

Economic Commission for Africa (ECA)
East African Community Secretariat (EAC)

**East Africa Regional Statistics Program-for-Results
(EARSP-for-R)**

Final Verification Report

The United Republic of Tanzania - October 2025

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List of Acronyms

AASS – Annual Agricultural Sample Survey
ACS – African Centre for Statistics
DLI – Disbursement Linked Indicator
DLR – Disbursement Linked Result
EAC – East African Community
EARSP-for-R – Eastern Africa Regional Statistics Program for Results
IVA – Independent Verification Agency
NBS – National Bureau of Statistics
OCCS – Office of the Chief Government Statistician
SBR – Statistical Business Register
SDGs – Sustainable Development Goals
TRA – Tanzania Revenue Authority
UNECA – United Nations Economic Commission for Africa
URT – United Republic of Tanzania

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Executive Summary

The United Nations Economic Commission for Africa (UNECA), serving as the Independent Verification Agency (IVA) under the Eastern Africa Regional Statistics Program for Results (EARSP-for-R), conducted the October 2025 verification mission for the United Republic of Tanzania. The mission, undertaken in close collaboration with the East African Community (EAC) Secretariat, focused on verifying three Disbursement Linked Results (DLRs): (i) the update and publication of the Statistical Business Register (DLR 2.2a); (ii) the completion and publication of the 2023/24 Annual Agricultural Sample Survey (DLR 2.3a); and (iii) the assessment of gaps and opportunities for the use of Big Data and new technologies (DLR 2.6c).

The verification confirmed that the 2024 Statistical Business Register (SBR) was successfully updated, published, and accompanied by anonymized microdata. The National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS) effectively utilized administrative data from the Tanzania Revenue Authority, the Census of Industrial Production, and the Employment and Earnings Survey to enhance the completeness and accuracy of the register. The updated SBR provides an integrated, enterprise-based dataset that supports evidence-based economic analysis and policymaking. While this represents a significant achievement, the verification identified opportunities to further strengthen automation, data sharing, and integration between mainland Tanzania and Zanzibar to ensure improved consistency and timeliness.

UNECA also verified the completion, publication, and online accessibility of the 2023/24 Annual Agricultural Sample Survey (AASS). The survey provides detailed and disaggregated data by sex and sector, with anonymized microdata made available for public use through the National Data Archive. The AASS reflects Tanzania's commitment to improving agricultural statistics, methodological rigor, and transparency, underpinned by the Statistics Act. However, future survey rounds would benefit from additional methodological refinements, including the computation of sampling errors, the integration of geospatial variables, and the inclusion of employment, aquaculture, livestock, and trade-related data for more comprehensive coverage.

The verification further confirmed Tanzania's substantial progress in applying Big Data and new technologies for official statistics. The NBS and OCGS produced a validated environmental report that meets verification criteria and are finalizing analytical reports on agriculture and poverty. The analysis highlights growing applications of satellite imagery, machine learning, and Earth observation data to complement traditional statistical approaches. Nonetheless, challenges remain, including inconsistent data quality, limited model validation, and capacity gaps in advanced analytics. The DLR was therefore assessed as partially achieved, with strong potential for full attainment in the next verification cycle.

The verification concluded that Tanzania fully achieved two Disbursement Linked Indicators (DLIs), the Statistical Business Register (DLR 2.2a) and the Annual Agricultural Sample Survey (DLR 2.3a), and partially achieved the DLI on Big Data and New Technologies (DLR 2.6c). These results reflect Tanzania's steady progress in strengthening its national statistical system and advancing the objectives of the EARSP-for-R program. The country continues to demonstrate commendable commitment to innovation, data accessibility, and methodological rigor in the production of quality statistics. To consolidate and institutionalize these gains, continued investments are needed in data infrastructure, inter-agency coordination, and advanced analytical capacities.

Summary of Verification Results

Disbursement Linked Indicators	Narrative	Status for October 2025 verification window
DLI 2.2 (a)	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online	Achieved
DLI 2.3 (a)	2023/24 Annual Agricultural Sample Survey (hereafter AASS) completed with report disseminated and anonymized micro data well documented, archived, and available online	Achieved
DLI 2.6 (c)	(c) NBS with OCGS produce assessments of opportunities and three technical innovation reports e.g. on environment, poverty and agriculture, using Big Data or applying other innovations, including use and analysis of satellite imagery and, if relevant, the Global Settlement Footprint	Partially Achieved

Table 1: Summary of Verification Results, URT

Section I. Statistical Business Register- SBR

1. Summary/ Overview

In the third verification window (October 2025) of Year 3, one (1) DLR was submitted for verification by the National Bureau of Statistics (NBS), through the East African Community (EAC) - Regional Program Coordination Unit Secretariat (RPCU). ECA was requested to verify the following DLR:

DLR/DLI	Narrative
DLR 2.2 – TZA:	Improved availability of enterprise-based survey data
DLI 2.2 (a)	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online
DLI Description	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online
Expected Milestone	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online

Table 2: Summary of DLI 2.2, URT

The verification confirmed that NBS, in collaboration with the Office of the Chief Government Statistician (OCGS), completed the 2024 update of the Statistical Business Register using administrative data to improve coverage, quality, and usability of enterprise-based statistics. The updated SBR provides an integrated, enterprise-based dataset for economic analysis, supporting improved planning, policymaking, and coordination within the National Statistical System (NSS).

2. Context and Discussions

2.1. Verification Protocols and Methodologies Deployed

Following the established Programme Cooperation Agreement (PCA) protocols, ECA's verification focused on confirming that:

- a) **The 2024 SBR update was completed using administrative data:** the United Nations Economic Commission for Africa (ECA), through the African Centre for Statistics (ACS), was tasked with independently verifying, in accordance with the agreed protocols, that the SBR 2024 update was completed using administrative data, the related report published and accessible online, and the microdata properly documented and available for public use.
- b) **The corresponding report was produced, published, and accessible online:** In line with the established Programme Cooperation Agreement (PCA) procedures, the verification of DLR 2.2 focused on assessing the production and publication of the Statistical Business Register (SBR) 2024 by the National Bureau of Statistics (NBS) and OCGS. The SBR serves as a critical tool for business and economic statistics, providing comprehensive information on enterprises disaggregated by sex, with accompanying sampling and non-sampling error reports and anonymized microdata available online.
- c) **The anonymized microdata was properly documented and available to users:** the NBS shared all relevant documentation, reports, and web links with ECA to

facilitate verification. The verification procedures for DLR 2.2(a) included a comprehensive review and analysis of the summary report, methodology, concepts and definitions applied, as well as identification of data gaps and opportunities for improving the quality and usability of the Statistical Business Register.

