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CASE STUDY

A Fertilizer Data Collaborative's First Steps Towards Farmer-Centricity in Nigeria

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A Fertilizer Data Collaborative's First Steps Towards Farmer-Centricity in Nigeria

How a trusted steward is growing data sharing in a competitive market

Public and private partners in the Visualizing Insights on Fertilizer for African Agriculture (VIFAA) program, led by Development Gateway and the International Fertilizer Development Center (IFDC), have been working together since 2017 to co-design dashboards and tools to improve, manage, and visualize fertilizer data in Nigeria.¹ VIFAA was developed to address the supply, demand, and use of fertilizer data. The program involves a **data collaborative** governance approach with the aim to increase access to accurate quality data owned by fertilizer companies, farmers, and public agencies; build trust and create data sharing opportunities; and improve national and local public-, private-, and farm-level decision making for the purpose of sector-wide benefit. The case study provides further insights into private sector collaboration, trust building, and data stewardship.

Background and main challenges

Investing in soil health is a good foundation for improving food and nutrition security and mitigating climate change and biodiversity loss. Soil is essential for productive and sustained ecosystems needed to transform food systems. Sub-Saharan Africa has the lowest fertilizer use in the world, insufficient to replace soil nutrients lost every year. To maintain productivity and sustain livelihoods, both the public and private sector need to better collect, analyze, and use relevant data to encourage fertilizer use. Fertilizer companies are in a position to help provide valuable insights on a national level, yet most collect retail price data, which is focused not at the actual retail level, but rather on wholesale.

Historically, in Nigeria, the Ministry of Agriculture controlled the purchase of fertilizer via tenders, subsidies, or contracted suppliers, and state authorities were the primary consumers. This meant that most of the private sector had very little connection to farmers, often resulting in a lot of scarcity of fertilizer when adverse circumstances arose. The private sector was often considered a middleman that did not add value in the supply chain.

The market has changed and the roles of private and public actors shifted. The government stopped releasing tenders, and actors started investing in large-scale urea nitrogen plants. Nigeria shifted from a net importer of nitrogen-based fertilizers to a global powerhouse net exporter. While difficulties from overreliance on government tenders remain, with the private sector investments, Nigeria's farmers are no longer burdened with constraints on availability and accessibility. Investments have, for the first time, created matching incentives between all stakeholders.

1. "Vifaa" means "tool" in Swahili, but this program will go beyond delivering dashboards—it will also strengthen data supply and support improved policies and investments to increase fertilizer affordability, availability, and quality.

Other challenges related to the case study environment

- **Positioning of farmers.** Many PPP data collaboratives struggle to position farmers in their work, either because the entities are too distant from the farmers, the effort doesn't fit the agenda, or partners don't see the relevance. The VIFAA dashboard has been designed for national-level use, while farmers are at the bottom of the value chain; in these political environments, farmers are not involved directly.
- **Big knowledge gap and access to data.** Smallholders generally don't understand what data they have or could have, or its potential and relevance. These are data points the country does not yet have.
- **Participation.** Dealing with farmer groups is perceived as politically difficult. The views that these groups hold aren't relevant to the average farmer, or they're not representative of what the actual needs of farmers are.
- **Lack of contextual solutions.** If the technical application is not mobile and in a local language, farmers will likely not use it.
- **Lack of trust and private sector involvement.** Considerable effort needs to be made to make sure that private actors are confident and feel safe sharing data, and do not feel they lose a competitive advantage. There are various appetites to data sharing.

How are problems solved?

Since 2017, the VIFAA program, led by Development Gateway, with IFDC through Africafertilizer.org (AFO), set out to address and strengthen the supply, demand, and use of fertilizer data, and support improved policies and investments to increase fertilizer affordability, availability, and quality.³ VIFAA focuses on better aligning the fertilizer data supply with information needs, bringing together disparate data from existing sources and actors in the public and private sector, with the goal of understanding how to use this data to make informed decisions, understand priorities and information needs, and design specific approaches for promoting data use.³ The country dashboards feature many indicators, including price, availability, and plant directory.⁴ Data on farm-level consumption and cost buildup of fertilizer provides for important insight. While public data is used to validate and ground truth some data, more granular data is shared directly from private sector partners. There was no direct involvement of farmers at the outset of the program, until the partners realized the value of involving farmers in the data governance.

