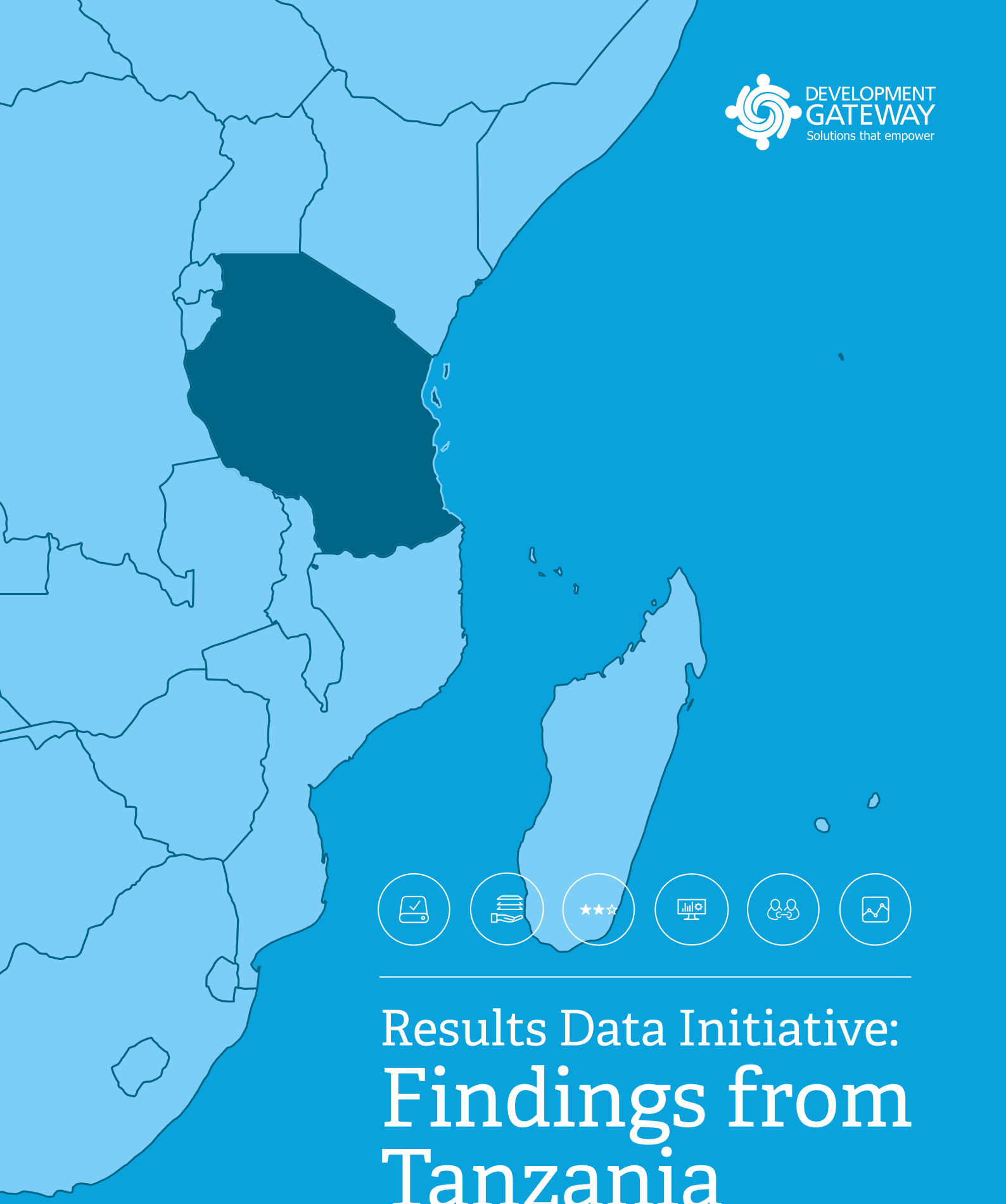

DEVELOPMENT GATEWAY
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Results Data Initiative: Findings from Tanzania

DRAFT

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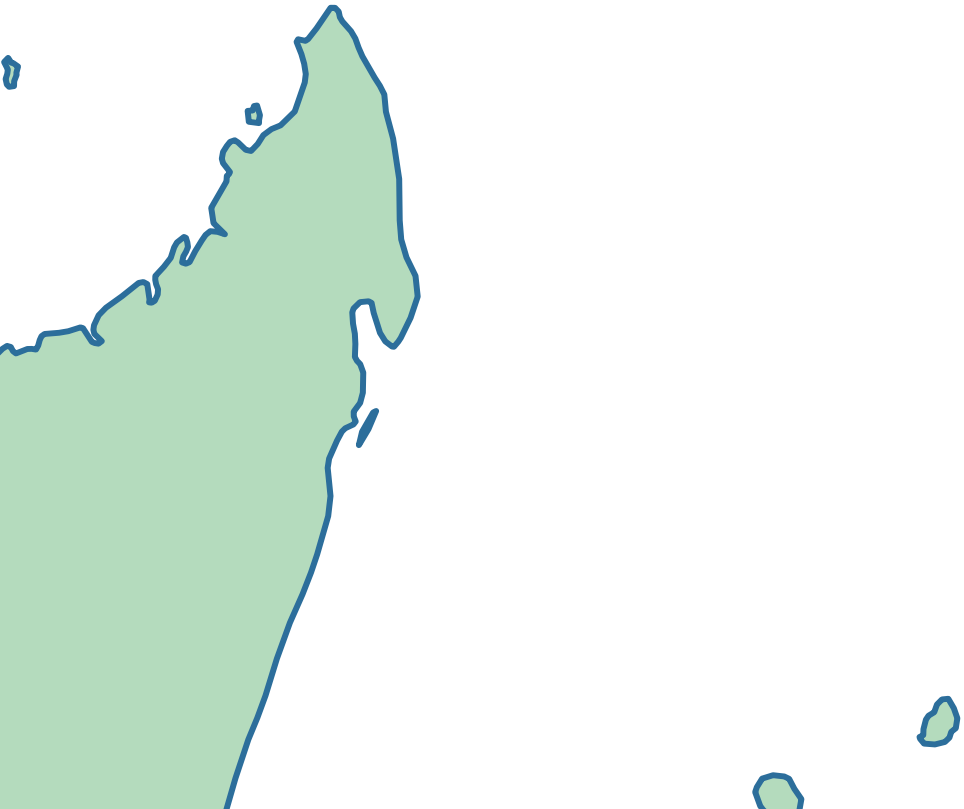
Introduction

Governments, development partners (DPs), and implementers spend millions of dollars every year collecting data on results. The post-2015 development agenda calls for more results indicators and larger investments in data. At this inflection point, we examine a critical question: **how do we make these investments most effective?**

Development Gateway (DG), with support from the Bill & Melinda Gates Foundation, is **studying how results data are collected, shared, and used** across the health and agriculture sectors in three countries: Ghana, Tanzania, and Sri Lanka. This report synthesizes our findings from Tanzania.



