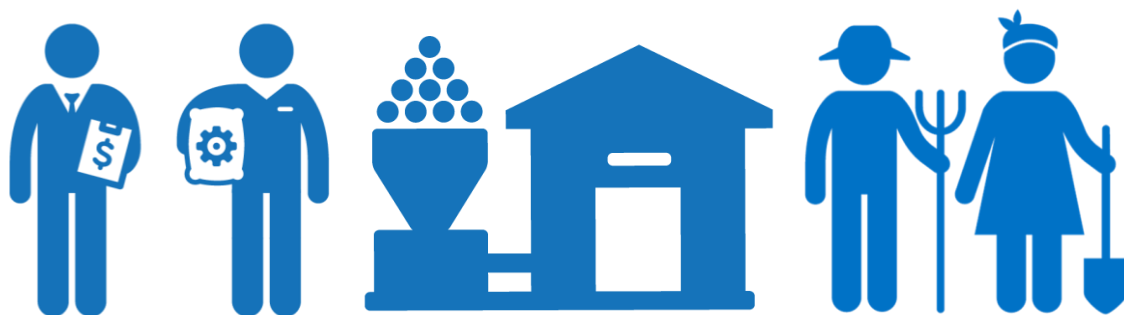


SDM: Case Report GADC

Service Delivery Model assessment: Short version
August 2017

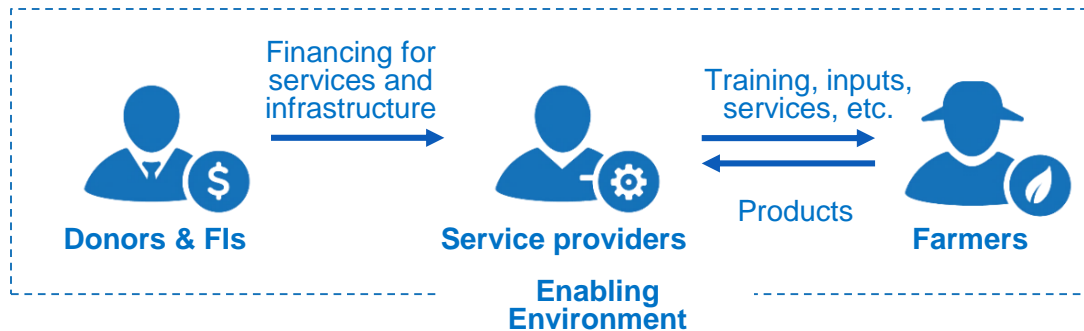
Location: Uganda
Commodity: Cotton (main), sesame, sunflower, chili, maize
Services: Organizational support, farmer training, certification, crop diversification



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

The GADC SDM and objectives

General SDM information:

Location:	Uganda
Timing in analysis scope:	2017-2022
Scale (start of analysis):	22,487 farmers
Scale (end of analysis):	94,500 farmers
Funding:	GADC (mainly), GIZ, African Wild Foundation
SDM Archetype*:	Local trader / processor



- GADC is the only commercial cotton ginnery operating in the Acholi region of Northern Uganda.
- Based in Gulu since 2009, with operations expanding into Kitgum in 2013, and Rhino Camp in the West Nile region in 2016.
- GADC sources organic products (mainly sesame, chili and cotton) from around 80,000 farmers and conventional cotton from another 40,000 farmers.
- GADC buys, processes, and sells both conventional and organic cotton, but is the sole organic cotton purchaser in Uganda.
- GADC works and has worked with various investment and loan facility partners (e.g. Acumen, Root Capital, TechnoServe, AgDevCo) in contributing to a sustainable supply chain.