2. VIFAA and partners also invested in new mapping and AI technologies to build a better understanding of changes in cropping patterns.

3. Data includes data on trade, fertilizer production, distribution and flow of fertilizers, consumption, and policy on fertilizer markets. Data from NARLS.

4. VIFAA has been working with the CountrySTAT program of the FAO, over the past eight years, to produce and disseminate reliable and up-to-date official statistics on fertilizers produced, imported, exported, and consumed in countries within the West Africa Sub-region.

Data Collaboration. The VIFAA cross-sector public-private collaboration is aimed at data collection, sharing, and processing for the purpose of sector-wide benefit, emphasizing the collaboration between private partners and going beyond data sharing and visualization. An environment that enables trust and cooperation between partners is a crucial component for successful data collaboratives. Private sector-focused data collaboratives are often bound to deal with trust issues or hesitancy to share data due to (perceived) competitive advantage. IFDC has worked hard to establish trusted relationships, and the VIFAA program illustrates valuable lessons on how to overcome these challenges. A lot of data has been opened up since then as a result of building and maintaining those relationships with companies. Designing non-disclosure agreements (NDAs) for actors in Nigeria played an important part in this. However, the program also demonstrates the vulnerability of relying strongly on personal relationships.

Data stewardship. AFO's role as a data steward includes convening the Fertilizer Technical Working Group (FTWG), a group of public and private sector actors who meet annually to use their combined datasets to validate production, trade data, apparent consumption, and others, including recommendations. At the moment, AFO collects the data and validates it through several means, stores it on restricted cloud files, and only releases them in an aggregated manner, in line with the requirements of NDAs, to the public (dashboard) or the private sector (individual request). AFO has signed NDAs with the private sector players to assuage any concerns about how their data is being used and shared ethically in accordance with the stipulated use cases. Lastly, AFO also creates avenues where its member countries can meet and discuss pertinent fertilizer issues. AFO's role as data stewards is to not only generate credible and reliable data via validation processes, such as CBU workshops, but also to manage how this information is collected and released to the public. This is where the NDAs come in, which serve as an assurance document to the private sector that their information is safe with AFO and would be properly used for the purpose for which they are requested.

Farmer-centricity through multi-stakeholder participation. Farmers hold a lot of valuable knowledge about how to farm and what information they deem relevant. This does not always align with the data assumptions made by data collectors. It is perceived as very hard to reach farmers that are not technically inclined. As indicated by All Farmers Association of Nigeria (AFAN), farmers in Nigeria are not organized enough. A lot of time and resources are needed to create awareness and sensitize farmers on the meaning of data.

Data ownership. Some companies, like Indorama Eleme Fertilizer and Chemicals Ltd., collect a lot of data on soil testing and conduct field demonstrations. In their experience, farmers don't understand what the data means; they need people on the ground to explain this, breaking it down in local language. Indorama uses different channels, such as radio, to reach farmers. They try to present the data in a format the farmers understand. Many companies are collecting data, and by default they control and own this, while no rights are provided to farmers. Some companies, like Dangote Fertilizer Ltd. and Indorama, advocate and acknowledge the need to shift the data ownership in a meaningful way back to the farmer. The data—and subsequent knowledge—should flow back to the farmer.

Private sector involvement. Agriculture can often feel quite siloed, with little collaboration. Multi-stakeholder convenings help to make sure everyone is on the same page about what data is shared and why. This convening was enough to generate agreement on quality metrics and how to collect data. The NDAs serve a purpose, but are not easy to replicate and they do not include the farmer in the picture. Partnerships are great, but require a trusted intermediary, like AFO, which makes the partnership highly reliant on the personal relationship.

