, climate smart practices and other training (e.g. diversified crops, gender sensitization, etc.).

Seeds/Seedlings (credit)

- Ugacof facilitates the purchase of **bean seeds**, with credit repayment by coffee and beans.
- Ugacof will invest in the establishment of **coffee / shade-tree** nurseries, with credit repayment by coffee.

Demo garden

- Ugacof has 10 demo-plots at selected farms (based on loyalty-scale).
- Plots are research and training ground on GAP, cover crops, food security, etc.
- Hosts receive additional field-staff engagement.

Finance / Digitization

Supporting activities

Cash advances

- Ugacof provides loans for inputs and school fees (reason to be shown by farmer)
- Repayment in coffee in four months, increasing interest, and on time repayment is an indicator for loyalty-scale and unlocks additional services.

CropIn

- An M&E system that captures data on farm-level through an app. This information is used to analyse the impact of services and improve the efficiency of service delivery.
- The app and information are also used to tailor and provide information to the farmers on premiums and loan-balance.

Market access

- Ugacof provides market access to farmers for beans and coffee by collaboration with bean-off takers;
- Ugacof explores off take of diversified crop / livestock by engaging with other VCPs.

Soil testing

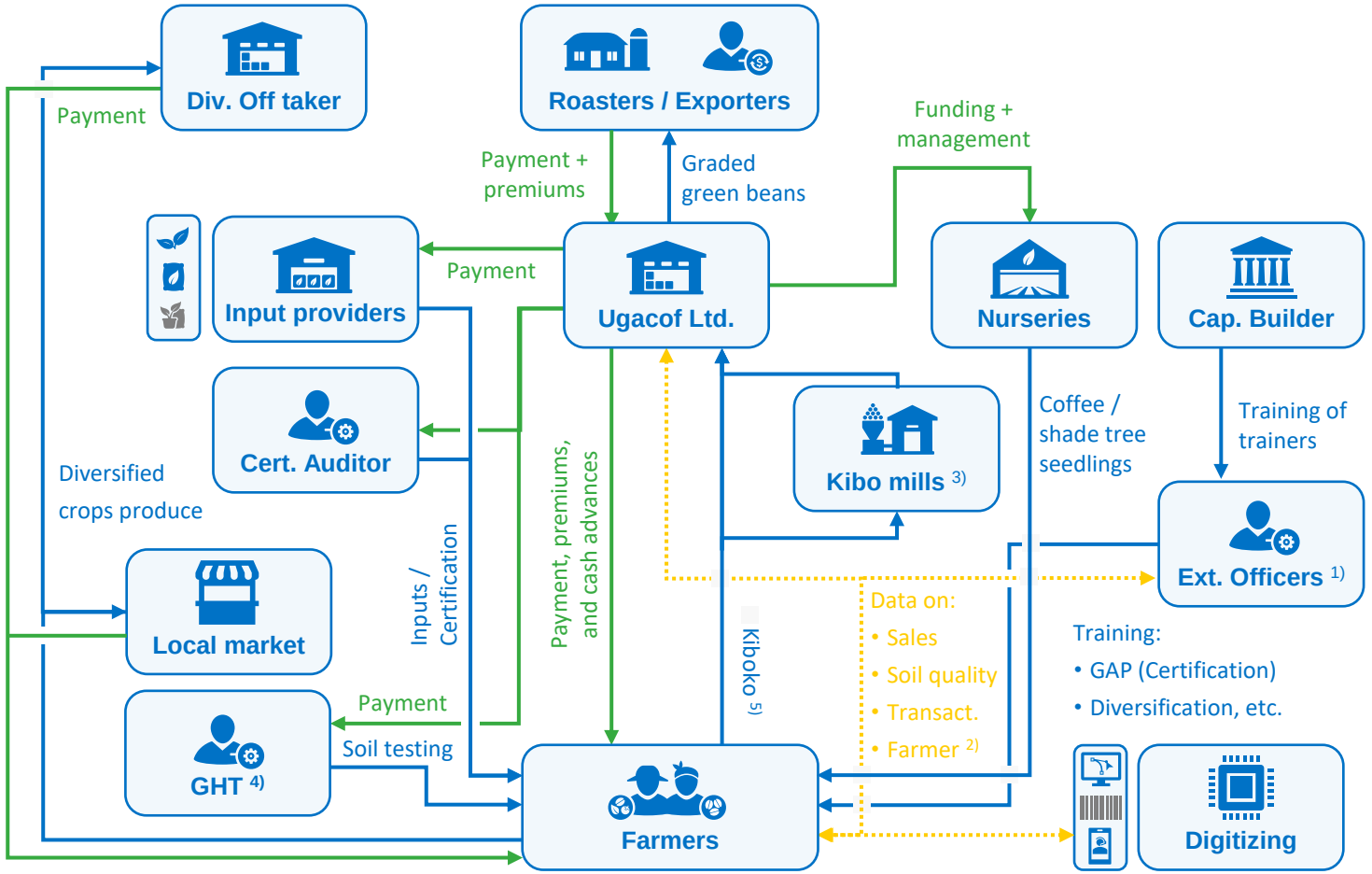
- Ugacof collaborates with Green Holland Tech to capture soil samples across the demo gardens.
- Tests show soil fertility based on carbon levels in the soil (CO_2-sequestration).

Certifications

- Ugacof supports farmers to become 4C and RFA certified.
- Premiums are paid out by the end of coffee season or converted into services taken by the farmer (e.g. inputs)

Margin

The SDM is structured in the following way



Service description

- This overview shows the main stakeholders and respective SDM service and payment flows between those.
- Ugacof is planning to establish nurseries to sell coffee and shade-trees to farmers. The remaining coffee seedlings are purchased by the UCDA.
- To strengthen the understanding of the soil quality, and tailor services around it, Ugacof is collaborating with GHT to perform soil testing. The results are used to tailor services and write the Farmer Management Plan.
- All payments are done by using digital money (mobile money), and purchasing transactions are registered in CropIn. Information will built up farmer track-records and help them to become eligible for finance.

Legend

- Produce / Services
- Payments
- Information / data
- Currently provided
- To be developed
- Seedlings
- Fertilizer
- Bean seeds
- Mobile application
- Barcoding
- Management System

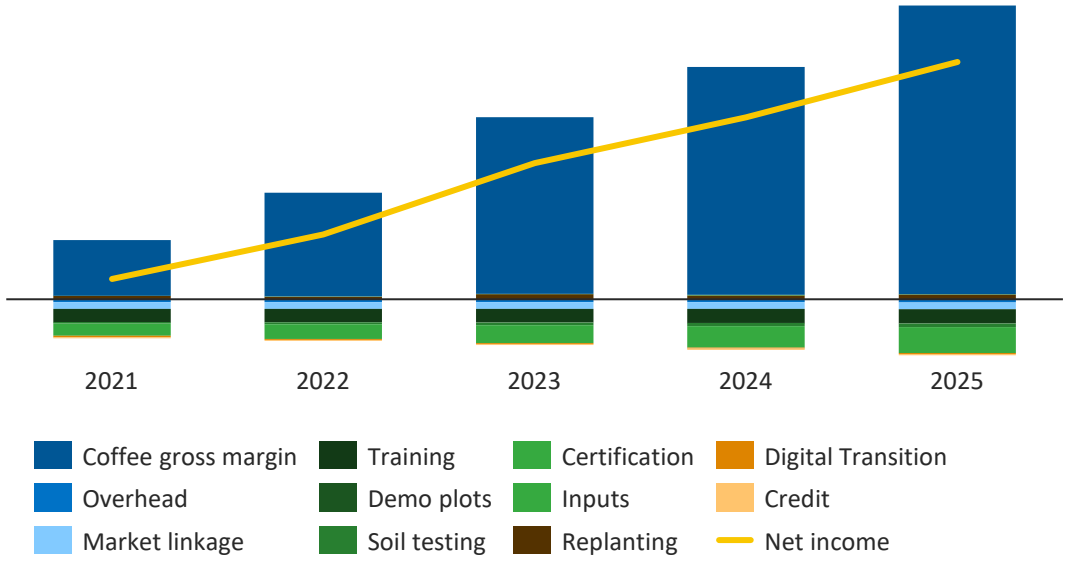
Notes: 1) There is 1 Extension officer per 125 farmers; 2) Farmer Agronomics (e.g. land-size, tree-density, etc.); 3) In total 2 mills and 2 staff per mill (GMS & Ugacof); 4) Green Holland Tech (GHT); 5) Dry coffee cherry (Kiboko);