Purpose

We aim to shed new light, both locally and internationally, on how results data is collected, shared, and used—and what can be done to improve the quality and use of results data in Tanzania, both at national and local levels. Our study explores results data primarily from the government perspective, while incorporating valuable views from DPs and non-governmental organizations (NGOs).

We recognize that the Government of Tanzania (GoT) and its DPs are actively engaged in improving the use of data for decision-making—in both health and agriculture. Rapid scale-up of HIV/AIDS, tuberculosis (TB), and malaria responses, with the support of the President's Emergency Plan For AIDS Relief (PEPFAR), the Global Fund, and others, have brought technical and financial resources to bear on health data issues. In contrast, GoT's Agricultural Sector Development Programme II[1] (ASDP II) has recognized the 'weak agricultural statistical system' and an Agricultural Statistical Strategy Plan (ASSP) is being implemented.

The importance of accurate agriculture results data for Tanzania has recently been reinforced by GoT[2]. Concerns about agricultural productivity and resource management remain at the forefront of public thinking:

> *"The point is for political leaders and the rest of the populace to come up with a new way of managing agriculture and we should change the matrix of development".*[3]

Our report seeks to add value to results-based management efforts by highlighting, in particular, the perspectives and needs of district level managers in health and agriculture when it comes to collecting, sharing, and using data on results.

We hope these insights inform future investments in results-based management in Tanzania. We also aim to influence international and national efforts to promote the role of data and results in making development efforts more effective.

1. While ASDP II has been formulated it has not yet been formally initiated. ASDP I, although it closed in June 2014, remains, formally, open with accounts still being transacted.
2. A June 2016 report from the Prime Minister stated that of 174 municipalities, 30% had a food surplus, 116 municipalities had adequate capacity, and 7 municipalities experienced food shortages to be addressed.
3. Editorial, The Guardian newspaper, Dar Es Salaam, July 1st 2016.

What Do We Mean By Results?

Our definition of "results" comprises both output and outcome data. We define **outputs** as the goods and services delivered through activities – such as immunizations or farmer trainings. We define **outcomes** as evidence of effects on target populations – such as infant mortality rates or increase in rural household incomes.

Analytical Approach

DG partnered with DataVision International (DVI) to carry out qualitative interviews and analysis. A number of individuals informed the interview guide, participant profiles, and sampling frame. These include representatives from: the President's Delivery Bureau; Ministry of Agriculture, Livestock and Fisheries (MALF); the Ministry of Health, Community Development, Gender, Elderly and Children (MOH); National Bureau of Statistics (NBS); other government agencies; civil society, and; several development partners. Interviews, conducted in Swahili, were pre-tested by DVI's field research team and appropriate government permissions were granted.

DG and DVI mobilized researchers to conduct 140 in-depth, semi-structured interviews with respondents working locally in the health and agriculture sectors from 1616 districts in six regions in mainland Tanzania. These included government officials, DPs, and civil society organizations (CSOs) in Dar-es-Salaam, Dodoma, Mwanza, Arusha, Kigoma, and Ruvuma regions. Regions were selected to represent agro-ecological zones and economic diversity. A focus on two sectors enabled a more in-depth exploration of data issues. We do not claim a statistically representative sample, and acknowledge the full caveats of any qualitative investigation, but are confident that our interviewees are broadly indicative of development actors in Tanzania.

Background: Demand for Results Data

We first outline some key recent trends that influenced the availability and use of results data in the health and agriculture sectors in Tanzania:

National M&E Guidance. The GoT's *National Strategy for Growth and Poverty Reduction* (known as the MUKUTUA II) articulates major goals and priorities, shaping which results (outputs and outcomes) matter. Coupled with the Medium Term Expenditure Framework, MUKUTUA II provides the foundation for the national results framework. Most DPs work carefully to align programs and results measurement with the national framework.

MUKUTUA II is driving new investments in statistical capacity, and is increasing pressure on sectoral agencies for more robust results frameworks and progress reporting. However, as the strategy document notes:

> *"The incentives for the production of robust data, their analysis, interpretation, sensitization and communication, dissemination, and utilization are still relatively weak in some MDA[4]s [sic] . As a result, the evaluation function which is critical in terms of linking outcomes and expenditure is rather underdeveloped."*
>
> MUKUTUA II, 2010 p. 23

Big Results Now. GoT launched the Big Results Now (BRN) initiative in 2012. Led by the President's Delivery Bureau, BRN sought to transform GoT delivery by focusing on high-impact, catalytic initiatives in a few priority sectors, and giving robust attention to results monitoring and management. Agriculture was one of 6 original key results areas; health was added in 2013. BRN has focused sector agencies—at every level—on a few key results measures, and is reinforcing the role of evidence in public service delivery. The BRN goals and indicators in both sectors remain relevant and continue to sharpen the focus on results.

4. Ministries, Departments, and Agencies

Demand for Disaggregated Data. As decentralization progresses, the NBS reports an increasing need to supply disaggregated data to meet demand from public service agencies—including in health and agriculture—as well as growing private sector demand for data on social and economic conditions in subnational markets. While these needs are widely known, there are few sources, aside from routine administrative data, of results-relevant data at district-level or below.

Investments in Health Data. Significant domestic and DP expenditures have been made to improve the coverage, reliability, and use of health data over the last 25 years. DHIS2[5], discussed in detail in the following pages, is a significant and recent product of these efforts, though many other innovations have improved measurement of service delivery access, quality, and, to a lesser degree, use. Tanzania is also a leader in collecting demographic sentinel surveillance data at the district level to target resources according to local—rather than nationally estimated—data on fertility, mortality, and burden of disease. Under the guidance of the Joint Health Sector Monitoring and Evaluation Technical Working Group, the Monitoring and Evaluation Strengthening Initiative (MESI) was started in 2010 with the goal to strengthen M&E to support evidence-based decision-making.