* For more info on SDM archetypes, see the [IDH Smallholder Engagement Report](#)

SDM objectives:

CORE OBJECTIVE

Increase supply of high-quality products (Gulu region)

1

Enhance farmer production of certified organic crops

2

Provide access to markets and improve traceability in the supply chain

3

Promote financial inclusion and linkages

4

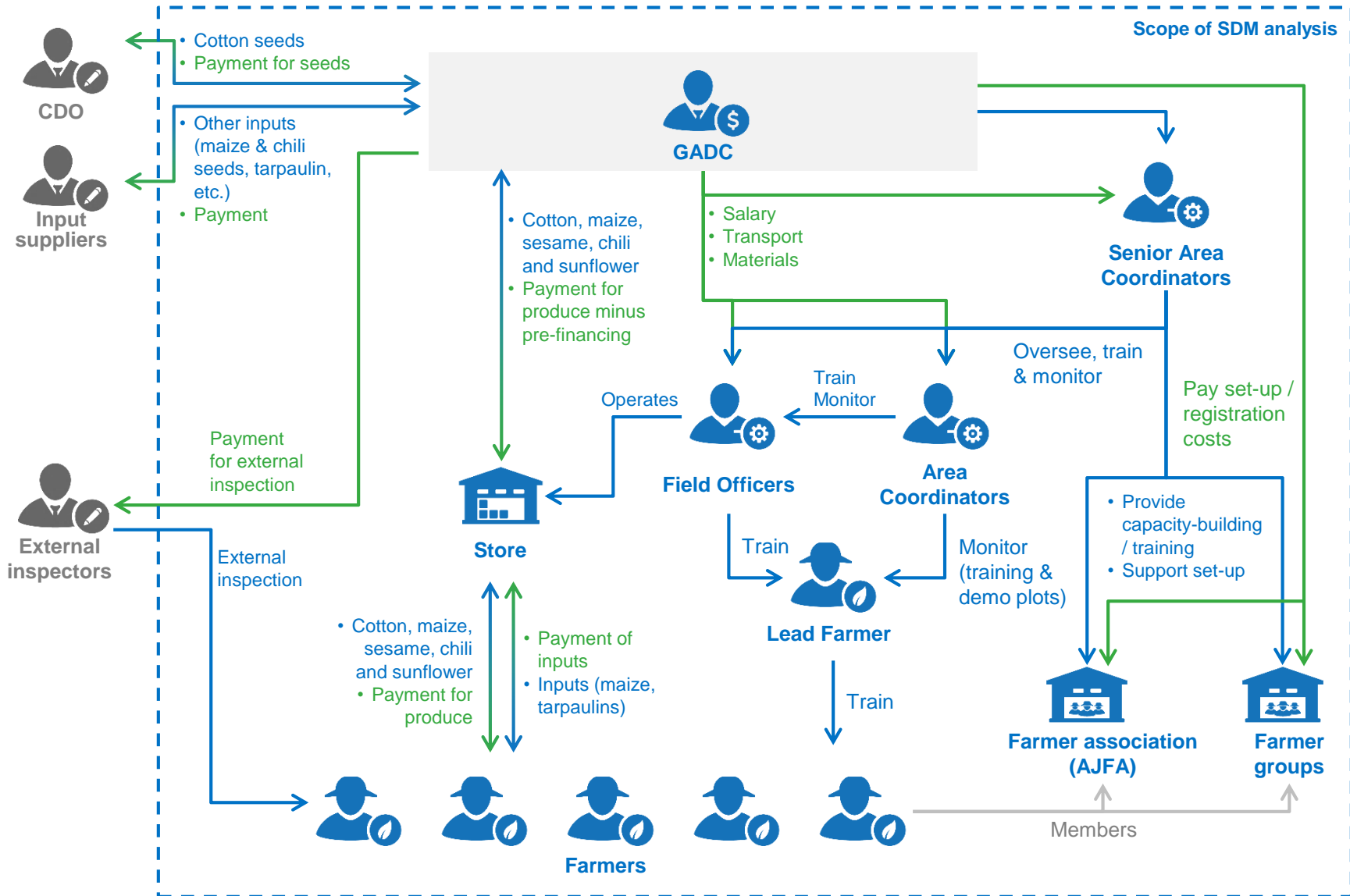
Improve livelihoods and reduce unemployment in a post conflict context

SECONDARY OBJECTIVES

SDM rationale:

















