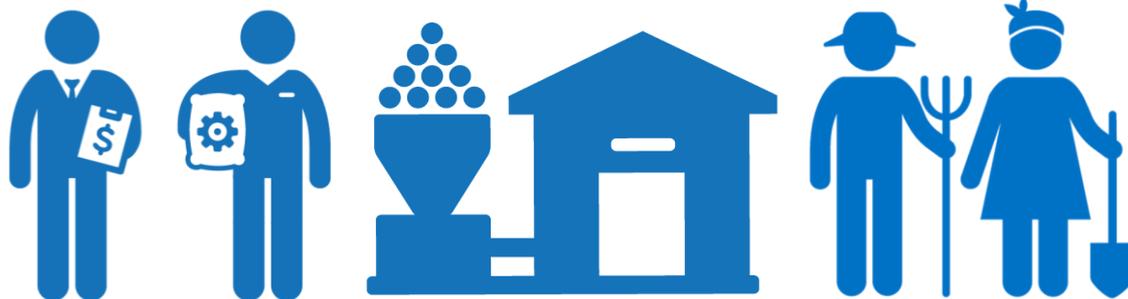


SDM: Case Report Allied Atlantic

Service Delivery Model assessment: Short version
December 2017

Location: Nigeria
Commodity: Cassava
Services: Training, input provision, transport, mechanization services, improved stems



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 Allied Atlantic SDM and objectives

General SDM information:

Location:	Nigeria
Timing and analysis scope:	2017-2022
Scale (start of analysis):	100 farmers
Scale (end of analysis):	500 farmers
Funding:	Allied Atlantic
SDM Archetype*:	Local trader / processor



- Allied Atlantic Distilleries Ltd (AADL) produces Extra Neutral Alcohol (ethanol) from fresh cassava. AADL's currently facility can process 75000MT of cassava per year. Cassava is obtained from three main sources: AADL's own farm, middlemen, and smallholder outgrowers. AADL aims to develop another 4-5 facilities in various states of Nigeria by 2020, specifically expanding its small holder supply of cassava through block farming or cluster production.

SDM objectives:

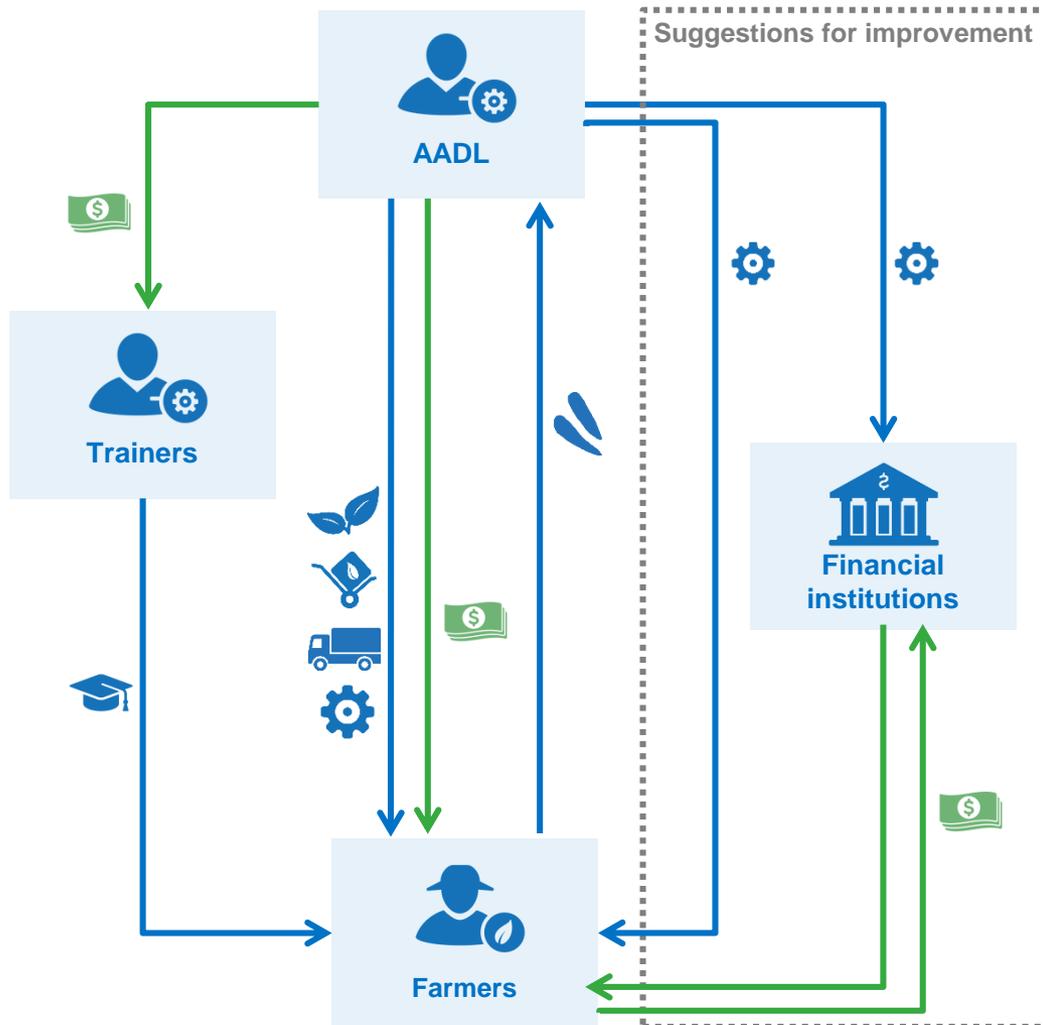
- 1 Increase farmers' productivity and access to land
- 2 Secure cassava supply
- 3 Improve cost-efficiency of current model

