# 1.0 Defining data intervention types

To lay the groundwork for a sustainable, data-driven project, define and document problems, goals, activities, challenges and solutions that enable FAIR data practices

# Why should I do this?

This is the first and necessary step in your plan for delivering FAIR and responsible data.

It will help you consider how data will feature in your investment and which resources, provisions, or other elements should be included at an early stage to best manage and leverage this data. You will also begin to identify challenges that block data from being made FAIR, and explore how to overcome these.

It also demystifies some of the jargon used when talking about data-rich investment projects and offers a system-focused framework you can use to see how data interacts with capacities, ecosystems and culture.

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# In this step you will:

1.1 Define your data problem: Reviewing or defining the issue or challenge that your data-driven work is designed to solve.

1.2 Develop your intention: Defining the desired outcomes or goals to be achieved by your data-driven work.

1.3 Specify the data intervention type: Identifying data-related activities integral to your investment.

1.4 Identify the data blockers: Identifying challenges that block data from being made FAIR.

1.5 Develop data levers: Developing solutions that best address your data blockers.

1.6 Put it all together: Documenting the work done to create an easy reference for future work and iterations.

As you complete these activities, document your outputs in the provided workbook. We recommend using the same document as you go through each step, so you have a single document that captures all your workings. Each workbook is segmented by activity, allowing you to complete either the entire workbook, or only specific sections relevant to your current project stage. Download workbook (and supporting factsheet).
If you would like to understand what inspired the approaches used to develop each step, view background research. This is not required to complete any activities.

# When should I do this?

During proposal development:

As a grantee (or another national partner), you will do a light-touch run through these activities to create an invaluable, shareable summary that clarifies the role of data in your project. By sharing and discussing this with your Investment Program Officer (PO), you will ensure there is alignment on integral data aspects early in your project.

When the investment is live:

As a grantee (or another national partner), you will build on your first drafts as you continue to develop the project with your wider team and other partners.

Below is an introduction to key concepts that you will come across in this step. As you are doing an activity, you may need to refer back to some of these key concepts.

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## Data blockers

The issues identified that will stand in the way, or 'block', the data in the project from being made or used in line with FAIR principles and the FAIR-informed ideas discussed.

## Data levers

The specific tools, techniques, or other solutions identified to overcome the 'blockers' to data being made or used in line with FAIR principles and the FAIR-informed ideas discussed. Levers are often elements within a complex system where a (seemingly) small shift in one area can produce a big impact on data outcomes.

## Data interventions

Data-related activities (or themes), likely involving the collection, access, use and sharing of data, which will help to conceptualize additional sub-steps or activities needed to effectively manage project data, services and stakeholders, and plan for FAIR implementation.

## Responsible data

Responsible data describes the practices and policies implemented to ensure data is managed in a way that is accountable, transparent, and in compliance with legal and regulatory requirements. It encompasses a broad range of considerations, including data security, privacy protection, data accuracy, and the lawful use of data. The focus is often on the operational aspects of data management:

**Compliance with laws and regulations**: Ensuring data practices adhere to all applicable data protection and privacy laws (e.g., GDPR, CCPA).

**Data security:** Implementing robust measures to protect data from unauthorized access, breaches, and loss.

**Data quality and accuracy**: Maintaining the integrity and reliability of data throughout its lifecycle.

**Transparency**: Being open about data collection, processing and sharing practices.

Responsible data practices are about doing things the 'right' way from a legal and procedural standpoint.

## Ethical data

Ethical data handling, while encompassing many principles of responsible data use, delves deeper into the moral implications of data practices. It considers not just whether data practices are lawful or efficient, but whether they are right and just. Ethical considerations might include:

**Fairness and non-discrimination**: Ensuring that data collection and analysis do not perpetuate bias or inequality.

**Consent and autonomy**: Respecting individuals' autonomy by obtaining informed consent for data collection and use, beyond what is legally required.

**Beneficence and non-maleficence**: Weighing the benefits of data use against potential harm to individuals or communities, aiming to do good and avoid harm.