SDM Structure



Legend ← Flow of goods and services → Cash flow

SDM relationship to the enabling environment

— = neutral
 ▲ = positive impact
 ▼ = negative impact

 Governance	LAND OWNERSHIP Approximately 90% of the land is communal (not lease or free hold). This informality makes bank loans very difficult to secure, but VSLA membership can offset these difficulties.	 Low impact	INFRASTRUCTURE Most of the roads provide adequate access by motorbikes and pedal bikes. Solar energy is quite prevalent even though electricity is minimal.	 High impact
 Farm Inputs	LABOR Farmers share labor needs within their communities or respective FGs. This reduces the need for and costs of hired labor significantly.	 Low impact	INPUTS & FINANCING Many inputs are reusable (e.g. fertilizer pumps, tarpaulins), which can reduce costs for the farmer, but can still be prohibitively expensive and unavailable.	  Mixed
 Crop	TRADING SYSTEM Most cotton is bought before harvesting (forward contract), ginned and baled (by ginners) and exported through international trading companies.	 Neutral	PRICING & COMPETITIVENESS Growing organic cotton is permitted in only two regions of Uganda. There are currently no competitors sourcing organic cotton. For other crops farmers tend to side sell when competitors offer better purchase prices.	  Mixed
 Sustainability	ENVIRONMENTAL (ISSUES) Burning of grasslands, wetland encroachment, contamination of water, all contribute negatively, but the most significant issue is drought and unreliable rains.	 High impact	SOCIAL (ISSUES) Domestic violence can be a significant issue in households, particularly during the market time when there are disagreements over money and expenditures.	 Low impact

Services delivered and farmer segmentation



Farmer training

- Training is provided to lead farmers for each of the FGs.
- Training consists of: agronomy, demo plot establish, integrated pest management, harvesting, post-harvest handling, marketing, financial literacy. E&S topics are covered during other trainings, e.g., climate change and environmental protection, healthcare awareness.
- Lead farmers are provided with knowledge and inputs needed to run demo plots, and to produce organic pesticides for farmers.



Input provision

- GADC provides field officers with maize seeds and tarpaulin, which are sold to farmers.
- Maize seeds are of an improved variety with higher yields.
- Tarpaulin for drying sesame and chili is provided at a subsidized price.



Organizational support

- GADC supported and continues to support the set-up (registration and opening of bank accounts) of the Farmer Association and individual FGs.
- GADC continues to provide training to the leadership of these groups (chairman, vice-chairman, secretary, treasurer, and 5 board members per group).
- Topics include, but are not limited to, record-keeping and marketing.



Pre-finance*

- GADC provides pre-financing to field officers, for purchasing from farmers.
- Field officers run commercially sustainable collection centers.
- Buying agents receive loans based on the value of one truckload of produce to pre-finance the next truckload.



Certification

- As part of their training, farmers learn the practices that are needed in order to produce organic / certified products.
- Field officers, with the help of lead farmers, conduct an internal inspection of farmers who apply for certification, to assess whether the right practices are applied.
- GADC pays an external inspector to validate whether these farmers can be certified.

Farmers are segmented in this SDM:

Farmer Trajectory

All farmers can attend the trainings, but only those that meet the criteria of and apply for growing organic become certified. High performers can be promoted to lead farmers.

Segment 1: Conventional

- Attend organic GAP training, yet keep using chemicals
- Buy improved maize seeds

