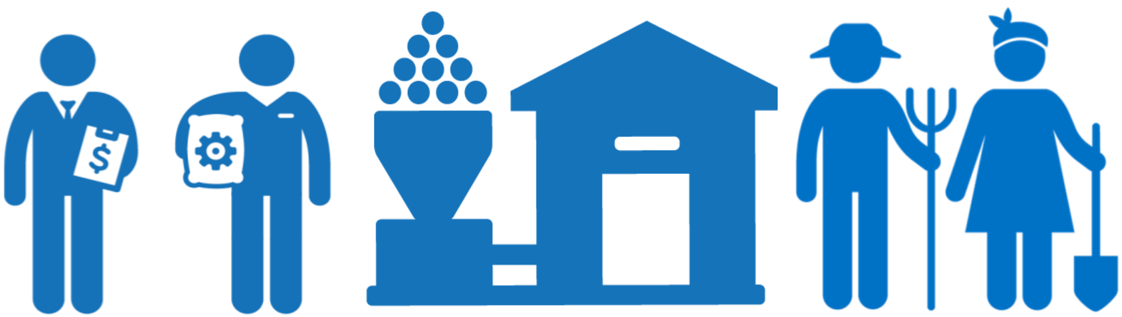
SDM Case Report: NFC, Uganda

Service Delivery Model assessment: Short version

December 2019

Location: Uganda
Commodity: Timber
Services: Out-grower group onboarding, Mapping & Tracking, Tailored training, Access to finance, Market linkages



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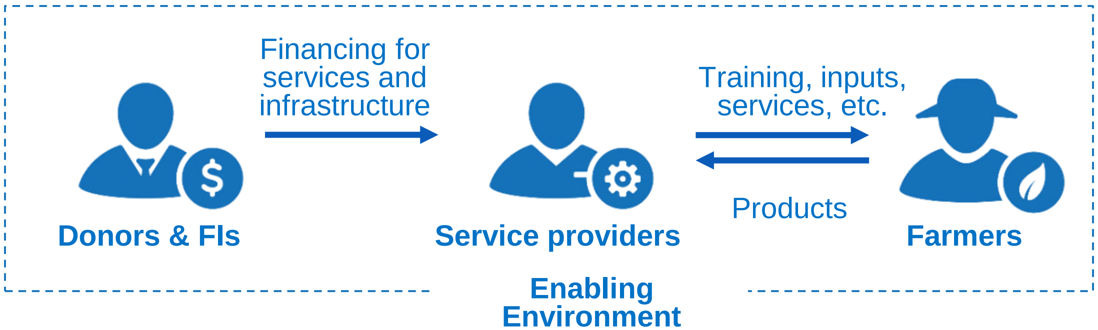
The New Forests Company

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

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

A SDM consists of service providers, often supported by donors and financial institutions (FIs), and farmers receiving the services. All are set within a specific enabling environment.



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

Key drivers for success of SDMs benchmarking	Innovation opportunities to support	Cross-sector learning, learning community	Convening at sector and national level

Analyzing SDMs brings a range of benefits

Farmers and farmer organizations

- **Enhanced services**, which lead to improved farmer income and resilience, through higher productivity and product quality
- **Improved SDM outcomes**, which lead to an improved social and environmental environment

SDM operator

- Better understanding of your **business case**
- Insights to **improve service delivery**
- Insights to develop **a cost-effective SDM**
- Identification of opportunities for **innovation** and **access to finance**
- **Comparison** with other public and private SDM operators operating across sectors/geographies
- Ability to communicate **stories of impact and success** at farmer level

Investors/FIs

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

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The NFC SDM and objectives

General SDM information:

Location:	Uganda
Timing and analysis scope:	2019-2038
Scale (start of analysis):	270 farmers
Scale (end of analysis):	2,256 farmers
Funding:	N/A
SDM Archetype*:	Local trader

The New Forests Company

- The New Forests Company Group (NFC) is a sustainable forestry and value-added timber products business.
- Products include electrification poles; telecom poles; fencing poles; sawn timber; kiln dried timber; moulded timber; pallets and biomass.
- It has operations in Rwanda, Uganda and Tanzania, a support office in South Africa, and headquarters in Mauritius.
- While focused mainly on self-managed plantations, NFC has distributed over 10 million seedlings over the last 10 years outside the plantation, 7 million of which were distributed in Uganda.
- NFC is now looking to integrate the Ugandan out-growers that received seedlings into a commercially viable out-grower program.