Farmer-centricity through informed decision and policy making. There is a lot of buy-in when agreements exist on the value of the collected public and private data. This helps to build strong, evidence-based advocacy. With the data, a case can be made for intervention. The cost information, specifically granular information about what goes into the cost chain buildup (transportation, logistics, etc.), and the interplay with the final price is very useful. Through the data validation process, the private and public sectors have both bought into a baseline of information, which is now presented on the dashboard.

Facts and figures

85% of African farmlands have annual nutrient mining rates of > 30kg/ha. Soils are losing billions of nutrients without adequate replenishment. Fertilizer use remains far below the Abuja Declaration target of 50kg/ha.

- The private sector invested over \$7 billion in the last decade into Nigeria's agriculture sector. Almost all of those investments came from the fertilizer sector (\$6.6 billion).
- In the past few years, Nigeria has gone from 2–3 fertilizer producers and blending plants to over fifty.
- Since the start of 2021, global fertilizer prices have drastically increased. This has been driven by various factors, primarily the increase in natural gas prices and firm freight levels.

Important factors for an enabling environment

- In 2006, the Abuja Declaration on Fertilizer for an African Green Revolution set primary targets to reach.
- Nigeria has a competitive culture, where people are not likely to share data, especially when it is perceived as leverage over competitors. People off the bat are less trusting of anything related to data sharing, as most Nigerians are skeptical and want to know how they could benefit from it. A lot of trust building is needed to acquire people's confidence. To get the buy-in, one needs to clearly articulate what sharing the data will and won't do for them.
- The African Union Commission is planning to host the Africa Fertilizer and Soil Health Summit in 2023 where data-driven solutions will be instrumental in the development of a 10-year Fertilizer and Soil Health Action Plan for the continent.
- The Nigerian government is and has implemented several related laws and programs, such as the Fertilizer Quality Control law and sensitizing programs to prepare the public.
- There is a clear link between fertilizer consumption and subsidies.

“[The dashboard] is a source that is trustworthy and credible enough to be used by everyone in the sector... it carries along all the stakeholders which is good for visibility and usage [of data].”

Private sector partner

Financial viability and Sustainability

A steward's revenue-generating structure is intricately linked to its function of safe, responsible sharing of data and the ways in which it imagines its relationship with individuals and communities. Data-gathering activities, as part of the role of the data steward, require financing. Until recently, there was a huge dependency on development partners to finance this activity. However, these have become unsustainable, owing to the fact that the private sector in Nigeria has grown to a level where it requires much more granular information than what development partners would be willing to fund. This is why it became necessary to create a type of revenue source via a subscription-based model to ensure the sustainability of the activities of the data stewards. The model has some deliverables tailored to the private sector needs, which range in time. So far, about 50% of the contribution has been received, with verbal promises for more payments to be made.

“[T]here is a way to make an impact directly to the people. Given that 90% of [farmers in Nigeria] are smallholder farmers, with a little innovation we could lift people out of poverty.”

Gideon Negedu

Executive Secretary of The Fertilizer Producers & Suppliers Association of Nigeria (FEPSAN).

What lessons can be learned?

- The building of sustainable relationships based on merit and trust as a data steward is foundational to creating an environment of data sharing and collaboration and opening up doors for new opportunities. It is important to allow room for flexibility in how data stewards act to take into account the context of the community or project.
- Many multi-stakeholder development programs in low- to middle-income countries (LMICs) find it hard to incorporate the voice of farmers, for many different reasons. The VIFAA partners have very much acknowledged this need and, while not a priority at the outset of the program, it has become one now especially as the program is beginning to think about transitioning focus to sub-national governments whose primary focus is the farmer.
- Prioritizing existing practices in communal governance with regards to group culture and data literacy is important. In Nigeria, AFO adopted NDAs in their engagement with the private sector, but this model has been harder to replicate in Ghana and Kenya, where the private sector is not as organized and involved.