Go to SDM assumptions →

With supporting farmers in the SDM to transition to RA, Ugacof is able to secure and increase its sourcing volumes sourced from Greater Masaka

Increasing sourcing volumes outweigh additional cost of service provision

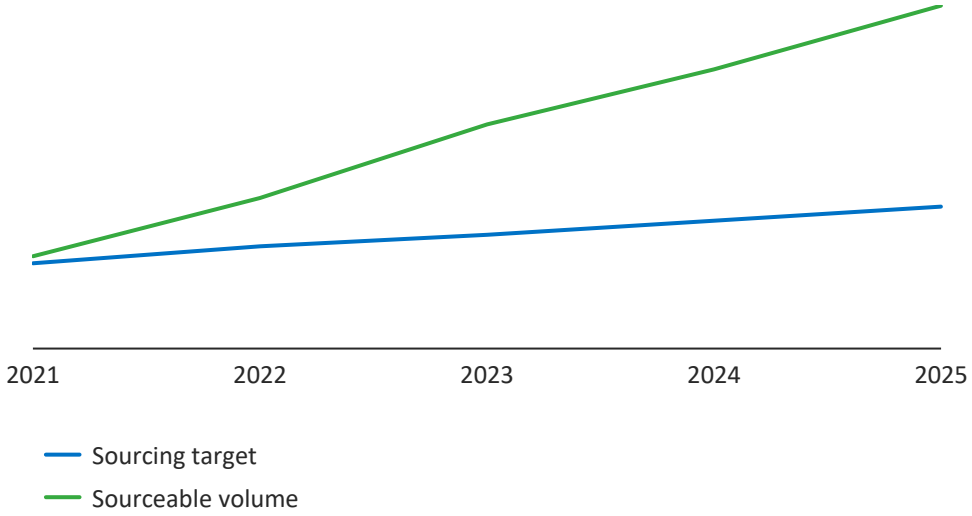
5-year projection of net-income in USD /year



- Ugacof is able to increase its coffee gross margin due to an increase in total number of farmers, an increase in farmer loyalty, and an increase in coffee yield per farmer.
- With an increase in farmers who are certified, Ugacof is able to increase its margin from certified volumes.

Service provision secures and outperforms Ugacof's sourcing target

5-year projection of sourcing coffee volume Mt/year



- With SDM farmers significantly increasing their overall coffee yield, Ugacof becomes able to almost double its sourcing volume in 5 years time.

Ugacof engages with multiple stakeholders both vertically and horizontally in the coffee value-chain, making Ugacof agile in order to achieve its goals

Actor	Organizations	Function (within this SDM)	Revenue model (within this SDM)	Incentive to participate (within this SDM)
Operator	• Ugacof Ltd.	• Value chain investor • Provide services to farmers • Sources and processes coffee beans and exports coffee green beans of Robusta and Arabica.	• Margin on coffee sales	• Increase and secure sustainable coffee supply, by achieving sustainability goals, transform the sector, accelerate progress, and contribute to alleviation of poverty in rural communities.
Processor	• Exporters • Roasters	• Co-investor in RA projects in Uganda; • Buys coffee from Ugacof and processes it to consumer products.	• Margin on coffee sales	• Increased sales volumes • Increase experience on business with smallholders.
Financial Service Providers	• Micro Finance Inst. • Dev. Finance Inst. • Impact Investments	• Co-investor in Regenerative Agriculture projects in Uganda; • Finance, de-risk, and create access to finance for smallholders and Ugacof.	• Payment of interest by Ugacof and farmers.	• Attract new agri-customers • Increase experience on business with smallholders and cooperatives. • Capture savings made by smallholder farmers and increase farmers access to financial services/products.
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.
Off takers	• Value Chain Players	• Buys diversified products from Ugacof and processes it to consumer products and/or export products.	• Margin on product sales	• Increased sales volumes • Increase experience on business with smallholders.

Opportunities to support the transformation towards regenerative agriculture, leverage Ugacof's strengths and solve weaknesses and mitigate threats.

	Helpful	Harmful
Internal	**Strength** • Ugacof initiated Farmer Hub to come up with innovative solutions that create more value for the company's supply chain and its long-standing relationship with farmers. • Ugacof has a data-driven segmentation methodology, which indicates the loyalty of famers, and which is used to determine access to services. • Ugacof is increasing its knowledge on diversifying activities with demo gardens for diversification focused pilots run by selected farmers. • Ugacof supports farmers to become C4 and RFA certified. • Ugacof, in the Greater Masaka Area, buys at farm-gate-price.	**Weakness** • Farmers Ugacof sources from have lower loyalty to Ugacof due to competition from middlemen, which leads to side selling by farmers. • Ugacof has a limited track-record in produce other than coffee in Uganda, which leads to large start-up costs and reliance on existing VCPs. • Limited adoption of GAP results in low coffee yield and a bigger farmer-base to source to reach volume targets, causing higher management cost. • Limited direct engagement with and sourcing from coffee farmers in Uganda, as most of the coffee is sourced through middlemen.
External	**Opportunities** • Coffee farmers' existing diversified income is to be increased with professionalized production and transitioning to regenerative agriculture. • From Masaka, Ugacof will be able to leverage existing trade corridors running towards Kampala where produce is transported out of Uganda. • With the implementation of regenerative agriculture, farmers might be able to tap into the maturing carbon market as an additional revenue stream • Stimulating women empowerment will increase farmer resilience as productivity of women associated activities will increase.	**Threat** • Decrease in coffee volume due to migration to other (food) crops because of food insecurity and low coffee prices; • Decreasing coffee volume, due to both soil degradation and risk of climate change causing favored coffee cultivation areas to shift to regions on higher altitudes, which are mostly protected nature reservoirs. • Average age of coffee farmers is increasing, and children are limited interested to take over the business.

SWOT

Legend: Economic | Social | Environmental

4.3 About the farmers

Assessing farmer impact and opportunities for improvement

This section:

- *Assessing the farmer's financial performance and opportunities for improvement*