* For more info on SDM archetypes, see the IDH Smallholder Engagement Report

SDM objectives:

Vision:

To create a social license that allows NFC to operate in Uganda

1. **Develop a secure, quality supply of timber in a commercially viable way**
2. **Increase agency of out-growers in the timber value chain**
3. **Provide alternative income options to out-growers**

SDM rationale:

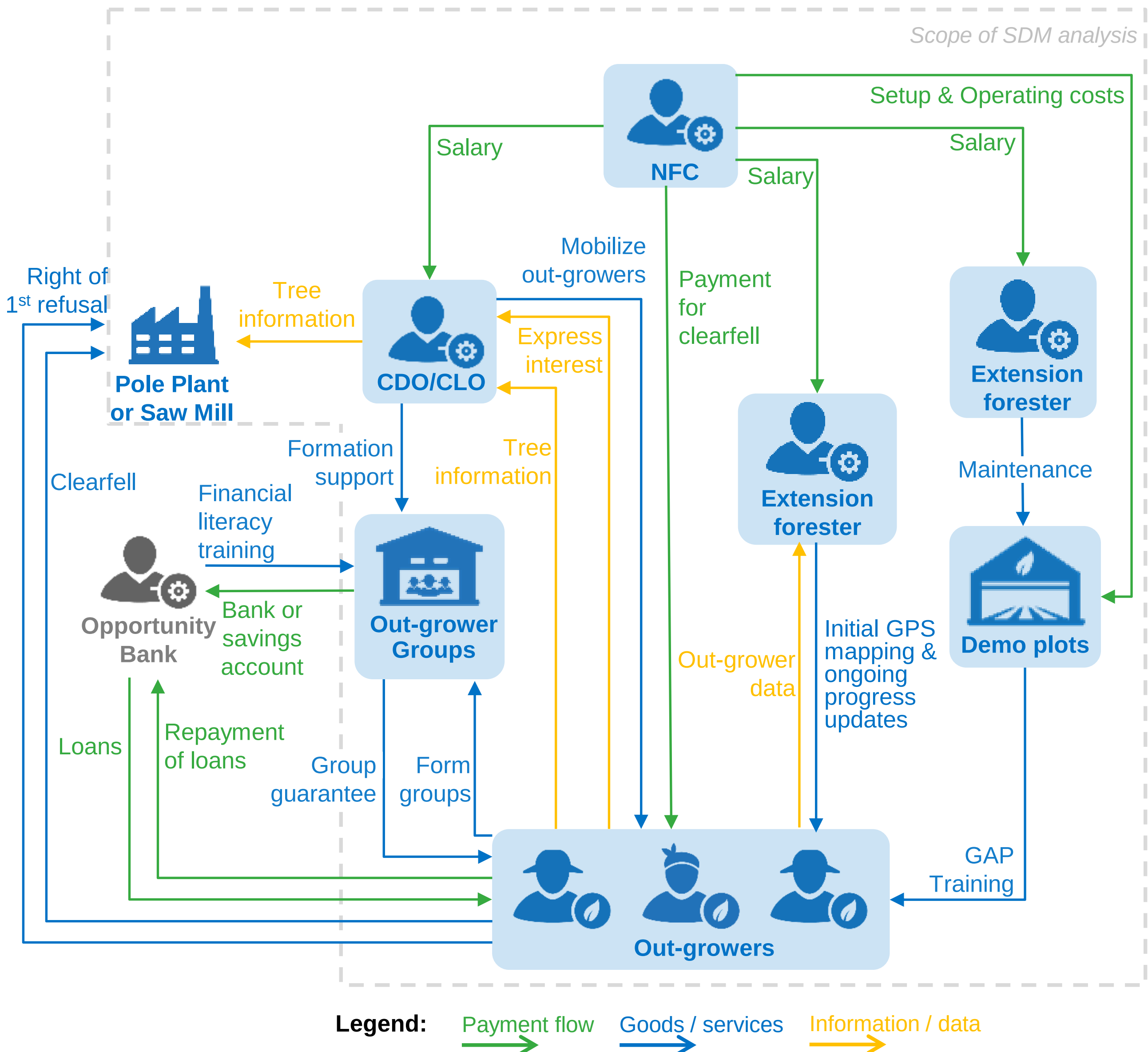
Higher yields and value creation

Diversification

Higher and more stable farmer income

Future-proof livelihoods & communities

SDM Services and Revenue Flow Overview for Small Farms



SDM Services and Revenue Flows

- Out-growers will be organized in groups, which are set up with support of a community liaison officer employed by NFC.
- Out-growers are mapped by extension foresters employed by NFC, to understand tree species, soil quality, density and age. Going forward all out-growers will continue to be tracked.
- Based on the outcome of the mapping process, out-growers receive tailored trainings in groups, using demo plots.
- Opportunity Bank provides out-growers with a savings account as well as loans for side businesses. Furthermore they will train the out-growers on financial literacy.
- When out-growers are ready to harvest, they inform the CDO/CLO and the pole plant has the right of first refusal (which means that timber will be offered to NFC first, and then NFC decides whether they want to buy it or not). There will be a streamlined procurement and harvesting process.

Services delivered and farmer segmentation

