LAGOS BUSINESS SCHOOL
PAN-ATLANTIC UNIVERSITY

Nigeria's Agricultural Data Landscape:

The Case for a New Intelligence Infrastructure

June 2026

Disclaimer

This report is based on research funded by the Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Gates Foundation.

About Lagos Business School

Established in 1991, Lagos Business School (LBS) is the graduate business school of Pan-Atlantic University. It is owned by the Pan-Atlantic University Foundation (PAUF), a non-profit foundation registered in Nigeria. LBS was founded on the inspiration of the teachings of Saint Josemaria Escrivá, the founder of Opus Dei.

LBS is transforming the business landscape both locally and globally by developing professionals who embody strong ethical values, high standards of professionalism, and a deep understanding of general management practices.

Since 2007, Lagos Business School has consistently been recognised by the Financial Times of London as one of the world's leading providers of open-enrolment executive education. In addition, the School has been ranked in the custom executive education category since 2015. In the 2026 Financial Times Custom Executive Education rankings, LBS was ranked #1 in Africa, reinforcing its reputation as a top-tier provider of high-quality business education and its commitment to shaping world-class business leaders.

The LBS Experience: Developing Responsible Leaders to Inspire Africa's Growth

Education at LBS is comprehensive and delivered by a multinational faculty, enriched by the diverse experiences of its participants. The School adopts a participant-centred learning approach, primarily using the case study method to ensure practical, real-world application of knowledge.

Programmes are conducted in purpose-built facilities designed to create an optimal learning environment. LBS serves over 9,000 participants annually, drawn from both indigenous and multinational organisations. The School also boasts a strong and vibrant alumni network, with over 10,000 members, fostering lifelong learning, professional growth, and global connections.

LBS serves over **9,000** participants annually

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Augmentum Advisory

Content

Foreword

Nigeria has everything it needs to feed itself, and to become a food system the rest of the continent looks to. I say this not as optimism, but as a conviction grounded in what this country already demonstrates: world-leading production across multiple commodities, an agricultural labour force of extraordinary scale, and a generation of entrepreneurs, policymakers, and investors determined to build something lasting. Yet that potential remains stubbornly unrealised. Crop yields average below global benchmarks and many emerging market peers. Post-harvest losses consume half of our total produce. More than 33 million Nigerians face acute food insecurity. A decade of serious policy efforts and capital investment has not shifted these fundamentals.

The business and policy leaders who engage with Lagos Business School are clear about this tension. As discussions develop, one question keeps re-emerging: what are we missing? Nigeria's agriculture ecosystem is not short of effort or desire. What it lacks is the shared, reliable intelligence that would allow that effort to compound rather than duplicate. To reach the places where it can do the most good. Critical decisions across the value chain, on investment, production, and resource allocation, are routinely made using fragmented, incomplete, and outdated information. This report explores the evidence to guide what needs to change. Comparable markets, including India, Brazil and South Africa, have shown the way: building coordination mechanisms that turn imperfect, fragmented data into decision-grade intelligence, anchored in the decisions that matter most across the agricultural value chain.

The Nigeria Agribusiness Data & Investment Hub (NADIH) is our response. Its design is anchored in a simple premise: the solution will not evolve from any single institution acting in isolation, but from the ecosystem acting together. At its heart sits a structured Community of Practice that brings together data producers, decision-makers, investors, government agencies, and development partners for sustained, aligned dialogue. This is infrastructure built with the ecosystem, rather than for it.

Foreword

To the organisations that hold data, to the decision-makers using incomplete information, and to all who share a stake in what this sector can become: we are building this with you, and we need your participation. Nigeria has always had what it takes. NADIH is our commitment to building what was missing.

This report is the product of a collective effort. I would like to express my appreciation to the many organizations and individuals who shared their perspectives, challenged our assumptions, and enriched the thinking that informed this work. Their willingness to contribute reflects a shared commitment to strengthening Nigeria's agricultural sector. I also acknowledge Augmentum Advisory for its partnership in developing this report, and our broader ecosystem partners for their support and collaboration throughout this endeavor.

Professor Olayinka David-West,
Dean, Lagos Business School,
Pan-Atlantic University

Executive Summary

Agriculture is central to Nigeria's economy and to the livelihoods of the majority of its people. It employs over a third of the labour force, contributes more than a quarter of non-oil GDP, and remains the primary source of food and income for communities across the country. Yet the sector consistently falls short of its potential. Crop yields average less than half the global benchmark. Between 40 and 60 percent of harvest is lost before it reaches the consumer. Acute food insecurity affects more than 33 million Nigerians. The evidence suggests that sustained capital investment and policy effort alone have not been sufficient.

> Fewer than
>
> **15%**
>
> of open access datasets have been updated in the past twelve months;

Among the structural factors limiting sector performance, this diagnostic identifies a gap in the quality and availability of decision-grade data as a significant binding constraint. Across the value chain, actors making high-stakes decisions about where to allocate capital, what to produce, and how to manage risk are operating without the information they need. Fewer than 15% of open access datasets have been updated in the past twelve months; fewer than 60% offer subnational coverage. Private sector data is largely proprietary and too narrow to serve system-wide needs. Funding for data collection is dispersed across overlapping, uncoordinated initiatives. The cumulative effect is a system in which effort is duplicated, methodologies are inconsistent, and capital is allocated on incomplete evidence.

The experience of comparable markets offers clear direction. In India, Brazil and South Africa, agricultural data systems have been built by designing around a small number of key decisions, drawing on what already exists, and connecting outputs directly to the credit, investment, and policy workflows that matter most. They did not wait for comprehensive infrastructure, but developed, progressively, under conditions of fragmentation, informality and limited resources – contexts analogous, and instructive, to Nigeria today.

The Nigeria Agribusiness Data & Investment Hub (NADIH), anchored at Lagos Business School, is designed in direct response to the findings in this report. Drawing on input from over 55 organisations engaged through this diagnostic, it will harmonise datasets across public, private, and social sectors, convene a structured Community of Practice, and deliver decision-grade intelligence for the banks, aggregators, government agencies, and development partners whose choices determine where resources flow across Nigeria's food system.

Source: Team analysis; Expert and Stakeholder interviews

The findings draw on analysis of 250+ publicly available datasets, 55+ stakeholder interviews conducted across Nigeria's agricultural data ecosystem, and evaluation of agricultural data systems in four comparable emerging markets

Decision Makers / Users

Help define priority intelligence needs; use NADIH outputs to guide investment, policy, financing, and operational decisions

Data Intermediaries

Partner on analytics, platforms, and tools that translate data into usable, decision intelligence

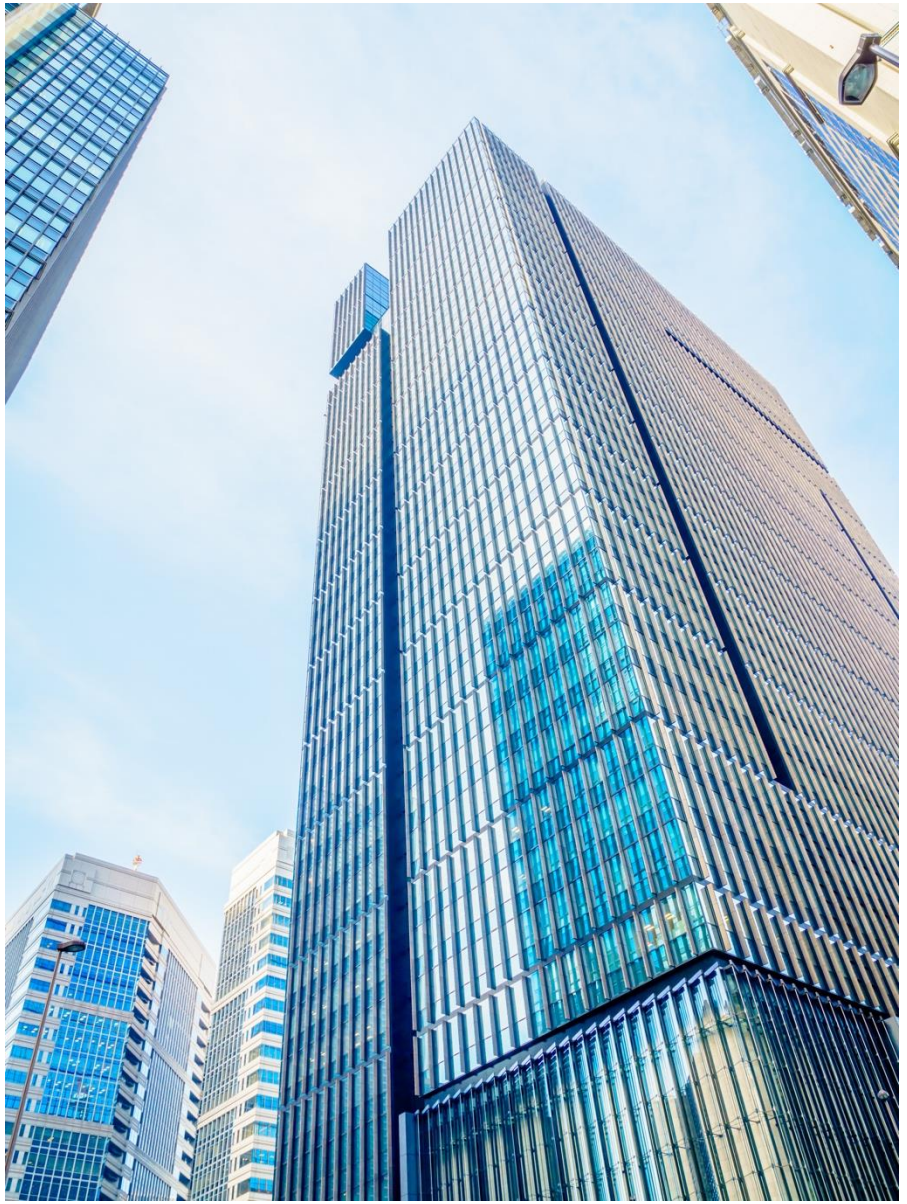
Data Producers

Contribute data, validate gaps, and support regular updates to strengthen the shared, foundational evidence base

Ecosystem Enablers

Champion, fund, and institutionalise agricultural data infrastructure as a durable public good

Part 1. A Broken System: Nigeria's underperformance despite sustained investment and policy efforts



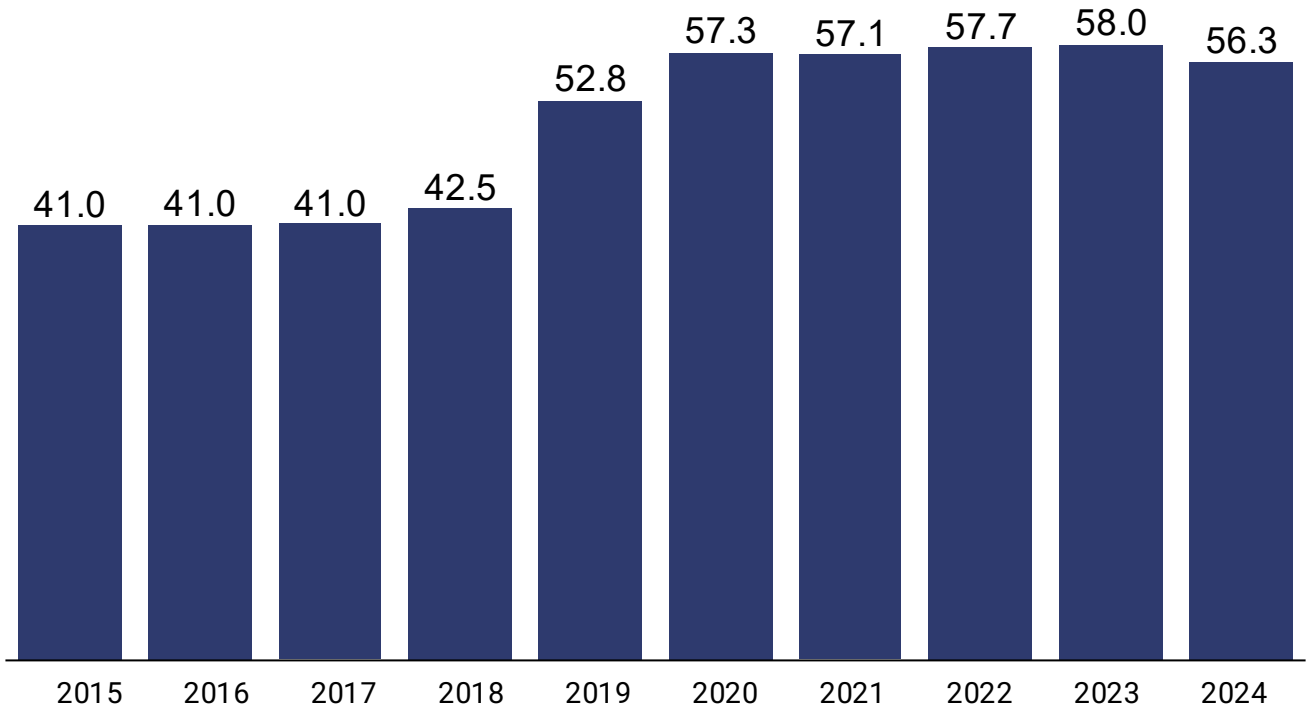
Our main problem today is the clean data of farmers. Unless our team will have that, we can never get it right...