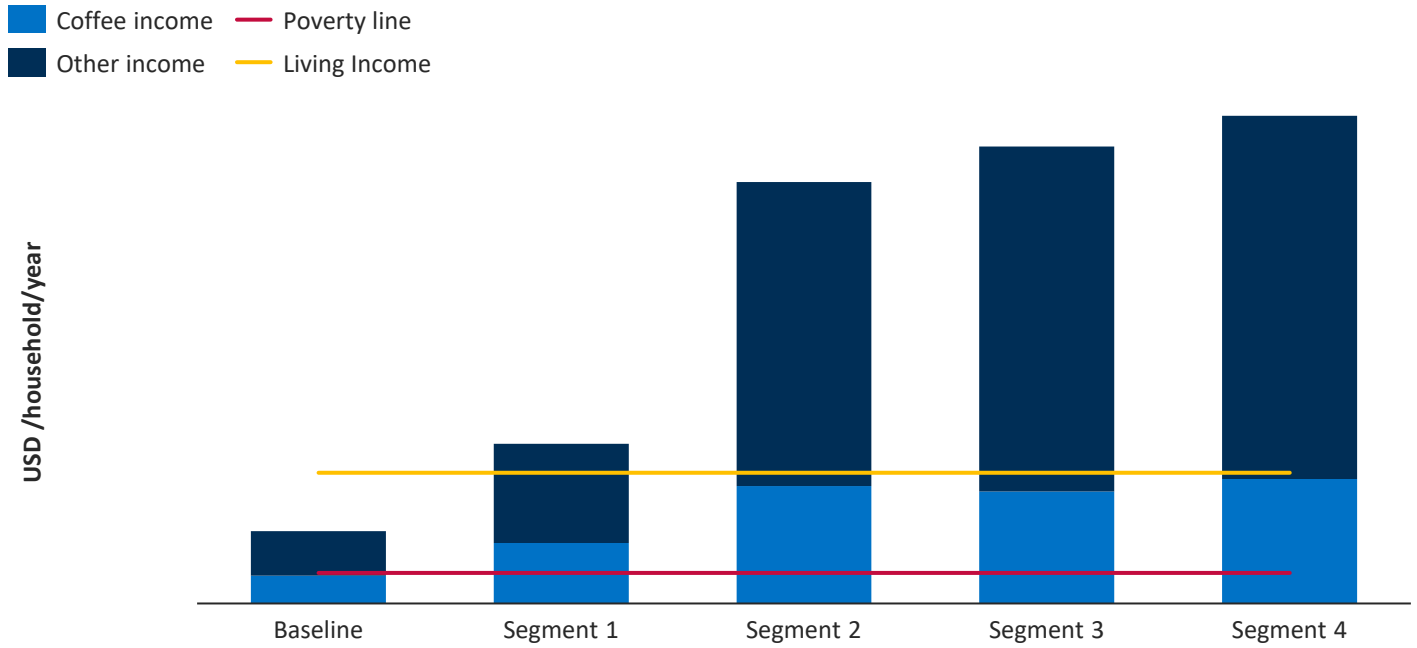
Back to Chapter overview →

Go to Living income expl.→

Farmer who enter the SDM are able to close the gap to a living income, although farmers remain reliant on income from activities other than coffee cultivation.

Comparing household income, living income benchmark and poverty line

Shown for each farmer segment, in USD/household/year based on 10-year average



	Baseline	Segment 1	Segment 2	Segment 3	Segment 4
Land size per household (acre)	Coffee: 6.0 Other: 3.0	Coffee: 6.0 Other: 3.0	Coffee: 6.0 Other: 3.0	Coffee: 6.0 -> 10.0 Other: 3.0	Coffee: 6.0 -> 10.0 Other: 3.0

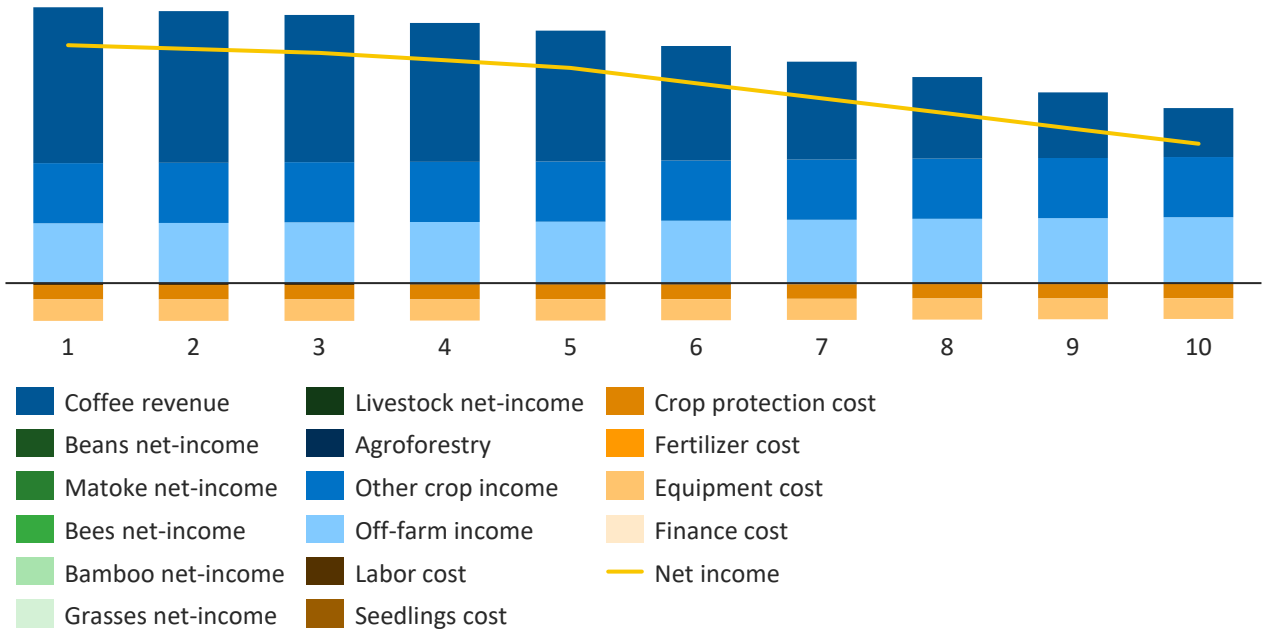
Impact on farmer incomes

- Given that envisioned service impacts will materialize, the SDM significantly boosts farmer incomes from coffee.
- When service impact is proven, it is critical for the SDM to rapidly grow its farmer base. In contrast to baseline farmers, all farmer segments accessing this service offering will be able to earn more than the Worldbank poverty line from coffee alone, and segments 2, 3 and 4 are able to get close to earn a living income with the cultivation of coffee alone.

Farmers outside the SDM will face significant income decrease due to yield loss, caused by temperature increase and soil degradation.

The Baseline farmer will become more relying on off farm activities

10-year net-income from farming activities in USD/year

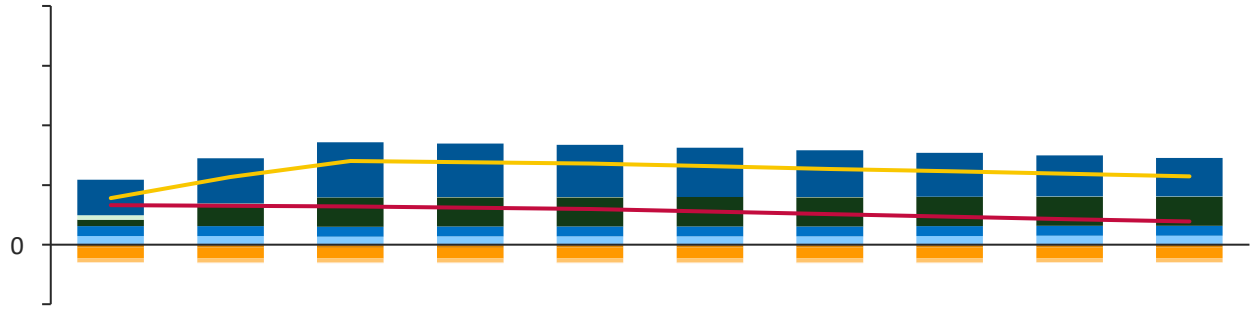


- The net income of a Baseline farmer decreases over time, due to declining coffee yields caused by degraded soils and climate change.
- The Baseline farmer's income in year 1 consists of 50% coffee, 25% other crops, and 25% off-farm income, changing to 9% coffee, 43% other crops, and 47% off-farm income in year 10, indicating that farmers will rely more on activities other than the cultivation of coffee in the future if they don't adopt different farming practices.
- The expenses consist of crop protection, equipment, and little harvest labor, as the farmer outside the SDM does not use fertilizer.

Adopting RA with Trees and other diversified activities is a highly potential business case for farmers in Ugacof's SDM.

Farmer who perform GAP, apply fertilizer and keep cattle can double their income.

