

Policy Brief

National Agricultural Data Infrastructure: Ghana

Summary

Data could be the conduit for boosting intra-Commonwealth trade and investment as enshrined in the 'Declaration on the Commonwealth Connectivity Agenda for Trade and Investment'.¹ The sharing of data according to the Open Data Institute (ODI), can create social and economic value for people, organisations, and the wider economy.² Ensuring data sovereignty including maintaining a secure, trusted data environment, governments have an important role to play in laying the foundations for a flourishing data-driven economy by pursuing policies that improve the flow of data and ensuring that companies who want to innovate have appropriate access to high-quality and well-maintained data.³

Ghana is well positioned to tap into the potential of digitalisation across its agriculture sector. A multi-stakeholder dialogue with representatives from the sector, including digital agricultural services providers, confirmed that numerous organisations were already engaged in agricultural data management. Participants identified and shared experiences of several well-established systems and platforms for data management already operational in the country. However, they

also described fragmented databases, an unwillingness to share data, operational inefficiencies, data collection fatigue, unsuited policies based on unreliable data and a data power imbalance.

After being exposed to the concepts of a National Agricultural Data Infrastructure (NAgDI), as established by the Commonwealth Secretariat as a model for countries to better manage their agricultural data, participants at the dialogue appreciated the number of assets available in Ghana for successful digitalisation but also wondered why they were collectively failing at collaboration on this matter. Therefore, as stakeholders, they resolved to move ahead with the design and establishment of a NAgDI in Ghana. Their main expressed need was for a co-ordinating entity to manage the NAgDI.

National stakeholders present at the dialogue made recommendations on a mechanism for managing the NAgDI, as well as on how to put in place an enabling environment for collaborative interventions among institutions engaged in agricultural data management for the implementation of a Ghana NAgDI.

Commonwealth advocacy on NAgDI: Countries with robust public infrastructure are better equipped to meet the needs of their people and accelerate action towards the United Nations Sustainable Development Goals. From the Commonwealth's perspective, NAgDI across the countries creates a broad interoperable data system that can act as a backbone to inform advisory decisions, policy decisions, and trade and investment decisions between countries.

What is the issue?

Ghana has led the West African region through its early liberalisation of telecommunications. It has a functioning national identification system for its citizens, and a Data Protection Act has been in place since 2012, with well-described operational guidelines. Supported by an expansive optical fibre network across the country, public institutions in the agriculture sector have invested in the establishment of digital systems and technologies to better serve their needs as well as those of their stakeholders.

Several private sector digital platforms, such as Esoko, Farmerline through its Mergdata platform and Farm Radio International, support data collection to facilitate access to agricultural services and the dissemination of good practices. In 2023, the Council for Scientific and Industrial Research's (CSIR's) Institute for Scientific & Technology Information, in collaboration with the International Institute for Tropical Agriculture and other partners, working through the Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) project, launched the Ag Data Hub Ghana. The Hub proposes to be a one-stop shop platform for agricultural and climate information. There is therefore an opportunity for the sector to embrace the inclusive nature of digital initiatives for the empowerment of the agricultural community in Ghana.

However, a persistent challenge to digitalisation in the agriculture sector remains in the form of a duplication of agricultural data systems; limited trust to share data; and a lack of harmonised data collection protocols, quality assurance and easy data storage facilities, among others. This was one of the conclusions of the multi-stakeholder dialogue convened on 16–17 November 2023 by the Commonwealth Secretariat and hosted by the Government of Ghana through the Ministry of Foreign Affairs, in collaboration with Farmerline, Esoko and AICCRA, with financial support from the Open Society Foundations. The dialogue gathered over 100 participants representing over 35 key public, private,

academic, farmer, business and community-based organisations. The consultations identified and shared the experiences of stakeholders within the national agricultural ecosystem in Ghana who are already actively involved in the management of agricultural data (data generation, aggregation, processing, analysis, sharing, use).

The main question participants were asking themselves was, *'If we have all these existing assets for the digitalisation of the agriculture sector, and we all agree that there are benefits to working together and pooling our resources, then why are we failing to collaborate?'* Stakeholders collectively felt that there was a need for a co-ordinating entity to bring everyone together for better data management in the agriculture sector.