HIV/AIDS, TB and Malaria. Although variable across districts and regions, HIV/AIDS prevalence is high, and TB and malaria also factor significantly in the overall burden of disease. The Tanzania Commission for AIDS (TACAIDS) oversees the multi-sectoral response to the HIV/AIDS epidemic. DPs, notably PEPFAR and the Global Fund, are supporting large-scale vertical programs[6] that add pressure on health information systems for targeting and monitoring these programs. While most of these vertical programs are 'off budget' (accounting for approximately 90% of the national HIV/AIDS response), PEPFAR and the Global Fund help to strengthen country systems for monitoring outputs and outcomes. DPs also support several large-scale surveys for monitoring HIV/AIDS, TB, and malaria.

Investments in Agriculture Data. Several initiatives seek to address two major results data needs in the agriculture sector: (i) the need to access routine administrative data, such as availability of agriculture inputs, and (ii) the need to accurately measure production to inform the food security situation, import/export needs, and national accounts. The Agriculture Routine Data System (ARDS) aims to provide district-level administrative data. In August 2016, the Annual Sample Survey will provide national and regional level production estimates for major crops and livestock. Also, the planned 2016/17 national Agricultural Census would provide much-needed new baseline data for the sector.

5. Tanzania's web-based Health Information Management System (HMIS)
6. Vertical programs are also known as stand-alone programs that are usually funded, managed, and evaluated vertically. The rise of substantial global funding to address specific diseases led to vertical programs such as HIV/AIDS, Malaria, TB, etc. http://www.who.int/management/district/services/WhenDoVerticalProgrammesPlaceHealthSystems.pdf

Theme 1:

Results Data Collection

Our findings on data collection provide a foundation for subsequent discussions on data management, quality, sharing, and use. Data collection activities are categorized into two groups: (i) routine administrative data, which captures performance/activity data at the point of service delivery (facility, household, or farm level), and often provides the basis for 'output' indicators; and (ii) surveys and census data, which captures primary data and can provide baselines to inform 'outcomes'.

Key Insights

Health. DHIS2 has catalyzed more coordinated and systematic data collection in the health sector since its rollout in 2013. The web-based system is intended to collect and report activity data from every public and private facility. While the coverage is imperfect—many rural clinics are not fully represented in DHIS2—the Ministry of Health (MOH) has improved overall data production. Data directly informs many of the indicators required by the health sector strategy, the PforR[7], BRN, and vertical programs.

Strategically located outposts[8] collect disease surveillance information. These outposts use verbal autopsy and sentinel surveillance methods[9] to collect population-based data on burden of disease, fertility, morbidity, mortality, and outbreaks. But our respondents indicated that this information is neither integrated into the DHIS2 platform, nor routinely used by Council Health Management Teams (CHMTs) to make decisions.

Agriculture. The diversity of actors and methods makes agricultural data collection complex and fragmented. In agriculture, there are six sources of data from censuses and sample surveys, and nine that cover administrative and routine data, including agricultural production, trade, fisheries, and forestry. Five different Government Ministries and institutions, such as the Ministry of Agriculture, Livestock, and Fisheries (MALF), National Bureau of Statistics, and the Tanzanian Revenue Authority, implement these activities. The Agriculture Statistics Strategic Plan (ASSP 2014) lists these data collection activities/institutions and sets goals for more strategic information collection, training for local and national staff, and improved statistical infrastructure.

In 2009, MALF and Japan International Cooperation Agency (JICA) initiated the Agriculture Routine Data System (ARDS), a web-based information system for collecting and reporting routine agriculture administrative data. The rollout to all Local Government Authorities (LGAs) was completed recently, and in the most recent data collection round **70% of districts reported via ARDS. This represents a positive and important direction for agriculture administrative data collection, but the progress is still in early stages.** An increase in overall district reporting and data quality assurance must happen before data is formally used and released (informally, some districts use ARDS data for planning). At national level, indicators on production extent, production levels, yield, and livestock are still developed using data reported manually from LGAs, usually by e-mail.

7. Program-for-Results. http://www.worldbank.org/en/programs/program-for-results-financing
8. Run by MOHSW, Ifakara, and National Institute for Medical Research.
9. Data collected in a well-designed sentinel system can be used to signal trends, identify outbreaks, and monitor the burden of disease in a community, providing a rapid, economical alternative to other surveillance methods. http://www.who.int/immunization/monitoring_surveillance/burden/vpd/surveillance_type/sentinel/en/

Institutional Arrangements for Data Collection

The routine administrative data that inform most output indicators locally and nationally are collected as part of the daily activities of service delivery workers. In health, these include health service delivery personnel, such as doctors, nurses, and lab technicians. In agriculture, the service delivery workers include Ward/Village Agriculture Extension Officers, District Agriculture and Livestock Officers, and NBS surveyors.

Due to recent decentralization, close collaboration is necessary between the Ministries and LGAs to effectively collect data that is usable by both parties. Ministries provide hardware and software required for DHIS2 and ARDS, as well as necessary registers, books, forms, templates, and standard operating procedures for data collection. LGAs oversee service delivery workers, who collect the data, report directly to LGAs, but also supply administrative data to regional and national officials for management and results monitoring.

Data Collection Methods

Respondents strongly indicated that methods for **routine data collection in the health sector are well defined but time-consuming, and disproportionately burden service delivery workers.** Respondents in both sectors also stated needs for more flexibility to alter the types of data they collect in response to unique needs at district and national levels.

"Doctor or clinician is supposed to produce good data, but he has other responsibilities and when you see his paper work, meaning if there is few patients he will do it within time and if there are many patients he will do it after work, which sometime is not possible. So, what is done, for example, people who we selected sometimes can spend the night, extra time, even weekends to feed the data."

Medical Officer In-Charge

Challenges with Data Collection

In the **health sector,** notable issues with data collection are particularly evident with routine data from facilities. Specifically:

- A majority of respondents indicated that data collection burdens are caused by shortages in the supply of trained professionals due to high levels of provider absenteeism and mobility.
- Due to the absence of an electronic records system, patient-specific data must be re-entered by different departments or for each patient visit. This adds to the 'data entry burden' of already over-stretched health workers.
- Busy health workers do not always complete data collection forms, leading to missing and/or low quality data.
- Facility and district officials must proactively request and obtain data collection books from MOH. While ostensibly a small issue, several respondents reported that data collection completely halts when the books are not available.

Notable challenges with **agricultural data** collection, reporting and use include:

- Systematic methods for data collection and reporting are not in place (including for agriculture production estimation). For example, forms and protocols for field visits either do not exist or are not standardized across districts, complicating data collection efforts.
- Field (measuring) equipment is lacking at ward/village levels, and adequate office space, office equipment (computers, printers, photocopiers) and statistical software for data analysis were lacking at district levels.
- Decentralization to LGAs leads to a lack of Ministry influence over data collection and reporting at district and village levels—a source of frustration for many at the central level.
- Awareness is lacking among district level management on the importance of evidence-based policy and data use —respondents report that this makes data collection a lower priority for all.
- Overlapping data collection systems for agriculture statistics, (ARDS, Early Warning and Crop forecasting, National Accounts agricultural production form) produce conflicting production data.
- Inadequate and uneven flow of financial resources for the production of agricultural statistics.
- Taxes and subsidies, (e.g. tax on agriculture as decided by the LGAs, fertilizer coupons) can lead farmers to misreport their production levels.