Out-grower group onboarding

- Support with the formation of out-grower groups (registration, election, etc.)
- Make silviculture more accessible through group support
- Facilitate access to finance with group guarantee

Mapping & tracking

- Map existing out-growers into Microforest database
- Use basic enumeration to allow access to other services
- Continue to track tree growth, allowing out-growers to understand the value of their trees

Tailored training

- Train on best practice silviculture, fire and risk management
- Provide basic timber value and volume estimations understanding
- Support out-grower associations good governance

Access to finance*

- Open bank accounts for associations and individual out-growers
- Provide a saving facility and loans for side businesses
- Train out-growers on financial literacy

Market linkages

- Determine a simple, streamlined procurement and harvesting process for out-growers
- Align payment terms with out-grower needs
- Provide market value quote to out-growers

Farmers are segmented in this SDM:

Overall, there are three farmer segments analyzed in this SDM, who correspond to different types of farms. No minimal criteria are required from farmers to join the SDM. All services are provided from year one of the project.

Segment 1

Small eucalyptus farms, that cut their trees after 7 years

Segment 1

Small eucalyptus farms, that cut their trees after 11 years

Segment 2

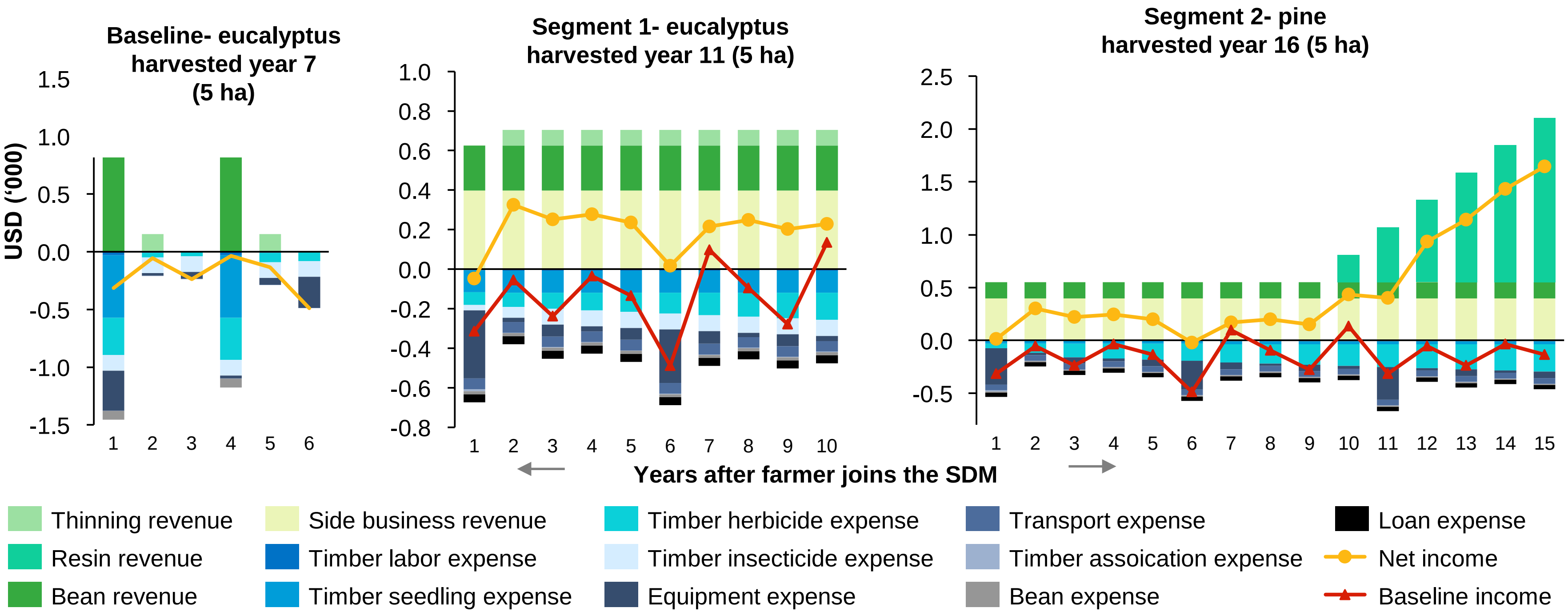
Small pine farms, that cut their trees after 16 years