Segment 2: Organic Certified

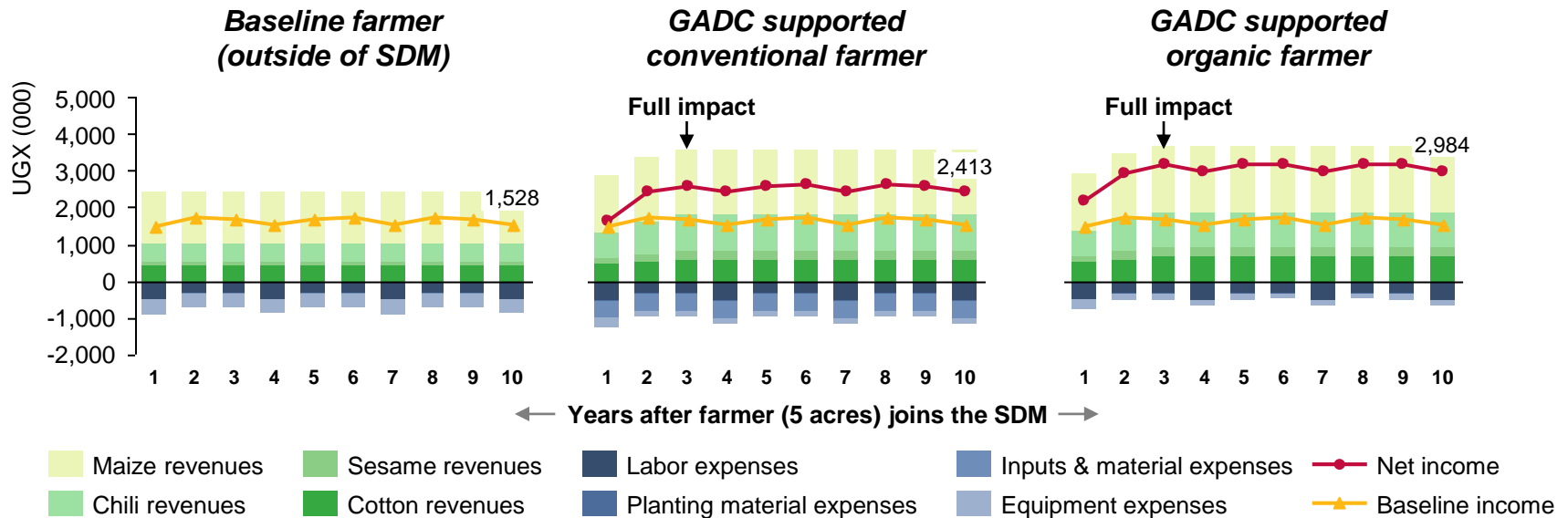
- Attend organic GAP training
- Are inspected and meet Organic criteria
- Receive premium

Segment 3: Lead Farmers

- Receive inputs and training to setup and operate a demo plot

**Pre-financing is excluded from the analysis as it is considered as a commercial activity beyond the scope of the SDM.*

Overall SDM impact: Farmer P&L



Economic sustainability at farm level

By attending the GADC trainings, farmers are able to improve the productivity and quality of cotton, sesame, chili, maize and sunflower, increasing their incomes by around 800,000 UGX (40%) for conventional and 1.4 million UGX (68%) for organic product. While conventional farmers can grow higher yields with more profitable maize hybrids, they incur higher costs on maize seeds and chemical inputs for cotton and maize (120,000 UGX / bag of fertilizer). Organic farmers earn more from cotton due to higher yields and premiums of 100 UGX / kg. At the same time they apply organic pesticides and fertilizers at no additional costs, requiring only additional family labor and raw materials naturally available to them, earning them a higher net income.

Farmers are relatively resilient to price fluctuations: they can mitigate a price decrease in one crop in one year by switching to other more profitable crops in the next year. The biggest challenge to all farmers is the changing climate, leading to unpredictable weather. Prolonged droughts and/or exposure to sun negatively impact crop yields and the farmer's resulting income.

Main revenue drivers

- Types of crops grown
- Productivity & quality
- Selling prices and premiums

Main cost drivers

- Chemical inputs for conventional farmers
- Planting materials for improved maize seeds
- Equipment (spray pump, storing bags, tarpaulin, motor rent)

Source: historical data and assumptions provided by the GADC team. Sunflower is not shown in the P&Ls as it is not as frequently grown as in 2016/17

Sensitivity analysis: chili profitability

While many farmers in Gulu region increasingly grow chili due to high selling prices, production increases only gradually. For one, as farmers have little experience with this relatively difficult to cultivate crop, obtaining good yields takes time. Also, harvesting chili is a labor intensive process and can only be done within a limited timeframe. On average, chili plots larger than 0.25 acre often can not be managed by just the household itself, leaving farmers with no other option than to hire external labor. At the same time, labor is in high demand and short supply during harvest, and farmers are additionally unwilling to harvest chili due to the unpleasant smell.