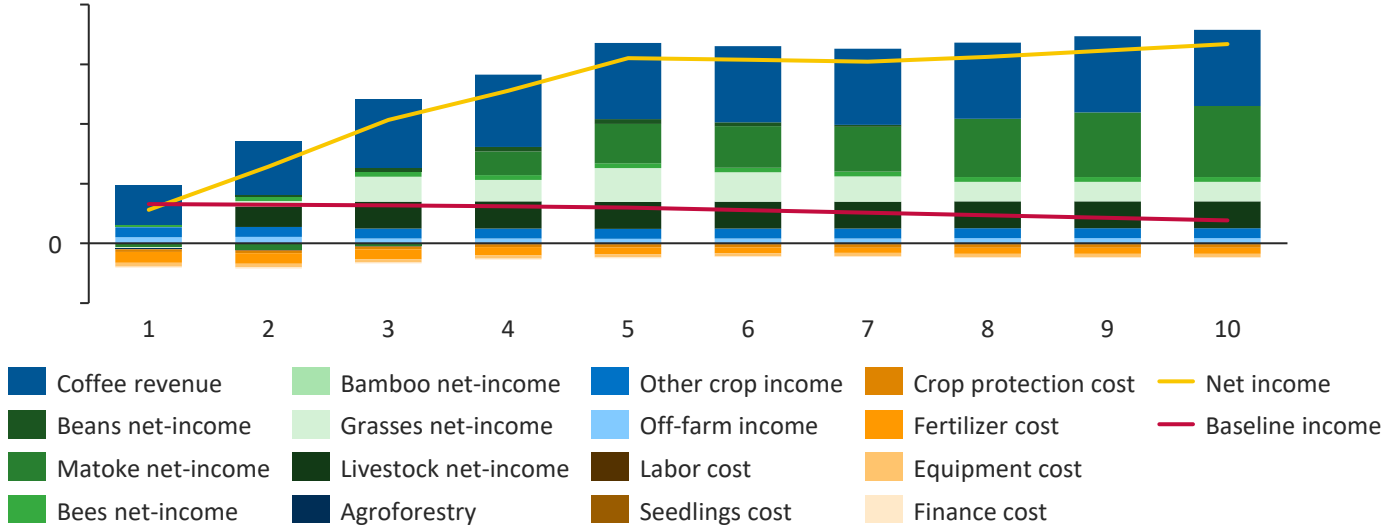
10-year net-income from farming activities in USD/year



- The net income of a farmer who performs GAP, applies fertilizer, and keeps milk cattle nearly doubles compared to the farmer outside the SDM.
- The majority of the expenses consist of fertilizer, equipment, and finance cost.

Implementing RA is a strong business case for coffee farmers

10-year net-income from farming activities in USD/year

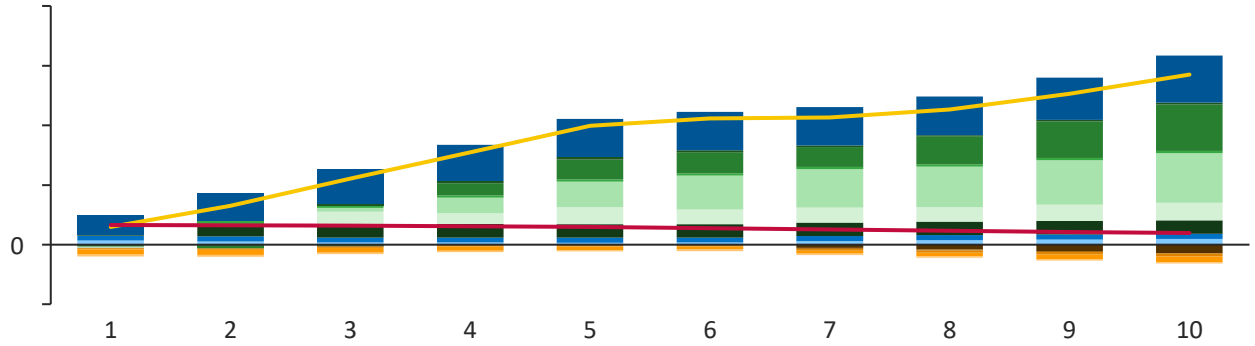


- Implementing RA from year 3 onwards, with less income compared to the Baseline in year 1, the farmer inside the SDM is able to increase its net income eightfold in year 10.
- The farmer's income in year 1 mainly consists of coffee, other crops, and off-farm income. With the implementation of RA, the majority of the income comes from diversified practices: bamboo, banana, grasses, bees, and cattle. The majority of the expenses consist of fertilizer, equipment, and finance cost.

Innovative RA with both bamboo and an increase tree-density of coffee and matoke shows to be the optimum business case for farmers in Greater Masaka.

Direct implementation of RA provide a strong business case for coffee farmers

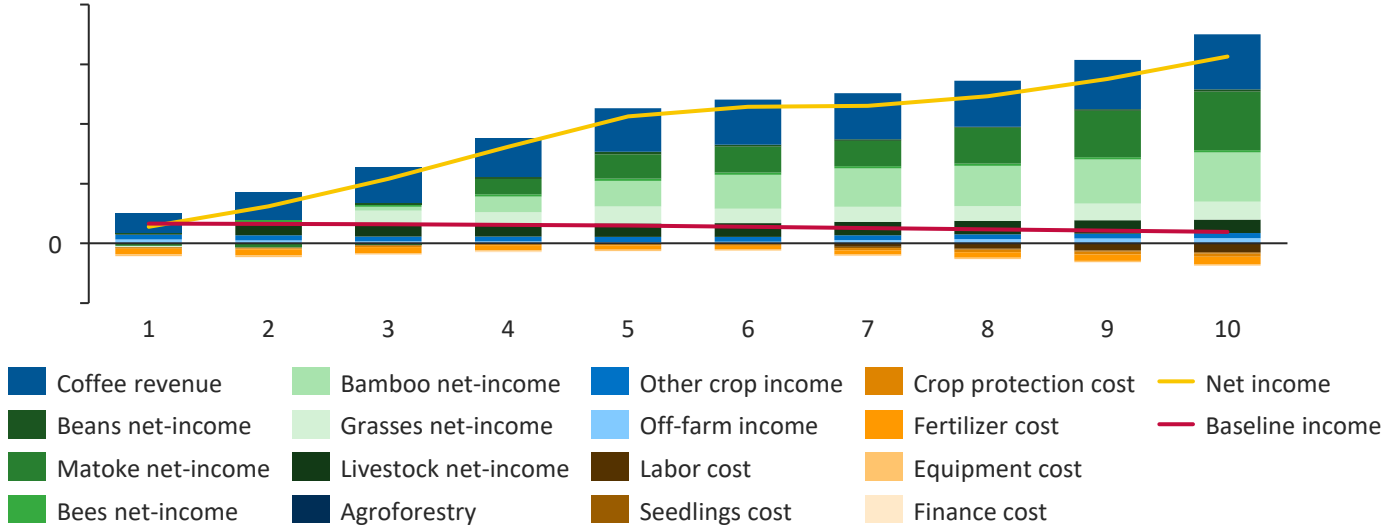
10-year net-income from farming activities in USD/year



- Directly implementing RA from year 1, and increasing the farm size from year 7 onwards show a high potential improved business case for the smallholder compared to a delayed implementation from year 3
- Increased labor cost from year 7 onwards does not outweigh additional income from farm expansion

Increased tree density and RA implementation increase net-income tenfold.

10-year net-income from farming activities in USD/year

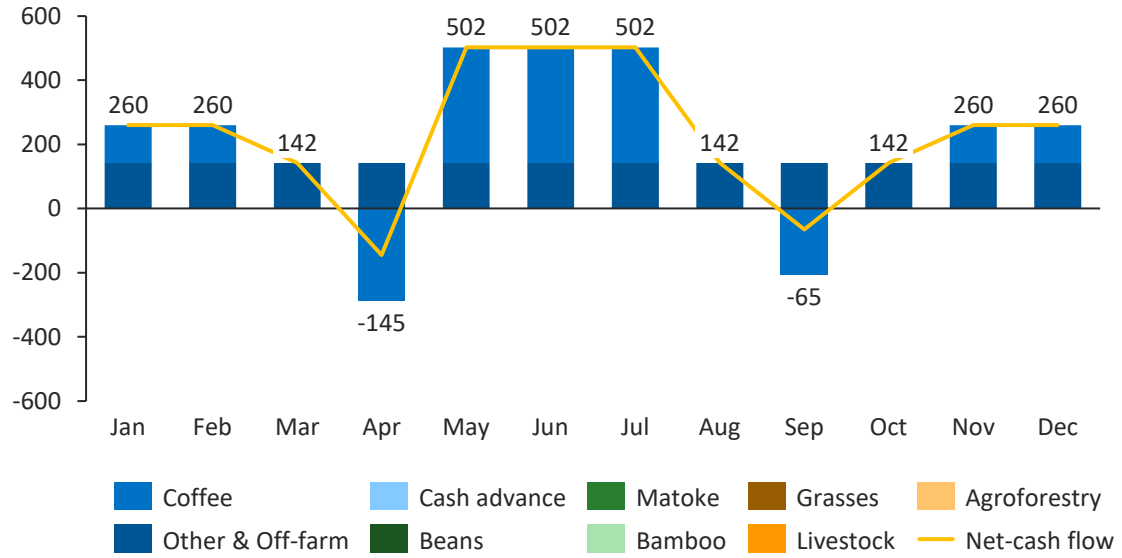


- Directly implementing RA from year 1, increasing the farm size from year 7, and increasing the coffee and matoke tree density shows the optimum business case for the smallholder