– Senator Abubakar Kyari

The Honourable Minister of Agriculture and Food Security to the National Assembly Joint Committee on Agriculture, 2023

Agriculture is systemically important to Nigeria's food security, employment, and financial stability

Real Agriculture GDP, 2015-2024, NGN Trillion[1]



1. Data is based on GDP in local currency adjusted for inflation
2. 2024 data used wherever official 2025 figures are yet to be released

Indicative statistics[2] (Not exhaustive)

Food security & Inflation

51.8%
Food share of CPI basket

$10bn
Food import bill

Employment & Livelihoods

34%
Share of labor force employed by agriculture

~26%
Contribution to non-oil GDP

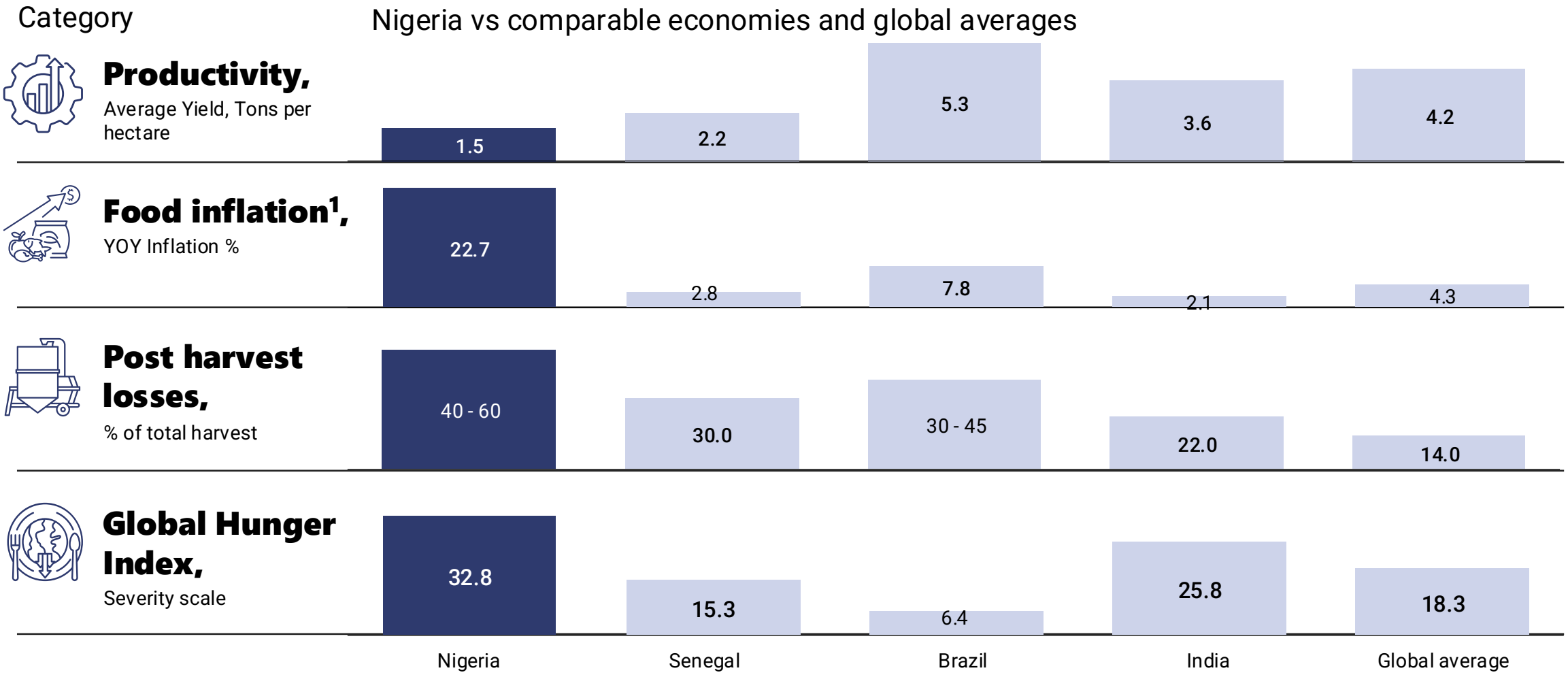
Capital & Financial stability

<5%
Share of agriculture in banking sector credit

₦3.24Trn
Total credit extended to sector

Source: World Bank; Central Bank of Nigeria; National Bureau of Statistics; Press search

Despite its size and importance, Nigeria's agricultural sector consistently underperforms relative to comparable economies

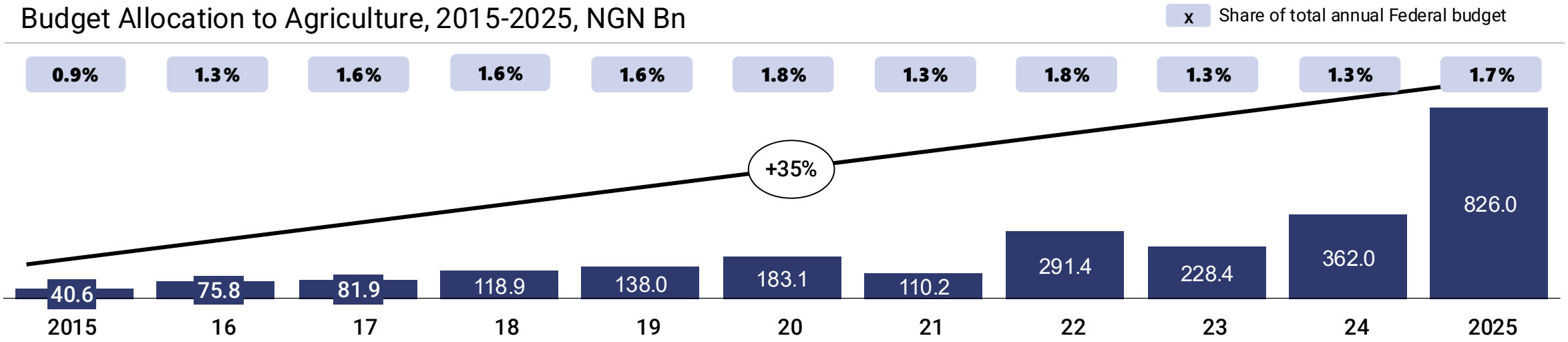


1. Volatility is calculated as changes in food inflation basket YOY from June 2025

Source: NBS; World Bank; Global Hunger Index; FAO; Indian Council of Agricultural Research; World Wide Fund for Nature

This performance gap persist despite repeated policy initiatives and investment efforts, suggesting attention and capital alone are insufficient

Budget Allocation to Agriculture, 2015-2025, NGN Bn



2015

CBN launches Anchors Borrowers Program designed to offer low interest loans to shift smallholder farmers to commercial farms which historically disbursed **NGN 1.2 trillion** year to date

CBN promotes risk sharing program NIRSAL as a **$500 million** public-private initiative with ABP

CBN restricts forex access to commodities such as rice and other commodities, including maize in 2020. This effectively served as importation bans

2016

FG launches Agricultural Promotion Policy focused on building agribusiness ecosystem

2018

FMARD designates rice and cassava for funding from FADAMA III **$450 million** program focused on increasing household income for smallholder farmers

2022

Nigeria launches Phase I of **$538 mln** Special Agro-Processing Zones initiatives offering processors special economic zones privileges to transform Agricultural sector

2024

Federal Government launches a massive **₦500 billion** program targeting the cultivation of **500,000 hectares** of farmland, with a specific focus on wheat in 15 states

2025

AFDB invests **$200 mln** into phase II of National Agricultural Growth Scheme - Agro Pocket to boost production of staples like rice, wheat and maize

Despite several interventions, a structural shift in performance has not occurred. This suggests that attention and capital alone are insufficient

Source: Federal Ministry of Agriculture Budget Reports 2015 – 2025; Budget Office of the Federation; Press search

A functioning agriculture system requires multiple enabling elements; In Nigeria, decision-grade data remains an acute gap

Focus for this report

A

Physical Infrastructure

e.g., roads, storage, logistics, irrigation

B

Financial Services

e.g., credit, insurance, investment

C

Policy & Regulation

e.g., land, trading, standards, incentives

D

Human & Knowledge Capital

extension, adoption of new practices, skills

E

Data & Information Systems[1]

prices, volumes, logistics; data sharing

1. Data is only one of several core agricultural enablers, but recent advances in AI and digital technology create a unique opportunity for transformative impact

Source: World Bank; World Economic Forum; CGAP; Team analysis

Public and Private sector actors alike see data gaps as a critical blocker to improved decision-making and resultant agriculture sector growth

The constrained impact of existing efforts to drive sustained improvement in Agriculture outcomes is driven in part by limitations on strategic and operational decision quality, underpinned by a lack of relevant, actionable, decision-grade data

> Our main problem today is the clean data of farmers in the country, unless our team will have that, we can never get it right. . . Without doing that, we will never get our input, the right person and at the right time and this is what we have been trying to do

Minister of Agriculture to National Assembly Joint Committee on Agriculture

> Index insurance schemes struggle to [offer] farmers to actual services [that they provide]. . . When the financial sector can access farmer-level data quicker, credit decisions can happen quicker

Global Technical Lead, ICT4IFAD on National Digital Farmers Registry Workshop

> A lack of data in the sector leads to less-than-optimal decisions, resulting in productivity losses, agricultural income losses, and eventually increased hunger and poverty.
>
> Agriculture suffers from significant data gaps, harming millions of the world's poorest people

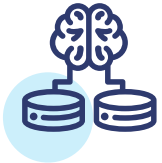
COO, AFEX on AFEX Crop Production report

> Food supply is a major factor in ensuring food security, and though national authorities are very much aware of the importance of domestic production, few [policies in the region] address this. . reason is the absence of quality data on crop yields

Nigeria: Selected Issues from IMF African Department report

Source: Press search

Recent shifts have increased the importance of decision-grade intelligence across the agricultural value chain



Artificial intelligence is lowering the cost of turning data into actionable insights

Artificial intelligence and advanced analytics can now process large volumes of fragmented data, generating insights on production, markets, risk, and investment opportunities at a scale and speed that was previously infeasible.

Climate and geopolitical volatility are increasing the cost of poor decisions

Climate change, supply disruptions, and geopolitical uncertainty are making agricultural markets less predictable, increasing the need for timely, reliable intelligence for farmers, agribusinesses, investors, and policymakers.

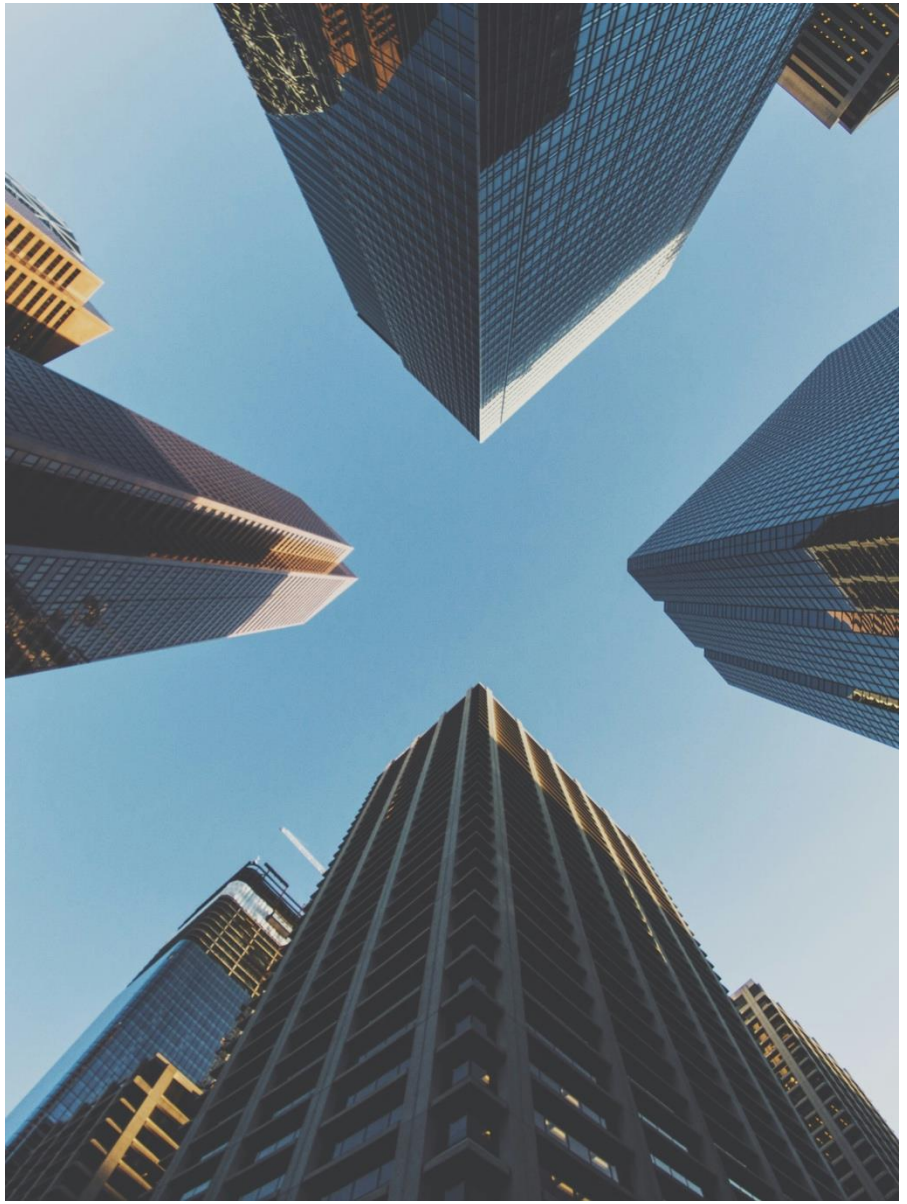
Agricultural value chains are becoming more complex and interconnected

Agricultural value chains are becoming increasingly commercialised, specialised, and interconnected, creating more decision points and increasing demand for trusted intelligence

THE IMPLICATION

There is a significant opportunity to expand access to trusted, decision-grade intelligence across Nigeria's agricultural ecosystem, unlocking the investment, operational, and policy decisions that will shape the sector's future

Part 2. What the Data Landscape Reveals: Supply-side gaps, funding fragmentation, and the case for decision-grade data



Five insights emerging from Nigeria's agricultural data landscape

01 The generation of foundational agricultural datasets is concentrated in a few public institutions, but fragmentation across initiatives limits the ecosystem's ability to generate decision-grade intelligence.

02 Significant agricultural data already exists, but much of it falls short of decision-grade quality, requiring digitisation, standardisation, triangulation, and the targeted closing of critical gaps to unlock meaningful insights.

03 Private-sector datasets can play a key role in the agricultural data ecosystem, including validating public data, filling critical gaps and enhancing granularity, but are unlikely to provide a standalone foundation for system-wide intelligence.

04 Funding is the binding constraint on the agricultural data ecosystem; while resources exist, limited coordination around shared priorities reduces their aggregate impact and contributes to duplication.

05 A small number of investment and resource allocation decisions are system-critical, driving outcomes across the value chain; however, these decisions are routinely made without access to decision-grade intelligence.

Source: Team analysis; Expert and Stakeholder interviews

01

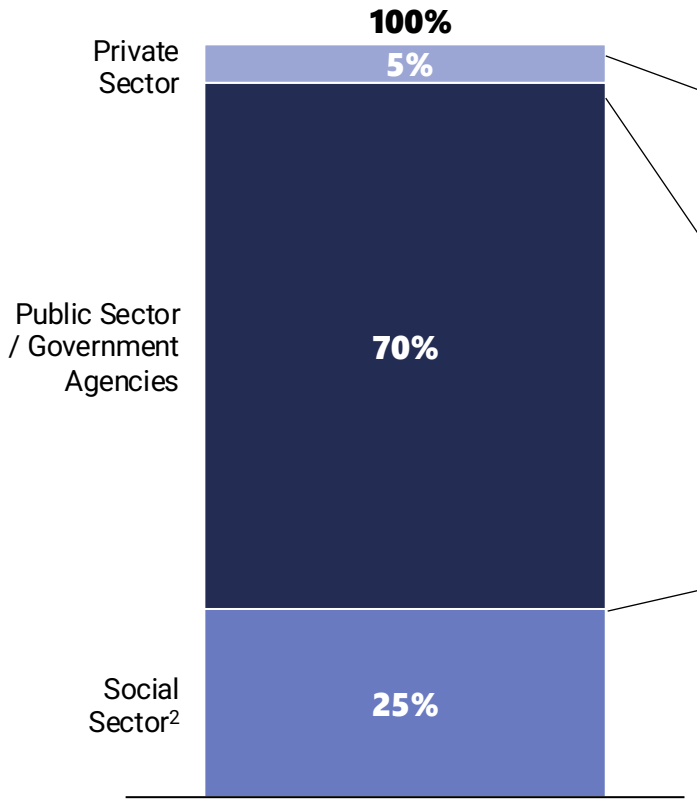
The generation of foundational agricultural datasets is concentrated in a few public institutions, but fragmentation across initiatives limits the ecosystem’s ability to generate decision-grade intelligence.