Net income from chili per acre

Farm size dedicated to chili (acre)

		Farm size dedicated to chili (acre)				
		0.25	0.5	0.75	1	1.25
Hired labor price, during chili harvest (UGX / kg)	5,000	2,800	2,459	2,345	2,289	2,255
	7,500	2,800	2,289	2,118	2,033	1,982
	10,000	2,800	2,118	1,891	1,777	1,709
	12,500	2,800	1,948	1,664	1,522	1,436
	15,000	2,800	1,777	1,436	1,266	1,164

Net total income per farmer

Farm size dedicated to chili (% of total farm and acre)

		Farm size dedicated to chili (% of total farm and acre)				
		5%	10%	15%	20%	25%
		0.25	0.5	0.75	1	1.25
Hired labor price, during chili harvest (UGX / kg)	5,000	3,121	3,325	3,516	3,691	3,847
	7,500	3,121	3,240	3,346	3,435	3,506
	10,000	3,121	3,155	3,175	3,180	3,165
	12,500	3,121	3,070	3,005	2,924	2,824
	15,000	3,121	2,984	2,834	2,668	2,483

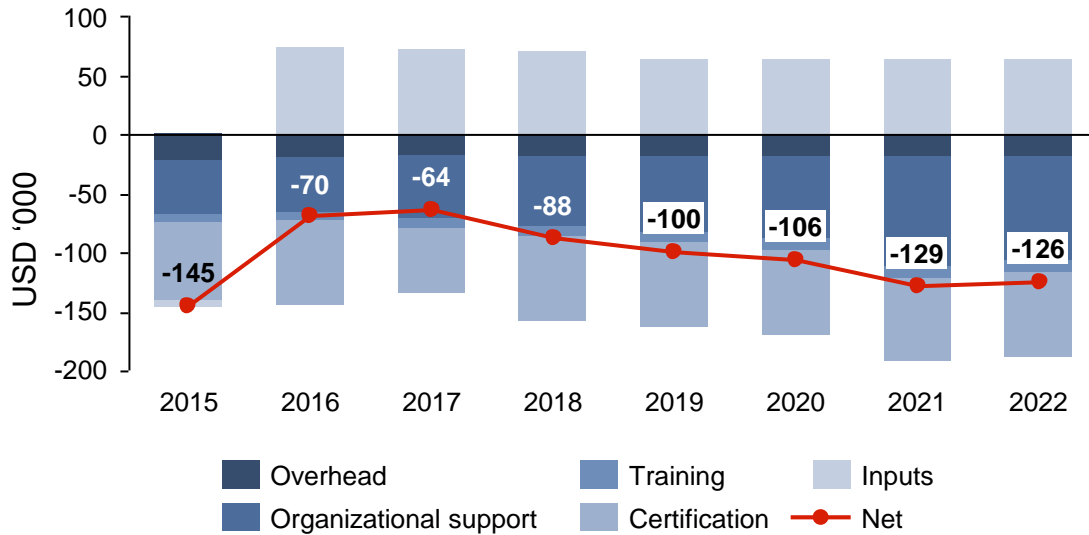
Scenario for actual wage and chili plot size

Hiring workers to harvest chili can quickly decrease the crops' profitability even when prices are high (>10,000 UGX), impacting the overall farm business case. By expanding the chili plot size beyond 0.75 acre, a farmer risks earning a lower net income compared to growing no chili at all. Farmers with tighter labor constraints (smaller households, or farmers that are less well connected to the community) need to be particularly cautious growing chili. In that case, cotton and maize are less labor intensive and thus less risky alternatives.