Theme 2:

Data Management

Data management practices are a key factor underlying the quality, reporting, analysis, and use of results data. Both, the health and agriculture sectors in Tanzania have invested in data management software—DHIS2 and ARDS, respectively. The DHIS2 implementation is considerably better established than ARDS.

Data Management In Health Sector

Progress in data management through DHIS2 is decreasing fragmentation of vertical program reporting. In particular, DHIS2 harmonizes reporting at the national level for HIV/AIDS, TB, and malaria.

DHIS2 received positive reviews from nearly all respondents at the district level. In contract to the facility level data management, DHIS2 replaced a paper-based data management approach in the districts in 2013. District-level respondents value its built-in validation capabilities, which speed up data quality assurance processes. Facility data can now be joined with prior periods and different program areas. For example, district officials reported visualizing the number and distribution of malaria cases across facilities to assess performance of district-wide services.

But the benefits of DHIS2 for data management are not realized at the facility level, because facilities do not yet have access to DHIS2. **Currently, facility staff continue to collect and manage data on paper- and may spend as much as 25-30% of their time filling out reporting forms that are then used to enter data into DHIS2 at the District.**

Paper based and cumbersome approach to data management is straining time-limited health workers and constraining possibilities for facility-level analysis. Respondents report that facility staff copy the data from one register to a report template, typically near reporting deadlines—meaning that data management is not a daily activity, but instead a rushed weekly or monthly task due to staff and technology constraints. Data quality—and local relevance—suffer as a result.

"If you go to the outpost…[the health worker] will tell you that of 350 patients who suffered from malaria, 30 suffered from UTI [urinary tract infection], but he can't compare with the previous year."

District Health Data Manager

Remote facilities often struggle getting data to district offices. Only data reports that reach district offices are entered and managed in DHIS2. Mobile phones have partially addressed this issue; facilities in remote locations sometimes send photos of reports to district offices, meeting immediate reporting needs. **But respondents in every sampled district indicated that if facility staff had access to DHIS2, data quality would improve[10].**

Data Management In Agriculture Sector

In the agriculture sector, ARDS data portals are available in all LGAs but only 70% of districts have submitted data. Paper forms and Excel spreadsheets are still used instead of or in parallel with ARDS in some districts, and data is transmitted to the MALF by email. **ARDS is still in the development phase and while some data is used informally at district level, aggregated data at national level is not yet published. This means that ARDS is still not achieving its intended data management purposes.**

Respondents from some districts further explained that while they use ARDS to submit official data for reports, they maintain parallel databases of unofficial, but useful, data in Excel. As an example of such unofficial but useful data is production figures from research institutions operating in the region.

> *"To preview data quality I make sure I have my personal databank, I usually have baseline data like population for each district, household number per village, production levels and the sort."*
>
> Regional Agriculture Officer

To address the issue of data overlap and rationalize the necessary various survey data, the ASSP has proposed revised roles and purposes for data collection including the Agricultural Census, ARDS, the Annual Agricultural Sample Survey (AASS), and the National Sample Census of Agriculture (NSCA). This would support data needs/ use at national, regional, and district levels.

In the future, this would be aligned with the planned 2016/17 National Agricultural Census and the 'Small Areas' District Data Initiative , which will source ARDS and AASS data to provide district level data.

10. This is part of MESI II strategy, but has yet to be implemented.

Theme 3:

Results Data Quality

Data quality is a key factor for staff and departmental performance metrics. Staffs are evaluated by three data-related criteria: (i) meeting reporting deadlines, (ii) submitting complete reports, and (iii) submitting accurate reports. Since criteria (i) and (ii) can be achieved with less effort than (iii), respondents suggested that they have incentives to submit reports on time with less regard for accuracy.

We asked respondents to describe how they perceive data quality, and then to rate the quality of their data. In both sectors, data quality was rated at 3, on a 5-point scale (1 being the lowest and 5 being the highest). **Primary collectors rated the data quality they collected higher than secondary data collectors** in both sectors, which reflects the pressure of the performance metrics in the responses.

Across the health sector, the most frequent **data quality concern is missing data,** either due to omission of remote facilities or incomplete data collection registers.

"…sometimes it is that burden of attending many patients at once. For, example the patients needs to be attended as soon as possible and there are other many patients waiting and there is no enough attendants so they just take the data, so we just take the data and expect to fill them later so that is when we lose data, so that also is one among the biggest challenge we face"

Medical Officer In-charge

Data quality issues originating at facilities are felt across all stakeholders. For example, when the facility data is of poor quality, CSOs who provided care in the community report that they are not able to use the data to target clients in need of out-of-facility services. As another example, CHMT, vertical programs, and MOH make planning decisions and measure performance of programs every quarter using DHIS2 data reported from the facilities. However, since rural and private facilities do not report on time, decisions may be made with periodically missing representation from rural facilities.

District-level respondents in both sectors noted that data collectors often have no sense of what the data will be used for, impairing incentives to collect quality results data. **Respondents noted the need for collectors that can understand the importance and potential benefit of good-quality data.** District-level health respondents called for targeted training to clinical staff to enhance their appreciation of data and its use.

"To improve data quality, first tools should be available to collect the data, such as books but also data experts because we medical personnel learn very little about data when we are in the colleges..."

Medical Officer In-charge

Respondents also express concern that population size estimates, the denominator for most key indicators and targets, are based on NBS projections and estimates that are outdated due to changes in the conditions of fertility and internal migration. Some respondents suggest that communities can help provide better denominator data, to be used in systems to provide more targeted services to the clients.

"[District Executive]... also accepted that village leaders can provide accurate data on that, and I also proved that, the time we were distributing nets. They have been insufficient all the times due to underestimating population. After realizing that we have been working with village leaders in identifying children under five and mothers. This information is always exact."