We need to have such a platform where all stakeholders will be… discussing issues that relates with agricultural data… and how to solve the fragmented data gap

– Senior Official, NAERLS

1 The public sector holds the majority of granular agricultural datasets in Nigeria; any meaningful effort to access system-wide intelligence requires public support

Share of agricultural datasets produced by source, % of total, approximated[1]



Example players and datasets covered

Example players	Example datasets produced (non-exhaustive)	Average duration, years
FMN Flour Mills of Nigeria Plc; Babban Gona; AFEX; Sterling	• Local production volumes and yield data • Price data at market and transaction level • Farmer identity and demographic data	<2
NBS National Bureau of Statistics; NAERLS; FMAFS; NiMet Nigerian Meteorological Agency; NIRSAL; Kaduna State Government Nigeria	• Price data across various states • Production volumes and yield data • Farmer economics data across states • Weather and Meteorological data across local areas • Investment and credit flows across periods	10 - 15
WFP World Food Programme; Tony Blair Institute for Global Change; JICA; AGRA Sustainably Growing Africa's Food Systems; UN Comtrade Database	• Trade data across various states • Price data across various states and markets • Production volumes and yield data • Farmer economics data	15 - 20

1. Based on public data collected across 15 commodities (Rice, Maize, Sorghum, Millet, Cassava, Oil Palm, Yam, Tomato, Groundnut, Cowpea, Sheep, Cattle, Poultry, Pigs and Goat)
2. Majority of data is sourced with assistance from governmental agencies

Source: NBS; NAERLS Agricultural Performance Summaries (2009 – 2024); FEWSNET; FAO; APHLIS; UN COMTRADE; IPAD USDA; AFEX; WFP; Press search; Team analysis; Expert and Stakeholder interviews

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1 A small number of public institutions anchor the bulk of Nigeria's fragmented agricultural data ecosystem

Data Producers[1]	Key datasets tracked (non-exhaustive)
nbs NATIONAL BUREAU OF STATISTICS	**General Household Survey (GHS) & Nat'l Agric Sample Survey (NASS)** • Farm size (measured on-site) • Crops planted • Yield • Livestock types/holding size • Apiary production • Forestry production • Labor cost • Panel: longitudinal follow-up of the same households across seasons: planting, harvest, and post-harvest outcomes over time **Food prices** • Farmgate • Wholesale • Retail
NAERLS	**Data captured primarily as part of Agricultural Performance Survey, (Annual, Wet Season only)** • Crop production estimates (hallmark - pre-harvest field assessments) • Livestock production • Weather situation (NIMET collaboration) • Flood assessment (NISA collaboration) • Farm inputs usage/procurement/distribution • Agricultural mechanization • Post-harvest losses • Cost of production by crop • Extension activities/ADP situation • Special government programs (tracking interventions) • Production constraints & Climate resilience • Weekly Market prices (3 markets per state, 6 zonal offices)
NiMet Nigerian Meteorological Agency	**Meteorological and weather data across States and select LGAs** • Rainfall and flooding data • Air temperature (at 2-meter height) • Soil temperature (at 5cm, 10cm, 50cm, and 100cm depths) • Wind speed and wind direction • Relative humidity **Analytical use cases derived from these inputs include:** • Seasonal Climate Prediction (SCP): onset date, cessation date, season length, and expected rainfall volumes, at LGA level
NIRSAL	**Data captured across 22 commodities[3]** • Farmer database • Stakeholder mapping (pre-upstream to downstream) • Production data (smallholder/commercial farmers, volumes, GPS locations) • Capacity data (processors: MT/day, equipment) • Market data (domestic, industrial, export) • Price data (bi-monthly updates + on-demand) • Finance data (sources, users, volumes) • Challenges & opportunities across ecosystem
FMAFS[2] / State Ministries of Agric. FMAFS	**Wide disparities in statistical maturity exist across States – datasets below reflect the most mature state systems (e.g., Kaduna, Lagos):** • Farm location & size • Feed lab analysis • Farm equipment count • Type of livestock • Breed of livestock • Farm capacity • Animal census • Value chain mapping • Farmers BVN • Animal disease registry

Key Takeaways

- The bulk of agricultural data is concentrated in a few federal and subnational agencies – these organizations are key partners for national data aggregation and intermediation initiatives
- Data collection maturity across state agencies varies widely
- Data collection across public institutions overlap significantly, particularly for price, production, and farmer demographic data, however differing organizational mandates, methodologies, and funding constraints limit comparability and indicate a need for orchestration and transformation

1. Prioritized list (not exhaustive); Research institutions were not included due to limited long-run data collection activities (driven by funding deficits). Data collection in these institutions is commonly project-based with intermittent funding cycles.
2. Federal Ministry of Agriculture and Food Security
3. Industrial (wheat, cotton, cassava, maize, soya), Export (hibiscus, sesame, ginger, cocoa), Consumer (sweet potato, rice, cowpeas), Fresh fruits/vegetables, Integrated livestock (beef, dairy, leather, poultry), sugar cane, cashew

Source: Press search; Team analysis; Expert and Stakeholder interviews

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1 A new wave of public-sector initiatives is reshaping Nigeria's agricultural data landscape, creating both momentum and a growing need for coordination

Theme	Examples of what is emerging (not exhaustive)[1]
Building data infrastructure	Expansion of NAERLS Annual Performance Survey: greater scope and frequency, incl. quarterly collection for priority crops via PFSU; new livestock baseline in development; crop cutting application across 18 states
	Digitization of NiMet data (2025 - ongoing): digitizing historical meteorological records to the 1850s; MOU pathway confirmed for structured access
	Establishment of NBS NASC (2022) and NASS (2023): conducting first comprehensive Agriculture census in 27 years; open access microdata (anonymized)
	National Digital Farmers Registry (NDFR): NIN-based farmer registry, geo-referencing farmers/farmlands in 36 states; workshop phase, pre-launch
Building intelligence and decision tools	Kaduna State Intelligence Unit: developing a dashboard aggregating price, location, and production economics data across all 23 LGAs. 6 policies developed to date. Internal access only.
	NIRSAL investor platform (planned Q3 2026): mapping value chain actors and building a land bank system across 21 priority value chains
Coordinating data collection	NADMIS: Harmonizing agricultural data across public sector agencies within FMAFS system; early stage / pre-launch
	PFSU quarterly data collection: Coordinating cross-agency quarterly data collection for 4 priority crops across 13 states
	New Federal Ministry of Livestock Development (July 2024) & NADIS: Establishing a dedicated institutional home for Livestock data governance for the first time; NADIS intended as the data infrastructure

Potential risks this creates

A Duplication of effort
Multiple agencies collect overlapping data with limited harmonization of instruments or outputs

B Inconsistent standards
Divergent methodologies and update frequencies make triangulation across sources difficult and reduce collective credibility

C Sustainability vulnerability
Most initiatives are project-led and grant-funded, with limited securing of sustainability or transition plans; platforms built on episodic donor funding rarely survive in the long term

D Weak coordination mechanisms
No recognized authority consistently aligns efforts, sets standards and directs system-wide investment toward shared priorities

1. NAERLS: National Agricultural Extension Research and Liaison Services; NiMet: Nigerian Meteorological Agency; PFSU: Presidential Food Systems Coordinating Unit; NIRSAL: Nigeria Incentive-Based Risk Sharing System for Agricultural Lending; NADMIS: National Agricultural Data Management and Information System; NADIS: National Animal Disease Information System; NASC: National Agricultural Sample Census; NASS: National Agricultural Sample Survey

Source: Press search; Team analysis; Expert and Stakeholder interviews

02

Significant agricultural data already exists, but much of it falls short of decision-grade quality, requiring digitisation, standardisation, triangulation, and the targeted closing of critical gaps to unlock meaningful insights.

We just keep the data in a Google Drive…If you see our raw data, you won't be able to use them…[we need] an application that we can use to be sorting these… We want our data collection to be automated

– Senior Official, Federal Government Agricultural Agency

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2 Despite data availability within the public sector, most datasets are not decision-grade – only 59% have subnational granularity; less than 14% were updated in the last year

Breakdown of publicly available datasets on Nigeria's agriculture sector[1,2]

By geographic granularity, % of total datasets	Updated within the last 12 months, % of total datasets	Average duration, Years	By machine readability[3], % of total datasets	Weekly/monthly data collection[4], % of total datasets	Price data share, % of total datasets
Area level 32	14%	12	~100%	~100%	~100%
State level 27	0%	13	2%	34%	14%
National level 41	14%	34	80%	0%	20%

Key Takeaways

Decision makers face various challenges with publicly available data

- Most data produced is outdated and therefore unusable by decision makers
- Data is generally not granular enough for decision makers – 41% of data cannot be disaggregated beyond the national-level
- Data is often collected with inconsistent or insufficient frequency to enable time-sensitive decisions
- Price data accounts for almost half of all public datasets, and nearly all data tracked at the sub-national level. There is limited visible tracking of other data types across the ecosystema

1. UN COMTRADE data was excluded from disaggregation analysis given the variations in HS Codes and tracking required
2. Commodities – Rice, Maize, Sorghum, Millet, Cassava, Oil Palm, Yam, Tomato, Groundnut, Cowpea, Sheep, Cattle, Poultry, Pigs and Goat
3. Data formats shared can be easily, automatically processed and interpreted by computers, software, or scanners without human intervention
4. Does not account for fill rates, which for varying LGA's are quite limited

Source: NAERLS; AFEX; NBS; FEWSNET; APHLIS; IITA; WFP datasets; UN COMTRADE; IPAD USDA; FAOSTAT; Team analysis; Expert interviews

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High Med Low

2 Commodity prices are widely collected, but there are gaps in the production and availability of other critical datasets

Data type	Ecosystem Demand[11]	Collection Activity	General Availability[11]	Rationale	Comments from ecosystem players
Price[1]				Relatively inexpensive and easy to collect; immediately actionable	"I would still track price information… because I know methodologies differ and my markets may not be reflected"
Production & Yield[2]				Annual collection by NBS and NAERLS (wet season only, crops dominate); FAO and USDA cross-check partially	"When we celebrate a 20% increase in output, the question I ask is how many farmers did it take to achieve that?"
Volume & Market Flows[3]				Requires sustained physical market presence; no single actor likely to fund as a public good	"If I can get information on arrivals in major markets on a weekly basis, I would gladly subscribe. S&D analysis is hard to build"
Market Participants[4]				Commonly informal. Some associations track actors (registered members); NIRSAL tracks stakeholder maps	"A wrong selection means wasted investment. The financiers need to know what the market capacity is and who the players are."
Farmer demographic[5]				Often collected by development partner-funded programs; risk of manipulation, decay and duplication	"Data from 10 years ago is still in circulation. Phone numbers have recycled. Farmers have died or moved. Data is never revalidated"
Farmer Economics & Input Use[6]				Collected by NAERLS and NBS but episodic, under-funded, and methodologically inconsistent	"We don't have data on the volume of fertilizer or chemicals consumed in any given region. In Nigeria it simply doesn't exist"
Logistics & Infrastructure[7]				Actors track internally for competitive advantage; no clear incentive to share or aggregate	"Levies vary significantly by state and route. We track weekly across partners. [Otherwise] have misleading costs estimates"
Weather / Agroclimatic[8]				NIMET provides national and some subnational forecasting; local, real-time data is largely inaccessible	"We use NIMET data to plan when to supply seeds ahead of the planting window. Agriculture is timing"
Investment & Credit Flows[9]				Public sector budgets tracked; private capital flows are largely disaggregated	"How much did the private sector spend on the rice value chain? On livestock? The data is so disparate"
Trade Flows[10]				Formal exports are tracked (customs, CBN); informal cross-border flows are structurally invisible	"Significant volumes move through ancient trans-Sahelian trade routes from Nigeria…These flows are largely uncaptured"

1. Price (Farmgate, Wholesale, spot, and futures prices across commodities and markets); 2. Production & Yield (Crop area, harvest volumes, and yield estimates by geography/season); 3. Volumes & Market Flows (Quantities of produce reaching wholesale markets, storage facilities); 4. Market Participants (Stakeholders in the value chains); 5. Farmer Demographic (Verified farmer profiles linking identity, land, crops, value chain participation); 6. Farmer Economics & Input Use (Cost of production, input expenditure, farm-level profitability); 7.Logistics & infrastructure (Road networks, storagecapacity, cold chain availability, market access data); 8. Weather / Agroclimatic (Rainfall, temperature, climate risk data for agricultural planning); 9. Investment & credit flows (Agricultural lending volumes, insurance coverage, investment disbursements); 10. Trade flows (Import and export volumes, values, destinations by commodity, formal and informal); 11. Based on team analysis of 55+ ecosystem stakeholder interviews

Source: Team analysis; Expert and Stakeholder interviews

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High Med Low

2 Primary data availability is significantly more constrained in livestock (and aquaculture) value chains compared to crops

Data type	Crop Data Availability (Maize example proxy)	Example sources	Livestock data availability (Sheep example proxy)	Example sources
Price[1]		nbs, NAERLS, FEWSNET		nbs, NAERLS, FEWSNET
Production & Yield[2]		FAO, IITA, WFP World Food Programme		FAO, ILRI, WFP World Food Programme
Volume & Market Flows[3]				
Market Participants[4]		AFEX		
Farmer demographic[5]		NAERLS, Babban Gona		
Farmer Economics & Input Use[6]		IITA, NAERLS		NAERLS, ILRI
Logistics & Infrastructure[7]		APHLIS, NAERLS, AFEX		NAERLS
Weather / Agroclimatic[8]		NiMet, NIHSA		NiMet, NIHSA
Investment & Credit Flows[9]		CBN		CBN
Trade Flows[10]		UN Comtrade Database, FAO		UN Comtrade Database, FAO

What we heard

No data exists. No census, no production volumes, no feed cost benchmarks… The livestock sector is a data desert. We are on ground zero, no baseline data since 1992
– Snr. Official, Federal Government Agency

There's no data at all, whether the goat, whether the cattle, what we are looking at, we don't have data
– Snr. Rep., Industry Association (Livestock)

Commercial fish farming is mostly a cottage industry [and] is missing from the data infrastructure. You can easily get data on crop production but not domestic fish production
– Snr. Programme Officer, Development Org.

There is no standardized data system. Data gaps affect all value chains, but it's worse for livestock… there is no egg price source by state, no livestock/ram prices by state/weight, no feed prices… How do I plan my sales and input sourcing?
– Executive, Commercial Farm

1. Price (Farmgate, Wholesale, spot, and futures prices across commodities and markets); 2. Production & Yield (Crop area, harvest volumes, and yield estimates by geography/season); 3. Volumes & Market Flows (Quantities of produce reaching wholesale markets, storage facilities); 4. Market Participants (Stakeholders in the value chains); 5. Farmer Demographic (Verified farmer profiles linking identity, land, crops, value chain participation); 6. Farmer Economics & Input Use (Cost of production, input expenditure, farm-level profitability); 7.Logistics & infrastructure (Road networks, storage capacity, cold chain availability, market access data); 8. Weather / Agroclimatic (Rainfall, temperature, climate risk data for agricultural planning); 9. Investment & credit flows (Agricultural lending volumes, insurance coverage, investment disbursements); 10. Trade flows (Import and export volumes, values, destinations by commodity, formal and informal); 11. Based on team analysis of 55+ ecosystem stakeholder interviews

Source: Team analysis; Expert and Stakeholder interviews

2 Public sector data requires significant transformation before it can support decision-grade insights system-wide and sustainably

What is required	Emerging illustrative examples	What we heard
1 Data must be made usable, not just accessible	• Convert Excel and paper records to structured formats • Standardise and harmonise across sources • Enable machine readability	It was just last year… that we were able to digitize our historic records… up to now, [we] store the data in Excel, just in Excel format… There is no online platform that you can go and pay and get the data **– Snr. Official, Federal Government Agency**
2 Design for triangulation across fragmented sources	• Combine multiple incomplete datasets into coherent, decision-relevant signals • Layer with private and external datasets for enhanced validation and granularity	What is obtainable in each locality or in each state differs… the challenges you are facing in your own state and what is being faced in the other state [are different]… the dissimilarity in data are higher than the similarities **– Snr. Official, State Agricultural Development Programme (ADP)**
3 Unlock and integrate non-public data	• Structure data held in internal systems and integrate into a usable analytics layer	The majority of the data that we use in the organization is situated in… a couple of departments… credit risk… finance… value chain… and they sit in their respective departments **– Executive, Federal Government Agency**
4 Co-create and shape emerging data initiatives	• Align methodologies and standards across initiatives • Prevent duplication across new and ongoing efforts	From your side, you determine what you want to use data for… We always design instruments to collect it **– Snr. Official, State Ministry of Agriculture**
5 Identify and fill critical data gaps	• Fill critical data gaps across underserved priority value chains (e.g., livestock, aquaculture) and data types (farmer economics, market flows, logistic and infra.)	Our report talks about wet season… that's the one we had largely funding for… you will not see crops like wheat… we don't have [that] data **– Snr. Official, Federal Government Agency**
6 Rollout basic management information systems (MIS)	• Enable institutions capture data consistently and sustain data generation activities over time	We just keep the data in a Google Drive…If you see our raw data, you won't be able to use them…[we need] an application that we can use to be sorting these… We want our data collection to be automated **– Snr. Official, Federal Government Agency**

Source: Team analysis; Expert and Stakeholder interviews

03

Private-sector datasets can play a key role in the agricultural data ecosystem, including validating public data, filling critical gaps and enhancing granularity, but are unlikely to provide a standalone foundation for system-wide intelligence.