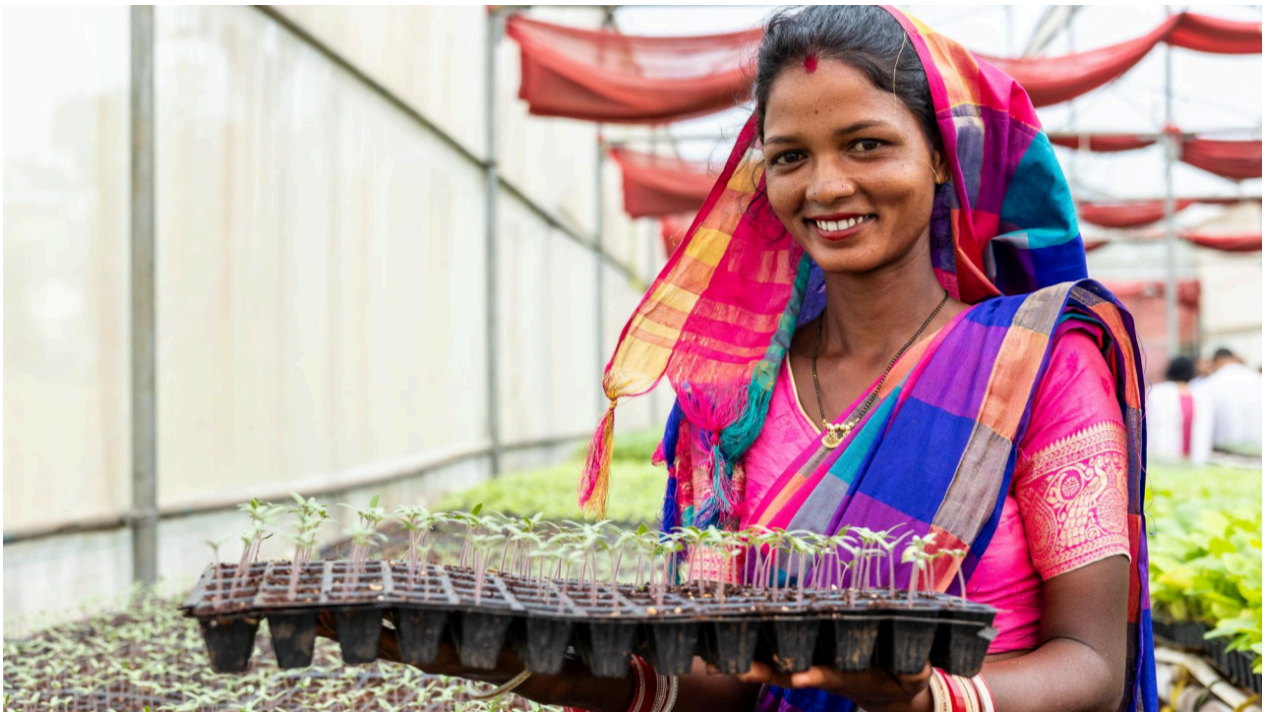
**Respect for individual rights**: Prioritizing individuals' rights to privacy and control over their data, even when such priorities conflict with organizational interests or efficiency. Furthermore, the individuals should retain ownership and control over data and, where so desired, can withdraw consent for further data processing.

Ethical data practices are about doing things the 'right' way from a moral or ethical standpoint. Even if the law may not mandate them, one should consider the broader impact on society and individual rights.

Ethical data considerations also include grievance redressal, including the ability to rectify errors, or complain against misuse of personal or sensitive data and seek redressal of the same.