- d) In general, the verification steps included a desk review of the SBR report, methodological framework, and data integration processes, alongside an onsite assessment at the National Bureau of Statistics (NBS). The Office of the Chief Government Statistician (OCGS) participated in the meetings held at NBS to discuss harmonization, validation, and integration approaches between mainland Tanzania and Zanzibar.

2.2. Reports and Links Reviewed

As per the agreed protocol of verification, the independent verifying team has been presented with the following list of documents and reports as evidence of accomplishment for the DLI.

- a) Statistical Business register updated to 2024
- b) Employment and Earnings Survey Questionnaire
- c) Census of Industrial Production Questionnaire

3. Findings and Reporting

3.1. Initial Findings and Alignment of DLR Evidence.

Alignment of evidence:

The documentation and outputs submitted by the National Bureau of Statistics (NBS) met the verification requirements and were consistent with the evidence framework outlined in the Programme Cooperation Agreement (PCA).

As the Independent Verification Agency (IVA), the United Nations Economic Commission for Africa (ECA) conducted the verification exercise in full adherence to the agreed PCA procedures for DLR 2.2(a). The verification protocols were rigorously applied to ensure accuracy, methodological soundness, and completeness of the reported results. The findings presented below summarize the review of the Statistical Business Register (SBR) 2024, including its background, methodology, data sources, data processing, and key observations.

i. Publication of Assessment Report:

The Statistical Business Register (SBR) updated to 2024 using administrative data, together with anonymized microdata, has been published and made accessible on the NBS website.

ii. Review of the Statistical Business Register report (SBR):

This section presents an assessment of the SBR report, including its background, methodology, data sources, identified gaps and opportunities, data processing, and overall findings.

iii. Background:

The United Republic of Tanzania compiled the 2024 SBR using administrative data, benchmarking it against the 2023 edition. Previous SBRs were compiled separately by Mainland Tanzania and Zanzibar through censuses and establishment surveys.

iv. Data Sources:

NBS utilized administrative data from the Tanzania Revenue Authority (TRA), the Census of Industrial Production (CIP), and the Employment and Earnings Survey (EES) as the primary sources for updating the 2024 Statistical Business Register.

v. Methodology:

A comprehensive list of businesses in the United Republic of Tanzania was obtained from the Tanzania Revenue Authority and complemented with information from the CIP and EES to enhance completeness and achieve a unified national SBR.

vi. Data Processing / Interrogation:

Surveys were administered using tablets, and in cases of missing responses, questionnaires were left with respondents for completion. Microsoft Excel was used to process and interrogate the data, which is stored on a centralized server.

3.2. Main Verification Findings

As an Independent Verifying Agency, ECA has conducted the verification adhering to the agreed procedures outlined in the Program Cooperation Agreement, for DLR 2.2(a). The verification procedures were rigorously applied to DLR, and the following are the definitive findings of each DLR:

i. Publication and Accessibility:

The Statistical Business Register (SBR) updated to 2024, along with anonymized microdata, has been published and made accessible on the NBS website.

ii. Methodological Framework:

The 2024 SBR builds upon the 2023 version, integrating administrative data from the Tanzania Revenue Authority (TRA), Census of Industrial Production (CIP), and Employment and Earnings Survey (EES). The methodology ensures improved coverage of active enterprises, reflecting both formal and emerging establishments across regions.

iii. Data Processing and Systems:

Administrative datasets from TRA were transmitted in Excel format and later processed in SPSS, with additional cross-checking using Microsoft Excel. While the process remains semi-manual, it demonstrates consistent progress toward integrated, automated data handling. Plans to establish a secure data portal between TRA and NBS are still pending, which, once implemented, would enhance timeliness and security of data exchange.

iv. Coverage and Content:

The SBR now includes key enterprise identifiers such as establishment name, Tax Identification Number (TIN), location, activity classification (ISIC Rev.4), turnover, size, and ownership type. The inclusion of both mainland and Zanzibar data improves national coherence and regional comparability.

v. Challenges Identified:

Several technical and institutional challenges persist:

- a) Delayed data transmission from TRA limits the frequency of SBR updates.
- b) Discrepancies between administrative and field data remain due to limited cross-validation procedures.
- c) Manual processing introduces risks of error and inefficiency.
- d) Limited automation hinders real-time data integration and analytical use.

4. Outstanding Issues and Document:

The Independent Verification Team of ECA confirmed that there are no outstanding issues or documents expected from the NBS and OCGS that are required to facilitate the verification process.

5. Conclusion

The verification confirmed that the Tanzania's 2024 Statistical Business Register (SBR) aligns broadly with international standards and consistent with the 2008 System of National Accounts (SNA). The SBR includes key attributes such as establishment name, Tax Identification Number (TIN), business location and contacts, activity classification according to ISIC Rev.4, turnover, size, and legal status. These elements reflect strong progress toward maintaining a comprehensive and reliable business register. However, the verification team recommends the inclusion of a confidentiality clause in the questionnaire to enhance respondent assurance and the addition of a foreign-owned business component to improve the analytical scope and international comparability of the dataset.

Despite these achievements, several gaps continue to affect the completeness and efficiency of SBR operations. Notably, delays in data transmission from the Tanzania Revenue Authority (TRA), currently shared via Excel and processed in SPSS, pose challenges to timely updates. The secure data portal proposed to facilitate transmission between TRA and NBS is still pending, with no clear timeline for deployment. Furthermore, discrepancies between NBS field data and TRA administrative records persist due to limited validation and reclassification procedures. Addressing these gaps will be critical to improving data integration, consistency, and overall reliability of the SBR.

Hence, under the October 2025 verification window, the verification team confirms that the DLI 2.2 (a) Statistical Business Register (SBR) updated to 2022 through an establishment census with report and anonymized microdata online, has been achieved by the United Republic of Tanzania.