Segment 3

Large mixed farms, that cut their eucalyptus trees after 11 years and their pine trees after 16 years

Go to assumptions

Small Farm P&Ls: start-up phase
(including non-timber and seedling purchase)



Discussion

The graphs show the annual cash-flows if intercropped with beans and segments 1 and 2 have a side business. Beans are intercropped for one 3-month season at planting, prior to the coverage blocking the sun. While it would be more profitable for farmers to use the land exclusively for beans, it is assumed this is additional land that they do not have enough household labor to manage for other crops and thus would use for timber, a less intensive crop. The side business is assumed to take a loan every year and remain profitable throughout the entire period.

Baseline

Even with bean revenues, the baseline has a net loss every year. This is because they do not have a side business and they are planting more land at one time.

Segment 1

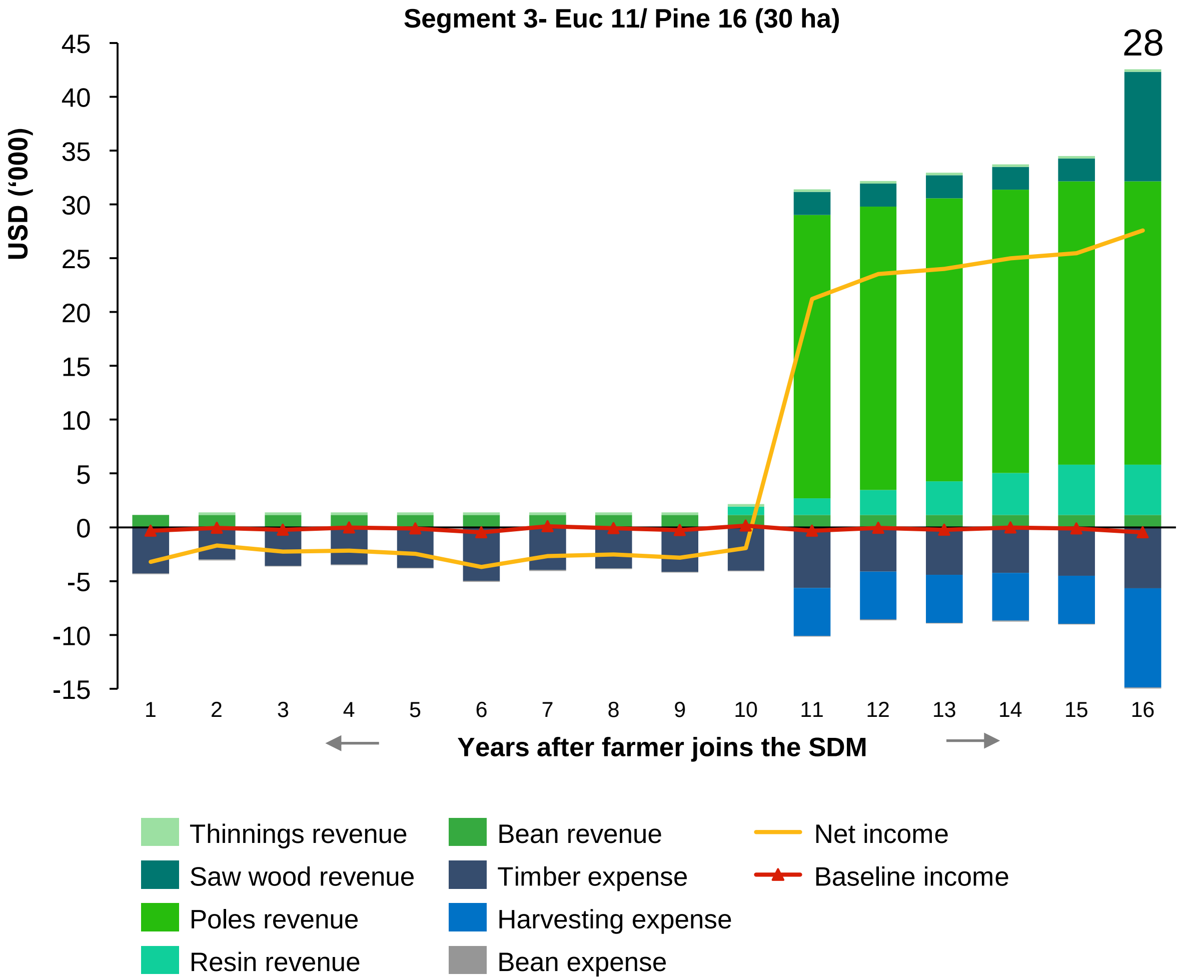
With bean and side business revenues, segment 1 has a positive net income every year after the first year. With beans making up 32% of revenues and side businesses 56% of revenues. Seedlings are the biggest cumulative expense, making up 22% of costs over the 10 years, followed by herbicide (20%) and equipment (19%).