# Investment types

# Overview



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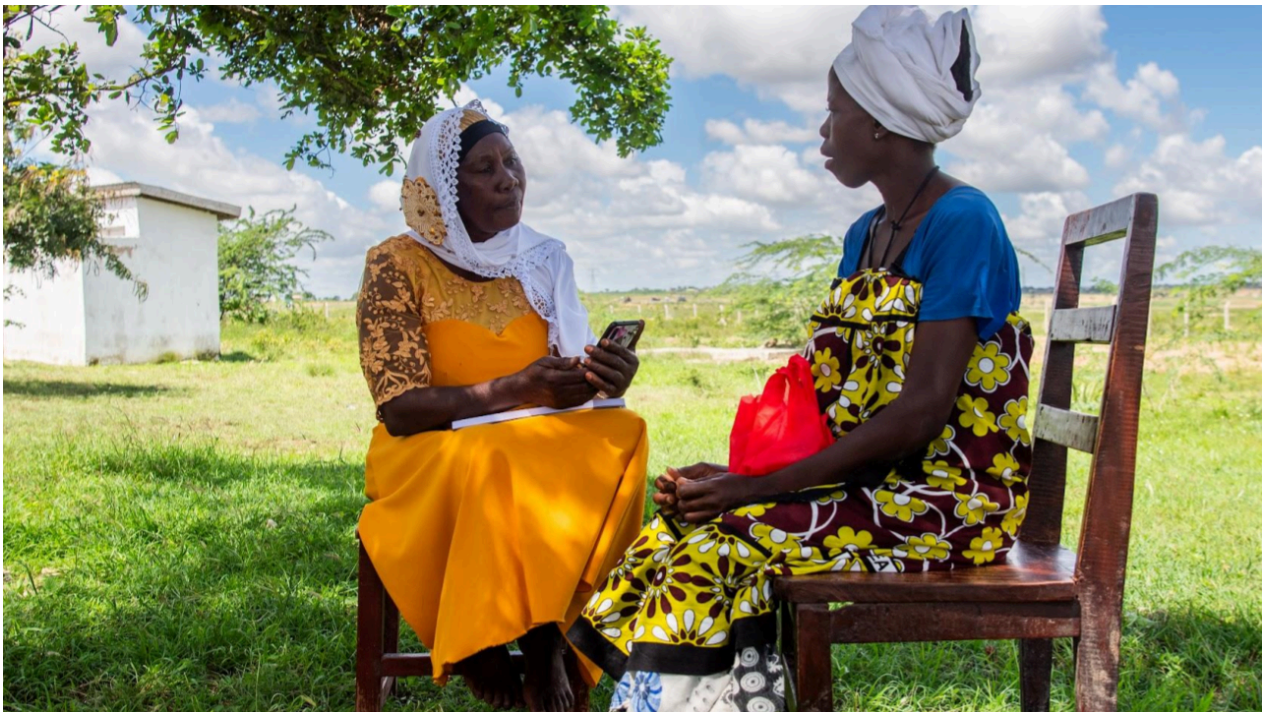
## Every investment project is unique

The application of the six steps will vary accordingly. To provide examples that align with your project, common characteristics of AgDev investments were researched and three 'investment types' were developed.

# AgriConnect: a digital solutions investment



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Recently, a large African-led organization, AgriConnect, has decided to make its data processes FAIR. Its work focuses on scaling agricultural innovations to improve smallholder livelihoods, and ultimately increase food security across the continent.

AgriConnect is determined to apply FAIR principles to avoid inefficiencies and the economic costs of efforts duplication, legal risks, and missed opportunities that might hamper its mission's accomplishment. To aid decision-making and collaboration, stakeholders need to be able to easily locate data. This platform must be accessible for stakeholders with different levels of digital literacy, meaning that usability considerations must be ensured.

Moreover, as the platform combines diverse data sources and formats, data must follow the interoperability principle, which facilitates collaboration and data sharing.

Finally, data must be reusable, so that they continue to add to the richness of new work, rather than stagnating after collection or publication.

To adhere to the FAIR Principles, AgriConnect plans to create a system that is open access, thereby increasing its utility to end users, and making the collected data available (when possible) for other researchers to find, access and reuse. The organization will include a technical perspective through data formatting, hosting infrastructure, and sharing agreements and permissions.

This commitment, from a large, respected organization, should act as an institutional and cultural guidepost for other organizations to adhere to the FAIR Principles within their own work, thereby increasing FAIR visibility and utility for future work within Dataland.

# AgroThrive: a policy and advocacy investment

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The well-established policy and strategy organization AgroThrive works to improve enabling conditions for people across the AgDev ecosystem (including smallholder farmers), with the goal of improving smallholder livelihoods, and ultimately increasing food security.