> **I have a team… responsible for getting me prices from all the field locations on a daily basis. As of today I think we track up to 50 markets**
>
> – Executive, Investment Management Firm

LAGOS BUSINESS SCHOOL
PAN-ATLANTIC UNIVERSITY

3 Private sector actors – particularly aggregators and exchanges – hold granular, operational data on prices, transactions, and farmer activity

Data is commonly captured by this actor type | Data is somewhat captured by this actor type

Actor types (private sector only)	Price[1]	Production & Yield[2]	Volume & Market Flows[3]	Market Participants[4]	Farmer Demographic[5]	Farmer Economics & Input Use[6]	Logistics & Infra[7]	Weather / Agroclimatic[8]	Investment & Credit Flows[9]	Trade Flow[10]
A Capital allocators	■	■	N/A	■	■	■	■	N/A	■	N/A
B Food processing and exporters	■	N/A	N/A	N/A	■	N/A	■	N/A	N/A	N/A
C Agricultural product dealers (incl. aggregators)	■	■	N/A	N/A	■	■	■	N/A	■	N/A
I Exchange platforms	■	■	N/A	■	■	■	■	■	N/A	N/A
K Research Institutions	N/A	■	N/A	N/A	■	■	N/A	■	N/A	N/A
N Private data collection networks	■	N/A	N/A	N/A	■	■	■	N/A	N/A	N/A

> "Everybody focuses on building up the resource to address their own... The silos are specialization-motivated silos. Your specialization inspired silos, where you are. And it's not just about being in a crop, it's about what end of the value chain" – Executive, Large Agro-Processor

> "I have a team of two field guys, one desk analyst... Field guys are responsible for getting me price from all the field locations... on a daily basis, we are tracking all of these prices. As of today, I think we track up to 50 markets" – Executive, Investment Management Firm

1. Price (Farmgate, Wholesale, spot, and futures prices across commodities and markets); 2. Production & Yield (Crop area, harvest volumes, and yield estimates by geography/season); 3. Volumes & Market Flows (Quantities of produce reaching wholesale markets, storage facilities); 5. Farmer Demographic (Verified farmer profiles linking identity, land, crops, value chain participation); 6. Farmer Economics & Input Use (Cost of production, input expenditure, farm-level profitability); 7.Logistics & infrastructure (Road networks, storage capacity, cold chain availability, market access data); 8. Weather / Agroclimatic (Rainfall, temperature, climate risk data for agricultural planning); 9. Investment & credit flows (Agricultural lending volumes, insurance coverage, investment disbursements); 10. Trade flows (Import and export volumes, values, destinations by commodity, formal and informal);

Source: Expert and Stakeholder interviews; Assessment of >140 public datasets incl. NAERLS; NBS; FEWSNET; APHLIS; IITA; WFP datasets; UN COMTRADE; IPAD USDA; FAOSTAT; AFEX; Team analysis

3 However, this data is often narrow in scope, fragmented in structure, and difficult to access without strong incentives and trust-based partnerships

Theme	What we found	Implication
Private data is deep but structurally narrow	• Private sector data is often limited to owned farmer networks, specific geographies, crops • Price data dominates; other datasets (e.g., volumes) are structurally constrained • Datasets are developed around program scope only (e.g., tracking out grower program-relevant hectares only vs tracking the entire area being farmed) • Data is generated at transactional moments, not continuously/timeseries • Data networks are frequently built on personal relationships	Private sector alone cannot provide market-wide or system-level visibility, or the multi-year time series signals that investment and policy decisions require
Data quality and completeness are inherently constrained	• Weak farmer identity and verification systems subject to errors, duplications, gaps, decay and intentional misreporting • Commonly manual collection and data entry; inconsistent use of digital systems • Field-reported data (e.g., price) requires constant active validation	Even large private datasets may be noisy, inconsistent, and incomplete
Data is fragmented, non-standardised, and operationally structured	• Data is typically stored in Excel, proprietary tools or PDFs – APIs largely absent • No common schema across actors; basic measurement units vary by state • Price data collection is manual, episodic, and locally specific • Ecosystem silos are structural, motivated by actor specialisation and business models • Limited interoperability across actors	Private sector data may be exceptionally difficult to integrate, compare, and scale across actors – it may only be worth it for the most hard-to-replicate datasets
Data is proprietary and difficult to access without clear incentives	• Internally generated data is commonly considered strategic IP or competitive edge, even when data collection is considered non-core • No natural ecosystem-wide sharing mechanism operating at scale – requires strong governance and trust (e.g., data rights and competitive safeguards). • Actors facing collective action problems (e.g., insurer penetration) show more openness	Accessing proprietary data depends on trust, structural incentives, strong governance and clear value exchange

Only specific, hard-to-replicate private sector datasets are worth selectively sourcing (e.g., transaction-level prices, farmer data and behavioral signals).
These datasets are best used to validate public datasets, fill critical gaps, improve granularity and power decision-specific analytics

Source: Team analysis; Expert and Stakeholder interviews

3 Mutual value exchange and robust data sharing governance are needed for long term partnerships with private sector actors

What is required	Emerging illustrative examples	What we've heard
1 Mutual value exchange	Offer aggregated, system-wide benchmarks and decision-grade analytics that individual contributors could not produce independently; Provide technical capacity and methodology support; Co-fund data collection activities; publicly credit contributors	We need to benefit from a kind of a hub… and at the same time, we're also willing to contribute… people that have contributed… should also have some benefits **– Snr. Executive, Financial Institution** If I'm playing in soybean I'll only [have] soybean data.. I might know a lot about it, but what do you cross-reference that against? There are silos of data out there. That's why it helps if consortiums are created for these things to be brought together and aggregated **– Executive, Large Agro-Processor**
2 Governance that builds trust and protects competitive data	Develop MOU-based arrangements specifying permitted uses for data shared; create a governance board with private, public and social sector oversight; Publish full methodology documentation incl. data classification; align survey instruments and reporting standards	Sometimes this data is their competitive advantage. So the governance behind any consortium is very important… it would motivate or demotivate whoever the participants will be… Contributors need governance protection, participation requires clarity on data rights, competitive safeguards **– Snr. Executive, Commodity Exchange**
3 Solving the verification and trust gap	Provide cross-validation using public (e.g., NiMet, NAERLS) and private (e.g., AFEX) datasets	Any data source they use needs to have a clearly explainable methodology so they can defend the output **– Executive, Agricultural Service Provider**
5 Technology infrastructure to enable seamless sharing	Build and publish APIs as the primary data ingestion channel for contributors; develop lightweight connectors to ingest Excel and PDF data; Provide technical onboarding support	From a tech point of view, let's have APIs, you have APIs, we integrate. [Today] the data is probably sent to you in Excel sheet or PDF documents and you probably have to wait a long time." **– Executive, Aggregator**

Source: Team analysis; Expert and Stakeholder interviews

04

Funding is the binding constraint on the agricultural data ecosystem; while resources exist, limited coordination around shared priorities reduces their aggregate impact and contributes to duplication.

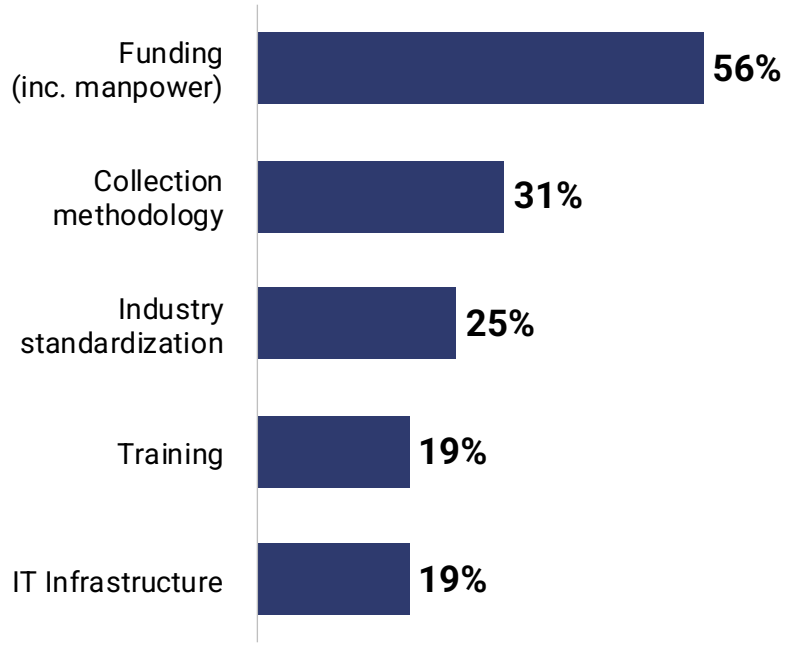
Everybody wants data, but nobody is willing to pay for it. If we don't start the discussion there, we will have this meeting again in a few years and we'll still be seeing deficits...

Most of these actors in the system work in silos. That's the tragedy. If you hadn't come here, you wouldn't know most of the programs that we are running

– Senior Representative, International Development Org.

4 Funding is the binding constraint on agricultural data collection; sustainability requires addressing the structural limitations across existing sources of funding

Constraints to primary data collection, % of actors[1]



> The largest and most important [barrier to scalable data collection is lack of financing
> **– Executive, Private Data Collection Network**

Sources of funding for primary data collection, % of actors[1]

> We have issues with funding… the funding from government is not enough to conduct this exercise… we could do more, but majorly we are limited [by lack of] funding
> **– Snr. Official, Federal Government Agency**

> Everybody wants data, but nobody is willing to pay for it. If we don't start the discussion there, we will have this meeting again [in] a few years, we'll still be seeing deficits in some areas
> **– Snr. Official, Development Organisation**

Key insights and implications

- Funding is the primary constraint on ecosystem data collection
- Each funding source has different structural challenges:
  a) Government funding is often tied to annual budget cycles, limiting multi-year continuity;
  b) Donor funding is project-bound, producing episodic activity;
  c) Commercial revenues alone are insufficient to sustain system-wide data activities
- No single source can anchor ongoing sustainability. As such, blended models are necessary
- Opportunity to coordinate across key ecosystem players for efficient resource allocation

Funding is required to facilitate and support across existing data initiatives, ensuring they are enabled to execute sustainably

Source: Team analysis; Expert and Stakeholder interviews

1. Based on analysis of ecosystem stakeholder interviews (55+ interviews); multiple responses allowed

4 Fragmentation across development partner-led initiatives limits efficient funding allocation. Greater coordination could drive improved synergy and sustainability

Development partner-led initiatives lack coordination across the Nigerian agricultural data ecosystem, despite having shared system-wide priorities

> Most of these actors in the system work in silos. That's the tragedy. If you hadn't come here, you wouldn't know most of the programs that we are running
>
> Snr. Representative, International Development Organisation

> I'm not sure why we have to duplicate efforts... Nigeria seems to be good at duplicating efforts in everything
>
> Snr. Representative, International Development Organisation

> A lot of organizations still hog their own data... it's expensive
>
> Snr. Representative, International Development Organisation

Implication and opportunity

There is an opportunity is to orchestrate across government and development partners to shape and align funding priorities, driving improved synergy of funding towards shared, system-critical priorities.

Without a coordination mechanism, development partners may continue to solve the same problems independently, propagating an inefficient allocation of resources towards fragmented outputs, rather than building the shared infrastructure the ecosystem needs most.

1. Based on team analysis of ecosystem stakeholder interviews (>30 interviewee responses)

Source: Team analysis; Expert and Stakeholder interviews

05

A small number of investment and resource allocation decisions are system-critical, driving outcomes across the value chain; however, these decisions are routinely made without access to decision-grade intelligence.

The marginal cost of adding a value chain is not just understanding the commodity, it's building an entirely parallel intelligence network

– Director, Agriculture Services Provider / Aggregator

4 High-impact investment and resource allocation decisions occur across multiple nodes of the agricultural value chain in Nigeria

Based on the FAO Agri-Value Chain Analysis Framework, USAID/M4P Value Chain Framework and IFAD Value Chain Development Guidelines

Value chain breakdown[1]	Inputs & Services	Primary Production	First-mile Aggregation	Processing	Trading & Distribution	End markets
	Input distribution, input credit and subsidies, extension services, vet services, breeding inputs, feed supply chains	**Planting and harvest cycles, herd rearing and management, grazing and feed systems, farm and pond management**	**Trader-led aggregation, middlemen networks, farm-gate, collection and aggregation hubs**	**Small-scale and industrial processing, slaughtering and meat processing, fish processing and preservation**	**Wholesale markets, regional and cross border trade, trading and distribution networks, transport to urban markets**	**Domestic consumption, industrial demand, export markets**
Actors and decision makers across the value chain						
Agri-players	• Input suppliers • Agro-dealers • Extension providers	• Smallholder farmers • Commercial farms • Farmer Cooperatives	• Traders/Middlemen • Aggregators • Commodity Exchanges • Outgrower operators	• Food processors • Agro-industrial firms • SME processors	• Wholesalers • Distributors • Logistics providers • Exporters	• Consumers • Industrial buyers • Export markets • Retailers
Cross-cutting stakeholders	Finance and Risk Services: Commercial Banks, DFIs, Microfinance institutions, Non-life Insurers Policy and Regulatory Environment: Federal and State Government Agencies, Regulators Development & Program Ecosystem: Donors, NGOs, research institutions and program implementers					
Nigeria examples (illustrative – not exhaustive)	Notore, Animal Care, Durante Fish Inc, One Acre Fund, chi Farms Ltd, Asada Foods, alluvial, Babban Gona, AFEX, Koolboks, ThriveAgric, FMN, Olam, Amo Farm Sieberer Hatchery Limited, Nigerian Breweries, AgroEknor, Verdantis, bokku!, Walmart					
	FMAFS, Sterling, GF, AGRA, IITA, IFAD, GALVmed, NAIC, LEADWAY					

- At each node, actors make decisions that determine how capital, resources, and interventions are allocated across the system
- Decisions are interdependent – constraints at one node (e.g., aggregation or logistics) can limit outcomes at others (e.g., processing)
- We use this structure to systematically identify which decisions matter most — and where they are most constrained.