6. Recommendation

Based on the documents reviewed, reports submitted, and verification protocols applied, the Independent Verification (IV) Team makes the following recommendations to further strengthen the quality, timeliness, and sustainability of the Statistical Business Register (SBR):

- a) **Strengthen Administrative Data Integration:** Although the linkage between the Tanzania Revenue Authority (TRA), Business Registration and Licensing Agency (BRELA), and other relevant administrative sources (such as the Central Establishment Census (CEC) and Employment and Earnings Survey (EES)) is functional, it remains affected by delays and inconsistent validation processes. Establishing a formal data exchange protocol would enhance the regularity, reliability, and coherence of administrative data flows.
- e) **Automate Data Processing:** Transitioning from manual, Excel-based data transfers to automated, API-based systems will help minimize human error, improve efficiency, and ensure more timely updates of business register information.
- f) **Institutionalize Regular Validation:** Introduce a biennial validation mechanism to systematically assess the accuracy and completeness of the SBR entries, ensuring that the register reflects current business dynamics and adequately captures the formal and informal business population.
- g) **Enhance Metadata and Documentation:** Strengthen the SBR metadata system to ensure transparency on data sources, update frequency, validation procedures, and limitations, facilitating better use by policymakers and researchers.
- h) **Include a Confidentiality Statement:** Introduce a clause in the SBR-related questionnaires assuring respondents that all information will be treated with strict confidentiality and used solely for statistical purposes.
- i) **Broaden Analytical Scope:** Consider including data on foreign-owned enterprises, employment size distribution, and sectoral turnover trends to enrich the analytical depth and cross-country comparability of the register.

End of Verification Report: DLI 2.2-TZA: Improved availability of enterprise-based survey data

Submitted by the United Nations Economic Commission for Africa (ECA) as the Independent Verification Agency (IVA) for the Eastern Africa Regional Statistics Program for Results (EARSP), October 2025 Window

Section II: Integrated Agricultural Survey (IAS)

1. Summary

The Eastern Africa Regional Statistics Program for Results (EARSP-for-R) aims to improve the harmonization, dissemination and use of core economic and social statistics and enhance data availability in East Africa. Under the program, funds are disbursed to national statistics agencies in Tanzania, Rwanda and Kenya on achievement of specific Disbursement Linked Results (DLRs) which must be independently verified. The ECA, under the Programme Cooperation Agreement (PCA) signed with the East African Community (EAC), has been contracted as an Independent Verification Agency (IVA) to verify DLRs using agreed verification protocols and methodologies. This document presents ECA's interim set of assessments of DLRs of the United Republic of Tanzania (URT) submitted to the EAC for comment before writing the draft and final verification report.

2. Context and Discussion

2.1. Disbursement Linked Results and Indicators for October 2025 Window

DRL/DLI	Narrative
DLR 2.3-TZA:	Improved availability of agricultural statistics:
DLI 2.3 (a)	2023/24 Annual Agricultural Sample Survey (hereafter AASS) completed with report disseminated and anonymized micro data well documented, archived, and available online
DLI Description	(a) NSB with OCGS complete 4 Agriculture and Rural Surveys (ARS) or IAS surveys (50x 2030 initiative) and disseminated findings through a report and online visuals with sex-disaggregated, and anonymized microdata documented, archived and available online. A non-standard measurement unit conversion survey is conducted as part of the ARSIAS in year 1.
Expected Milestone	(a) IAS completed for 2022, 2023, 2024 and 2025, with report disseminated and anonymized microdata well documented, archived and available online.

Table 3: Summary of DLI 2.3, URT

2.2. Verification Protocols and Methodologies Deployed

In accordance with the Programme Cooperation Agreement (PCA) and established verification procedures, the United Nations Economic Commission for Africa (ECA) conducted validation of the evidence submitted by the National Bureau of Statistics (NBS) of the United Republic of Tanzania for three Disbursement Linked Results (DLRs). The verification focused particularly on confirming the production and publication of the 2023/24 Annual Agricultural Sample Survey (AASS) under DLR 2.3(a).

As per the agreed framework:

- a) NBS and OCGS were required to provide verifiable evidence demonstrating that the 2023/24 AASS had been produced, published, and made publicly available.

- b) ECA, through its African Centre for Statistics (ACS), was mandated to independently verify the authenticity and accessibility of these outputs in line with the PCA verification protocols
- c) The NBS and OCGS shared the relevant documentation, datasets, and web links to facilitate this verification process.

The verification of **DLR 2.3(a) 2023/24 Annual Agricultural Sample Survey (hereafter AASS) completed with report disseminated and anonymized micro data well documented, archived and available online**, involved the following steps and procedures:

- a) Confirming that the 2023/24 AASS report was completed and available online.
- d) Verifying that the data and reports were disaggregated by sex.
- e) Assessing the inclusion of sampling and non-sampling error estimates as part of quality assurance.
- f) Ensuring that the microdata was available, anonymized, and downloadable.
- g) Checking the use of international statistical classifications to ensure data comparability and alignment with global standards.

2.3. Reports and Links Reviewed

Following the agreed protocol of verification, the independent verification team of UNECA was presented with the following reports and links to reports to be verified as supporting document for the attainment of the DLI

DLR 2.3 (a): Assessment frameworks with assessment summary reports and links.

- **Link for the Main report:** <https://www.nbs.go.tz/uploads/statistics/documents/en-1760642712-Annual%20Agricultural%20Sample%20%20Survey%202023-24%20-%20National%20Report.pdf>
- **Key findings report:** https://www.nbs.go.tz/uploads/statistics/documents/en-1760643333-KEY%20FINDINGS%20REPORT_AASS%202023-24_ENGLISH.pdf
- **Link for microdata:** <https://microdata.nbs.go.tz/index.php/catalog/52>
- **Link to the Quality Assessment Report:** <https://microdata.nbs.go.tz/index.php/catalog/60/download/421>

3. Findings

3.1. Initial Findings and Alignment of DLRs Evidence.

Alignment of evidence: The evidence provided by NBS is aligned with the requirements and is useful in validating the DLR. On the OCGS website, the team note that both the 2023/2024 Annual Agricultural Survey report and the corresponding metadata is published (available at <http://102.223.7.121:443/znada/index.php/catalog/36>). Moreover, the direct link to the NBS website is available on the OCGS webpage.