Segment 2

With bean and side business revenues, segment 2 has a positive net income every year. With beans making up 28% of revenues and side businesses 72% of revenues in the first 9 years. After that, resin become the most important revenue driver. Herbicide is the biggest cumulative expense, making up 43% of costs over the 15 years, followed by equipment (23%).

Go to assumptions

Large farm out-grower P&L: overall impact



Economic sustainability at farm level

Large farmers are assumed to grow half of their land with pine and half with eucalyptus (15 ha each), but plant based on growing cycles, (1/15 and 1/10 respectively). They are also assumed to hire all labor, making the initial years much more costly compared to segments 1 and 2, who hire minimal labor. Large farms lose money for the first 10 years and only recover investment in year 12. Ultimately, however, after year 16, net income stabilizes at around $28,000/ year

Main cost drivers

- **Harvesting costs:** Continue to be the largest driver, making up 62% of costs from year 16 onwards.
- **Labor:** 11% of all costs come from labor. This is for pine/eucalyptus planting and maintenance activities as well as overall farm management.

Main revenue drivers

- **Eucalyptus poles:** Poles are the main revenue driver, making up 62% of annual revenues from year 16 onwards
- **Clearfell saw wood:** 24% of the annual revenue comes from saw wood, pine and eucalyptus combined, from year 16 onwards
- **Resin**: This makes up 11% of annual revenues from year 16 onwards. Resin tapping is only from pine, starting in year 10.

Go to assumptions

Startup costs with seedlings: impact of beans/side business revenues

Net income (USD/farm) in year 1

Segment 1 - eucalyptus 11-years w/ seedling purchase

Price of beans (UGX/kg) →; Side business loan amount (UGX) ↑

Side business loan amount (UGX)	500	1000	2000	3000	4000
500,000	-477	-439	-363	-287	-211
750,000	-397	-359	-283	-207	-131
1,000,000	-317	-279	-203	-127	-51
1,250,000	-238	-200	-124	-48	28
1,500,000	-158	-120	-44	32	108

Segment 2 - pine 16-years w/ seedling purchase

Price of beans (UGX/kg) →; Side business loan amount (UGX) ↑

Side business loan amount (UGX)	500	1000	2000	3000	4000
500,000	-351	-326	-275	-225	-174
750,000	-272	-246	-196	-145	-94
1,000,000	-192	-167	-116	-65	-15
1,250,000	-113	-87	-37	14	65
1,500,000	-33	-8	43	94	144

Discussion

All out-growers are assumed to intercrop one season of beans as well as start a side business. The beans are assumed to be 100% sold on the market and the side businesses are assumed to get a loan for 85% of the value of net income of the business.

Reading the tables

The numbers in each cell of the tables indicate the net income for an out-grower in year one, when they have significant upfront expenses including seedlings, labor for planting, equipment purchase and crop protection.

The top is the farm gate price the farmers receive for their beans on the market

The side is the side business loan amount, which directly correlates to the business revenues. This is based on conversations with Opportunity Bank.