District Medical Officer

In the agriculture sector, **respondents across all levels of government and DPs express distrust in administrative data because of (i) inconsistent methodologies, and (ii) figures based on projections instead of actual measurements.**

"Frankly speaking, our data is not of high quality. For example, if I want to assess food situation in case there is drought, I should report the number of households with food shortage, in doing that I cannot move from village to village; I just rely on the data from extension officers and VEOs which is also estimated not real…There are few extension officers; when we request data from them, they just consult village leaders and estimate data…"

District Agriculture Officer

The most commonly used data quality assurance tools for routine data is supportive supervision and searching for outliers against historical or projection figures in both sectors. **However, these quality assurance methods are reactive and do not address the root causes of poor data quality.** We observed the need for data quality assurance methods that are more proactive and independent.
In the health sector, district officials reported supervision visits to facilities when discrepancies in the reported data were identified. In the agriculture sector, the district officials use supervision visits to select certain data points to back check. Respondents in both sectors noted that a **major constraint to supportive supervision is lack of travel funds and human resources.**

Theme 4:

Results Data Analysis and Use

Demand for data analysis varies widely. The major local use of government health sector data is to count service delivery outputs. In agriculture, major local use is to record basic production indicators and create activity reports. **We find few examples of analyzing or understanding the relationships between outputs and outcomes—or effectiveness—**across districts and regions[12].

Data Analysis in the Health Sector

The Council Health Management Team (CHMT) is a major source of demand for results data use at the district level. The CHMT planning process focuses energy toward local analysis and away from mere reporting 'upwards' to the national level in two ways. First, CHMT develops the Comprehensive Council Health Plan (CCHP), which outlines planned health activities for the district, based on facility data. CCHP plans reflect the needs of the district—using facility-based rather than population-based data—as well as the national priorities. Second, CHMT allocates the District Health Basket Funds, which pools all funds for district health programs based on the CCHP needs.

Performance against the CCHP matters a great deal in securing budget from the basket fund[13]. Program coordinators and administrators provide monthly reports to the CHMT (using analysis from DHIS2) that shows progress against key goals and indicators.

"Fund allocation depends on how the problem is analyzed: for example, if infant mortality rates are high and most of the fund is not allocated to infants, then that budget cannot be approved. We submit our budget directly to the Treasury, but it has to come back to the Ministry of Health for approval."

District Medical Officer

12. The whole PEPFAR country operations strategy stresses finding efficiencies, as PEPFAR funding levels off.
13. 'Basket' funds are an approach used by DPs in Tanzania to pool DP sector resources (health, agriculture) into a common fund that uses Government systems to allocate and disburse. Tracking remains a key requirement.

Data analysis in the districts is primarily done via DHIS2—district officials create charts and tables to monitor service delivery patterns.[14] While reportedly useful, there are indications that these charts are inadequate proxies for deeper analysis, which still requires a dedicated officer to take a deep dive into specific issues.

> *"I recently analyzed the number of HIV victims' [lab tests.]…The results showed the majority did not get the service despite attending the health facility. We discovered that there was a shortage of instruments for doing that. The existing stock had expired and Medical Store Department had no stock by then…So the clients haven't been getting the service for three months."*
>
> District AIDS Coordinator

Although recognizing the constraints on the quality of the data, district officials rely on DHIS2 to manage day-to-day activities. Respondents in all the districts pointed out that DHIS2-centered analyses leave out non-facility based information and cannot include indicators to reflect district-specific issues. Additionally, DHIS2-based analyses are biased toward results from larger, well-staffed facilities, since data from smaller facilities tend to be late or incomplete.

Results data analysis at facility level is limited, in part because although DHIS2 is about facilities, it is not available in facilities. In addition, respondents feel that they lack guidance on how to effectively use the data in the registers at facility level. Therefore, data is analyzed to a limited extent using paper forms—and sometimes Excel—generally just to check for consistency before data is sent to districts to enter into DHIS2.

CSOs also analyze facility outputs and performance for external assessments, relying on facility-based data to inform additional non-clinical services such as home-based care. However, access to such clinical data depends on the CSO's relationship with the CHMT and its capacity to fund local programs. CSOs providing health services access DHIS2 as well as their own programmatic databases for analysis, but they report struggling with poor quality data from the facilities. CSOs rely on the routine administrative data system to track patients and provide other supportive services in the community. For example, a CSO respondent observed that Prevention of Mother-to-Child Transmission service delivery was low according to the database. During verification they learned that the issue was not less service delivery, but documenting clients into multiple registers. This obstructed the CSO workers from providing follow-up care to those who needed it, because the individuals were not captured in a data collection book.

14. It's important to note that non-facility based data is not captured in DHIS2 and therefore not analyzed.

The most common analysis across all the districts is a list of the top ten diseases by prevalence, calculated from facility-level disease reports. For example, one District Medical Officer (DMO) reported that malaria in the district was "going down" because it had moved from the first to the third rank in the list of top ten diseases reported at the facilities. Because this assumption was not based on the number of actual cases, but a change in the rank of the disease in comparison to other top diseases, the conclusion may have been incorrect.

Also, facility based data is an approximation of the conditions across the population. For example, families that are too poor or otherwise constrained from accessing services will not be counted. Thus, approximation of actual prevalence is used to monitor estimated disease prevalence, allocate testing instruments, medications, etc. Findings from sentinel surveillance—which collects local data on births, deaths, and burden of disease—are not used to calibrate and validate findings from facility-based data. Efforts should be made to encourage these important data linkages at district level.

Data Analysis in the Agriculture Sector

National level actors analyze and create monthly/quarterly progress reports as well as annual reports using both (i) routine administrative data provided by e-mail from districts, and (ii) survey and census data (see Annex 1). These analyses aim to inform policy makers on food availability (early warning), food prices, national production forecasts to estimate imports/exports, and insight for further agriculture policy and programs. Data is also provided to NBS to assess agriculture's contribution to the economy. While analysis is typically limited to descriptive statistics and trends, respondents pointed out that these summaries help 'get the real picture' of what is happening in agriculture.

Routine administrative data is used in the District Agriculture Department to plan activities, and ultimately the data influences the production forecasts. Respondents highlighted that data is analyzed to document the status of agriculture in their respective councils. A few respondents also noted that further analysis could illuminate the status of different district targets and the production capacity of the district. For example:

- When poor performance of some crop seeds was quantified, a decision was made to change seed suppliers.
- In pastoral districts, analyzing the number of animals is crucial in planning and can help in detecting livestock diseases.
- The business community also requested basic analysis; i.e. the number of cows slaughtered can assist in projecting number of hides available for manufacturing.