3.2. Main Verification Findings

As an Independent Verifying Agency, ECA has conducted the verification adhering to the agreed procedures outlined in the Programme Cooperation Agreement, for DLR 2.3 (a). The verification procedures were rigorously applied to the DLR, and the following are the definitive findings of the DLR:

ii. Publication of Assessment Report :

The verification of DLR 2.3(a) focused on confirming the publication and quality of the 2023/24 Annual Agricultural Sample Survey (AASS) outputs, with specific attention to the following key elements identified during the verification process:

- a) The 2023/24 AASS reports are compiled, published and available on the NBS website;
- b) Production and publication of national agricultural statistics tables by Mainland Tanzania and Zanzibar are completed.
- c) Microdata anonymized and published.
- d) Report presented and disaggregated by sex.
- e) Use of standardized units of measurement; and
- f) Use of the Central Product Classification expanded for agricultural statistics.

iii. Review and Analysis of the assessment report.

The Independent Verification Team from UNECA conducted a detailed review and analysis of the Annual Agricultural Sample Survey (AASS) 2023/24 to assess its compliance with the Disbursement Linked Results (DLR) verification framework. The analysis covered key quality dimensions, methodological soundness, accessibility, and adherence to international statistical standards, as summarized below:

- a) **Annual Agricultural Sample Survey:** The verification confirmed compliance with all the indicators of the data quality standards, revealing that the country has made efforts to ensure the quality of agriculture statistics in consistent with International classifications for agricultural statistics especially Central Product Classifications (CPC) and its expansion for agricultural statistics. However, since the survey did not include employment or economic activity variables, the International Standard Classification of Occupations (ISCO) and the International Standard Industrial Classification of All Economic Activities (ISIC) were not applied.
- b) **Prerequisites of quality:** Regarding quality prerequisites, the verification results indicated the existence of a law defining the responsibilities of the entities responsible for agricultural statistics. Under the Statistics Act (law), the data sharing process is effective. However, data sharing currently operates mainly through specific agreements and memoranda rather than an automated or centralized system.
- c) **Methodological soundness:** The verification found that the scope of the survey covered both the agricultural households and large-scale farms to provide a complete national estimate. The survey covered crop production, livestock, and households practicing aquaculture as well as agricultural machinery and equipment.
- d) **Accuracy and reliability:** At this level, the review of the main reports provided, and the discussions and deliberations revealed that the activity is completed, and the statistical outputs published online for easy access by the public.
- e) **Accessibility:** In its commitment to protecting data privacy and promote the use of agricultural statistics, the data is anonymised to avoid compromising on the confidentiality of the respondents, and the microdata is published as per international best practices and accessible online.

- f) **Review of the compliance rating of improving Agricultural Statistics:** the compliance assessment was conducted based on the documentation and evidence provided. The verification confirmed substantial progress toward meeting data quality and methodological standards.
- **Data Processing:** The verification team noted that the AASS microdata were processed using STATA files, reflecting adherence to recognized statistical software practices for large-scale surveys.
 - **Sampling Methodology:**
 - the report presents the results of the 2023/24 AASS sampling error assessment, examining the precision of major crop estimates through CV analysis, identifying survey calendar deviations and data collection challenges. It presents findings reviewing the integration of conversion factors and providing recommendations to enhance the quality and implementation of future survey cycles.
 - In the sampling error assessment, tables 1 and 2 summarize the number of regions with CV greater than 35 percent and the national-level CVs, respectively. These findings reveal substantial differences in the variability of production across crop types and seasons.
 - **Interpretation of Findings:**
 - Staple crops such as maize, paddy, beans, groundnuts, and cassava generally recorded low national-level CVs (3–10%), indicating the estimates are statistically reliable with relatively low dispersion around the mean.
 - Horticultural crops and spices, including garlic, cardamom, clove, cinnamon, grapes, recorded very high CVs, ranging from 60% to over 80%. This reflects their limited cultivation areas, climatic sensitivity, and wider production fluctuations.
 - The high number of regions with CV >35% for some major crops in Table 1 indicates substantial regional variation, even when national estimates appear stable. This distinction should be explicitly noted in future reports.
 - Overall, variability is lower for widely cultivated food crops and higher for specialty, cash, or horticultural crops.
 - The survey was designed to ensure national and regional representativeness, focusing on area planted and livestock (TLU) as key precision indicators. However, some crops showed a Coefficient of Variation (CV) above 35% based on quantity produced, reflecting significant regional diversity in crop production
 - **Geospatial Component:** The report's Chapter Six, which discusses geospatial analysis, was not directly derived from the questionnaire used during data collection. It is therefore recommended that future survey instruments be expanded to include geospatial data questions to ensure full methodological consistency.

4. Outstanding Issues and Documents

The Independent Verification Team of ECA confirmed that there are no outstanding issues or documents expected from the NBS and OCGS that are required to facilitate the verification process.

5. Conclusion

The verification of DLR 2.3(a) for the United Republic of Tanzania demonstrates substantial compliance with the agreed verification protocols and Disbursement Linked Indicators under the Eastern Africa Regional Statistics Program for Results (EARSP-for-R). The National Bureau of Statistics (NBS) with OCGS successfully produced, published, and disseminated the 2023/24 Annual Agricultural Sample Survey (AASS), ensuring the availability of anonymized microdata and sex-disaggregated results in line with international statistical standards. The report's methodological soundness, legal framework for data management, and commitment to data accessibility reflect the country's continued progress in strengthening the agricultural statistical system and promoting evidence-based policymaking.

Despite these notable achievements, certain methodological and technical aspects warrant improvement to fully align with international best practices. Specifically, the absence of sampling error estimation, limited integration of geospatial analysis within the survey instruments, and lack of explicit coverage on employment and trade indicators represent areas for enhancement in future survey cycles. Addressing these gaps will not only strengthen data quality and reliability but also enhance the analytical depth, comparability, and policy relevance of agricultural statistics across the region.