SDM rationale:



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

SDM and structure and enabling environment



- Currently, AADL provides several services directly or via trainers to farmers. To improve the current model, provision of access to finance and land preparation is suggested.

Enabling environment

Farmers and AADL are impacted by several factors within their enabling environment. Most important are:

1. Infrastructure

Infrastructure and logistics may limit access to market for farmers.

2. Trading system

There is a large risk of side-selling of farmers and not respecting the terms of the contract.

3. Pricing & competitiveness

High and volatile market prices for cassava are driven by external factors such as exchange rates.

4. Social issues

Child labor is a risk in Nigeria.

5. Environmental issues

Deforestation is the main issue. Soil erosion and land degradation are also important issues.

Legend → Flow of goods and services → Cash flow

Services delivered and farmer segmentation



Improved stems

- AADL plans to provide farmers with improved varieties of cassava stems from its own farm. The improved stems will be provided on a cost-reimbursement basis.



Input provision

- AADL will provide herbicides to farmers on a cost-reimbursement basis. AADL expects farmers to assume the responsibility for land preparation and spraying.



Mechanization Services

- AADL will offer mechanized planting and harvesting services on a cost-reimbursement basis.
- AADL will assist with free of charge land clearing.



Transport

- AADL plans to provide subsidized transportation once a factory is established in Oyo State.



Training

- AADL will provide training through its extension staff.