Although farmers outside the SDM have enough labor capacity, they are cash strapped during the main cultivation months of the year, hindering the possibility to invest in improving farming practices

Baseline farmers' monthly cash flow movements

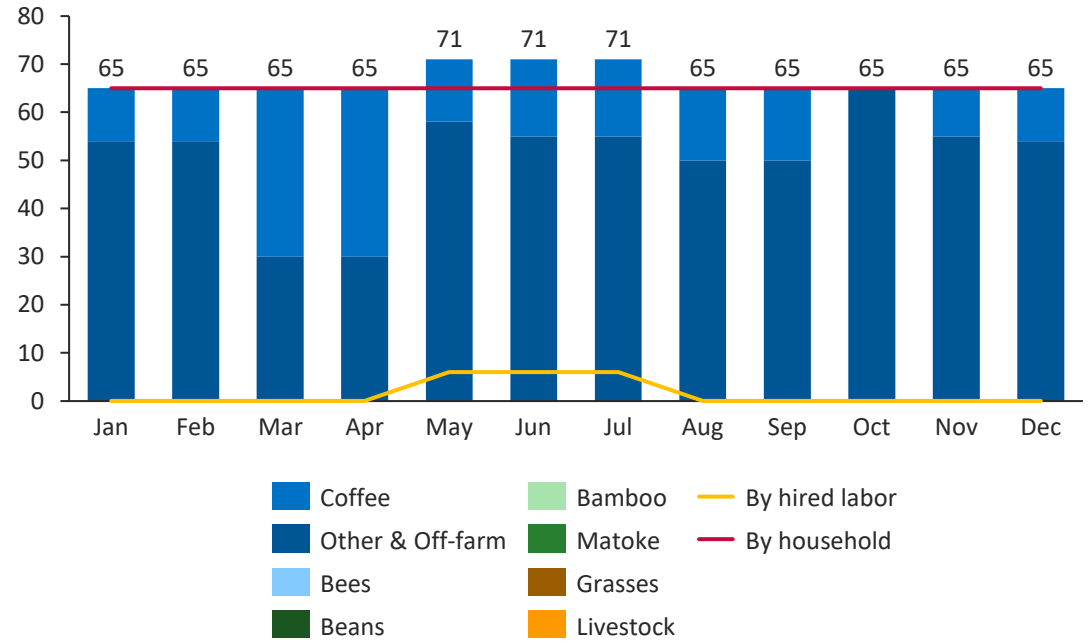
Average 10-year net cashflow from farming activities in USD/month [1)]



- With on average a annual income of USD 2,759 the Baseline farmer faces cash shortage in April and September, as inputs are bought for the cultivation of coffee
- Cash earning peak during the main (May – July) and fly (Nov – Feb) coffee season

Baseline farmers' monthly labor requirements

Average 10-year labor requirement for farming activities in days/month



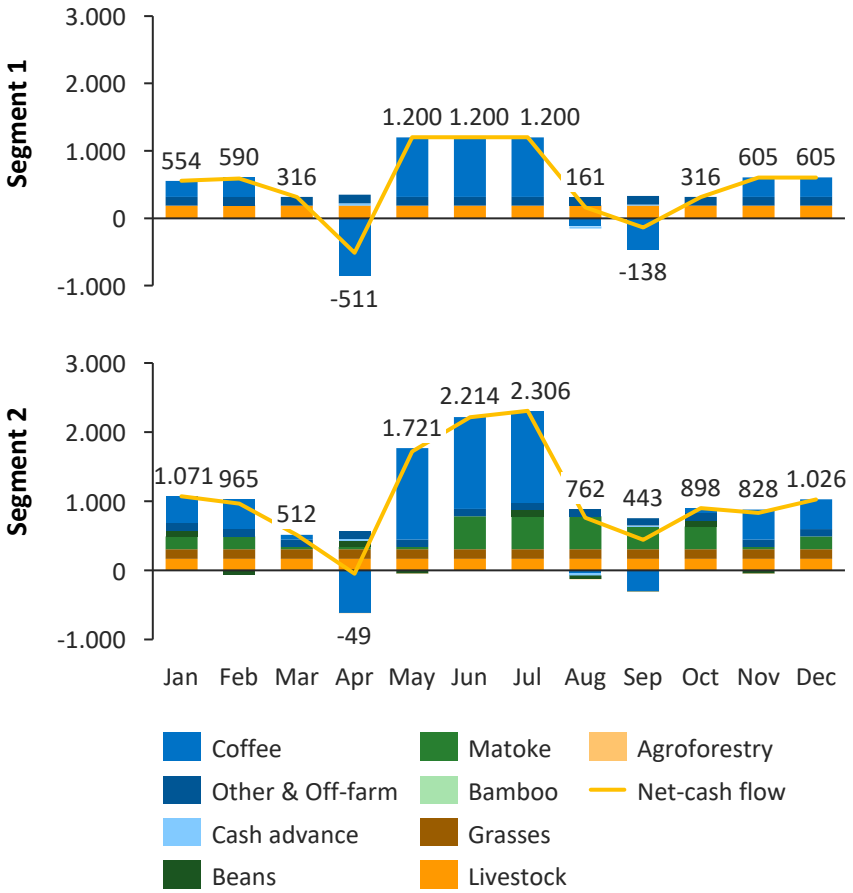
- Total labor requirements peak during the main cultivation months of the coffee calendar in March/April
- To ensure timely harvesting, additional labor is hired during the main coffee season in May – July

1) Other & Off-farm income are modelled to be equally spread during the year but can change accordingly to the number of days available to perform Other & Off-farm activities.

Only performing GAP and applying fertilizer does not dampen the cash strapped position during April and September, showing the need to diversify income with crops having crop calendars contra to coffee

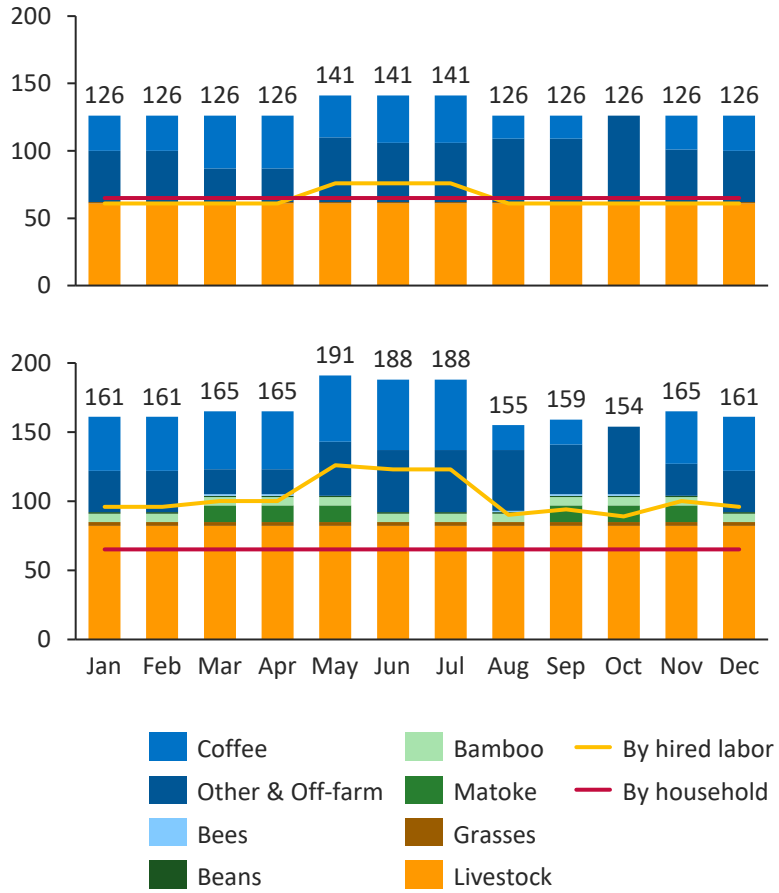
Segment 1 and 2 farmers' monthly cash flow movements