Source: FAO; USDA; World Bank; GAIN; Team analysis; Expert and Stakeholder interviews

1. Value chain Nodes are not strictly sequential; decision-making and flows are often iterative and overlapping

5 Eight decision areas are system-critical at specific nodes across the agriculture value chain, where they unlock the value across the ecosystem

Based on interviews with +55 agriculture ecosystem actors and stakeholders

Source: Team analysis; Expert and Stakeholder interviews

1. Decisions made by public and development actors that set system priorities, allocate funding, and define the operating environment for value chain participants;
2. Comprises decisions that determine where capital is deployed, which parts of the value chain are developed and how resources (capital, product, relationships) are distributed across markets, actors, and geographies

5 The gap in *decision-grade* data to support these decisions forces costly and inefficient workarounds by ecosystem actors

The Private Sector relies on costly workarounds and proxies to make key decisions

Building out parallel data infrastructure

> The marginal cost of adding a value chain is not just understanding the commodity, it's building an entirely parallel intelligence network

Snr. Executive, Aggregator

Duplication of primary data collection activities

> Investors don't trust the datasets that exist and are more interested in carrying out primary research for new projects. When data exists, it is for reassuring investors based on primary research.

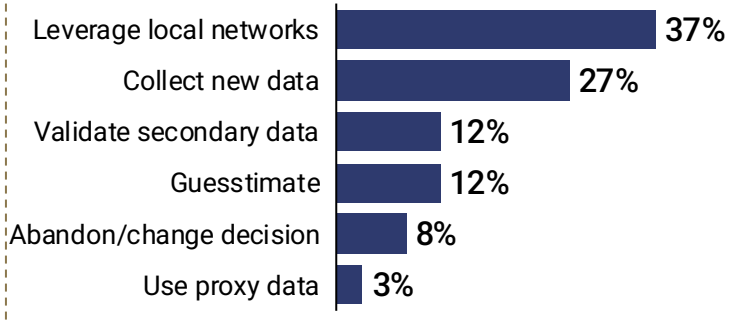
Partner, Institutional Investor

Manual triangulation to approximate truth

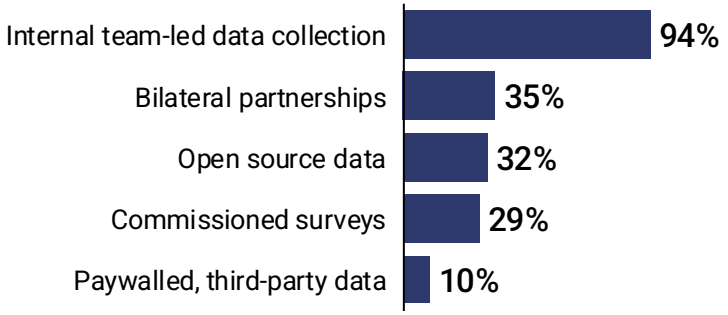
> We look at everything to come to a decision. . . We have large out grower programs we tap for relevant data and on a larger scale, we triangulate with customs, tax data, to get a sense of truth

Executive, Agricultural Service Provider

Most common response to critical data gaps, %[1]



Share of players that rely on different ongoing methods to meet their data needs, %[1]



This approach is systemically inefficient and limits the ecosystem

Duplicated efforts:
Multiple ecosystem players collate the same datasets and develop similar workarounds to meet their data needs

Limited system learning:
Proprietary data collection constrains data sharing. This leads to sub-optimal choices made across the private and public sector as decision makers lack access to system-wide data to learn from

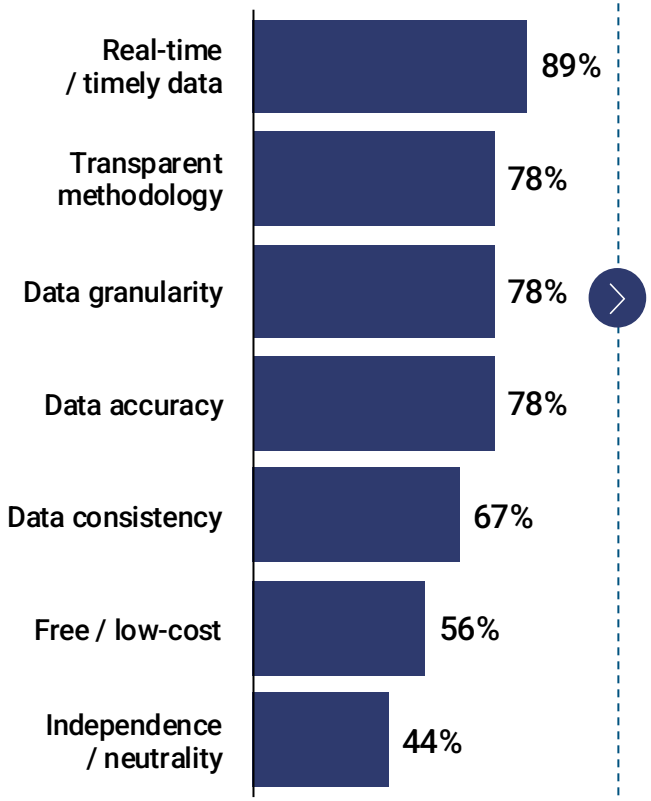
Constrained view of data:
Workarounds are commonly cross-sectional and specific to player contexts – they rarely offer a broad view or time-series data

Source: Team analysis; Expert and Stakeholder interviews

1. Based on analysis of ecosystem stakeholder interviews (55+ interviews); multiple responses allowed

5 Providing data and insight solutions to support these decisions would require several things to be in place

Data and platform features that would most unlock actor decision making, % of decision makers who agree[1]



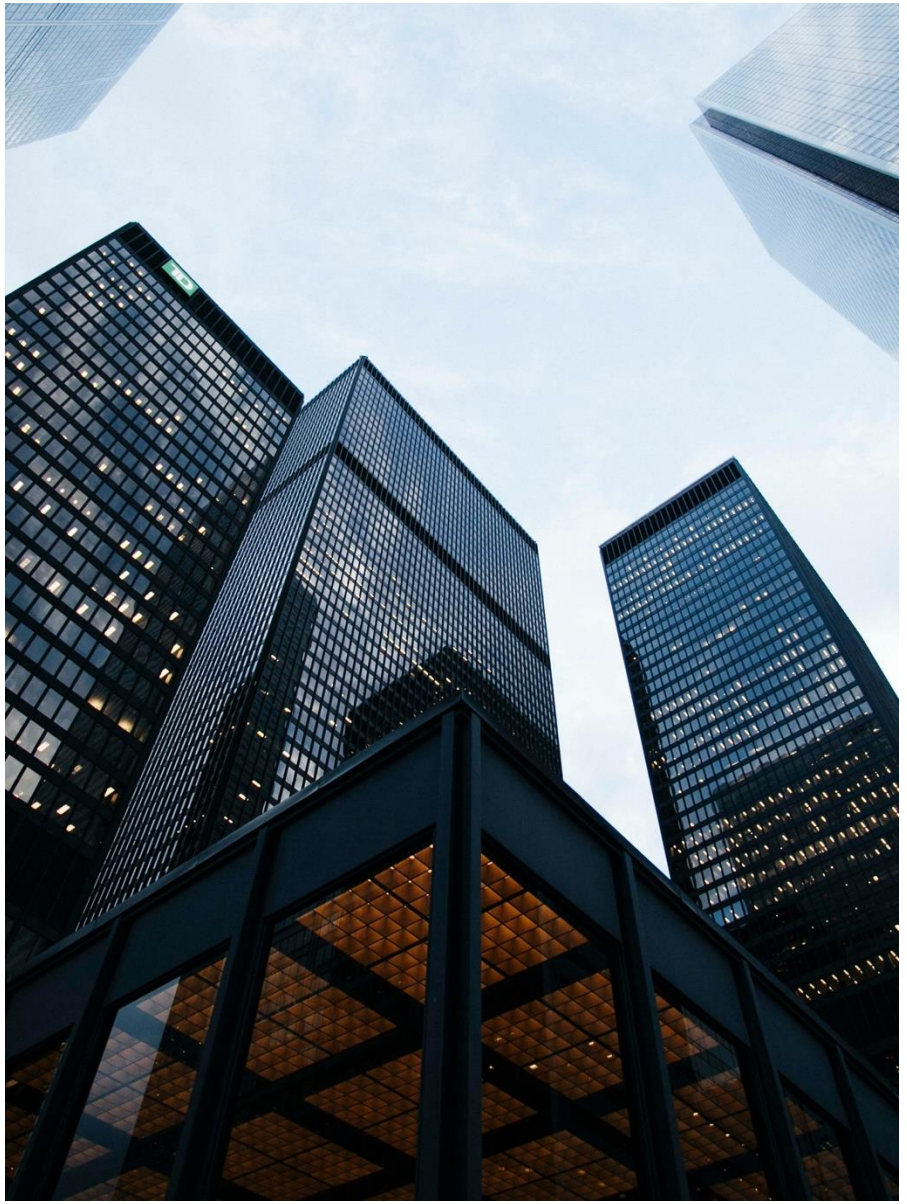
System-wide data interventions must design for the following elements from day 1

Accessibility	Data must reach each user type through appropriate channels and formats	"A farmer in a remote community will not have the same level of technology as a capital market operator, but both need market prices" — Executive, Commodity Exchange
Affordability	Cost must not be a barrier to access for priority users	"Farmers have the weakest appetite, ability to pay… NGOs were paying [for the farmers]. [Financial Institutions] were the only people who were genuinely paying" – Exec, Agri-Tech Platform
Trust & Credibility	Methodologies must be transparent, validated, and consistently applied over time	"It's better to also show your data sources, where or how you source this data, because that would help to ascertain its reliability." — Snr. Official, Development Organisation
Relevance & Insightfulness	Data must be decision-grade, and analysis tailored to decision-maker groups	"I felt strongly in my bones that 460 was just too low for soybeans. But because I didn't know whether we truly produced 1.5 million metric tons, I couldn't take a call." — Exec., Financial Institution
Timeliness	Data must be current enough to inform the decision at hand	"Price data had better be every day. And you must collect it at the same time, else you are comparing apples with oranges." — Exec., Aggregator

Source: Team analysis; Expert and Stakeholder interviews

1. Based on analysis of ecosystem stakeholder interviews (55+ interviews); multiple responses allowed

Part 3. Learnings From Our Peers:
Case studies of agricultural data systems and intermediary models in emerging markets



We examined agricultural data systems and intermediary models across four emerging markets

	1 India	2 Brazil	3 South Africa	4 Kenya
Rationale for selection	Most structurally comparable: Public sector fragmentation, historical administrative context, and demographic and geographic diversity echoes Nigeria. Well-documented recent reforms	Aspirational benchmark: Advanced emerging market example and clear benchmark for Nigeria's agriculture sector. Illustrates embedded, non-government-led analytical intermediation at scale	Geographic and institutional proximity: Relatively mature agricultural sector in the same region. Transferable governance model – non-profit, university-anchored, and industry-governed intermediation.	Rapidly evolving ecosystem: Kenya offers lessons from an agricultural data landscape being actively shaped by multiple government, private-sector, and development-partner initiatives.
Key lesson	**Governance-embedded intermediary**	**Decision-embedded intermediary**	**Independent analytical intermediary**	**Ecosystem-orchestration intermediary**

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

Learnings from Agricultural Data Systems and Intermediary Models in Emerging Markets

Design Principle	1. India	2. Brazil	3. South Africa	4. Kenya
A. Anchor use cases in top priority decisions and value chains, and build data around them; do not optimise for data comprehensiveness	**Strong (MSP, food security; data structured around policy workflows; Broad value chain coverage from launch atop pre-existing infra. (e.g., AgMarknet)**	**Very strong (credit, insurance, trading; data embedded in financial decisions); CEPEA 1st price index in cattle (1994), expanded over 40 yrs**	**Strong (market + banking decisions; analytics aligned to industry); BFAP started with grains and oilseeds, expanded through commissioned research**	**Still evolving; policy and investment use cases emerging, but not yet deeply embedded**
B. Data production quality matters more than data aggregation	**Mixed (informal markets, lag issues, fragmentation)**	**Strong (source collection credibility)**	**Strong for key value chains; breadth constrained by upstream gaps**	**Constrained; production-layer gaps persist despite emerging aggregation effort**
C. Systems evolve as specialist producers + intermediary layer; requires selective primary data investment	**Moving toward integration (UPAg), but still reliant on fragmented, specialist producers**	**Clear specialization (CONAB vs CEPEA), with strong upstream data reducing need for central collection**	**Strong integrator model (BFAP + SAGIS), but constrained where production data is weak**	**Emerging integrator (SAFIC); KilimoStack designed as foundational layer, with planned gov't handover**
D. Sustainability of the intermediary layer requires embedding in core financial and/or policy decisions	**Policy-driven sustainability**	**Deeply embedded (credit, insurance, markets)**	**Industry + statutory funding**	**Donor-funded, not yet embedded**
E. Governance model shapes trust (authority vs independence)	**Authority-led**	**Hybrid (gov't + academic)**	**Independent + statutory**	**Independent (Academic) + government association**
F. SHF coverage gaps are structural	**Real time farmer registry incomplete**	**No real-time farmer registry**	**Smallholders largely invisible**	**Real-time farmer registry progressing but incomplete**

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

UPAg: Government-led

Case Study 1: India's shows that a focused, governance-embedded intermediary can unlock decision-grade agricultural data

CONTEXT AND ECOSYSTEM

India's system is evolving in response to fragmentation across geography, demography and data, similar to Nigeria today

Three pressures led the data ecosystem to begin to evolve

1. Agency fragmentation forced manual reconciliation before any analysis. Analyses and decisions were delayed and error-prone
2. The scale of government market intervention created an operational data requirement (e.g., MSP-setting, procurement)
3. Rural credit subsidies created fiscal risk without reliable data

Agricultural data ecosystem historical context per layer

i Data Users

CACP, commercial banks, agribusinesses - Previously relied on costly workarounds: parallel surveys, risky lending, private field data. Now, increasingly use UPAg for crop monitoring, market intelligence

ii Data intermediaries

Agmarknet (price only), ICRISAT District DB - Historically solutions were fragmented and inconsistent, with no harmonization mandate. Now UPAg integrates across multiple agencies into a single platform.

iii Data producers

DES, CACP, NSSO, ICAR, 28 State Directorates - Agencies produced data under a separate mandates; different methodologies, duplicated efforts. Now, progressively feeding UPAg. Standardization ongoing.

iv Governance & Infrastructure

Government systems were not interoperable. Data sharing was voluntary. Now, the Digital Agriculture Mission provides mandate and funding, led by DA&FW leads. Farmer registry remains incomplete.

DESIGN AND ONGOING CHALLENGES

In response to these pressures, UPAg was designed around 3 specific functional gaps

1. Standardization across fragmented data sources

Agmarknet price data existed but was in inconsistent units and formats across mandis. UPAg converts inputs from DES, Agmarknet, CACP, and Ministry of Commerce into consistent formats

2. Validation of secondary datasets

UPAg automates triangulation across secondary data sources to identify anomalies, missing entries, and implausible movements in price data before publication

3. Decision-grade outputs for public and private sector

Existing data was not structured around key institutional decisions workflows (such as CACP/MSP, food security monitors). UPAg builds around decisions, automates production of commodity profiles (combining multiple data types), and provides API-access for easy use.