Out-grower impact

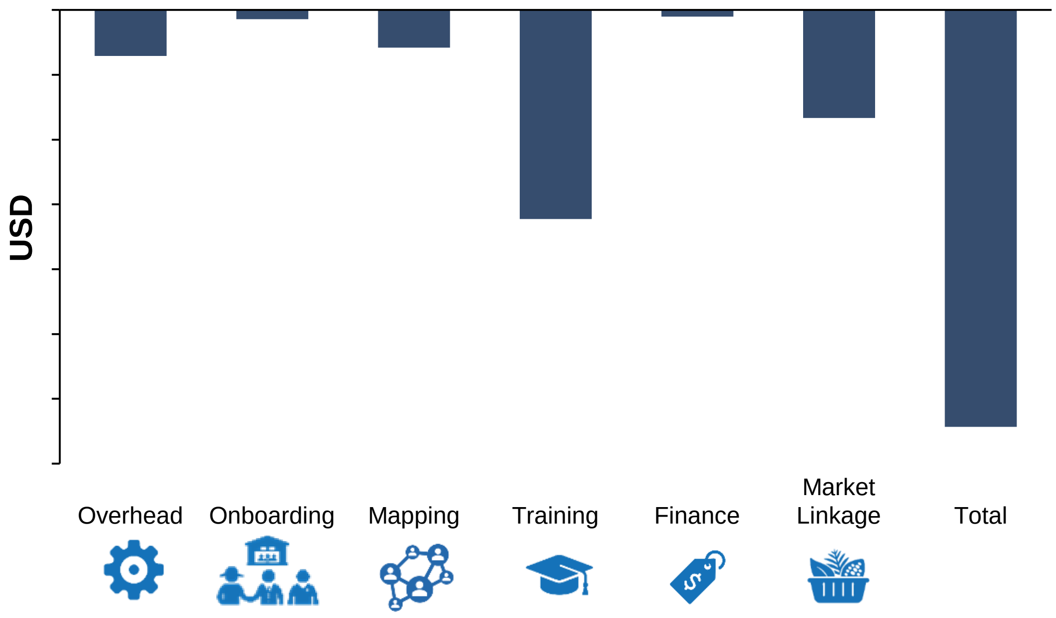
The red box shows the currently modeled scenario. In this, the bean sales and side business cover most of the upfront costs the farmers have in the first year, with a $48 deficit for eucalyptus farmers, given the higher price of the seedlings, and a surplus of $14 for pine farmers.

Without the sale of beans or a side business, it would be quite costly to out-growers to start growing, needing hundreds of dollars in start-up costs.

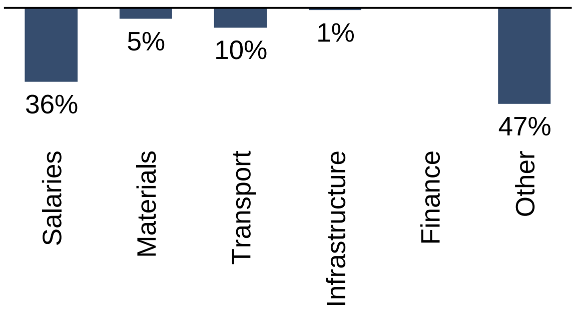
Given the importance that these alternative revenues play, NFC would need to minimize risks for both by ensuring a market for beans, potentially partnering with an off-taker, as well as support selection and capacity to run side businesses to ensure success.

SDM P&L: Cumulative service costs and revenues

Cumulative costs per service between 2019 and 2038 (in '000,000s USD)



Expense categories



Discussion

In the upper graph shows the cumulative cost per service over a 20 year period. Here one can see once again that Training and Market Linkage are the main components of the total costs. Combined these two services account for 76%.

Training is by far and large the biggest cost driver with 50% of the total costs.

Market Linkage is the second biggest cost item with 26% of total costs. It has to be taken into account that this cost is not significant until the first harvest in year 12, so this 26% of the 20 year period is mainly accrued during the last 9 years.

In addition, it is important to note that the ratio of the costs for the different services shift over the years. Some services are more relevant in the beginning years of the SDM, whereas others are of increasing importance towards the end of the SDM.

In the lower graph the total costs are split out per cost category. Other is the largest category making up almost half of the total costs of the SDM. The main driver behind this is the cost for food and beverages for the farmers attending trainings. This account for 65% of Other costs, and therefore it is 31% of the total SDM costs.