Average 10-year net cashflow in USD/month [1)]



Segment 1 and 2 farmers' monthly labor requirements

Average 10-year labor requirement in days/month



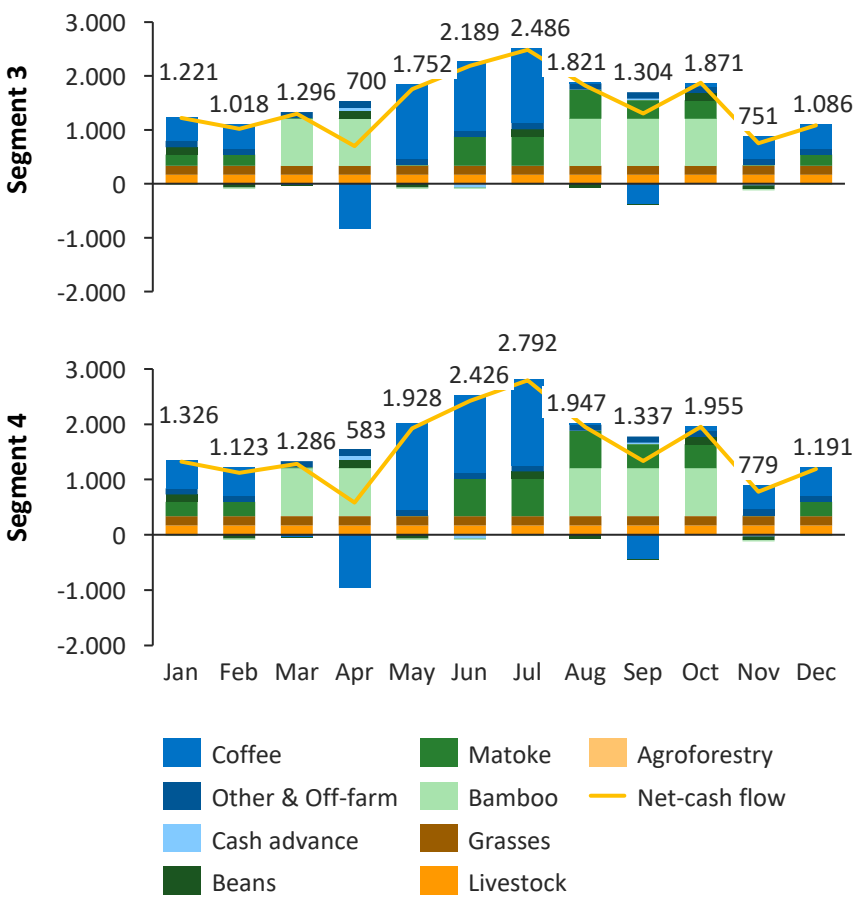
- Compared to the Baseline, Segment 1 farmers face increased cash shortage in April and September, due to the adoption of GAP and application of fertilizer.
- For both Segment 1 and 2, monthly earning from livestock are damped due to the need to hire additional labor throughout the year.
- By adopting a diversified income strategy, Segment 2 significantly reduces cash shortage in April and September, ensuring enough monthly income to cover other household expenses.

1) Other & Off-farm income are modelled to be equally spread during the year but can change accordingly to the number of days available to perform Other & Off-farm activities.

Diversifying income enables farmers to mitigate the risk of becoming cash strapped during the year and to allocate labor capacity to both on-farm as off-farm activities

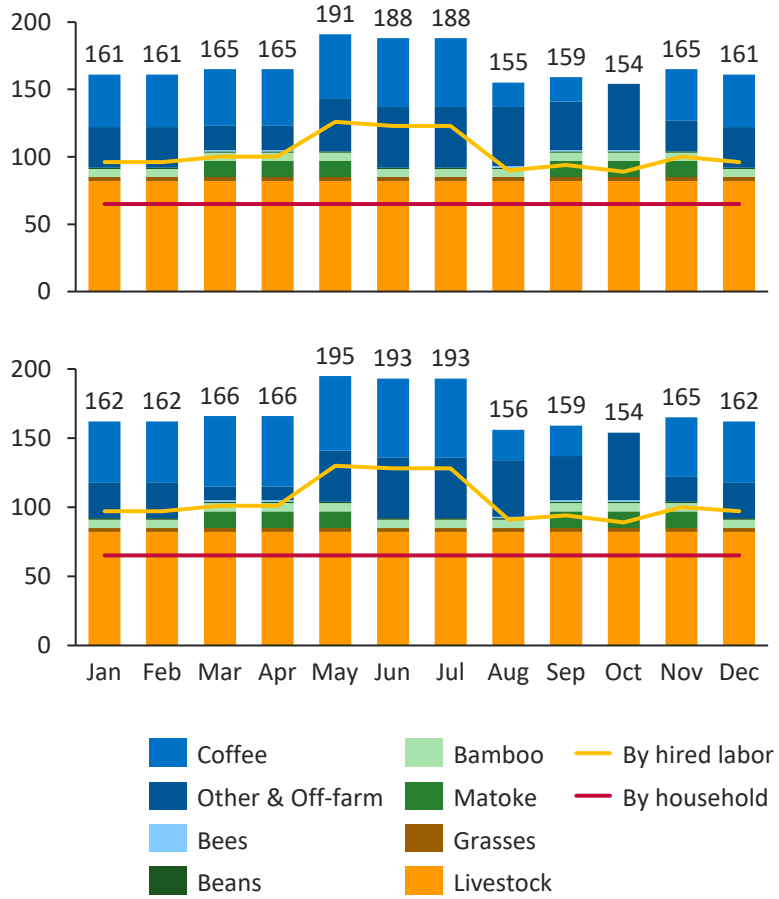
Segment 3 and 4 farmers' monthly cash flow movements

Average 10-year net cashflow in USD/month [1)]



Segment 3 and 4 farmers' monthly labor requirements

Average 10-year labor requirement in days/month



- Diversifying with bamboo enables Segment 3 and 4 to significantly increase their positive net-cash flow from farming activities in March/April and Aug/Sept/Oct.
- Intensifying tree/density of coffee and matoke provides an increase in cashflow in all months except April as intensified coffee cultivation requires increased inputs cost.
- By hiring additional permanent labor throughout the year, both farmer segments have enough labor capacity to perform all farming activities in each month.

1) Other & Off-farm income are modelled to be equally spread during the year but can change accordingly to the number of days available to perform Other & Off-farm activities.