Despite progress, structural gaps remain

4. Significant AgriStack enrollment gap

~3.7m SHFs enrolled vs ~110m target. Fragmented land records and weak identity systems challenge coverage.

5. AgMarknet covers regulated markets only

AgMarknet (wholesale price, arrivals) captures APMC data; informal markets (SHF dominant) are largely invisible

6. CACP cost data lag (2-3 years)

MSP-setting relies on outdated cost surveys, misaligned with current input prices.

DATA TYPES AND PARTICIPATING ENTITIES

India's data intermediary layer is fed by a range of data producing entities across each data type

Data product / type	Entity	Maturity
Integrated decision intelligence	UPAg (DA&FW)	
Farmer demographic	AgriStack / DA&FW (3.7m of 110m target enrolled)	
Production/yield	DES; state directorates; MNCFC satellite estimates	
Farmer economics & input use	CACP surveys (2-3 year lag); NSSO household surveys	
Market volumes & arrivals	Agmarknet (regulated markets only; informal markets absent)	
Price	Agmarknet; NCDEX futures; deep, accessible	
Trade flows	DGFT/ICEGATE customs data; comprehensive, granular	
Investment & credit flows	RBI / NABARD / Kisan Credit Card data; published, accessible	
Agroclimatic risk	IMD + MNCFC; embedded in decisions	

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

1. MSP – Minimum Support Price (government-guaranteed floor price for agri commodities); CACP – Commission for Agricultural Costs and Prices (sets MSP for crops); DES – Directorate of Economics and Statistics (produces national crop estimates, Ministry of Agriculture); NSSO – National Sample Survey Organization (conducts periodic household and agricultural surveys); ICAR – Indian Council of Agricultural Research; Agmarknet – Agricultural Marketing Information Network (government-run wholesale price database across regulated markets); ICRISAT – International Crops Research Institute for the Semi-Arid Tropics; UPAg – Unified Portal for Agricultural Statistics; DA&FW – Department of Agriculture and Farmers' Welfare (host ministry for UPAg); AgriStack – India's digital farmer registry initiative (under the Digital Agriculture Mission); MNCFC – Mahanadi National Crop Forecast Centre (produces satellite-based crop area and production estimates, used alongside DES ground surveys); NCDEX – National Commodity and Derivatives Exchange (India's primary agricultural futures exchange, benchmark commodity price data); DGFT – Directorate General of Foreign Trade (India's trade policy and export-import licensing); ICEGATE – Indian Customs Electronic Gateway; IMD – India Meteorological Department (weather and agroclimatic data agency); RBI – Reserve Bank of India (publishes agricultural credit and banking data); NABARD – National Bank for Agriculture and Rural Development (publishes agricultural credit flow reports).

Case Study 1: Key learnings from India (UPAg)

Lessons from India

A

Outputs were designed around core decision workflows, e.g., MSP-setting, food security monitoring, market intervention. Adoption followed usefulness rather than comprehensiveness.

B

A tightly defined scope made the intermediary platform feasible. UPAg explicitly excluded primary data collection, comprehensive crop coverage, and farmer registries.

C

Data sharing is mandated across key sources, reducing reliance on relationship / goodwill and mitigating risk of long-term degradation.

D

Funding is long-term and predictable, rather than demand- or project-led, reducing discontinuity risk.

E

A clearly defined institutional role within a government ministry with statutory authority anchored the platform, providing accountability and continuity.

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

CEPEA: Non-government / Academic; CONAB: Government-sector led

Case Study 2: Brazil shows that agricultural data systems work when institutions embed data directly into financial and market decisions

CONTEXT AND ECOSYSTEM

Brazil's system evolved in response to key market pressures and intervention needs

Three pressures led the data ecosystem to begin to evolve

1. Growing agriculture export scale and importance drove demand for credible market signals (e.g., crop forecasts, price references)
2. Key state interventions (e.g., minimum prices, subsidized credit) required real-time market visibility to be effective
3. Large-scale rural credit created fiscal risk from insuring plantings

Agricultural data ecosystem historical context per layer

i Data Users

Government (MAPA/MDA), BCB, commercial banks, agribusinesses Historically reliant on costly workarounds and proxies. Now, decision makers rely on CONAB, CEPEA, and ZARC outputs for key decisions.

ii Data intermediaries

CONAB, CEPEA, ZARC - No fully trusted intermediary existed. Traders suspended cattle futures; government set minimum prices on lagging data. Now, CONAB and CEPEA provide trusted ecosystem integration

iii Data producers

IBGE, CONAB, BCB/SICOR, INMET, Embrapa – Producers operated independently with limited standardisation or coordination. Now, feed into a structured, functional ecosystem with clear mandates

iv Governance & Infrastructure

Was largely absent or fragmented. Now, more structured, e.g., ZARC outputs are embedded in legal credit and insurance frameworks; CEPEA independence (University-led) supports price policy legitimacy

DESIGN AND ONGOING CHALLENGES

These pressures produced a set of specialized intermediaries solving different decision problems

1. CONAB – Crop intelligence for the Public Sector

Integrates crop monitoring, minimum prices, cost of production, stocks, and logistics into policy-support intelligence that directly feeds government market interventions, incl. public auctions, strategic stocks, and minimum price purchases

2. CEPEA – Price reference infrastructure for the Market

Produces daily transaction-based price indices for 15+ value chains; cattle, corn, and soybean indices are formal B3 futures settlement references, embedded in markets

3. ZARC – The key to viable crop insurance

Converts agroclimatic data into municipality-level planting windows formalised as MAPA ordinances, with compliance required for crop insurance access. Has resulted in an estimated R$3.6 billion in annual loss avoidance2

Despite progress, structural gaps remain

4. No real-time national farmer registry

In practice, Agricultural census runs every 7-11 years. Latest (2024) is still ongoing.

5. CONAB crop estimates face credibility challenges

CONAB faces a credibility gap with market actors3, in part due to its dual role as data producer and policy executor

6. No integrated view on agricultural investment

Consolidated agricultural investment flows absent across all institutions

DATA TYPES AND PARTICIPATING ENTITIES

Brazil's data intermediary layer is fed by a range of data producing entities across each data type

Data product / type	Entity	Maturity
Integrated decision intelligence	CONAB (policy); CEPEA (market)	
Farmer demographic	IBGE Agricultural Census (last 2017, latest 2024 [ongoing])	
Production/yield	IBGE LSPA/PAM; CONAB safra; monthly, comprehensive	
Farmer economics & input use	CONAB cost of production; CEPEA farm margins	
Market volumes & arrivals	CONAB / Prohort (horticultural); monthly, not-comprehensive	
Price	CEPEA indices (B3 settlement reference); CONAB price series	
Trade flows	Federal customs/Secex; used by CONAB and analysts	
Investment & credit flows	BCB / SICOR / Proagro; systematic, accessible	
Agroclimatic risk	INMET + MAPA/Embrapa ZARC (Proagro eligibility-linked), written into law	

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

1. MAPA – Ministry of Agriculture and Livestock; MDA – Ministry of Agrarian Development and Family Farming; CONAB – National Supply Company (federal crop intelligence and market intervention agency); CEPEA/ESALQ-USP – Centre for Advanced Studies on Applied Economics, University of São Paulo (produces commodity price indices used for market settlement); B3 – Brazil's main commodities and stock exchange; IBGE – official national statistics agency; LSPA – monthly IBGE crop production survey; PAM – annual IBGE municipal crop production survey; BCB – Central Bank of Brazil; SICOR – Central Bank rural credit operations database; Proagro – federal crop insurance programme; ZARC – Agricultural Agroclimatic Risk Zoning (Embrapa-developed planting risk classification; compliance required for Proagro access); Embrapa – federal agricultural research corporation; INMET – National Institute of Meteorology; Prohort – CONAB wholesale horticultural market tracking system; Secex – Secretariat of Foreign Trade
2. Embrapa (Brazilian Agricultural Research Corporation)
3. Farmdoc daily (University of Illinois): Janzen, Colussi, and Irwin, "What Explains the Disparity between USDA andConab over Brazil's Soybean Crop Size?" (April 2024)

Case Study 2: Key learnings from Brazil (CONAB, CEPEA, ZARC)

Lessons from Brazil

A

A private institution can become infrastructure when markets depend on it to make key decisions. CEPEA is infrastructure because B3 cannot settle futures contracts without its index.

B

Data rapidly changes behaviour when embedded in decisions actors are required to make. Agroclimatic data existed before ZARC, however behaviour only changed once compliance became critical for insurance and credit access.

C

The binding constraint is collection quality, not aggregation architecture. CEPEA and CONAB both collect from source. Neither became trusted by harmonising weak upstream data, but by credibly collecting data and embedding insights in institutional decisions

D

Sustainability often follows from necessity. For example, CONAB's data is sustained because key government interventions require it (e.g., minimum prices, subsidized credit).

E

The farmer registry problem is unsolved even in mature systems. In practice, Brazil runs its agricultural census every 7-11 years, with no real-time farmer registry.

F

An independent, academic home can be a unique governance opportunity. CEPEA is housed at ESALQ/USP. Its independence strengthens the legitimacy of its price benchmarks, and partially insulates it from political interference and commercial pressure

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

BFAP: Non-government / academic

Case Study 3: South Africa's agricultural data system shows that a university-led analytics intermediary can harmonise fragmented data

CONTEXT AND ECOSYSTEM

South Africa's system evolved in response to sudden market reform in 1996, and a consolidated, credit-dependent sector

Three pressures led the data ecosystem to begin to evolve

1. 1996 deregulation created a data vacuum. Marketing boards were abolished, collection systems tied to controls disappeared. Liberalized markets had no replacement for price discovery.
2. A few large operators controlled grain market visibility, limiting government's ability to intervene (e.g., food security, inflation)
3. Highly-leveraged sector drove demand for reliable market data

Agricultural data ecosystem historical context per layer

i Data Users

Government (DALRRD, Treasury), banks, agribusinesses. Previously set prices, made credit decisions without reliable data. Now, rely on SAGIS flows data, SAFEX price signals and BFAP analysis

ii Data intermediaries

BFAP - No trusted intermediary post-deregulation; no single actor could produce the required data. Now, BFAP offers independent horizontal integration atop specialist verticals (e.g., SAGIS, Stats SA)

iii Data producers

SAGIS, Stats SA + CEC, SAFEX/JSE, SAWS - Operated independently with limited coordination. Now, have clear specialist boundaries as data domain verticals (e.g., SAGIS for grain flows, SAWS for weather)

iv Governance & Infrastructure

Absent or fragmented at deregulation. Now, mandated statutory reporting to SAGIS (funded by industry trusts), while BFAP's independence (University-led) drives output credibility

DESIGN AND ONGOING CHALLENGES

This led to the development of deep data producing entities (public- & private-sector) requiring integration

1. BFAP – The horizontal integrator and analytics layer

Est. 2004 under University of Pretoria to convert fragmented secondary data into decision intelligence. Synthesises production, prices, weather, costs, and trade into forecasts and analytics outputs used by government, banks and agribusiness (e.g. Baseline Outlook, AgriTrends in collaboration with Absa Bank). Credibility comes from academic independence.

2. Key specialist verticals which feed into BFAP

- SAGIS: industry trust led and funded; weekly grain flows, stocks and prices; mandatory reporting from agribusiness operators for 9 grains
- Stats SA + Crop Estimates Committee: production data. Official trend data and in-season crop estimates.
- SAWS: agroclimatic data. Used in forecasting, production modelling.
- SAFEX/JSE: grain futures prices. Used by traders, processors, and lenders for positions, contract pricing.

Despite progress, structural gaps remain

3. SAGIS covers 9 grains only

No equivalent statutory reporting for other grains, horticulture, livestock, or poultry

4. No comprehensive farmer registry

SHFs and non-grain producers remain structurally invisible, as data ecosystem was built around commercial actors

DATA TYPES AND PARTICIPATING ENTITIES

South Africa's intermediary layer involves a horizontal analytics integrator atop specialist data producers

Data product / type	Entity	Maturity
Integrated decision intelligence	BFAP (analytical); NAMC (policy monitoring); industry embedded	
Farmer demographic	Stats SA Agricultural Census (last in 2017); SHF largely invisible	
Production/yield	Crop Estimates Committee (CEC); grains only	
Farmer economics & input use	BFAP farm-level modelling (commercial farms only)	
Market volumes & arrivals	SAGIS (grains/oilseeds only), limited for others (e.g., livestock)	
Price	SAFEX/JSE futures; SAGIS spot prices (grains/oilseeds only)	
Trade flows	SARS customs; SAGIS cross-referenced	
Investment & credit flows	Land Bank; fragmented, no consolidated source	
Agroclimatic risk	SAWS; used by BFAP and Crop Estimates Committee	

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

1. SAGIS – South African Grain Information Service (industry-governed, statutory-mandate commodity data body for grains and oilseeds); BFAP – Bureau for Food and Agricultural Policy (independent non-profit analytical intermediary, University of Pretoria); NAMC – National Agricultural Marketing Council (statutory advisory body, monitors agricultural markets and advises DALRRD); DALRRD – Department of Agriculture, Land Reform and Rural Development; Stats SA – Statistics South Africa (official national statistics agency); SAWS– South African Weather Service; SAFEX/JSE – South African Futures Exchange, now part of Johannesburg Stock Exchange (grain futures market; primary price reference for grains); SARS – South African Revenue Service (customs data, cross-referenced by SAGIS); Land Bank – state development finance institution for agriculture; Marketing of Agricultural Products Act – Act 47 of 1996 (legal basis for SAGIS statutory reporting mandate and NAMC advisory role); CEC (Crop Estimates Committee – statutory body publishing in-season crop production estimates); AgriTrends – quarterly commodity outlook report co-produced by BFAP and Absa for commercial banking audiences.

Case Study 3: Key learnings from South Africa (BFAP, SAGIS)

Lessons from South Africa

A

Statutory reporting is powerful and can drive near-total sector visibility where actors are few and identifiable (e.g. processors), but faces challenges in fragmented systems (e.g. smallholders).

B

Government authority can exist without government dependency. SAGIS is industry-governed and funded but operates under statutory mandate, combining government authority with independence from public funding cycles.

C

A university-led analytics layer can intermediate across secondary data, without collecting data directly. BFAP has operated for >20 years, housed within Pretoria University and funded through a mix of government contracts, industry subscriptions, and partnerships.

D

The binding constraint is at the data production layer, not the analytics. For example, BFAP's credibility is limited by SAGIS's data quality and value chain coverage. The intermediary layer can amplify existing data, but it cannot substitute for weak data collection structures.

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

SAFIC: Non-government / Academic

Case Study 4: Kenya/SAFIC shows an ecosystem-led analytical intermediary can organize fragmented data, but designing the right data-sharing incentives is critical

CONTEXT AND ECOSYSTEM

Kenya's ecosystem is evolving in response to a fragmented and siloed data landscape, similar to Nigeria today

Two pressures led the data ecosystem to begin to evolve

1. Smallholder fragmentation: large volumes of data is collected across millions of SHFs (government, NGOs, private actors), but in fragmented siloes and incompatible formats
2. Repeated climate shocks (latest in 2020–22) led to coordination for food security, but this was not extended to investment, markets, or credit. Broader data use remains fragmented.