Why is this important?

In general, lack of reliable and trusted data on agriculture and agribusiness renders a country risky for investors. Lack of trusted data, often resulting from duplications of data systems, with different entities reporting multiple figures on a single data point, can hinder private sector investment in the sector, which will deprive the economy of opportunities for steady growth, resulting in increased food insecurity, poverty and hunger.

There is currently poor co-ordination in the management of agricultural data, such as unique identifiers of farmers, traders, agribusinesses and other entities within the ecosystem (*user data*)

and data on the substance of the entities, such as production data, agronomic data, weather data, financial data, soil data, transactional data (*content data*). This lack of co-ordination has led to fragmented databases, unwillingness of data-holders to share data, further duplication of data systems, operational inefficiencies, data collection fatigue on data subjects, failure to scale innovations based on data, unsuited policies being made based on these fragmented data points and a data power imbalance between the data-owners and the data-holders.

The dialogue mentioned above was structured based on the Digital Agriculture Framework⁴ and the Digital Fisheries Framework⁵ produced by the Commonwealth Secretariat. Pillar 2 of these frameworks deal with Data Infrastructure. In general, infrastructure powers societies, provides fundamental services and systems that enable economies to function, allows for communication, facilitates the creation and growth of other systems and supports daily activities. For example, shared public infrastructure such as roads, railways, telecommunication networks or power lines serve as the fundamental building blocks that allow other innovations to thrive. Similarly, agricultural data management at a country level needs a model of digital public infrastructure (DPI) to power new innovations within the sector. This is what forms the foundation for the concept of the NAgDI as a model of DPI for agricultural data implementation in Commonwealth countries.



What should policy-makers do?

The NAgDI is likened to any national public infrastructure, such as rails or roads. A well-operating national rail infrastructure has policies guiding its use; backbone technologies supporting multiple users; a business model to ensure maintenance and sustainability of

the infrastructure; and an entity that uses the policies, the technologies and the business model to manage the infrastructure. As a result, the design and implementation of the Commonwealth NAgDI has been conceptualised to cover four components: (i) data principles and policies to guide the NAgDI; (ii) data systems and technologies as the backbone for the NAgDI; (iii) a marketing and business plan for the NAgDI; and (iv) governance and administration of the NAgDI.

The dialogue shared background knowledge of these concepts with the institutions represented, provided the opportunity for stakeholders to appreciate the existing digital assets in the country and enabled an informed assessment of the challenges and gaps. The outcome of the dialogue comprised recommendations generated by the participants themselves, on each of these components, generally related to the enabling environment to facilitate the establishment of the NAgDI.

Given the already existing systems and platforms that could be integrated into a NAgDI for Ghana, and especially tapping into the ongoing Ag Data Hub initiative, recommendations for the implementation and management of the NAgDI in Ghana are summarised as follows:

1. On data policies and principles, participants noted that the Ghana Data Protection Act 2012 acted as the foundation for the agriculture sector and recommended the development and continuous updating of a comprehensive and **integrated legal and governance framework** for the Ghana NAgDI, aligned with national laws and international best practices. This framework should include transparent and equitable relationships among stakeholders; ensure that farmers have ownership of their data; streamline processes that reduce duplication of efforts; and consider trust and confidence, data governance, data systems and the identification of a business model that is fit for purpose, among others. Some of the key institutions identified to lead this component are *the Ministry of Food and Agriculture (MoFA), the United Nations Population Fund (UNFPA), the Data Protection Commission (DPC), the National Information Technology Agency (NITA) and representatives of farmers groups.*
2. On the backbone technology, participants noted the existence of the Ag Data Hub