4.4 Assumptions and methodology

Key assumptions and background information

This section:

- *Shows all assumptions used for the SDM operator*
- *Shows all assumptions used for the different farmer segments*
- *Explains the methodology of the Primary Data collection*
- *Explains the methodology of the Digital Transformation Assessment*

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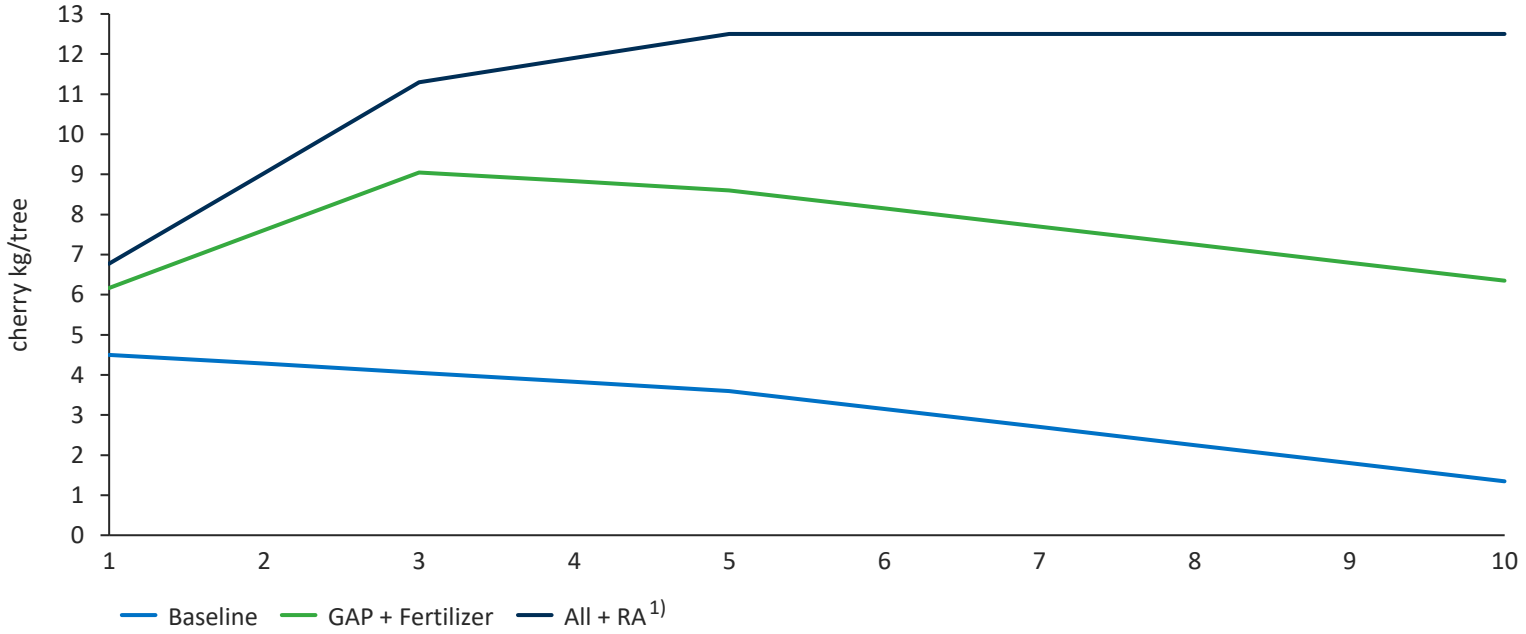
Coffee cherry yield-curve from GAP, fertilizer, and RA

Yield curve of coffee cherry kg/tree

10-year projection of cherry kg/tree due to GAP, fertilizer, RA and soil degradation



GAP (3 kg/tree)	33%	67%	100%	100%	100%	100%	100%	100%	100%	100%
Fert. (0.8 kg/tree)	33%	67%	100%	100%	100%	100%	100%	100%	100%	100%
RA (1.2 kg/tree)	20%	40%	60%	80%	100%	100%	100%	100%	100%	100%
Soil degradation 2)	100%	95%	90%	85%	80%	70%	60%	50%	40%	30%

- Baseline cherry kg/tree decreases overtime due to soil degradation and temperature increase in the Greater Masaka area
- The positive effects on the yield for the farmer who implements GAP and applies fertilizer increases in the first three years, but is outweighed by the negative effects from soil degradation and temperature increase
- Negative effects from soil degradation and temperature increase are mitigated with the implementation of RA by shade-trees/bamboo, beans, and grasses

1) Cherry yield kg/tree for farmer who applies GAP, fertilizer, and implements RA
2) Yield as percentage of cherry kg/tree exclusive services

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Effects from RA on farm performance

Shade/temperature

Bamboo and shade-trees are planted between the coffee rows. The shade from either the shade trees or the bamboo will reduce and mitigate temperature increase, leading to a potential yield increase of 3.0 cherry kg/tree in 5 years. Further, diversification with bamboo enriches the soil due to roots penetration of the soil, and water collection to keep the moisture levels sufficient.

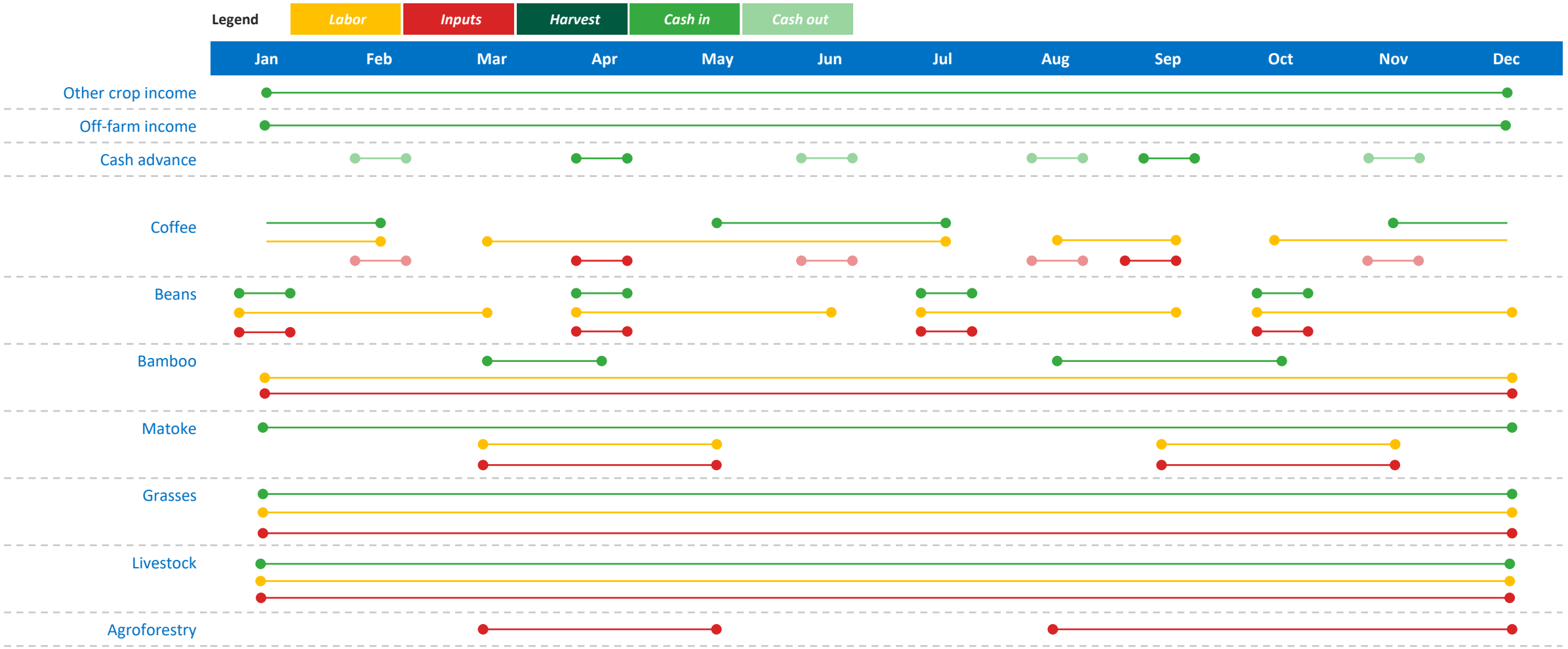
Chemical -> Organic

*With the cultivation of grasses, keeping of cows, and collecting of droppings of other crops, farmers are able to make organic compost on their farm. The organic compost, in combination with micro-elements, will fully replace chemical fertilizer from **year 5 onwards**.*

Beans

Beans are cultivated for the first 5 years, after which the bean area is replaced with the cultivation of grasses. Beans function as a nitrogen fixator, enriching the soil to become more fertile and responsive to other inputs such as organic fertilizer.