Farmer segments

Minimum criteria

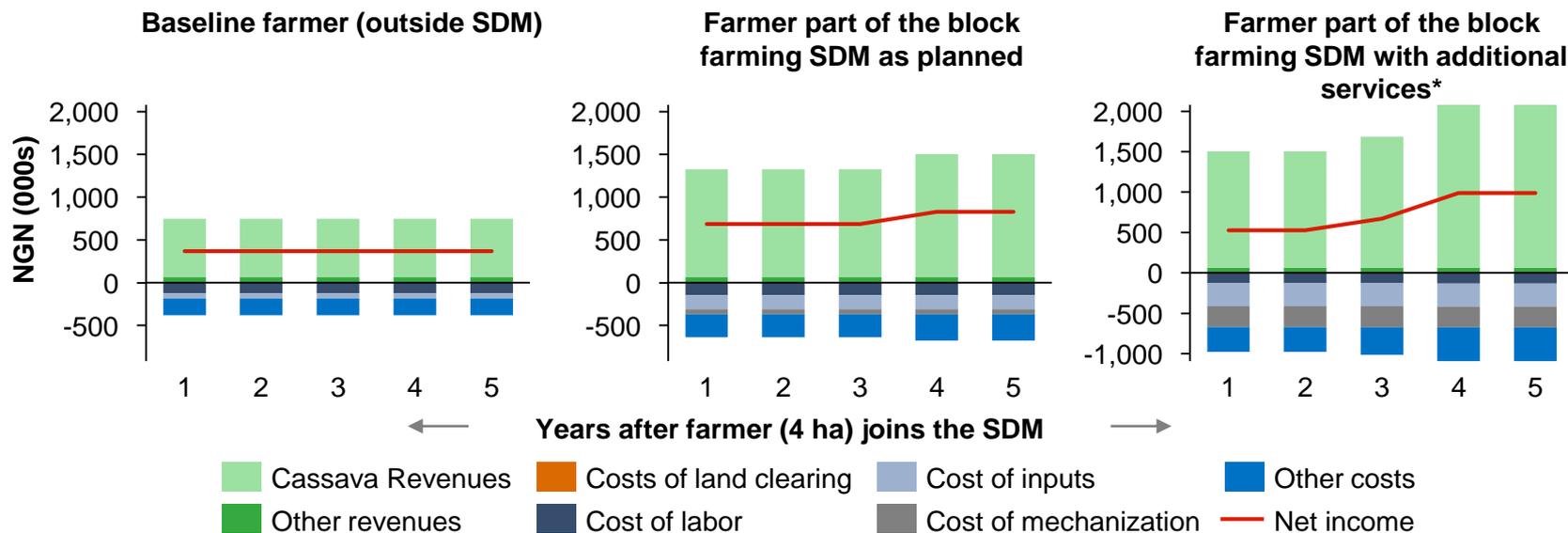
There are minimum criteria in place before farmers can enter this SDM:

- Farmers must have a farm of at least 2 hectares
- Farmers must have been trained for at least 3 years
- Farmers must be ready to accept the supply chain management of the SDM

Segments

AADL does not yet segment their farmers, but could consider adjusting their service delivery based on a set of criteria. For example, AADL could consider providing additional credit and/or access to fertilizer and/or mechanization services for well-performing farmers, providing an incentive for farmers to run their farm professionally.

Overall SDM impact: Farmer P&L



Economic sustainability at farm level

Farmers significantly benefit from services delivered. Assuming stable cassava prices (18,000 NGN / MT), farmers that currently do not receive any services would increase their productivity by up to 211% within 5 years after joining the block farmer program. Including additional services such as (external) financing for fertilizer and land preparation services could increase productivity up to 295%.

Main revenue drivers

- **Production:** An increase in productivity is directly linked to increasing revenues. In the SDM higher productivity is achieved. Although quality (starch content) influences the profitability, it is difficult to measure and project accurately therefore not directly included in these estimates.
- **Price:** The price of cassava is highly volatile. For high cassava prices, service delivery becomes profitable much quicker. Low cassava prices decrease the returns of service delivery.

Main cost drivers

- **Inputs:** Cassava stems are an important cost driver for the baseline farmer. Herbicides (and fertilizer) are the main cost drivers for farmers that are part of the SDM.
- **Mechanization:** Mechanization costs are large, but have a large impact on productivity and reduces labor needs.
- **Labor:** Farm labor is mainly done by family labor. In this model, hired labor needs are estimated to be 25% of total labor needs for a 4ha farm.

*Additional services include financing for fertilizer and land preparation services.