Several respondents noted that politics could influence data analysis in agriculture. In most districts, crop data is analyzed to brief district commissioners and regional commissioners (political leaders) each week. Thus, while measures of crop production, seed production, fertilizer vouchers distributed, amount of fertilizer used, etc. are quantified, there is **no agriculture-sector oversight at the district level to ensure that these figures correctly impact policies and plans in the district.**

District and national officials also recognize that they only collect and use data on outputs—such as changes in production—rather than the longer term outcomes. Many respondents stated that they lack the data to understand the actual outcomes of their extension activities, e.g. improvements in household income or employment opportunities.

"We can get such data, though [we] do not go to [such] details. For [example,] the case of outcomes, if someone modifies livestock farming, builds a good house, and takes children to school after selling crops, change from one meal to three meals and the sort. These are among changes that you can notice on the farmer though we rarely reach that level. [However,] the nature of data we access most of the times does not track to outcome level because food security aims at making sure one gets food that sustains him or her and that is what we deal with."

Agriculture Extension Officer

Theme 5:

Data Sharing

We asked respondents about their experiences sharing results data with people inside and outside their respective organizations, with a goal to uncover any good practices, unmet needs, or salient barriers to sharing this data. Insights are as follows:

Health Sector

Data sharing at district level and above has been streamlined with implementation of DHIS2. Anyone with DHIS2 credentials can access the system and data related to their duty, including all relevant government officials and some partner NGOs. MOH and vertical program leaders also reported that they directly access district data without waiting for reports from district program coordinators. Also, some district officials reported that they were recently given permission to view national and regional level data that they use to benchmark their own performance—though they still cannot see figures from other districts.

A mandate to coordinate all health activities in the districts via the CHMT has also created avenues for data sharing in the districts and nationally. Several collaborating CSOs reported using DHIS2 to access government data, while also sharing their quarterly performance reports with district officials to inform the CHMT.

However DHIS2-based data sharing is not available at community and facility levels, as the public facing portal of DHIS2 does not show data disaggregated to district levels, nor do facility staff have access to DHIS2 to view data. Facility staff frequently called for access to DHIS2 or CSO reports of activities in the communities.

"We at the facility would like to see some data on implementation of the activities that NGOS in our in-catchment area collect, such as the number of clients they have attended. This will help us to know the number of services provided, of tested clients, how many are eligible to start the treatment."

Medical Officer In-Charge

District health officials, especially those focused on HIV/AIDS, reported regularly meeting partner CSOs to write joint progress reports on CSO-supported activities for CSOs to submit to their national and international stakeholders. This is a valued data-sharing forum for both actors.

"Organizations supporting us should learn what EGYPAF[15] is doing, like organizing quarterly meetings that display activities done, so we are able to evaluate ourselves. I also urge them to continue involving us in budget preparations to avoid duplication of activities."

District Health Official

There is a need to harmonize TOMSHA (Tanzania Output Monitoring System for HIV/AIDS) with DHIS2. Currently, CSO reports on non-medical HIV/AIDS activities are added into TOMSHA and not into DHIS2, but we found no evidence of district officials using TOMSHA data for decision-making. DHIS2 remained the primary data source and tool for performance measurement and decision-making.

We asked respondents about what results information they would like to access, but currently do not. **Health facility staff expressed demand for more community-specific data such as maternal or infant deaths at home, HIV/AIDS patients who do not come for treatment and intravenous drug users in the community** to better understand local population needs and to assess service delivery against community-specific issues.

"Currently, the system of data collection is based only on health centers, but in the community where the patients come from, not all of them come to hospital, therefore there are other information which we miss. There are some people who are sick and get treatment while at home and die there..."

Medical Officer In-Charge

15. Elizabeth Glaser Pediatric AIDS Foundation

Agriculture Sector

In the agriculture sector, ARDS has potential to be a "one-stop shop" for sharing routine administrative agriculture data. The Tanzania Agriculture Sector Strategic Plan marked it as the official source of routine administrative agriculture data**, but demand for—and sharing of—ARDS data is still weak.** Ministry officials and DPs reported that they do not yet access ARDS due to incomplete coverage and perceptions of poor quality. ARDS needs full reporting from all districts and stiffer data quality controls to build wider trust.

The most significant impediment to data sharing in agriculture stems from quality concerns. Donors, NGOs, researchers, and other non-government actors do not see routine administrative data as accurate enough to meet their needs.

"[Non-governmental actors] rarely come to us because there is a belief that our data is not correct since they are … supposed to be regularly updated and we rarely do that. So most [external actors] believe that government data should not be dealt with because [they] are not realistic. They have their data which are in most cases different from what we have."

Regional Agriculture Officer

Data is also not routinely shared with other departments in a given district, such as education or roads. **District officials who have experienced benefits from cross-departmental sharing strongly advocate for better processes to join data from other sources.**

"I have learnt that we cannot eradicate cholera without cooperating with other departments. We need to know water sources for our people in the district. This data is important to us because some people use water from conduits and this is one of the cholera causes. This data can help us in setting preventive measures."

District Medical Officer

Data sharing is a barrier to demand for benchmarking. Respondents in the districts reported the desire to benchmark their production against the neighboring districts, but are not able to do so because districts do not readily share production indicators—particularly because these directly reflect the District Executive Director's performance. Some agriculture departments also reported difficulties accessing data from private companies[16]. In at least two instances, respondents report that private companies export agricultural products with permits from MALF; however, when district officials request production information these companies deny them access.

"…there are companies with permits from the Ministry of Agriculture to export crops. When we face them to give us data on quantity of crops exported from our region, they are not ready to give us that information; they just roam us around"

Regional Agriculture Official

NBS officials in Dar Es Salaam reported that dissemination of agricultural sample survey data is a challenge because small sample sizes prevent disaggregation at the district level. As a consequence, data is of limited use to district officials or local private sector investors. However, ministry respondents did state that national-level surveys conducted in both sectors, as well as crop and disease surveillance information, are circulated as reports to the districts. Some trend analysis in such reports is of potential use to districts, but given the regional aggregation of most surveys, we did not observe a significant use of NBS agriculture survey data in the districts.

16. There if fragmentation of authority of who grants the operational permits and who requests data. MALF grants private companies operational permits, but LGA—are not under the supervision of MALF— requests data. This fragmentation diminish the incentives of private companies to share data with the district agriculture department, unlike the incentives from the CHMT in the health sector.

Theme 6:

Results Data for Planning, Resource Allocation and Performance Management

We asked respondents about their awareness of department, district, and national goals, and if performance towards these goals has an impact on planning, budget, and resource allocations. Key insights are as follows:

Multiple surveys and robust monitoring and evaluation frameworks inform national planning and budgeting (see Annex 1)—emphasizing the increasing demand for data for national planning. The national poverty reduction strategy, Agriculture Sector Development Plan II, Health Sector Development Plan, and sectorial statistics plans are all developed with an in-depth situation analysis. They also contribute to planning and resource allocation activities at the national level. These national goals are relayed to the LGAs via President's Office of Regional Administration and Local Government (PORALG), where the goals become key factors for district planning and performance evaluations. Local departments then create bottom-up plans based on plans submitted by villages and wards, in line with national goals.