Crop calendar of crops in diversification portfolio



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Farmer P&L Assumptions (1/4)

Variable	Baseline_0	Segment_1	Segment_2	Segment_3	Segment_4
Other (crop) income	1,000,000 UGX/acre	1,000,000 UGX/acre	1,000,000 UGX/acre	1,000,000 UGX/acre	1,000,000 UGX/acre
Off farm income	2,985,882 UGX/year	Based on available days	Based on available days	Based on available days	Based on available days
Days for off farm income	585/year	*Calculation*	*Calculation*	*Calculation*	*Calculation*
Coffee					
Tree-density	360 trees/acre	360 trees/acre	360 trees/acre	360 trees/acre	360 trees/acre
Sales channel					
Ugacof					
Middleman					
Certified	No	Yes	Yes	Yes	Yes
Tarpaulins	Regular	Advanced	Advanced	Advanced	Advanced
Service / RA adaption					
GAP	No	Yes	Yes	Yes	Yes
Fertilizer	No	Yes	Yes	Yes	Yes
Change to compost	No	No	Yes	Yes	Yes
RA Effects	No	Yes	Yes	Yes	Yes
Available HH-labor	780 days/year	780 days/year	780 days/year	780 days/year	780 days/year
Full-time laborer	0 #/year	0 #/year	1 #/year	1 #/year	1 #/year

Farmer P&L Assumptions (2/4)

Variable	Value			Variable	Value
Coffee					
Yield	*Current*	*Fertilizer*	*GAP*	*RA*	*Obtainable*
Cherry kg/tree	4.5	2.0	3.0	3.0	12.5
Kiboko	1.8	0.8	1.2	1.2	5.0
FAQ	0.9	0.4	0.6	0.6	2.5
Yield increase	*Y1*	*Y2*	*Y3*	*Y4*	*Y5 →*
from GAP	33%	67%	100%	100%	100%
from fertilizer	33%	67%	100%	100%	100%
From shade/bamboo	20%	40%	60%	80%	100%
Yield distribution	*Fly season*	*Main season*			
%/total yield	30%	70%			
Labor	*Availability*	*Cost per FTE*			
Permanent labor	0.5 FTE/acre	3,600,000 UGX/FTE			
Variable labor	Days/year	10,000 UGX/day			
Inputs	*Herbicides*	*Copper*	*Removing twig-borer*	*Biological pest control*	
Application	4 * 1 liter/acre	4 * 1 liter/acre	4 * 1 day/acre	4 * 1 application/acre	
Cost	15,000 UGX/liter	15,000 UGX/liter	10,000 UGX/day	10,000 UGX/day	

Farmer P&L Assumptions (3/4)

Variable	Value			Variable	Value	
Coffee				**Matoke**		
Fertilizer	*Application*		*Price*	Yield	3 bunch/tree/year	Y1: 0%, Y2: 50%, Y3 -> 100%
Chemical application	150 gram/tree (fly)	350 gram/tree (main)	3,000 UGX/kg	HH Consumption	24 bunch/year	
Organic compost	10 kg/tree		90 UGX/kg	Seedlings	5,000 UGX/seedling	every 7-years
Professional compost	1 kg /tree		540 UGX/kg	Fertilizer	Equal to coffee	
Micro elements	1 bottle/acre (4*)		15,000 UGX/bottle	Crop protection	Equal to coffee copper	and biological pest control
				Shade branch	50 UGX/tree (year 1)	
Bees						
Boxes	10 # (5-year)			**Grasses**		
Yield	40 kg/box/year	Y1: 50%, Y2 → 100%		Yield	4 flush/acre/year	8,094 kg/flush
HH Consumption	26 kg/year			Curve	Y1: 75%, Y2 → 100%	
Boxes price	150,000 UGX/box			Seeds	200,000 UGX/acre	(year 1)
Flower seeds	100,000 UGX (year 1)			Fertilizer	200,000 UGX/acre/year	
Beans				**Shade trees**		
Yield	1,000 kg/acre/round	Y1: 50%, Y2: 65%, Y3 →	70%	Seedlings	44 trees/acre	
Rounds per year	4 #/year	Y1: 2, Y2: 2, Y3: 3, Y4 →	4			
HH consumption	100 kg/year			**Bamboo (1/2)**		
Seeds	15 kg/acre/round			Yield	75 kg/year/tree	
Inputs (gross-margin)	Y1: 40% / Y4 → 50%			Mulch	38 kg/year/tree	

Farmer P&L Assumptions (4/4)

Variable	Value		Variable	Value	
Bamboo (2/2)			**Equipment**	*(distributed to div. crop*	*s if used in portfolio)*
Curve	Y1: 10% / Y5: 100%		Tarpaulins (standard)	150,000 UGX/tarp	3 #/year (2 years)
Seedlings	4,000 UGX/tree		Tarpaulins (advanced)	8,000 UGX/m2	300/m2 (6 years)
Organic fertilizer	600 UGX/tree/year		Bags	1,000 UGX/bag	1 per 80kg Kiboko
Pest control	300 UGX/tree/year		Panka	15,000 UGX/#	5 #/HH/year
			Hoes	20,000 UGX/#	5 #/HH/year
Livestock			Knapsack	80,000 UGX/#	3 #/HH/year
Yield	183 days, 15 liter/day		Boots	15,000 UGX/#	10 #/HH/year
HH Consumption	5 liter/day		Wheelbarrow	80,000 UGX/#	2 #/HH/year
Price cow	1,000,000 UGX/cow		Protection Mask	15,000 UGX/#	3 #/HH/year
Fodder	12.5 kg/day	300 UGX/kg	Protection glasses	10,000 UGX/#	3 #/HH/two years
Supplements	2.0 kg/day	1,000 UGX/kg	Protection gloves	10,000 UGX/#	3 #/HH/year
Shed	431,782 UGX/cow	5 years			
Veterinary fees	250,000 UGX/cow/year				
Medicine cost	250,000 UGX/cow/year				
Calf	1 #/year	600,000 UGX/calf			
Cow dung	2.5 kg/cow/day				
Compost	Cow dung 1 : Mulch 6				

IDH developed a methodology and tool to support our clients in their digital journey, including a data base

The Digital Transformation Assessment identifies and prioritizes digital opportunities (tech use-cases) that fit an agri-service provider's needs, with ROI estimates. Additionally, through a digital maturity analysis, areas of improvement are suggested for the agri-service provider. Based on the assessment, the tool allows you to match-make with relevant tech-providers.

Identify digital gaps

Identifying and prioritizing the tech uses cases that are best-fit for your business

Expert network

We match-make through a database of tech providers and agri-specialists in your country

Efficient and cost-effective

An affordable, simplified process, supported by our experienced team.

Intuitive, web-based platform

Web-based platform powered by a dynamic global database of 300+ tech providers

The DTA process

1. **Introduction with the organization |** Discuss the overall process
2. **Identification |** Performing the first step of the methodology in the online DTA on the use case database
3. **Prioritization |** Prioritize the earlier identified use cases from the database based on desirability and feasibility
4. **Digital Maturity Assessment |** Conduct the Digital Maturity Assessment to distinguish strengths and opportunities for improvement
5. **Results |** The results include identified and prioritized use cases and DMA analysis with improvement areas

Living income benchmark methodology

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Living Income

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

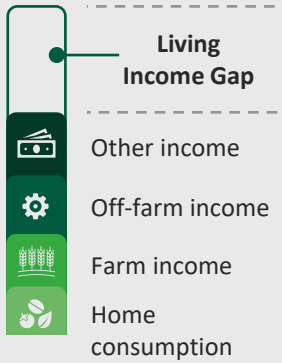
Living Income Benchmark

The Living Income Benchmark is equivalent to the cost of living for a family

Cost of a decent standard of living for a family

(specific to a time and place)

Living Income Gap



Actual income

To measure the Living Income Gap, **compare the living income benchmark with farmers' actual income** (earned by **all adult household members** from their own farming enterprise, as well as all other income sources).

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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