Agricultural data ecosystem historical context per layer

i Data Users

Government, donors, banks, agribusinesses - Previously relied on fragmented surveys and proprietary data workarounds. Now, beginning to use KIAMIS and SAFIC outputs (early-stage adoption).

ii Data intermediaries

SAFIC - No prior integrator; actors all operated in silos. Now, SAFIC increasingly plays role of integrator: mapping data, aggregating public sources, and developing analytical products.

iii Data producers

KNBS, MoALD/AFA, KAMIS, KMD, KIAMIS, ANITRAC – Real progress in specific verticals, e.g., farmer registry (KIAMIS, 7.1m SHFs registered), livestock traceability (ANITRAC, +45% meat exports2).

iv Governance & Infrastructure

Statistics Act (KNBS mandate); KIAMIS governance framework; SAFIC's university base (credibility); donor funding for analytics (with CoP underfunded). KADIC now oversees KIAMIS and ANITRAC (2025)

DESIGN AND ONGOING CHALLENGES

SAFIC is designed around five focus areas in response to this challenging context

1. **Regional AgriAtlas**
   Integrates macro, crop, livestock, and trade data into a single dashboard. Built on a full data landscape mapping; Kilimo AI chatbot enables natural language queries.
2. **Data Infrastructure & Open Access**
   Harmonizes fragmented data into interoperable systems. Includes KilimoStack (enriched farmer registry, linked to KIAMIS) and upgrades to KALRO (AI bots, farmer calculators).
3. **Market & Policy Analytics**
   Prices, forecasts, and policy analysis. Includes value chain studies, e.g., Maize deep dive, Lime commercialization study
4. **Capacity Building and AMDiG CoP**
   A network of ecosystem actors; supports data discovery and sharing. Currently underfunded, relying on ad hoc resourcing.
5. **Insight to Policy Translation**
   Transforms analytics into tools and outputs for policy and investment decisions, e.g., Livestock Investment Dashboard

Despite progress, a few challenges are yet to be solved

6. **Private sector data access is constrained**
   Analytics support unlocked government data, not private, "we haven't hacked it very well what's in it for them"
7. **AMDiG CoP sustainability and data sharing models limited**
   Without funding and clear incentives, CoP remains limited
8. **Mechanism for regular data updates not yet developed**
   SAFIC has aggregated data but lacks a process to keep it current, "… it's still something we are thinking about"

DATA TYPES AND PARTICIPATING ENTITIES

Kenya's data system is nascent; clear progress has been made but structural gaps remain for key data types

Data product / type	Entity	Maturity
Integrated decision intelligence	SAFIC (emerging; Kenya Agri Atlas phase one complete)	
Farmer demographic	KADIC (KIAMIS and ANITRAC)	
Production/yield	KNBS; MoALD administrative data	
Farmer economics & input use	Largely absent: identified as acute gap by AMDiG CoP	
Market volumes & arrivals	No volume or arrivals data systematically captured	
Price	KAMIS (enumerator-based; all 47 counties)	
Trade flows	KNBS / Kenya Revenue Authority; accessible, limited granularity	
Investment & credit flows	Largely proprietary (e.g., AFC/Pula/Apollo); fragmented	
Agroclimatic risk	KMD; accessible but underutilized	

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

1. SAFIC – Strathmore Agri-Food Innovation Centre (university-linked analytical intermediary at Strathmore Business School, Nairobi); AMDiG – Agri-Markets Data for Investment and Growth (SAFIC's Community of Practice bringing together government, private sector, academia, and development partners around agricultural data); KIAMIS – Kenya Integrated Agriculture Management Information System (national digital farmer registry, developed by FAO and now government-owned under KADIC); KADIC – Kenya Agriculture Data and Information Centre (government body, hosting KIAMIS following Nov 2025 handover); KNBS – Kenya National Bureau of Statistics; MoALD – Ministry of Agriculture and Livestock Development; KAMIS – Kenya Agricultural Market Information System (Ministry of Agriculture price and supply reporting system covering all 47 counties); KMD – Kenya Meteorological Department (produces agrometeorological bulletins and advisories); KFSSG – Kenya Food Security Steering Group (multi-agency coordination mechanism; produces biannual food security assessments); KALRO – Kenya Agricultural and Livestock Research Organization (national agricultural research body; hosts KIAMIS platform)
2. Principal Secretary of State Department for Livestock Development, January 2026 "Meat exports from Kenya to the world have increased by 45%. This is due to interventions such as guaranteeing food safety…traceability (ANITRAC) and the signing of various trade agreements."

Case Study 4: Key learnings from Kenya (SAFIC)

Lessons from Kenya

A

The private and public sectors require different incentive models for data sharing. What works for government (e.g., offering analytics support) may not directly transfer to the private sector, where concerns about competitive advantage is a barrier.

B

Data sharing through ecosystem orchestration requires specific governance structures. The AMDiG Community of Practice identified sources and built relationships, however systematic data sharing was not automatic.

C

A dedicated mechanism for regular data updates needs designing from day 1. Keeping data current is harder than one-time aggregation, and requires deliberate design, e.g., recurring data partnerships, automated feeds, scheduled refresh agreements. A platform built on outdated or static data risks long term credibility and trust.

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

Emerging market agricultural data systems converge on similar strengths, with gaps driven by specific contexts and design choices

Data type	Description	1. India	2. Brazil	3. South Africa	4. Kenya
Integrated intelligence	Agri Data aggregation and analytics synthesized into decision-ready outputs	UPAg; six agencies, one portal	CONAB (policy); CEPEA (market [prices indices])	BFAP + NAMC; industry embedded	AgriAtlas; phase one only
Farmer registry & identity	Verified farmer profiles linked to land, crops, and value chain participation	AgriStack; 3% of target enrolled	IBGE census; decennial, static	Stats SA; smallholders invisible	KIAMIS; 7m enrolled, ANITRAC; incentive-driven
Production & yield	Crop area, harvest volumes, and yield estimates by geography and season	DES + MNCFC; frequent, satellite-verified	CONAB safra; monthly, comprehensive	Crop Estimates Committee; grains only	KNBS; infrequent, variable quality
Farmer economics	Cost of production, input expenditure, and farm-level profitability	CACP; systematic but 2-3yr lag	CONAB/CEPEA; commodity-specific only	BFAP; modelled, commercial farms only	Limited systematic collection
Market arrivals & volumes	Produce quantities reaching wholesale markets and storage facilities	Agmarknet; regulated markets only	CONAB/Prohort; monthly, incomplete	SAGIS; statutory but grains only	Limited systematic collection
Price data	Wholesale, spot, and futures prices across commodities and markets	Agmarknet + NCDEX; deep, accessible	CEPEA/B3; benchmark, settlement-grade	SAFEX/JSE + SAGIS; grains only	KAMIS; 47 counties, enumerator-based
Trade flows	Import and export volumes, values, and destinations (formal / informal)	DGFT/ICEGATE; comprehensive, granular	Secex; comprehensive, needs processing	SARS + SAGIS; cross-referenced	KNBS/KRA; accessible, limited granularity
Investment & credit flows	Agricultural lending volumes, insurance coverage, and investment flows	RBI/NABARD; published, accessible	BCB/SICOR; systematic, accessible	Land Bank; fragmented, no consolidation	AFC/Pula/Apollo; proprietary, fragmented
Weather & agroclimatic	Rainfall, temperature, and climate risk data for agricultural planning	IMD + MNCFC; embedded in decisions	INMET + ZARC; written into law	SAWS; accessible, used by BFAP	KMD; accessible but underutilised

Key takeaways

- Price and weather data are broadly solved across ecosystems; represent the most tractable starting points
- Farmer registry maturity depends on active enrollment platforms, not periodic census
- Farmer economics is constrained globally; commonly unlocked by data intelligence hubs
- Statutory mandate is the most proven model for market arrival data
- Data intermediation / intelligence is constrained by the robustness of upstream data production

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

Lessons from peer countries suggest a small number of priorities for Nigeria

A

Coordinate around priority decisions

Coordinate around a small number of shared priority decisions and value chains rather than pursuing comprehensive coverage from day one

B

Design as an integrator

Design as an integrator of existing data, while selectively targeting primary data collection where gaps are binding

C

Balance governance trade-offs

Balance governance structure trade-offs between authority, independence, and stakeholder trust

D

Invest in how data is produced

Invest strategically in how data is produced, not just integrated or made accessible

E

Embed in financial workflows

Link to credit, insurance, or policy workflows early

F

Design around data gaps

Accept that some datasets may always be incomplete, and design around gaps (e.g., triangulation, proxies)

Part 4. Our Response: Nigeria Agri-Business Data & Investment Hub (NADIH)

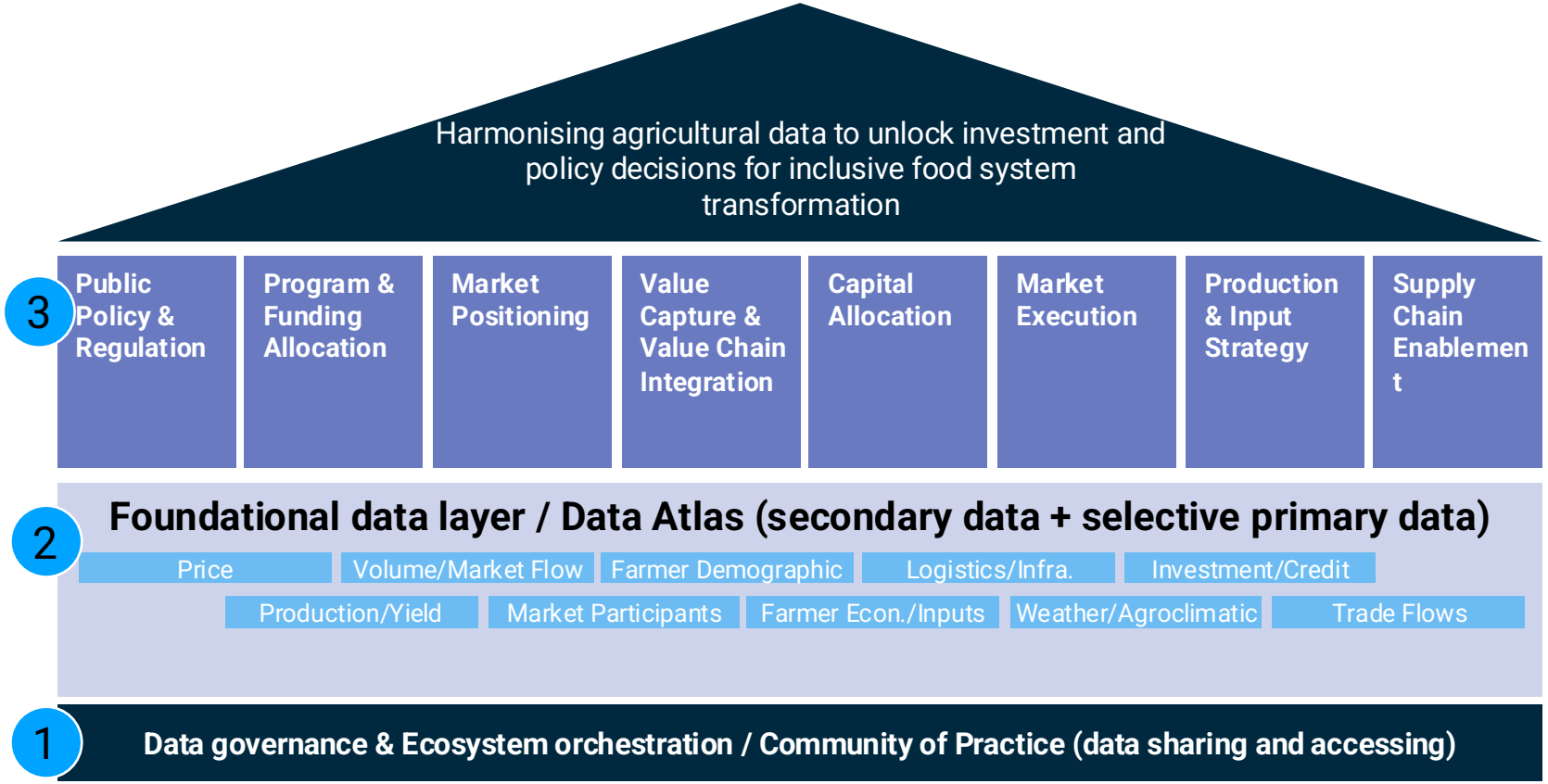
7 design principles emerge from this diagnostic, guiding the development of Nigeria's agricultural data ecosystem and intermediary model

Design Principle	Implication for Nigeria and its Intermediary Model
1 Start with priority decisions and value chains, not a comprehensive data system	Focus on a limited number of decisions and value chains. Build iteratively over time.
2 Integrate existing data but selectively invest in improving data production where gaps are binding	Integrate public, private and academic datasets. Identify critical gaps e.g. livestock and aquaculture, farmer economics, market flows. Coordinate ecosystem data collection efforts around shared priority data gaps
3 Embed outputs into real decision-making workflows	Design outputs for critical decisions (e.g., pricing, credit, investment). Prioritise high utility decision tools and recurring insights for key actors.
4 Take a targeted, differentiated approach to engaging data providers	Coordinate with a few high priority public agencies via deep partnerships; Engage top private sector players via mutual value exchange e.g. sector-wide insights / benchmarking.
5 Act as a convenor and orchestrator of a fragmented ecosystem	Establish an intermediary model with a system orchestrator role (rather than just a platform). Map and coordinate across existing initiatives. Set shared standards and methodologies. Shape new initiatives to tackle fragmentation.
6 Establish a clear governance model that balances authority and independence	Decide on governance model (i.e. government-anchored, independent, or hybrid). Ensure private sector credibility and public sector legitimacy.
7 Build sustainability through embedded demand (not funding assumptions)	Build outputs around sustained user demand (e.g., banks, aggregators). Consider blended funding models for long-term sustainability, e.g., donor-funded with transition towards industry-supported services as usage grows.

Source: Team analysis; Expert and Stakeholder interviews

What are we building:
Nigeria Agri-Business Data & Investment Hub (NADIH)

NADIH's design responds directly to the gaps identified across Nigeria's agricultural data ecosystem



3 **Decision Insights & Intelligence:** Anchors platform in ecosystem demand with tools supporting key decision workflows

2 **Agri Data Atlas – FAIR compliant, AI-ready foundational layer:** Comprises the Hub's core value prop to the ecosystem (harmonization) enables network effect and compounds over time

1 **Data governance & orchestration / Community of Practice:** Establishes the rules, processes and structures required to enable data to flow sustainably, incl. coordination across new and ongoing agricultural data initiatives

NADIH will start with a focused proof of concept before progressively expanding scope and impact

	Narrow prioritization, rapid impact and a robust evidence base to guide scale up	Progressive scale up across Decisions, Users and Value Chains to unlock impact across the Nigerian agriculture ecosystem
	Year 1: Pilot	**Year 2+: Scale up**
Objectives	• Pilot interventions and establish an evidence base to guide scale-up across subsequent years	• Scale programme scope to drive impact across the full Agriculture ecosystem
Key Activities	• Establish key partnerships and launch multi-stakeholder Community of Practice (CoP) • Prioritise focus areas for year 1 (decisions, users, value chains), and high-level roadmap for year 2+ • Harmonize priority datasets into the Foundational Data Layer • Develop and test analytical use cases that support real decisions for key stakeholders	• Expand coverage across decisions, users and value chains based on PoC • Embed outputs within key financial and policy processes • Develop long-term sustainability and funding mechanisms
Focus Areas	• A limited set of Decisions • A limited set of Users • A limited set of Value Chains	• A progressively expanding scope across Decisions, Users and Value Chains

Building Nigeria's agricultural intelligence infrastructure requires collective action from across the ecosystem

The findings in this report point to a clear conclusion: No single institution can solve Nigeria's agricultural data challenge alone.