District-level respondents often indicated that BRN goals had taken precedence, in practice, over other sector-specific goals in recent years. Since 2012, BRN[17] has created goals for key priority areas "to achieve measurable impact in a limited timeframe." These goals were created in partnership with sector ministries and PORALG, and they sit on top of the goals set by sector ministries.

At all levels, respondents were aware of the relationship between results data, goals, and budget planning. Districts use PlanRep[18]—an IT tool for budgeting and planning—to view budgets and expenditures versus progress against goals. But the system does not automatically sync with departmental reporting systems (e.g. DHIS2 or ARDS) and requires duplicated data entry. Also, crop and disease surveillance information collected by their respective ministries is not captured in PlanRep, diminishing the opportunity to capitalize on early warning and forecasting measures to allocate more targeted funds.

Through some candid conversations, respondents in both sectors expressed awareness that they are relying on poor quality, estimated, or missing routine data for planning. **In two instances, the respondents addressed quality risks by directly reaching out to the community leaders to gain a more accurate count of the target populations.** However, in most cases, respondents proceeded to make plans with the data and the qualitative assessments they had available.

As a result, respondents understandably expressed doubts about their ability to plan—**even when they spend time using limited results indicators to inform district-level plans, budgets seldom match these plans.** Respondents in at least three districts reported that although they submit their plans and agriculture budgets are allocated accordingly from the ministry, these budgets are sometimes re-allocated by the District Council to other priority areas, such as building schools and clinics. Such challenges reduce incentives for local-level agriculture workers to give importance to results indicators in the planning and budgeting process.

17. The agriculture sector was part of the BRN since 2012 and health sector was added in 2015.
18. http://www.pmoralg.go.tz/quick-menu/mis/planrep2-tasks.php

"For agricultural department, we get fifty seven million from district revenue but…we never use that money. Its always used for priorities like building health facilities, schools etc."

District Agriculture Officer

We asked respondents, **does performance on certain indicators matter for your budgets?** In the health sector, the response was 'yes.' Vertical programs coordinators reported that prioritizing meeting national targets meant that more funds are made available when targets are met.

"If you meet national targets you get more funds… I have talked of performance based budget, which means that the more you meet the targets, the more money you get."

District Medical Officer

Also, DMO and other officials reported that when performance on certain indicators is poor, or there are outbreaks, CHMT can divert resources to address the problem.

"These are plans that we use for our own domestic fund. This is the kind of fund that we can allocate in areas of need without depending on the sponsor or government grants that are delayed most of the time. For example, for epidemic diseases, the council financed us. Domestic revenue can be directed according to the needs in the district."

District Medical Officer

In the agriculture sector, the response was mixed. **Production indicators are given a great deal of attention, but respondents report that budgets are not directly influenced by annual production figures.** For example, if famine is noted, local agricultural budgets do not change, as the focus is on short-term emergency food allocation from strategic reserves.

Way Forward

Our recommendations are intended for both GoT and the DP community, as well as for international actors. We focus our points separately on health and agriculture, but suggest that many lessons from each are broadly applicable.

To address the issues discussed above, our recommendations focus on (i) reducing data burdens, (ii) improving relevance of results information, and (iii) creating the right incentives to promote data use, especially among district managers and service delivery staff.

Health Sector

Build the analytic skills of health facility staff. Several programs correctly offer training on data collection skills. Intense, successful efforts have been made to improve monitoring of health service delivery via DHIS2. But with outsized attention on DHIS2, real interpretation and use of data outside the tool at local level is lacking. Future trainings for health leaders should prioritize basic evaluation and analysis skills to make analysis more constructive and accurate.

Expand DHIS2 access to facilities. Health sector respondents were concerned with the inability of facilities to access DHIS2—either for entering data or analyzing and benchmarking performance. This undercuts DHIS2's value for facilitating facility-level learning and improvement.

Critically streamline routine indicators. Personnel spend a great deal of time completing reports on program activities and outputs. GoT and DPs have worked successfully to harmonize their indicators—as demonstrated by DHIS2—but the overall number and type of indicators to be prepared remain burdensome, according to respondents. Further review and streamlining of the number of indicators would help to remove those not used to assess key government priorities, inform local decisions, or fulfill international reporting requirements.

Increase the number of service delivery staff toward the specific goal of reducing data collection burdens and improving data quality. Our respondents emphasized time and again that staff face trade-offs between seeing patients while completing reporting books. Efforts to ease staff constraints should include an explicit priority for improved data collection and quality.

Further develop proactive and independent data quality assurance processes. By simply checking for outliers and not systematically assessing the accuracy of data, district officials perpetuate incentives for poor data. The role of independent, third party data assurance processes should be explored.

Ensure that district level officials can combine various strands of results-oriented data to assess and meet local priorities. As decentralization efforts evolve, we highlight two important approaches for improving use of evidence and data at district-level and below:

- Integrate surveillance data with district data systems such as DHIS2 and PlanRep. CHMTs are beginning to reap the benefits of DHIS2 for compiling data across facilities and creating simple visualizations to inform plans. Making other types of data—particularly findings from sentinel surveillance, such as leading causes of death via verbal autopsy—more readily available for decision-making can accelerate progress.
- Bring non-clinical HIV/AIDS data into planning discussions, including population data from communities and output data from non-clinical CSOs. These are particularly relevant to community prevention and care work addressing HIV/AIDS and malaria. CSOs report their activities to LGAs, but we find that this information does not typically factor into planning processes. Ultimately, it reduces opportunities to improve the reach of clinical services to vulnerable populations.

Support the forthcoming Data Dissemination and Use (DDU) strategy. The DDU strategy, supported by USAID/PS3[19] aims to prepare and disseminate guidance on data use and sharing to all health sector workers, provide pre- and in-service training activities on the role of data and analysis skills, and establish 'data forums' in districts and regions to encourage data sharing and peer learning. Our findings strongly validate this approach.

Accelerate investments in and use of Civil Registration and Vital Statistics (CRVS). Respondents frequently stated needs for outcome-relevant data at the district and sub-district level. Communication and training should demonstrate the value of existing outcome-relevant data and provide specific tools and approaches for using it. Moreover, efforts to strengthen CRVS have been revived; these stand to provide more expansive outcome-relevant data and should be prioritized.