In conclusion, under the October 2025 verification window, the Independent Verification team of ECA confirmed that both the NBS and OCGS have achieved the DLI 2.3 (a) 2023/24 Annual Agricultural Sample Survey (hereafter AASS) completed with report disseminated and anonymized micro data well documented, archived and available online.

6. Recommendations

To further enhance the quality, usability, and methodological rigor of the Annual Agricultural Survey (AASS), the Verification Team provides the following recommendations for consideration by the National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS). These recommendations aim to strengthen data quality, improve accessibility, and promote greater analytical value and policy relevance of the survey outputs.

- a) **Enhancing Fieldwork Timing Through Improved Coordination:** fieldwork for the 2023/24 survey started later than planned, beginning in November instead of October, and extended until February 2024. The prolonged schedule coincided with heavy rains and flooding, which created access challenges for logistics and increased the likelihood of non-sampling errors. To prevent similar delays, stronger coordination between technical, financial, and administrative teams is recommended so that budgeting and operational timelines are better aligned with fieldwork needs.
- b) **Enhance Data Accessibility:** To promote greater use of the AASS data, the Team recommends that the anonymized microdata files currently available in STATA format also be provided in Excel or CSV formats. These formats are more accessible to a wider range of stakeholders, including ministries, research institutions, and development partners that may not have access to specialized statistical software. Improved accessibility will also support data-driven policy analysis, capacity building, and evidence-based decision-making across sectors.

- a) **Ensure Comprehensive Data Coverage:** For the next round of the AASS, the Team advises that the United Republic of Tanzania (URT), through NBS and OCGS, ensure the report presents a comprehensive analysis of aquaculture and livestock production. These components were part of the survey design but not adequately reflected in the analytical report. Including them would provide a complete picture of the agricultural sector, reflecting the country's economic diversification and the growing role of aquaculture and livestock in rural livelihoods and food security.
- b) **Strengthen the Geospatial Analysis Component:** The Verification Team recommends that the section on geospatial analysis (currently Chapter Six) be reorganized into a standalone thematic report or annex. This approach will allow for more in-depth presentation of spatial data and visualization of patterns related to crop distribution, land use, and productivity variations. Enhanced geospatial analysis can support targeted policy interventions, regional planning, and resource allocation by providing location-specific insights.
- c) **Clarify Survey Scope:** It is recommended that the introduction or background section of future AASS reports explicitly state that components related to employment, economic activity, and trade (imports/exports) were not covered in the current survey scope. This clarification will enhance transparency and user understanding, ensuring that data users interpret the results correctly and do not infer coverage beyond the intended objectives of the survey.

End of Verification Report: DLI 2.3-TZA: Improved availability of agricultural data

Section III: Geospatial Data: Gained experience with big data and new technologies

1. Summary

The United Nations Economic Commission for Africa (ECA), serving as the Independent Verification Agency (IVA), conducted the October 2025 verification for Tanzania under the Eastern Africa Regional Statistics Program for Results (EARSP). The verification team received a request to verify the attainment of the DLR 2.6(c) for the assessment of gaps and opportunities for using Big Data and three technical reports. The review of DLR 2.6(c) confirmed partial completion, with the environmental report was verified and met the agreed criteria, while the agriculture and poverty reports remain in progress. The verification noted strong progress in applying Big Data, geospatial analysis, and satellite imagery to environmental assessment but identified challenges in data consistency, model validation, and inter-agency coordination. ECA concludes that Tanzania is advancing steadily toward the program's objectives, with clear potential for full compliance in the next cycle.

2. Context and Discussion

2.1. Disbursement Linked Results and Indicators for October 2025 Window

DRL/DLI	Narrative
DLR 2.6	Gained experience with big data and new technologies:
DLI 2.6 (c):	Assessment of gaps & opportunities for using Big Data & three technical innovation reports on environment, poverty & agriculture, using Big Data or applying other innovations, including use & analysis of satellite imagery &, if relevant, the Global Settlement Footprint.
DLI Description	c) NBS with OCGS produce assessments of opportunities and three technical innovation reports e.g. on environment, poverty and agriculture, using Big Data or applying other innovations, including use and analysis of satellite imagery and, if relevant, the Global Settlement Footprint
Expected Milestone	(c) Assessment of gaps and opportunities for using big data and three technical innovation reports on environment, poverty and agriculture produced using Big Data.

Table 4: Summary of DLI 2.6, URT

2.2. Verification Protocol and Methodologies Deployed:

- **Accessibility and Effectiveness:** In accordance with the PCA verification principles and the established verification protocol, the required documentation and outputs related to the Disbursement Linked Indicator (DLI) under review should be readily accessible and publicly available through the official websites of the National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS). During the verification process, ECA assessed both the accessibility and the functional effectiveness of the reports and supporting evidence produced under the environmental component, including outputs on environment, poverty, and agriculture, which utilize Big Data analytics and other innovative approaches. The verification team reviewed whether these reports were appropriately disseminated, whether the links provided were functional and accessible, and whether the

documentation aligned with the methodological requirements outlined in the verification plan. This approach ensured a transparent and evidence-based assessment of the DLI achievement, focusing on the availability, quality, and relevance of the materials submitted by the implementing agencies.

2.3. Reports and Links reviewed:

- The NBS and OCGS presented the team of Independent Verifiers from ECA with the following Links and Report as evidence to support the DLR 2.6(C)

2.3.1. Links to main reports:

- DLR 2.6 (c):
 - a. Assessment Report on Challenges and Opportunities of using Big Data:<https://www.nbs.go.tz/uploads/statistics/documents/en-1760617676-Report%20on%20Assessment%20of%20Gaps%20and%20Opportunities%20for%20using%20Big%20Data%20in%20Tanzania.pdf>
 - b. Assessment Report on Challenges and Opportunities of using Big Data:<https://www.nbs.go.tz/uploads/statistics/documents/en-1760617676-Report%20on%20Assessment%20of%20Gaps%20and%20Opportunities%20for%20using%20Big%20Data%20in%20Tanzania.pdf>

2.3.2. Reports:

- a. Technical Innovation Report on Environment using Big Data:<https://www.nbs.go.tz/uploads/statistics/documents/en-1760616333-Technical%20Innovation%20Report%20with%20Environmental%20and%20Climate%20Change%20Statistics%20using%20Big.pdf>
- b. Link to the microdata:<https://microdata.nbs.go.tz/index.php/catalog/45>
- c. Link to the data collection questionnaire:<https://susotz.nbs.go.tz/tsmp/WebInterview/NCVG46J5/Start>

3. Verification Findings and Discussions

3.1. Initial findings of the Verification

The team of independent verifiers of ECA crosschecked the presented reports and data sets against the protocols and identified the following summary of findings under its initial finding report. The summary of findings was shared with the NBS and OCGS under the EAC secretariat.