Note: Based on a combination of real data, assumptions and projections. Figures will be checked periodically against actual data

Specific service impact: sensitivity analyses

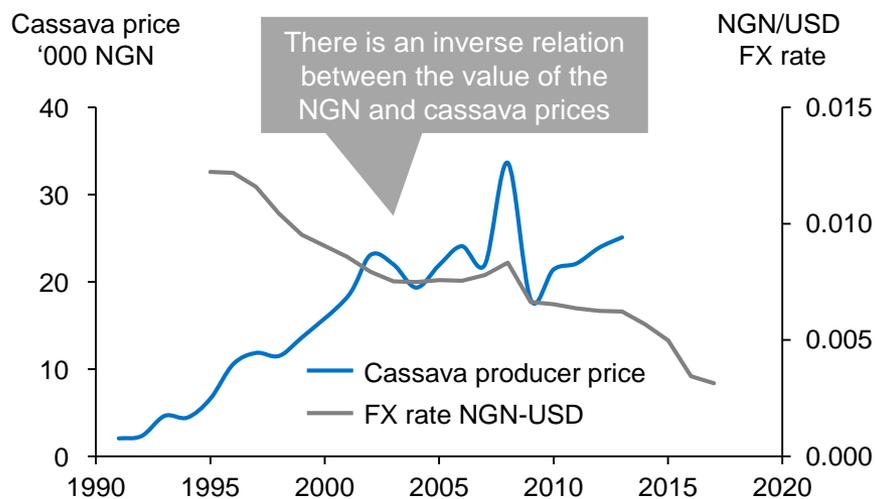
Securing cassava supply and producer prices

Increasing cassava prices can be linked to the decreasing value of the Naira to the Dollar and associated increase in import price of commodities. There are also large seasonal fluctuations in cassava supply and price. Competition for cassava produce is high. Securing a stable and affordable sourcing of cassava is the main challenge AADL faces.

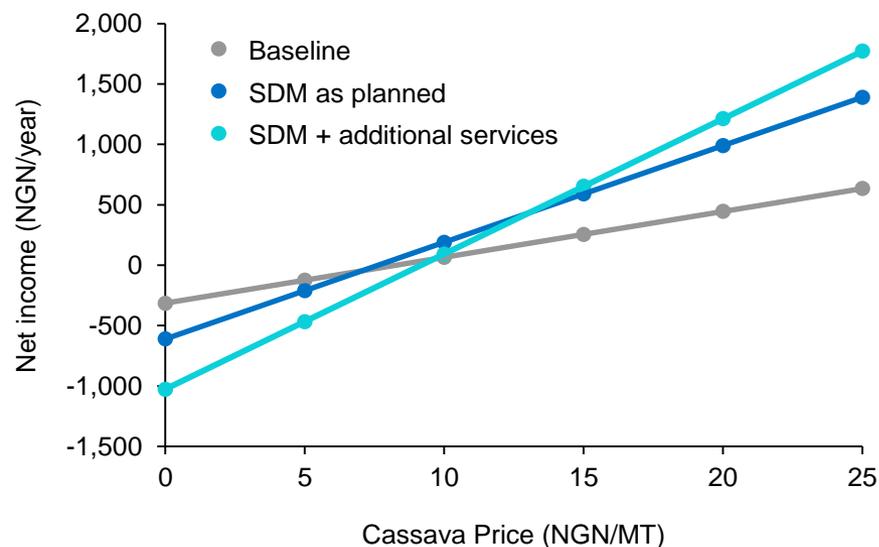
Farmer net income for fluctuating cassava prices

Cassava prices are highly volatile. It is therefore important to understand the profitability of the SDM program for farmers under different pricing scenarios. This analysis suggests that it is beneficial for a baseline farmer to join the SDM program for all realistic cassava market prices. Further, the benefits for farmers increase as the price paid for cassava becomes higher.