AgroThrive is launching a project in the lower-middle income nation of Datapur to bolster the local government's capacity to scale inclusive agriculture and attract private sector investment. It aims to create a more enabling policy environment for Datapur's agricultural sector by providing evidence-based policy recommendations. Its work specifically includes access to credit and affordable financing options for agricultural inputs, infrastructure development (transportation and storage facilities), educational opportunities for smallholders, fostering technological advancements, climate resilience, and land tenure security.

AgroThrive believes that all of these conditions should also be viewed through an intersectional lens, with special attention given to including traditionally marginalized communities.

Additionally, AgroThrive will work with Datapur officials to increase the state's implementation capacity by helping to improve government planning, accountability, delivery of services and sector coordination.

The AgroThrive team has determined that the FAIR Principles are an integral component of the project's long-term success. The principles are transversal to all the project's phases, from data gathering to findings dissemination. This will allow AgroThrive to leverage existing data and analyses, speeding up the policy development process and optimizing resource use.

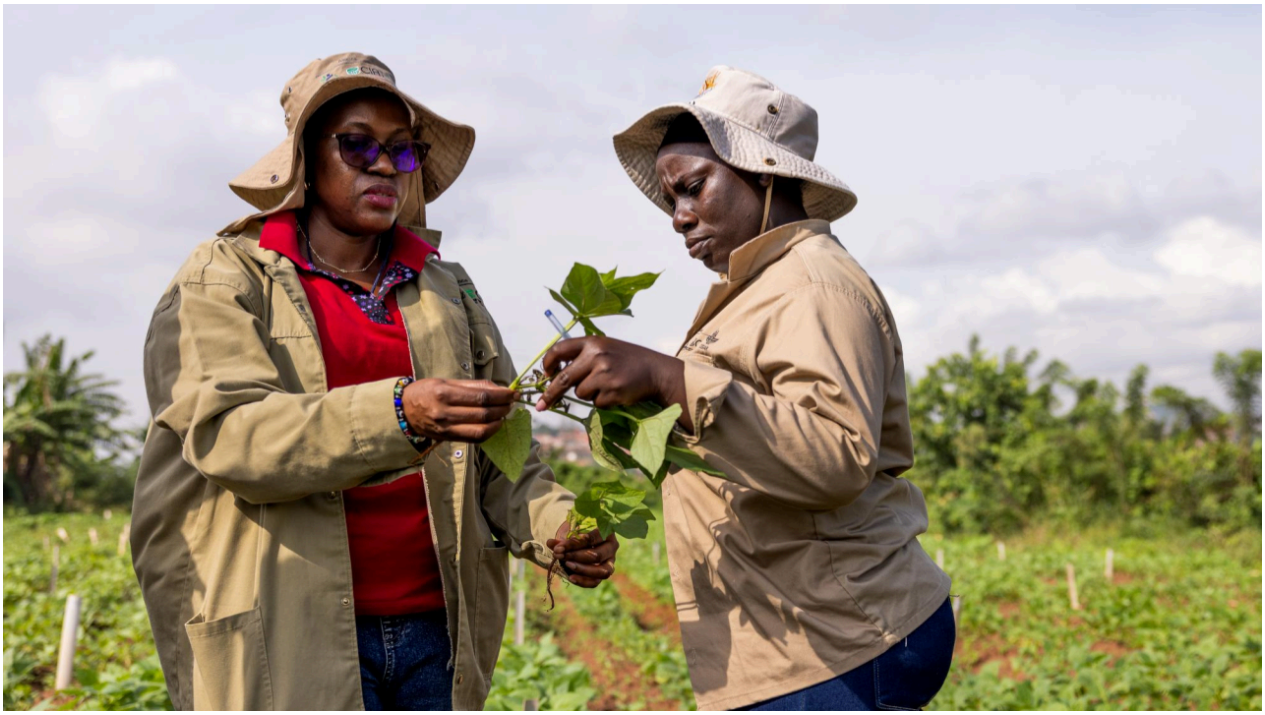
Once a final report is prepared and shared with the government of Datapur, AgroThrive will (to the best of its capabilities) adhere to the FAIR Principles by making the data used, and the resulting policy recommendations, findable and accessible to those working in the broader AgDev sector, so they can be built on or reused for similar initiatives, with interoperability as an enabling condition for transparency, collaboration, and data sharing.