Encourage benchmarking and peer review of performance. The pilot Star Rating system, if more widely communicated, has potential to improve facility-level demand for and use of results data. As the system is scaled up, ratings should be distilled and communicated in structured benchmarking and performance reports across regions and districts. Similar approaches for using DHIS2 and other district-level data to publish service benchmarks across districts should be considered to stimulate demand for—and attention to—results.

Provide adequate recurrent budgets for results data. DPs largely drive demand for and supply of health data, leading to underestimates of the recurrent costs of managing data systems. Respondents frequently expressed frustration with insufficient resources for supportive supervision, transportation, and staff time to collect, maintain and use data.

19. Public Sector Systems Strengthening

Agriculture Sector

The Ministry of Agriculture, with support from PORALG should standardize data collection instruments. This will improve data interoperability across districts and improve quality. Agriculture Sector Strategic Plan is already promoting this, and should be pursued.

Recruit and train more sub-district staff for field level data collection to reduce the data collection burdens and improve the extension service coverage. Service-level workers are—and will remain—the primary routine data collectors, and staffing constraints are a constant reality. Skilled staff and standard collection methodologies at the sub-district level will improve the quality of routine administrative data.

Recruit and train statisticians for district and regional level to build sub-national analytical capacity. The training programs underway with ARDS are a good basis for this, but further funding is required from GoT (new staff) and DPs (training and equipment/transport/facilities). Training should include methodologies for crop recording and estimation, along with understanding and use of data types—e.g. the difference between activities, outputs, and outcomes. DP result systems can provide guidance and examples; DPs therefore need to be updated on ARDS, and its funding needs by the Monitoring, Evaluation, and Statistics Department.

Review data systems and reporting lines. The 2014 ASSP inventory of agriculture data collection systems needs to be updated. This should include proposed roles, responsibilities, and purposes for data collection agreed and endorsed by LGAs, national ministries, and DPs. Respecting the decentralization process, there is a need for MALF and other national actors to directly supervise the technical aspects of agriculture data collection and reporting. While GoT should adjust reporting lines through matrix management, DPs should coordinate and harmonize initiatives and collectively fund, as envisioned under ASDP II, core data requirements.

Improve reliability and access to routine administrative data to encourage greater use. Data sharing in agriculture is currently limited with only informal links to other institutions/agencies and with DPs. As a result, and also due to financial constraints, limited data is published. Data use at district/regional and national levels is primarily focused on status of crop and livestock production, with the immediate requirement to assess food security.

Respondents at all levels noted that the agriculture sector could benefit from systematic data quality assurance protocols. Current protocols are employed through supervision processes and depend on the availability of scarce travel funds.

Improve access to and use of ARDS. Incomplete data, difficult access, and low reliability restrict the use of ARDS. Apart from improving correct submission of data into ARDS, guidelines for access and use need to be made user-friendly and accessible (both in paper and on-screen). More importantly, to improve sharing and use, ARDS needs to facilitate district-level demand for data. To improve use, the tool should more easily add locally relevant indicators and allow users to prioritize specific items (e.g. farm input and output prices). The ability to generate custom tables that correspond to local needs will also be important, requiring integration with data from other sources—e.g. the Annual Sample Survey, district 'Small Areas' data, and eventually, the National Census data.

Build demand for results data. Sufficient data already exists both in NBS and Ministries to develop concise results data 'highlights' that can communicate relevant data to decision-makers and other stakeholders. One or two page results briefs would highlight specific results and performance in crop and livestock production. Provided both to media and government officials (nationally and locally), such approaches would stimulate an interest in agriculture results data.

Annex

Types of Data Collected Health
The types of data collected can be generally broken into three categories: Routine Data, Surveillance Data, and Survey/Census Data.

Table 1.1 Summary of responsible institutions mapped to data collection activities

Major Data Collection activities	Institutions Responsible for Producing Data	Method of Data Collection	Uses	Primary Users
Tanzania Demographic Household Survey	NBS[20], MOH,	Sample survey using standard collection forms	Estimates on key performance indicators at national level, urban/rural levels, and seven zones.	National; DPs
Routine Health Information Management System (DHMIS2)	Health facilities, LGAs, MOH	Facilities reporting activities in 3 HMIS books/ registers	Facility based data are used to Monitor health service coverage at health facilities, performance of key program areas such as TB, HIV/AIDS, Malaria, TC, PMTCT, etc.	National; Regional; and District
HIV/AIDS and Malaria Survey	TACAIDS, NBS, ZAC[21]	Sample survey using standard collection forms	Information on knowledge and behavior about HIV/ AIDS and Malaria, HIV prevalence among men and women ages 15-49, presence of malaria among children 6-59 months	National; Regional; and District
Demographic Surveillance System	MOH, Ifakara NIMR[22]	Verbal autopsy, Sentinel Surveillance	Population based Measures child and adult mortality rate, assess leading causes of death via verbal autopsy	Participating Districts; National

Source: Compiled by DG from World Health Organization and MoH

20. National Bureau of Statistics
21. Zanzibar AIDS Commission
22. National Institute for Medical Research

Types of Data Collected Agriculture

Table 1.2: Selected summary of responsible institutions mapped to data collection activities

Major Data Collection activities	Institutions Responsible for Producing Data	Uses	Primary Users
National Sample Census of Agriculture	NBS and OCGS[23] Zanzibar, MALF, MIT[24], MLF - Zanzibar	Basic data for designing, monitoring and evaluation of agricultural development policies and programmes. National Accounts.	National
National Panel Survey	NBS and OCGS Zanzibar	Data for Poverty Monitoring and tracking results for agricultural development programmes	National, regional
Annual Agriculture Sample Survey (under development in 2014)	NBS and MALF, MLF-Zanzibar	Current annual data on major crop area, yield and livestock inventory for monitoring food security and results of agricultural development programmes	National
Agriculture Routine Data System (with technical assistance from JICA)	MALF, PORALG, MIT, NBS	Main source of current data on agriculture and food security (articulation with current and upcoming surveys will be discussed later)	National, Regional, District
Crop Monitoring and Early Warning	MALF, National Food Security Information Directorate, Crop Monitoring and Early Warning Section	Food security information	National
Crop and Livestock Price Data using a network of Extension workers in selected Regional and District level rural markets	MIT and MANR[25]-Zanzibar (crop prices)	Price information used by Government, Farmers, investors, general public for marketing and investment decisions	National, regional

Source: ASSP

23. Office of Chief Government Statistical
24. Ministry of Industry and Trade
25. Ministry of Agriculture and Natural Resources

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