Cassava producer price and NGN/USD FX rate



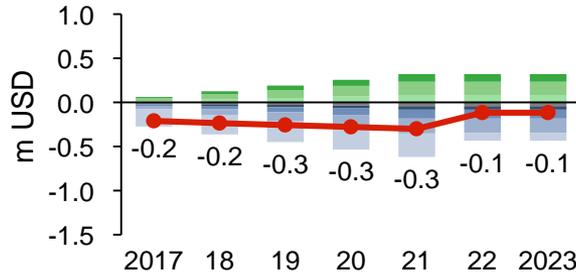
Farmer annual net income vs cassava price*



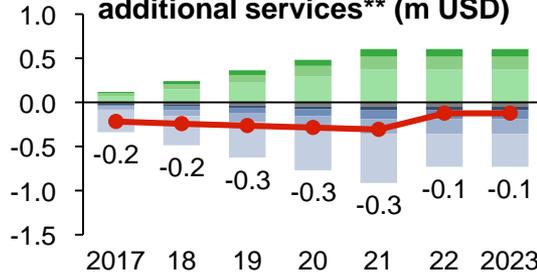
*Assuming a productivity of 9.5 MT/ha for baseline farmers, 20 MT / ha for farmers within the SDM as planned, and 28 MT/ha for the SDM + additional services. Furthermore, costs are constant under changing cassava market prices.

SDM P&L, scale and sustainability

Costs and revenue by service (m USD* / ***)



Costs and revenue by service + additional services** (m USD)



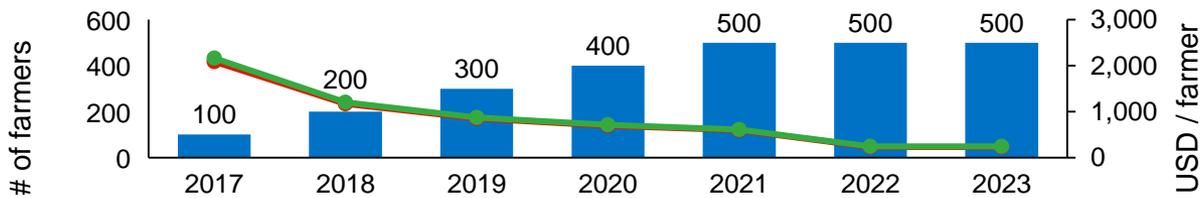
Cost

- Overhead
- Training
- Transport
- Improved stems
- Inputs
- Mech services

Revenues

- Improved stems
- Inputs
- Mechanization services
- Net costs

Number of farmers in the SDM and net cost per farmer (USD)



\$/MT	119	67	49	35	30	11	11
\$/MT+ add. services	108	61	40	26	22	9	9

■ Number of farmers ● Cost per farmer ● Cost per farmer + additional services

Economic sustainability of the program

- The largest components of the SDM are financed by the farmers. Improved stems, herbicides, and mechanization services are all paid for when farmers sell their yield to AADL.
- A large fraction of the net costs are one-off investments in land clearing (included in mechanization)
- Excluding these costs gives a better picture of the long-term economic sustainability of the program, and looks markedly better.
- Providing additional services can be realized without significant additional net costs, as the costs for the services are charged to the farmer. However, it does increase financial risk for AADL if productivity and/or loyalty levels are not realized, as gross costs greatly increase.
- AADL may earn back their investment in the SDM through commercial revenues (outside of the scope of this analysis).

Main revenue drivers:

- Income from services (improved stems, herbicides, and mechanization).

Main cost drivers:

- Land clearing costs.
- Overhead & training

* Overhead costs include salaries, overhead transport costs, and office rent. Salary costs and transport costs scale linearly with the scale of the SDM.

** Additional services include financing for fertilizer (+ 2 FTE per year for coordinating credit provision), and land preparation services (2x ploughing, harrowing, ridging, 50,000 NGN / ha on a cost-reimbursable basis).

*** Assuming an exchange rate of 350 NGN/USD

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

1 Increase farmers' productivity and access to land

The block farming program provides access to land to farmers and increases farmer productivity by ~200% compared to a baseline farmer. Opportunities for further productivity increase remain.

2 Secure cassava supply

Based on projected costs and revenues, block farming program will provide a commercially viable and secure cassava supply to AADL, reducing exposure to volatile cassava prices.

3 Improve cost-efficiency of current model

Yields of farmers can likely be increased by providing additional services in the future. Increasing yields will lead to a more cost-effective SDM.