This will allow the recommendations to become a part of the evolving ecosystem around the country's policy environment, rather than stagnating after they have been shared with the government.

As the provision of policy recommendations is largely based on the analysis of existing data sources, applying FAIR to the project will necessitate data sharing agreements to be put in place with relevant data owners. As much of this data may be sensitive (or proprietary, in the case of private sector data), these agreements will need to include privacy provisions and data safeguarding measures, and explain how the data sources will be used and why they are necessary to the project's outputs. Trust-building with stakeholders is also a vital component of the project, both to facilitate data sharing and to create buy-in for the targeted recommendations (thereby employing a 'bottom-up' approach to the recommendations).

This will be done through open-source publication, and the appropriate use of metadata, in addition to sharing the recommendations in widely accessible journals and platforms. As a large, well-respected organization, this adherence and promotion of FAIR will act as a guidepost for other organizations to consider FAIR in their own work.

# NGBT: a field research investment



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NourishGen BioTech (NGBT) is a multinational research organization committed to combating global hunger, addressing gender disparities, and mitigating the impact of climate shocks on vulnerable populations. Its lab-to-field approach has already improved nutritional outcomes for millions of people by optimizing crops for widespread planting.

NGBT is launching a project in the low-income nation of Datastan, where increases in crop productivity and yields will provide tangible benefits to a population overwhelmingly made up of smallholder farmers, and to the country as a whole, for which agriculture is a main driver of economic growth. NGBT is cognizant of the fact that women play a crucial role in this domain.

In Datastan, NGBT is developing a more nutritious varietal of barley that is more resistant to climate change and produces greater yields. The project not only seeks to optimize crop varieties capable of thriving in challenging environmental conditions, but also indirectly addresses the exacerbation of child nutrition gaps due to climate-related disruptions. Simultaneously, it empowers women, who are often disproportionately excluded from field-research projects, by enhancing their access to resources and opportunities in agriculture.

If successful, this would allow farmers to use less farmland without decreasing the quality of their outputs. This work will involve both small and large data points, including (but not limited to) historical and current weather data, data on current crop yields and production, land use for agricultural purposes, and government data on the population involved in the production of the target crop.