The assessment focused on gaps and opportunities for using Big Data, as well as three technical innovation reports on environment, poverty, and agriculture, incorporating Big Data, other innovations, and, where relevant, satellite imagery and the Global Settlement Footprint. The NBS and OCGS documents and supporting links provide the basis for this review. Certain outstanding issues, including the practical application and integration of these innovations is indicated to be clarified following the completion of the onsite verification protocol.

3.2. Findings of the Verification

i. Alignment of Evidence for DLR 2. 6(c).

- a) Following the observations highlighted in the Initial Findings Report and the subsequent onsite mission conducted at the National Bureau of Statistics (NBS) to assess the accessibility and effectiveness of the documents and links presented to the Independent Verifiers, UNECA noted that the evidence provided in relation to

DLR 2.6(c) was consistent with the established verification plan and served as a reliable basis for confirming the reported results.

ii. **Measurement of Achievement of the DLR**

- b) In accordance with the PCA verification procedures, **one (1) Disbursement Linked Result (DLR)** submitted by the United Republic of Tanzania was verified through the strict application of the agreed verification protocols and methodologies. This section presents the definitive assessment of the DLR's achievement status, as outlined below.
- c) The verification confirmed **partial completion** of the assessment of gaps and opportunities for the use of Big Data, as well as the preparation of three technical innovation reports on environment, poverty, and agriculture. These reports demonstrate Tanzania's efforts to apply Big Data analytics and other innovative methods, including the use and analysis of satellite imagery and, where relevant, the Global Settlement Footprint (GSF). The available evidence substantiates the progress achieved under this DLR. However, the verification of the agriculture report is scheduled for the next verification session, while the poverty report remains under preparation and was not available at the time of this verification
- d) Based on the verification assessment, the report highlights several gaps and disparities in development and socio-economic conditions across different regions of Tanzania. These imbalances contribute to increased vulnerability to climate-related hazards, particularly in areas with limited infrastructure, low adaptive capacity, and high dependence on climate-sensitive sectors such as agriculture and natural resources.

iii. **Summary of Gaps and Opportunities of using Big data presented in the report**

The verification team has identified key findings that are highlighted and discussed the following gaps and opportunities of using Big data:

Gaps in Public Services and Human Development: According to the reported presented to the verification team, the NBS identified gaps in the Central and Western regions like Singida, Tabora, Dodoma, and Shinyanga, as well as northern parts of Arusha, which exhibit high levels of both drought exposure and vulnerability. This pattern points to ongoing limitations in access to public services, low levels of human development, and constrained livelihood opportunities, which reduce the capacity of communities to manage and recover from climate shocks.

Development Gaps in Rural and Underserved Areas:

- a) In the Southern Highlands (e.g., Mbeya and Iringa), despite regional affluence, specific rural wards face challenges in **service delivery and economic diversification**, elevating their risk.
- b) Along the Southern coast, particularly in Lindi Region, many wards are significantly exposed and vulnerable. These areas are described as underserved in basic infrastructure and social services.
- c) The Morogoro Region shows a strong convergence of flood risk and vulnerability, stemming from long-standing development constraints in rural wards related to health, education, and livelihood diversification.

Infrastructure Gaps:

- a) Rapid urban expansion in Eastern and Southern regions (e.g., Morogoro, Pwani, Dar es Salaam) is outpacing the development of adequate drainage and flood control infrastructure, increasing flood exposure.
- b) Poor market connectivity, proxied by the lack of all-season roads, is identified as an indicator of deprivation that contributes to household vulnerability.

Localized Development Gaps in Zanzibar: While Zanzibar generally shows lower vulnerability, certain wards on Pemba and in Central Unguja register both high heat stress and higher vulnerability. This signals localized development gaps that place parts of the island's population at greater risk.

Data and Modelling Limitations:

- a) **Lack of consistent and verifiable data sources:** the report acknowledges that while geospatial data enhances assessments, its application has limitations. These include variability in spatial resolution across datasets, inconsistencies in temporal coverage, and a reliance on modelled outputs that may not fully capture localized dynamics.
- b) The analysis also notes that the hazard data used does not reflect on how climate change might shift hazard patterns in the future.
- c) Based on the environment output, the **R** tool is used to analyse the risk from three perspectives of hazards, exposure, and vulnerability.

Strategic Opportunities and Enabling Trends:

- a) The Sustainable Development Goals (SDGs) and the Sendai Framework for Disaster Risk Reduction provide the landscape for developmental and humanitarian agendas. This offers important leverage to support introduction and strengthening of Big Data and new technologies in health, environment, and related sectors in countries.
- b) Initiatives such as the Health Data Collaborative (HDC) and the Global Partnership for Sustainable Development Data support countries in improving availability, quality, and use of data for local decision-making. This helps in keeping data high on the political agenda, aligning efforts to improve demand and supply of data at national levels, and improving data use through development of reference standards, norms, and practical tools.
- c) Strengthening existing data innovation centres such as Tanzania Commission for Science and Technology (COSTECH), establishing and operationalizing new data science campuses, centres of excellence, new Big Data and data innovation units in organizational structures, and innovation hubs creates spaces for Big Data skills development and expertise.

iv. Summary of Identified Gaps:

The challenges related to the assessment of gaps and opportunities, and overall climate risk analysis stem primarily from the limitations of the data and modelling techniques used. The challenges are explicitly mentioned as:

- a) **Variability in Spatial Resolution:** The datasets used for different hazards have varying levels of detail. For instance, flood data is modelled on a fine 90-meter

grid, while heatwave data uses a much coarser 10-kilometer grid. This inconsistency can affect the precision of the assessment, as localized risks might not be fully captured in lower-resolution datasets.