- system, which currently harmonises mainly public sector data in Ghana, and recommended implementation of a **robust integrated data systems and technologies framework** that considers both public and private sector data. The backbone technology should ensure the harmonisation of existing data systems in the country, enhance data accessibility and usability, support standardised data collection and avoid vendor lock-in. It should entail open data systems that promote transparency; interoperable systems for seamless integration; robust cybersecurity measures and controlled access that ensures the protection of sensitive data; tools that enable the organisation, classification, discovery and migration of data assets; and decentralised and tamper-proof data storage and verification. Some of the key institutions identified to lead this component are *the Accelerating the Impact of CGIAR Climate Research for Africa (AICCRA) project, the Ministry of Communications and Digitalisation, Ghana-India Kofi Annan Centre of Excellence in ICT (AITI-KACE), the Council for Scientific and Industrial Research (CSIR), Farmerline Group, Esoko, the National Identification Authority (NIA) and the National Information Technology Authority (NITA).*
3. On the marketing and business plan, participants noted the huge market opportunity within the agriculture sector in Ghana, the size of the market and the financing gap, to recommend **financing models to attract both public and private sector investments** for the development and sustenance of the necessary infrastructure. Initial seed funds from governments, grants, loans, development partners, international financial institutions, etc. are options for financing. Participants noted that diverse adoption would ensure use and sustainability and therefore recommended ensuring that the infrastructure would have a strong value proposition by developing and offering data products with a solid and diverse customer base; exploring innovative revenue generation models; implementing comprehensive marketing plans; ensuring increased visibility to attract investment and users; and looking for partnership opportunities. Some of the key institutions identified to lead this component are *Farmerline Group, the International Fund for Agricultural Development (IFAD), the African Development Bank (AfDB), the Ghana Investment Fund for Electronic Communications (GIFEC), the Ghana Investment Promotion Centre (GIPC), the Ministry of Finance (MoF), Esoko, Farm Radio International and Ghana Statistical Service (GSS).*
 4. On governance and administration, participants recommended the establishment of a **multi-stakeholder governance and representation** model that actively involves all stakeholders in decision-making processes. This includes creation of a council for the effective implementation of all policies developed and agreed upon for the running of the NAgDI; having the technical skills to deploy and maintain the backbone technology; rolling out the business model, which is dynamic so as to meet the changing market; establishing a culture of continuous improvement through periodic evaluations of implemented policies

and technologies; ensuring enforceable regulatory measures; supporting capacity-building and collaboration through effective stakeholder engagement strategies; and rewarding incentives for active participation in data-sharing initiatives, among others. Ideally, capacity would be built in an existing agency or institution so it can carry out this role. Some of the key institutions identified to lead this component are *the Ministry of Food and Agriculture (MoFA) through its Statistics, Research and Information Directorate (SRID), the Ghana Cocoa Board (COCOBOD), Ghana Statistical Service (GSS), AIDEC Digital, AGRA and the Ministry of Foreign Affairs (MFA).*

References

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Endnotes

- 1 The Commonwealth (2018). Declaration on the Commonwealth Connectivity Agenda for Trade and Investment, 2018. <https://thecommonwealth.org/connectivity-agenda>
- 2 The ODI (2023). Understanding the social and economic value of sharing data. <https://theodi.org/insights/reports/understanding-the-social-and-economic-value-of-sharing-data-report/>
- 3 HM Treasury (2018). The economic value of data: discussion paper.
- 4 Commonwealth Secretariat (2022). The State of Digital Agriculture in the Commonwealth. A Baseline Report: 2022. <https://state-digitalagriculture.thecommonwealth.org/digital-agriculture/introduction>
- 5 Commonwealth Secretariat (2023). The State of Digital Fisheries in the Commonwealth. A Baseline Report: 2023. <https://state-digitalfisheries.thecommonwealth.org/digital-fisheries/introduction>

About the series: These *Policy Briefs* are the result of multi-stakeholder dialogues hosted by governments in selected countries in the Commonwealth and jointly organised by the Commonwealth Secretariat, acting as an honest broker, to bring actors together to design and develop a National Agricultural Data Infrastructure (NAgDI) to facilitate decision making on climate-related issues. These dialogues, involving relevant national stakeholders, are possible through financial support from the Open Society Foundations and in collaboration with Farmerline, Esoko and AICCRA in the case of Ghana.

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