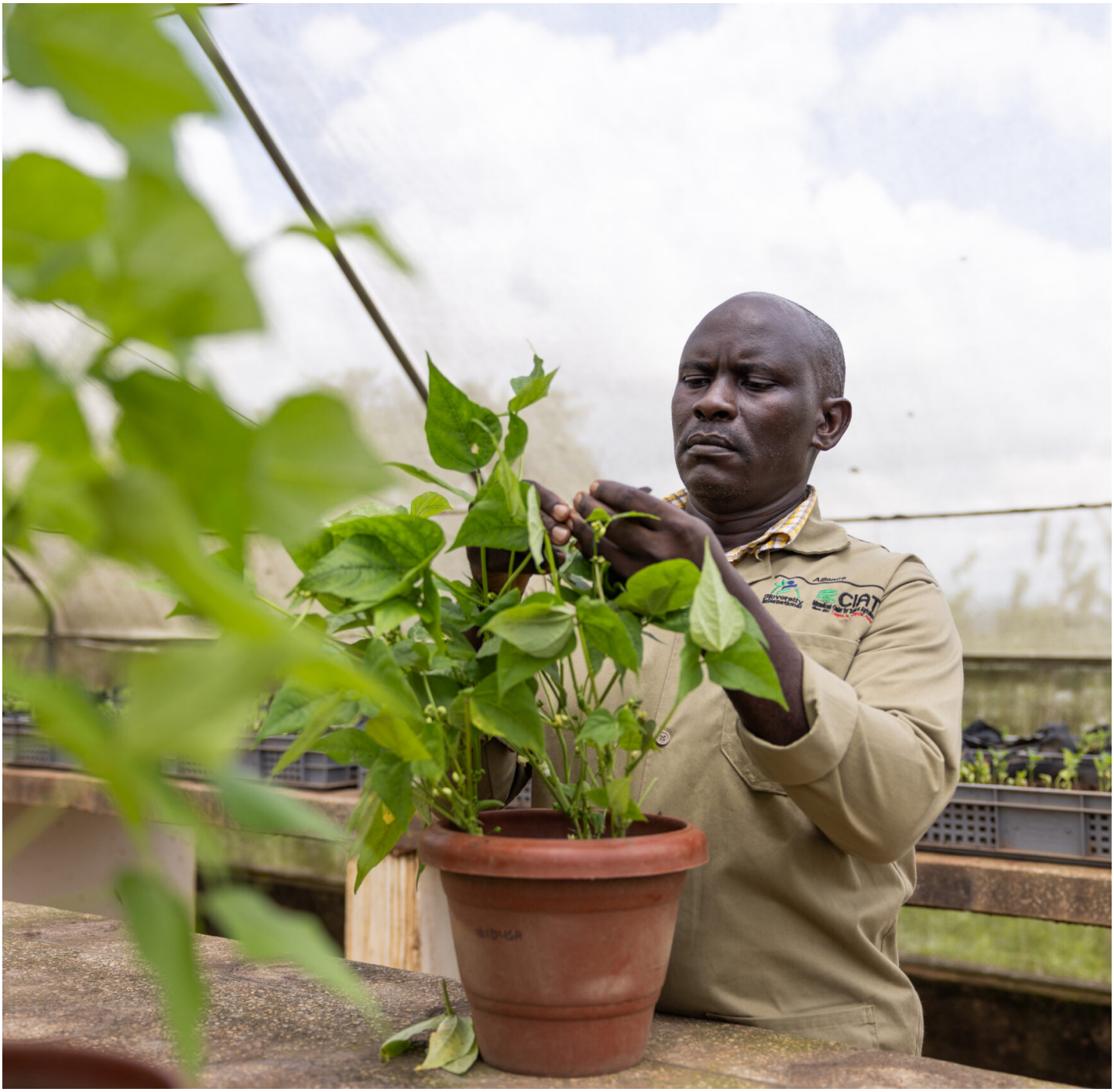
Planning for the application of the FAIR data principles is vital from the project's inception. As this project is focused on the creation and eventual sharing of newly generated data, NGBT will need to plan for how the data will be published. This may include data, methodologies, research materials, results, budgets, or other useful information within the project's outputs for greater findability, accessibility, interoperability and reusability of results. The main objective is to ensure the research process is transparent, so that others can review, critique and build on their work.

Additionally, NGBT must consideration how to communicate results with relevant stakeholders (through in-country meetings or workshops), and, after the results are published, collect stories about how this positively impacted the community.

It must also ensure that the outputs of the project contribute to the overall scientific community, and allow results to be built on in future research. The outputs will need to be appropriately labeled with metadata and stored in an accessible platform, which will facilitate their findability and accessibility for researchers working in similar spaces.

The NGBT team will also, through mapping of the data ecosystem and data assets, decide on the most appropriate storage system for research outputs, with an eye toward greater interoperability.

As a well-respected and influential organization, the consideration of FAIR principles will influence other researchers and organizations on the utility of FAIR, as the scientific community as a whole (including NGBT) benefits from findable, accessible, interoperable and reusable research outputs, which can help to advance discovery and reduce repetition of research.



# *We never had any understanding of FAIR before*

## Since training, we have been using the word FAIR everywhere. I have been noticing that CABI's trying to make data accessible... really been pushing for it.

Adam Ndatulu, Cluster and Partnership Specialist from Southern Agricultural Growth of Tanzania (SAGCOT), CABI

**Learn more**



FAIR Process Framework has been developed by the Enabling Data Access (EDA) project team at CABI and is funded by the Bill & Melinda Gates Foundation to support the foundation's Open Access Policy. The FAIR Process Framework is a tool to assist partners in developing data access and management plans (DMAPs) that incorporate FAIR and responsible data practices. 