Another 21% of Other costs, and therefore 10% of total costs, consists of the costs for accommodation for supervisors overseeing the harvest.

The second largest cost category is Salaries & HR. During the duration of this SDM NFC will have to hire additional staff, and in the last 10 years a significant amount of people will be employed by NFC, specifically for SDM related activities.

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Go to assumptions

Learning questions

These results do not represent an official assessment of SDM success or failure by IDH. An indication is given based on the analysis done in this forward-looking study and assumptions provided by the SDM operator(s). Actual assessment should be done during and after the SDM, using measured data

SDM Structure	*1) What services are being offered?* *2) How will these services be delivered to out-growers?*	1) NFC is organizing out-growers into groups, mapping their land, providing GAP training, connecting groups to Opportunity Bank for small business loans, and providing market access, including arranging harvesting services. 2) Out-growers with small land size will primarily be offered services through their group, with the exception of harvesting and mapping, which are done individually for each. Out-growers with large land size will receive most services individually.
Financing	*1) What are the financial risks in this SDM and how can they be shared?* *2) Will the SDM become financially sustainable over time?* *3) What impact does MFI financing have on out-grower ability to wait to harvest?* *4) What security can be used for out-grower MFI financing?*	1) Timber requires up front payment with a long period before returns. Any costs NFC incurs up front without guaranteed supply, or out-growers make without guaranteed market, are a risk. By creating a relationship of trust between the two and building loyalty, out-growers can assure the product to NFC and NFC the market to out-growers, minimizing risk. 2) While the SDM does not have built in revenue streams, the additional timber sourced after first harvest fully covers the initial costs and makes it financially sustainable. 3) MFI financing can be invested in side businesses, providing annual income and making out-growers less vulnerable to early harvesting. However, it does not fully remove pressure of unforeseen expenses (MFIs don't finance those costs directly). 4) The group lending model can be used as initial collateral, while the bank becomes comfortable with trees as collateral.
Services	*1) What initial investments are needed to provide the services?* *2) How can services be tailored to specific out-grower needs?*	1) Initial investments are primarily staff, motorcycles, laptops and onboarding meeting expenses as, in the first 3 years, the focus is onboarding. 2) By segmenting out-growers into small and large, understanding their specific needs, and tailoring the packages to those groups. Further segmentation, beyond land size, may further improve this.
Farmers	*1) What is the impact of early harvest on out-grower income?* *2) How do the different species (pine/eucalyptus) impact out-grower income?*	1) Early harvest has a significant impact as not only is there less volume of wood to be harvested, out-growers are also forced to sell on the informal market, which offers lower prices. 2) Eucalyptus is clearly the better choice, given current market dynamics. It grows faster, being harvested after 10 years instead of 15 years for pine, and receives a higher return than pine, given the eucalyptus pole market.
Application & Impact	*1) How can NFC support out-growers to have agency over their trees and remove middlemen?*	1) NFC can provide knowledge/information to allow out-growers to understand the current and potential value of their trees, to make better informed decisions. They can also provide a fast buying process, potentially with some pre-payment after the quality check for harvesting, allowing out-growers to sell to NFC, even when their need for cash is urgent.

Conclusions: key drivers for success

Key drivers of success

- **NFC's social capital-** NFC already has created social capital in the groups surrounding the plantation through its existing Forests for Prosperity (FP) program. Many of those members will likely desire to be out-growers as well. NFC has already built a strong foundation of trust with them on which it can build the out-grower program.
- **Timber out-growers exist-** There are already hundreds of out-growers surrounding NFC. While they might not have been fully trained, they are familiar with growing trees and have land to grow it. Additionally, CDO/CLOs have identified a large number of farmers interested in becoming out-growers, suggesting that there is land available for timber.
- **Group organization experience-** With the FP program, NFC has created functioning community groups and learned what works. These lessons and the staff structure provide NFC with the knowledge needed to ensure success for out-grower groups.
- **Staggered planting-** NFC plans to promote staggered planting for out-growers, similar to how NFC plants. This rotation approach diversifies risks, allowing out-growers to adjust to market shifts and introduction of improved tree species. Additionally, after year 2 for eucalyptus and year 10 for pine, out-growers have an annual income stream from thinnings, resin or clearfell, incentivizing out-growers to continue growing.
- **Supplementary revenue streams-** While NFC is interested in clearfell, out-growers earn revenues early on from beans and side business, which help to cover most of the initial costs for the smaller farms. NFC is supporting these streams through its existing relationship with Opportunity Bank, to provide small business loans. These revenue streams make a more convincing business case for farmers.
- **Proximity to plantation-** As NFC will be involved in setting up mapping, training, and harvesting the land, the proximity of the out-growers to the plantation and processing facilities increase success. The proximity to NFCs own plantation allows for economies of scale as NFC does work on its on plantation, it can use existing staff to support the SDM. It also eliminates the need for demo-plots and reduces staff transport costs.
- **Out-grower education**- Through access to extension foresters in the area, out-growers will be able to grow trees that meet NFC quality. Additionally, they will be educated on the value of their trees, allowing them to make more informed decisions on selling and potentially incentivizing them to keep trees until maturity.
- **Strong relationships with key partners**- Through its other programs, NFC already has strong relationships with key partners. Opportunity Bank is essential, as analysis has shown the importance of side business revenues in covering start-up costs. Opportunity Bank has a positive view of NFC from past projects and is willing to pilot new approaches with NFC.