- b) Inconsistencies in Temporal Coverage:** The time periods covered by the different datasets are not uniform. For example, the drought data covers 1984-2022, while the heatwave data is based on a climatological period of 1981-2010. This can make direct comparisons or integrated analysis challenging.
- c) Reliance on Modelled Outputs:** The assessment relies on modelled outputs, which may not perfectly represent real-world, localized conditions. The report states that these models may not fully capture localized dynamics. This is a significant challenge as local factors can greatly influence the actual impact of a hazard.
- d) Oversimplification of Complex Hazards:** The analysis uses single, simplified metrics to measure the intensity of complex events. For example, flooding is measured only by inundation depth, while other crucial factors like the speed and duration of the flood are not captured. The report acknowledges that relying on a single metric can oversimplify complex hazards.
- e) Static Climate Data:** The hazard data used is based on historical climate patterns and does not account for future changes. The report explicitly notes that the data does "not reflect how climate change might shift these patterns in the future." This is a major limitation for forward-looking policy and adaptation planning.
- f) Proxy Indicators for Vulnerability:** The assessment of household vulnerability relies on proxy indicators to measure complex concepts like market access. For example, "poor market connectivity" is proxied using data on the proportion of rural households near an all-season road. While useful, such proxies may not fully capture the nuances of economic access and vulnerability.
- g) Institutional Framework Challenges:** A sustainable and cost-effective use of Big Data and new technologies for decision-making across sectors requires a supportive institutional environment. Unfortunately, elements constituting such an environment including strategy, plans, governance structures, policies, and financial resources are often lacking or incomplete, preventing institutionalization and long-term sustainability.
- h) Human Resource and Capacity Gaps:** Accessing, processing, and analysing Big Data requires competent personnel with specialized or sophisticated skills. NBS, OCGS, and other data producers need staff capable of not only technical data analysis but also understanding the methodological implications of using Big Data for statistical and spatial production."
- i) Data Quality Issues:** Big Data is often largely unstructured, meaning that such data sources do not always have pre-defined data model and may not fit well into conventional relational databases. The quality issue is mainly linked to the absence of agreed-upon and enforced guidelines, specifications, standards, and protocols across partners within various sectors."

- j) **Data Accessibility Challenges:** Private sector entities holding valuable data may be reluctant to share due to commercial sensitivities, lack of trust in data security measures, or absence of clear legal protections. Government agencies may face bureaucratic restrictions or inter-departmental rivalries that inhibit data sharing.
- k) **Awareness Deficits:** Low levels of awareness about potential uses and applications of Big Data and new technologies persist across various sectors in Tanzania.

4. Outstanding Issues and Documentation

The National Bureau of Statistics (NBS) is expected to submit the agriculture and poverty analytical reports in accordance with the agreed Disbursement Linked Indicator (DLI) protocols. These reports are essential to complete the verification process for DLR 2.6c (Big Data and New Technologies) and to confirm full compliance in the current and subsequent verification cycle.

5. Conclusion

The verification exercise undertaken by ECA as the Independent Verification Agency (IVA) confirms that Tanzania has made notable progress in implementing DLR 2.6(c) under the Eastern Africa Regional Statistics Program for Results. The National Bureau of Statistics (NBS) and the Office of the Chief Government Statistician (OCGS) have demonstrated commendable efforts in leveraging Big Data and innovative technologies to generate analytical products on environment, poverty, and agriculture. The assessment revealed tangible advancements in the use of geospatial analysis, satellite imagery, and data-driven modelling, which have strengthened the evidence base for policy formulation and planning. However, the verification also identified **partial completion** of outputs, with the agriculture and poverty reports pending finalization, and underscored several technical and institutional challenges, including data inconsistency, limited model validation, and inadequate integration of future climate scenarios.

Moving forward, the report emphasizes the importance of consolidating gains and addressing identified gaps to ensure that the use of Big Data becomes an institutionalized and sustainable practice within the national statistical systems. Strengthening data governance frameworks, improving spatial and temporal harmonization, and expanding the use of advanced analytical tools such as GeoAI, cloud-based GIS such as Google Earth, ArcGIS Online, and predictive models will be key to achieving this. Enhanced collaboration among NBS, OCGS, academia, and development partners will also be vital to build the necessary technical capacity and foster innovation. Overall, the verification concludes that Tanzania is on a promising trajectory towards fully realizing the potential of Big Data and new technologies for evidence-based policymaking, provided that the ongoing efforts are strategically reinforced through targeted investments, coordination, and capacity development.

In conclusion, under the October 2025 verification Window, the Independent Verification team of ECA confirmed that the United Republic of Tanzania has partially achieved the DLI 2.6 (c) *Assessment of gaps & opportunities for using Big Data & three technical innovation reports on environment, poverty & agriculture, using Big Data or applying other innovations, including use & analysis of satellite imagery &, if relevant, the Global Settlement Footprint,*

6. Recommendations

Based on the challenges identified, the team of independent verifiers from UNECA highlights the following recommendations to address the limitations in assessing gaps and innovation on environment:

i. **Improve Spatial and Temporal Consistency of Data:**

- a) It is recommended that NBS and OCGS strengthen efforts to identify, establish, and utilize consistent and verifiable data sources to enhance the credibility and comparability of analytical outputs across sectors.
- b) The institutions are further encouraged to harmonize spatial resolutions across various hazard and exposure datasets to enable more reliable cross-comparisons and integrated geospatial analyses. Ensuring consistent temporal coverage of all hazard-related data will also facilitate longitudinal assessments and improve the monitoring of environmental changes over time.
- c) Moreover, it is advisable to expand the use of advanced analytical and modelling techniques, including simulation, predictive, and projection-based approaches, to generate more precise insights into environmental risks and to inform evidence-based decision-making.