NADIH is being established as a collaborative platform to transform fragmented agricultural data into harmonized, decision-grade intelligence. Success depends on participation from decision makers, data producers, intermediaries, and ecosystem enablers.

Decision Makers / Users

Help define priority intelligence needs; use NADIH outputs to guide investment, policy, financing, and operational decisions

Data Intermediaries

Partner on analytics, platforms, and tools that translate data into usable, decision intelligence

Data Producers

Contribute data, validate gaps, and support regular updates to strengthen the shared, foundational evidence base

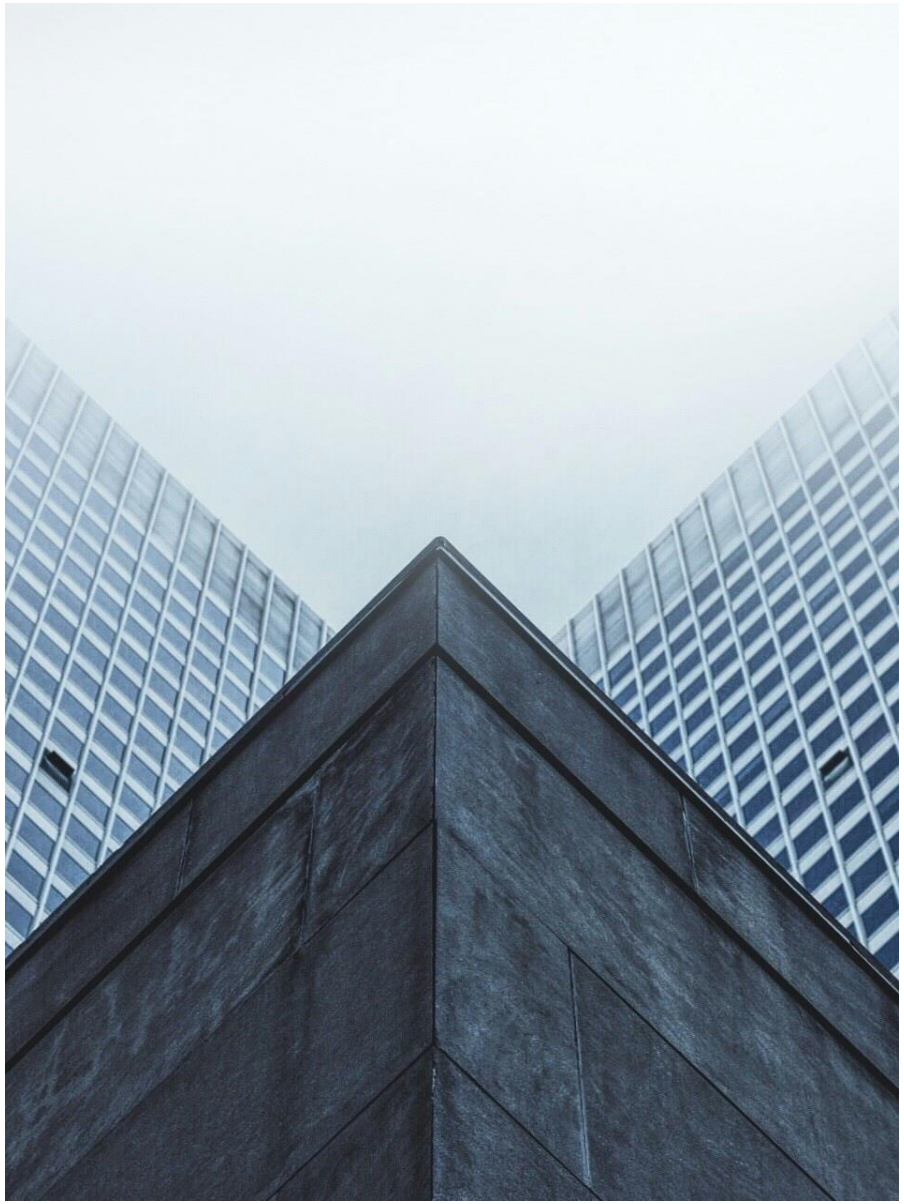
Ecosystem Enablers

Champion, fund, and institutionalise agricultural data infrastructure as a durable public good

Contact us to learn more, explore partnership opportunities, or contribute to the Hub

nadih@lbs.edu.ng

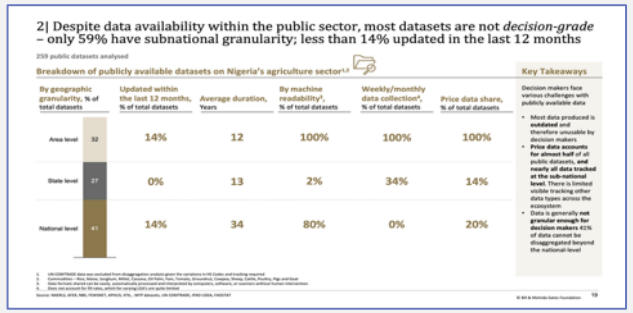
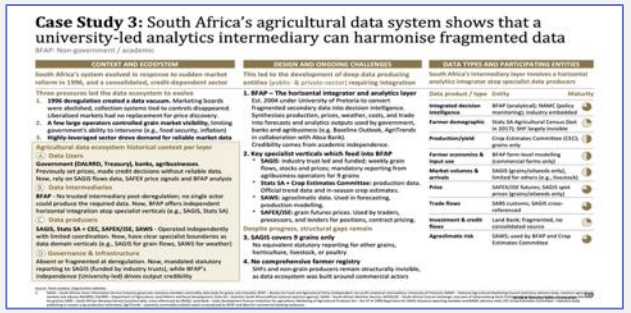
Appendix 1.



Appendix 1. Approach to the Diagnostic of Nigeria's Agricultural Data Landscape

This diagnostic draws on three complementary sources of insight: stakeholder interviews, open-access datasets, and global case studies

Overview of approach used to assess Nigeria Agricultural Data Landscape

			
What we did	Assessed 250+ publicly available datasets across Nigeria's agricultural sector, evaluating availability, coverage, and quality against enterprise data quality dimensions consistent with DAMA-DMBOK principles.	Conducted and analysed 55+ interviews with stakeholders across Nigeria's agricultural data ecosystem. Stakeholders spanned public, private, and social sectors, segmented by actor type across a four-layer structure informed by the 50×2030 Data Ecosystem Mapping Initiative and FAO's Agricultural Statistical System Framework.	Evaluated agricultural data systems across four relevant emerging markets — India, Brazil, South Africa, and Kenya — to surface design principles for the Nigeria Agribusiness Data and Investment Hub. Case study framework informed by World Bank diagnostic approaches and FAO agricultural data system perspectives.
Key questions answered	• What data currently exists across Nigeria's agricultural sector, and how decision-ready is it? • Where are the most critical gaps in coverage, recency, and granularity?	• What key decisions are most constrained by data gaps, and who bears the greatest cost? • What are the incentives, barriers, and conditions for data sharing across actor types?	• What design and governance choices determine whether agricultural data systems sustain and scale? • What has worked in comparable contexts, and what should we deliberately avoid for Nigeria?

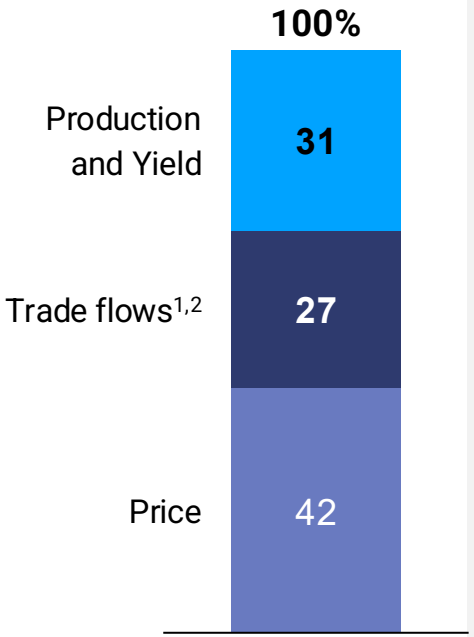
Source: DAMA-DMBOK: international standard for enterprise data management and quality; 50×2030 Data Ecosystem Mapping Initiative: structured framework for mapping agricultural data ecosystems; FAO Agricultural Statistical System Framework: global framework for organizing national agricultural statistics; World Bank Diagnostic Approaches: structured methodology for evaluating development program design and context

Dataset assessment deep dive: We assessed 250+ publicly available datasets on Nigeria's agriculture sector

Analysis covers 15 priority value chains across Crops, Livestock and Horticulture

Breakdown of publicly available datasets on Nigeria's agriculture sector

Distribution of data types, % of total datasets



Data sources

Average duration, years

NBS, APHLIS, NAERLS, USDA, FAO	13
UN Comtrade Database, FAO	34
NBS, IITA, WFP World Food Programme, USDA, NAERLS, FEWSNET	13

Value chains assessed

Crops:
Rice, Maize, Sorghum, Millet, Cassava, Oil Palm, Yam, Groundnut, Cowpea

Livestock:
Sheep, Cattle, Poultry, Pigs, Goat

Horticulture:
Tomato

1. UN COMTRADE data was excluded from disaggregation analysis given the variations in HS Codes and tracking required
2. Trade data is comprised of importation and exportation data of relevant commodities

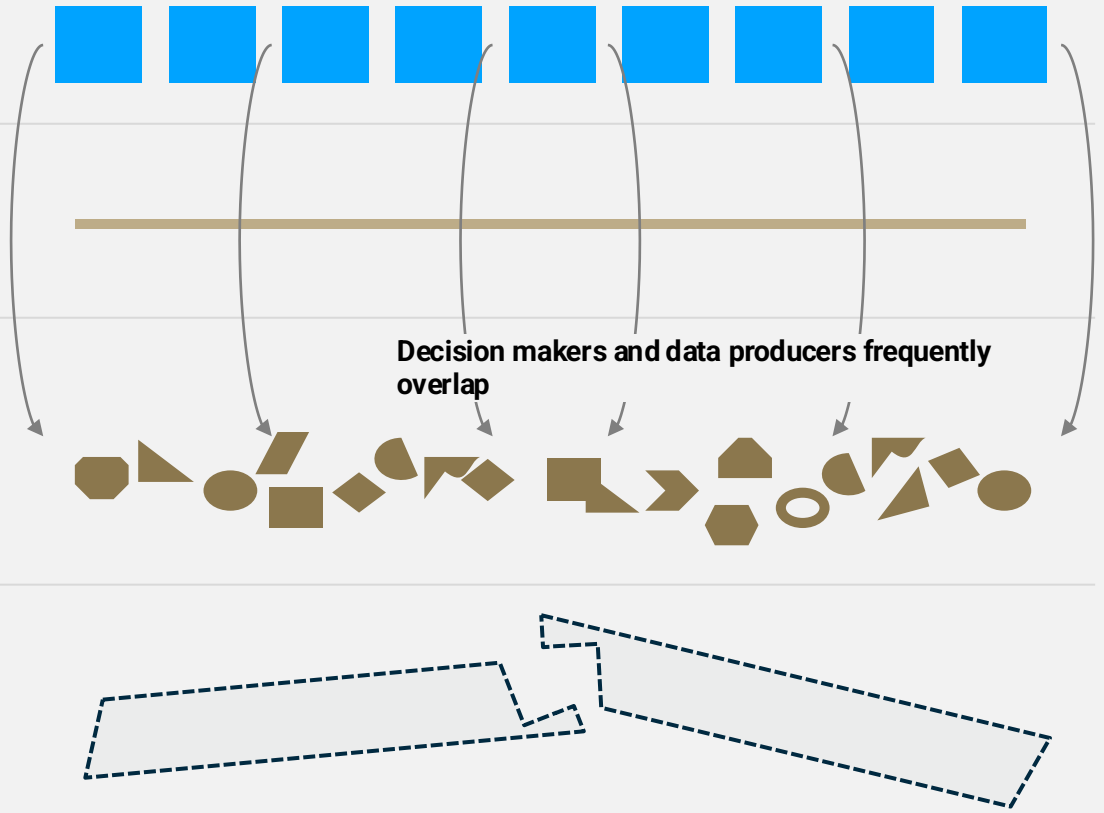
Source: NAERLS; AFEX; NBS; FEWSNET; APHLIS; IITA; WFP datasets; UN COMTRADE; IPAD USDA; FAOSTAT; Team analysis; Expert interviews

Ecosystem stakeholder deep dive: Nigeria's Agricultural Data Ecosystem maps across 4 layers

Developed based on the 50X2030 Initiative on Data Ecosystem Mapping and the FAO's Agricultural Statistical System Framework

→ Overlaps and interactions

Layers (Ecosystem players)	Description	Nigeria's data ecosystem mapping breakdown
Decision Makers	Organizations that use data to answer questions and inform decisions related to programs, policies, or investments	
Data Intermediaries	Organizations that take existing data, incl. tables or micro-datasets, add value to them by conducting analyses and interpretations, and expose transformed data to the others	
Data Producers	Organizations that generally work with raw survey data, generating data sets and survey reports. Focused on producing data through collection, curation and dissemination	
Enablers (Governance & Infrastructure)	Organizations that drive governance and infrastructure to support data production and flow	



The ecosystem is multi-actor and multi-layered, and cannot be fully understood solely by looking at one segment

Source: FAO's Agriculture Statistical Systems Framework; 50X2030 Data Ecosystem Mapping Framework; Industry and Expert interviews; Team analysis

Ecosystem stakeholder deep dive: We conducted 55+ interviews with industry stakeholders to gather insights on the agricultural data ecosystem

Developed based on the 50X2030 Initiative on Data Ecosystem Mapping and the FAO's Agricultural Statistical System Framework

Layers (Ecosystem players)	Player types / sub-categories		
Decision Makers	Capital allocators	Food processing and exporters	Agricultural Service Providers / Aggregators
	Policy makers	INGOs & donor organizations	Local development organizations
	Commercial Farms	Smallholder farmers (SHFs)	Industry Associations
Data Intermediaries	Exchange platforms	Advisory / Advocacy firms	
Data Producers	Research Institutions	Government agencies (Execution-focused)	Private data collection networks
	International (data) organizations		
Enablers	Government agencies (Governance-focused)		

Global Case Studies deep dive: We evaluated agricultural data systems and intermediary models across 4 relevant emerging markets

	1 India	2 Brazil	3 South Africa	4 Kenya
Rationale for selection	Most structurally comparable: Public sector fragmentation, historical administrative context, and demographic and geographic diversity echoes Nigeria. Well-documented recent reforms	Aspirational benchmark: Advanced emerging market example and clear benchmark for Nigeria's agriculture sector. Illustrates embedded, non-government-led analytical intermediation at scale	Geographic and institutional proximity (Africa): Relatively mature agricultural sector in the same region. Transferable governance model – non-profit, university-anchored, and industry-governed intermediation.	Rapidly evolving ecosystem: Kenya offers lessons from an agricultural data landscape being actively shaped by multiple government, private-sector, and development-partner initiatives.

Source: Team analysis; Organization websites and reports; Expert and Stakeholder interviews

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