Key insights



Key drivers of success

- The projections indicate that the SDM can be profitable for both the farmer and AADL (through commercial revenues). A stable and affordable supply of cassava is of key importance for AADL.
- AADL has a lot experience working with outgrowers, and knowledge on opportunities and risks.
- AADL has worked with a variety of technical service providers.
- AADL has got allocation of land from various state governments
- Cost reduction in land clearing activity (from 160,000NGN/ha to 100,000NGN/ha) by utilizing own equipment or subsidized government equipment could have a major impact on the SDM.



Key risks

- The costs for the SDM are high and if the expected returns are not realized this could result in a large financial burden for AADL.
- This study assumes a high productivity increase for SDM farmers. Lower yields would directly impact farmer income and commercial revenues for AADL.
- This study assumes that AADL will be able to reduce side-selling to 0%. Higher side-selling would result in lower revenues for AADL.
- A key risk is the ability to mobilize the funding needed to set-up and scale-up their activities. The upfront investment in materials and inputs is very high and AADL is currently limited in its capacity to scale up the program.
- There is a risk that farmers will for example leave or refuse to join the SDM program, if there is a large discrepancy between cassava market price and the price AADL offers.



Opportunities for improvement

- **Credit for fertilizer:** For reliable farmers with a proven track record, the processor may assist with access to agricultural credit for land preparation and/or inputs (herbicides and fertilizer) through e.g. the Anchor Borrowers' Program, NIRSAL or in partnership with banks or micro-finance institutions such as LAPO or Fortis. The use of fertilizer can have significant impact on average yield.
- **Land preparation** (minimum of ploughing): If farmers are left to their own devices and are obliged to use a combination of manual labour and commercial tractor hiring services, they are not likely to cultivate more than 2 or 3 hectares due to a lack of financial resources, even if more land is available. AADL could consider to provide ploughing services rather than mechanized planting, which can also be done manually.
- **Farmer segmentation:** AADL does not yet segment their farmers, but could consider adjusting their service delivery based on a set of criteria.
- **Soil conservation:** Farmers can markedly reduce soil losses by erosion using simple agronomic or soil conservation practices, such as minimum tillage, intercropping, contour ridging, closer plant spacing, fertilizer application, mulching and the planting of contour hedgerows of grasses, legumes or leguminous tree species.
- **Monitoring & Evaluation:** AADL could consider using a M&E app. By implementing a structured and standardized use of a system like Farmforce, farmer data could be used to track adoption and impact in a sophisticated way. This data could then be used to pilot innovations and improve existing service delivery. Such M&E systems become valuable especially when service delivery is scaled up to a large number of farmers.

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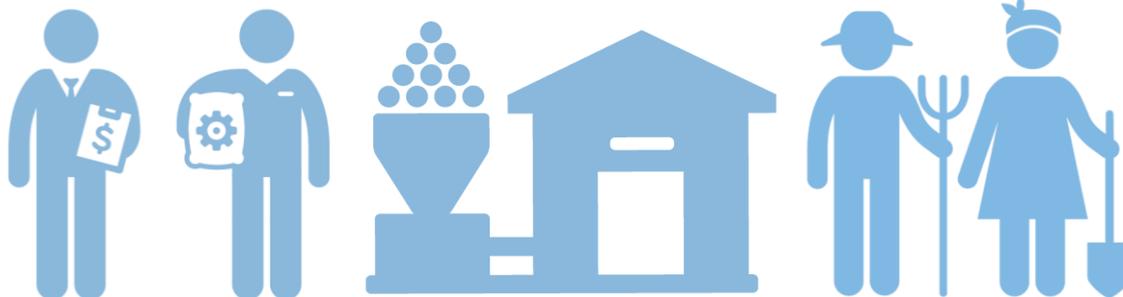
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For more information, see the [IDH Smallholder Engagement Report](#). This report, gathered by analyzing over 30 individual SDMs in 16 countries, provides insights into IDH's data-driven business analytics. The findings identify drivers of farmer resilience,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