ii. **Enhance Modelling Approaches:**

- a) The team recommends NBS and OCGS to Invest in developing and validating models that can better capture localized dynamics and complexities of climate hazards, moving beyond reliance on simplified metrics. Explore the use of ensemble modelling techniques to better quantify and communicate the uncertainties inherent in modelled outputs.
- b) Based on the environment output, the R tool was used to analyse the risk from three perspectives of hazards, exposure and vulnerability. Exploration of other technologies such as Geospatial AI, cloud GIS (Google Earth, ArcGIS Online), Python etc.
- c) It is recommended to invest in the development, calibration, and validation of analytical models that can more effectively capture the localized dynamics and complexities of climate-related hazards, rather than relying solely on simplified or aggregated metrics. The use of ensemble modelling approaches should be explored to improve the quantification and communication of uncertainties inherent in model-based outputs, thereby enhancing the robustness and credibility of analytical findings.
- d) On top of the above points, building on the current environmental assessment, where the R statistical tool was applied to analyse risk from the three perspectives of hazard, exposure, and vulnerability, it is further advised to explore the integration of emerging technologies such as Geospatial Artificial Intelligence (GeoAI), cloud-based GIS platforms (e.g., Google Earth Engine, ArcGIS Online), and advanced programming environments like Python. Leveraging these tools will enable more automated, scalable, and insightful analyses to strengthen evidence-based environmental monitoring and decision support systems.

iii. Incorporate Future Projections:

- a) NBS and OCGS are recommended to integrate climate change scenarios and future projections into the national risk assessment framework to promote forward-looking and adaptive policy planning. This should involve close collaboration with climate science experts and research institutions to downscale global climate models to the local context, ensuring that the resulting projections are relevant and actionable for national and subnational decision-making. Incorporating these localized projections into hazard and vulnerability analyses will significantly strengthen the predictive capacity of environmental assessments.
- b) In addition, future assessments should emphasize the integration of projections for other key environmental domains, such as land use and land cover dynamics, to better understand the interlinkages between environmental change, human activity, and risk exposure. This approach will help anticipate emerging vulnerabilities and support the formulation of comprehensive, multisectoral adaptation strategies

iv. Strengthen Assessment Processes:

- a) Further to strengthen the assessment process, the institutions are recommended to expand the set of socio-economic indicators used to measure household vulnerability, moving beyond proxies to capture dimensions more directly like market access, livelihood diversity, and access to essential services. The use of participatory approaches and community-level data should be explored to better understand localized perceptions of vulnerability and coping mechanisms.

v. Improve Coordination and Data Sharing:

- a) The NBS is recommended to establish robust and standardized data-sharing protocols and collaborative platforms to enhance the integration and interoperability of datasets generated by various government agencies, research institutions, and development partners. Strengthening coordination mechanisms will ensure that environmental and climate data are systematically consolidated, updated, and made accessible for cross-sectoral use. Furthermore, fostering interdisciplinary collaboration among climate scientists, statisticians, development practitioners, and policymakers will promote a more comprehensive understanding of climate risks and enable the formulation of coherent, evidence-based response strategies.

By addressing these methodological and data-related challenges, future assessments can provide more accurate, granular, and policy-relevant insights to guide targeted interventions and build climate resilience across Tanzania.

End of Verification Report: Gained experience with big data and new technologies

Submitted by the United Nations Economic Commission for Africa (ECA) as the Independent Verification Agency (IVA) for the Eastern Africa Regional Statistics Program for Results (EARSP), October 2025 Window.

Annexes: Summary of Project Cooperation Agreement Under the DLIs

East African Community and UNECA Project Cooperation Agreement Eastern Africa Regional Statistics Program for Results (EARSPror) For the Provision of Technical Assistance Undertake verification of Disbursement Linked Results for the United Republic of Tanzania Under DLI: 2.2, 2.3, 2.6 (October 2025)							
Project Cooperation Agreement					Independent Verifying Agency- ECA		
DLI Name	Yr	Milestones	DLI Description	DLI Verification Procedure	DLI Code	Details of ECA procedures	Area of Expertise
DLI 2.2: TNZ Improved availability of enterprise-based survey data	4	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online	(a) Statistical Business Register (SBR) updated to 2024 through an establishment census with report and anonymized microdata online	(a) NBS conducts an establishment census and produces the Statistical Business Register (SBR) 2024 disaggregated by gender, sampling and non-sampling error report and microdata available online	A (i)	ECA checks Statistical Business Register updated to 2024.	National Accounts
DLI 2.3 TNZ Improved availability of agricultural statistics:	5	(a) IAS completed for 2022, 2023, 2024 and 2025, with report disseminated and anonymized microdata well documented, archived and available online.	2023/24 Annual Agricultural Sample Survey (hereafter AASS) completed with report disseminated and anonymized micro data well documented, archived, and available online	(a) NSB with OCGS complete 4 Agriculture and Rural Surveys (ARS) or IAS surveys (50x 2030 initiative) and disseminated findings through a report and online visuals with sex-disaggregated, and anonymized microdata documented, archived and available online. A non-standard	A (i)	ECA checks ARSIAS reports sampling errors and assessment of survey quality downloaded from the NBS and OCGS websites;	Agriculture

				measurement unit conversion survey is conducted as part of the ARSIAS in year 1.			
DLI 2.6-TZA: Gained experience with big data and new technologies	4	(c) Assessment of gaps and opportunities for using big data and three technical innovation reports on environment, poverty and agriculture produced using Big Data	(c) NBS with OCGS produce assessments of opportunities and three technical innovation reports e.g. on environment, poverty and agriculture, using Big Data or applying other innovations, including use and analysis of satellite imagery and, if relevant, the Global Settlement Footprint	(c) Verification that reports have been produced on thematic areas using big data.	C(i)	ECA checks reports on the environment, poverty and agriculture, using Big Data or applying other innovations produced and available.	Geospatial Data

Table 5: Overview of the PCA and DLI, URT

Independent Verification Team- ECA

S/No	Name	Position
1	Tinfissi-Joseph Ilboudo	Chief of Section (Statistical Development, Data Innovation and Outreach), Programme Coordinator
2	Ali Yedan	Task Manager, Agricultural Statistics
3	David Boko	Task Manager, National Account and Price Statistics
4	Lerato Martha Makana	Task Manager, National Account
5	Peter Njagi	Task Manager, Geospatial Data
6	Bernice Ofosu-Baadu	Consultant, Agricultural Statistics
7	NYANGE Augustine MBUFUA	Consultant, Geospatial Data
8	Samba Barrow	Consultant, National Account
9	Rebecca Work Emmanuel	Senior Programme Management Assistant
10	Akrem Abdusemed Muhammed	Programme Management Officer

Table 6: Independent Verification Team- ECA