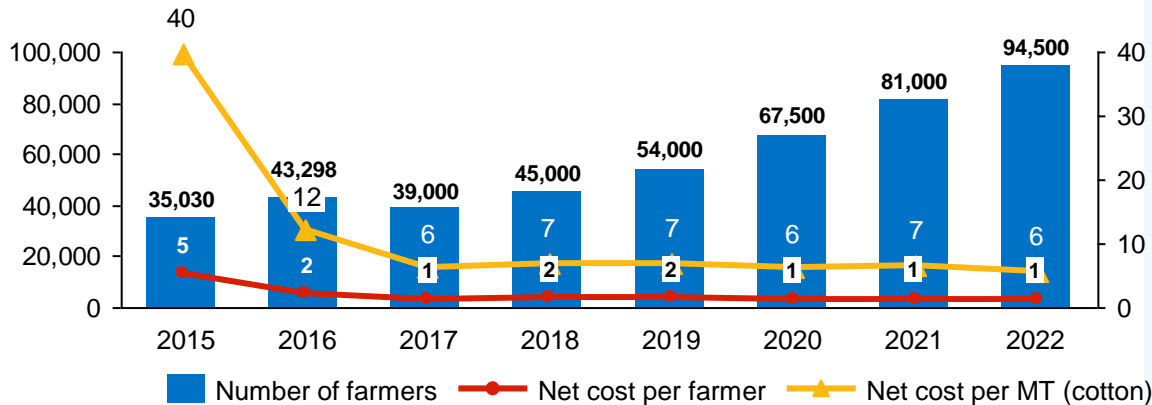
Assumptions: maximum chili plot size covered by family labor 0,25 acre; average hired labor wage during chili harvest of 10,000 UGX / day; chili yield of 280 kg / acre; chili farm-gate prices of 5,500, 5,000 and 2,000 UGX for grade A, B and C respectively; total farm size is held constant, farm land used to grow other crops decreases / increases proportionally with changes in chili plot size.

SDM P&L

Overall SDM P&L by service ('000 \$)



Farmer growth and efficiency



Economic sustainability of the program

The GADC SDM is a very low cost model, starting at \$5 and decreasing to \$1 per farmer. GADC has managed to keep overhead costs low by setting up a scalable pyramid-shaped organizational (field) structure and strongly integrating commercial and service provision activities.

Main revenue drivers

- The main revenues for this SDM are the margins on sales of improved maize seeds. After a sharp increase in 2016, sales are expected to remain constant.
- The additional commercial revenues (from improved quality and increased sales of produce) are not within the scope of this analysis.
- GADC is strongly donor dependent, receiving significant funding mainly for training activities (see next slide).
- The services provided to lead officers and (lead) farmers are all provided free of cost.

Main cost drivers

- Training and certification are by far the biggest costs, with the main drivers being salaries of GADC's field staff and external inspection respectively.
- Pre-financing costs (mainly commercial expenses) are not included in this analysis

SDM projected outcomes

These results do not represent an official assessment of SDM success or failure by IDH or NewForesight. 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 objectives

Projected outcomes

CORE OBJECTIVE	SDM objectives	Projected outcomes
SECONDARY OBJECTIVES	Increase supply of high-quality products (Gulu region)	<ul style="list-style-type: none"> • Number of farmers selling a combination of crops to GADC has been and is expected to keep growing. • Percentage of high-quality produce has increased, from 60% (maize) and 40% (sesame) both to 70%.
	1 Enhance farm(er) productivity and production of certified organic crops	<ul style="list-style-type: none"> • GADC farmers obtain 12% higher 10-year average cotton yields. Other yields increase between 25% (local maize seeds) and 80% (sesame). • The number of certified farmers grows over time.
	2 Provide access to markets and improve traceability in the supply chain	<ul style="list-style-type: none"> • GADC created access to markets for chili, sesame, and sunflower, and continues exploring new market opportunities. • GADC provides clear pricing information to farmers.
	3 Promote financial inclusion and linkages	<ul style="list-style-type: none"> • VSLAs are a valuable mechanism allowing farmers to manage cash-flows and save for lean season, household and/or investments. • GADC's involvement in managing VSLAs is limited.
	4 Improve livelihoods and reduce unemployment in a post conflict context	<ul style="list-style-type: none"> • 10-year average farmer incomes increase by 60% due to increased productivity and quality of crops. • GADC is expanding operations to new districts and a larger number of farmers.