Conclusions: key risks and mitigation strategies (1/2)

Key Risks	Potential Mitigation
Mismatch of demand and supply- If NFC cannot buy from farmers in the expected year, farmers will lose trust in NFC	• Communicate buying plans continuously, potentially via an app • Include out-grower projections in NFC's overall production planning and update future planting and sales accordingly • Store wood at sawmill for future, even if not demanded now
Land competition for food crops- Out-growers may prioritize food crops that have annual revenues and can provide food security to their households.	• Out-grower selection to ensure timber is on additional land • Well-informed on-boarding process that details the growing cycle and expected returns • Intercropping with food crop
Seedlings purchase and availability- Many out-growers do not have access to the clones that they need and, if they do, they are expensive.	• Support the creation of local, certified nurseries • Support early additional revenue streams (beans/side business) so out-growers can cover cost of seedlings • NFC can fully cover the cost of seedlings to smallholder out-growers
Urgent financial needs not addressed- The main reason farmers cut early are unforeseen expenses (funerals, illness and weddings) that often need one off funding that on-going revenue are unlikely to eliminate	• Partner with the funeral insurance providers in Uganda • Set-up internal group savings groups to cover small needs • Speed up procurement process by sharing data with purchasers and rating farmers to asses likelihood of quality • Pay a portion of payment prior to delivery
Side business success rate/default rate- Many of these out-growers have not run businesses in the past. Without the success of these businesses, out-growers will not be able to cover up-front costs or cut down early, impacting supply	• Provide business management skills training to out-growers • Partner with off-takers in other key crops that out-growers grow (beans, coffee, bananas, maize) • Identify partners with business in a box ideas and capacity building

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Conclusions: key risks and mitigation strategies (2/2)

Key Risks	Potential Mitigation
Engagement of large farms- NFC has limited experience working with them and no clear value proposition for them.	• Collaborate with UGTA to reach large out-growers in the area • Provide direct management services, potentially hiring members of FP groups • Engage with owners at higher level, sharing market dynamics
Out-growers unable to meet NFC standards- If NFC cannot buy from farmers due to poor quality, then the program will not be sustainable	• In-depth technical trainings by NFC staff • Plantation visits for out-growers to gain direct field experience • Farm visits to provide tailored advice and inform out-growers early if they will not meet NFC standards
Market shifts- Currently dynamics make eucalyptus a better choice, but ff the market shifts, farmers may blame NFC	• Communicate market dynamics, potentially via an app • Promote staggered planting, allowing planting adjustments
FSC certification- Out-growers may need to be certified	• Train out-growers from the beginning in FSC practices • Aerial mapping to understand indigenous forest coverage • Coordinate with FSC Uganda project manager
Reliance on 3rd party harvesting- As these are not NFC staff, there may be issues of quality or capacity to meet out-grower needs. NFC needs to ensure that these 3rd party companies are reliable and are able to support expected number of smallholders	• Identify and promote preferred 3rd party providers • Create lasting relationship by supporting preferred providers, potentially facilitating financing • Explore ways out-growers can set up harvesting business to fill any capacity gap • Analyze the P&L and feasibility of setting up NFC out-grower harvest team
Climate change impacts- Drought will impact survival rates and rains impact road access to out-growers for TA as well as delivery to processing plants	• Includes climate mitigation strategies in out-grower training curriculum • Use seasonal planning for harvesting schedule

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