Key insights



Key drivers of success

- For organic cotton, there is no risk of side selling, as GADC is the only buyer of organic cotton.
- This SDM is quite cost-efficient, as most service delivery is by design highly scalable: lead farmers are trained, and there is a clear pyramid in the SDM organization.
- The SDM has strong incentives for farmers to take on the roles of Lead Farmers, both in terms of service provision (training) and commercial roles.
- Both GADC and farmers are highly diversified. GADC is somewhat insulated from price volatility. Farmers show high price elasticity: they grow primarily annual crops, so can adjust the crops under production in response to price developments.



Key factors in replication

- GADC has set up a field structure that is scalable and cost efficient. Due to the pyramid shaped setup and incentives are in place that motivate farmers to become part of GADC and staff to get promoted within the structure.
- Strong integration of commercial and service provision activities allows GADC to keep overhead costs low and make sensible decisions both from a business and service provision perspective.
- Contracting and incentivizing buying agents to manage the transporting of crops to GADC's ginneries and warehouses allows GADC to incur almost no logistical costs.



Key risks

- This SDM has a high reliance on donor funding. This could create risks for the long-term sustainability of the model.
- CDO, the sole provider of seeds, limits the production of organic products as they are also a provider of chemical inputs, which organic production does not use. For this reason, only 2 regions have been designated for organic production.
- For non-cotton crops, there is quite significant side-selling observed. If this side-selling also starts occurring for cotton crops, it will likely become more challenging for this SDM to cover its costs through commercial revenues.
- Farmers appear highly vulnerable to climate change. Besides training on climate change awareness, increasing climate change resilience among farmers is outside of the scope of the SDM.



Opportunities for improvement

- Farmer organizations have the potential to become more empowered (e.g., FOs can take on some of the service delivery roles from GADC). However, previous efforts of GADC to work with the FA and FGs on improving their marketing activities have had limited success.
- Digital solutions for data collection are both needed and sought. Currently, the majority of data collection is done using hard paper copies. Scaling will require a transition to digital data collection (potentially using tablet solutions) and analysis.
- Production and sale of organic inputs (pesticides) at a central level (e.g., GADC or a standalone producer, operated by the FA or collection of FGs), rather than decentralized by individual (lead) farmers can be efficient and cost-effective for both GADC and farmers.



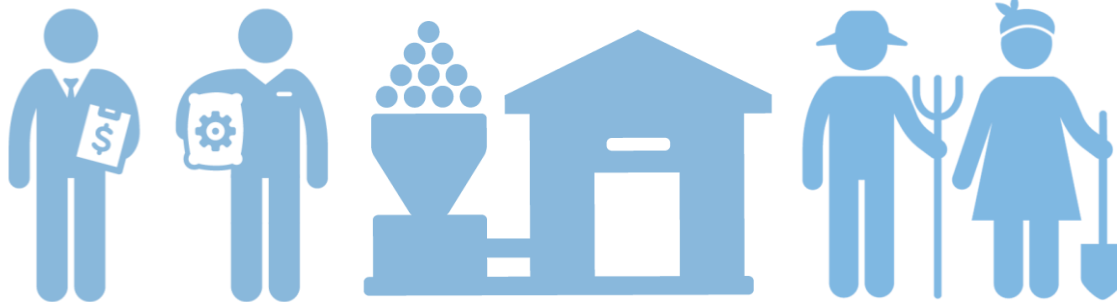
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For more information, see the [IDH Smallholder Engagement Report](#). This report, gathered by analyzing over 30 individual SDMs in 16 countries, provides insights into IDH's data-driven business analytics. The findings identify drivers of farmer resilience, cost reduction and financial sustainability in service models and the conditions needed for a supporting enabling environment.