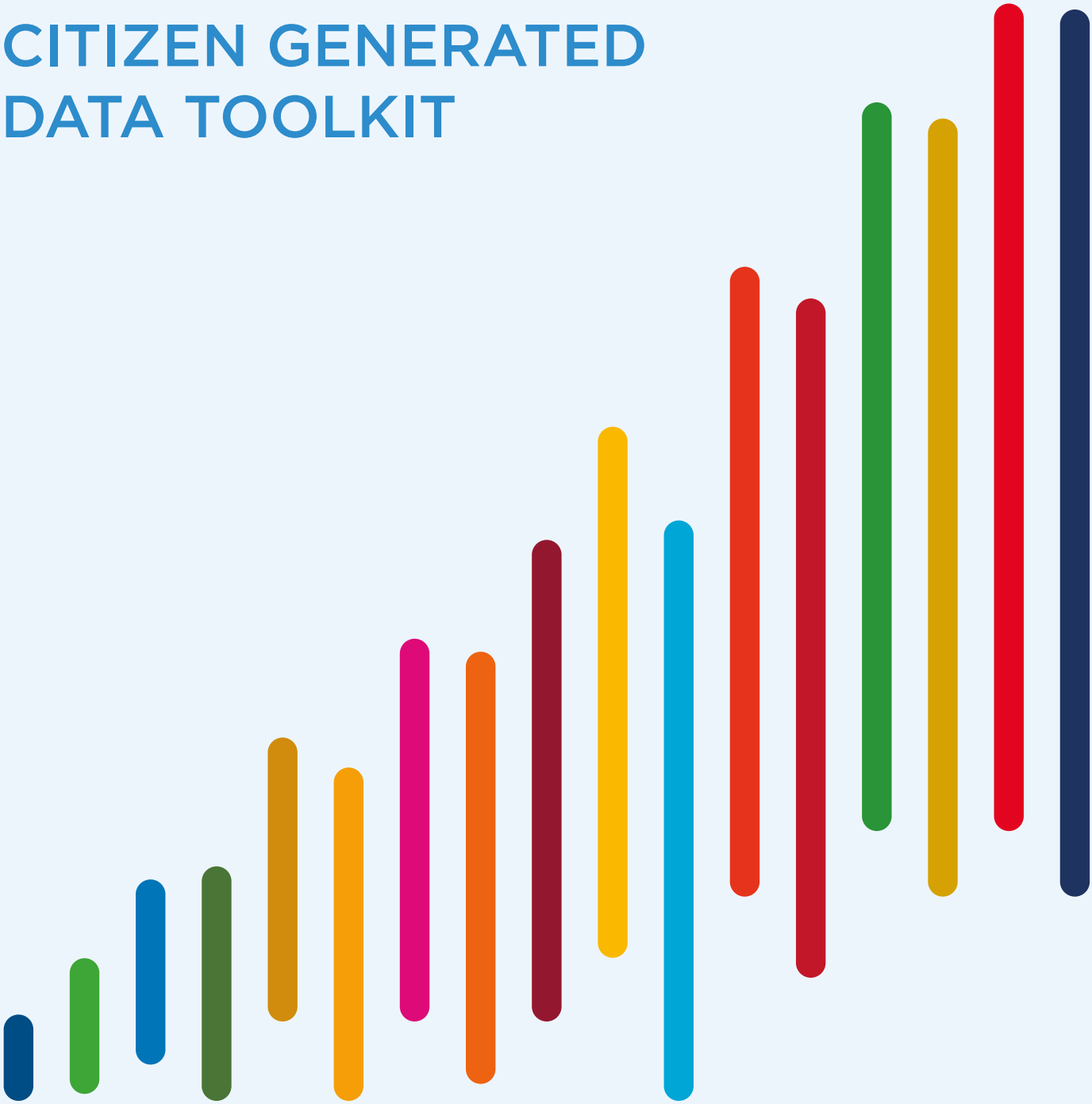
THE REPUBLIC OF UGANDA

UGANDA BUREAU OF STATISTICS

CITIZEN GENERATED DATA TOOLKIT



The Uganda Bureau of Statistics (UBOS), established by the UBOS Act, 1998, is the principal data collecting and disseminating agency responsible for coordinating, monitoring and supervising the National Statistical System (NSS). The 'NSS' refers to agencies in Uganda, whether Government or not; under any enactment or otherwise; responsible for compiling any data through censuses, surveys and administrative action, as well as suppliers, users of statistics, and, research and training institutions, and the common principles and procedures that govern their statistical processes. Its mission is to coordinate the National Statistical System and provide quality statistics and statistical services that support development processes.

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UN WOMEN | WOMEN COUNT

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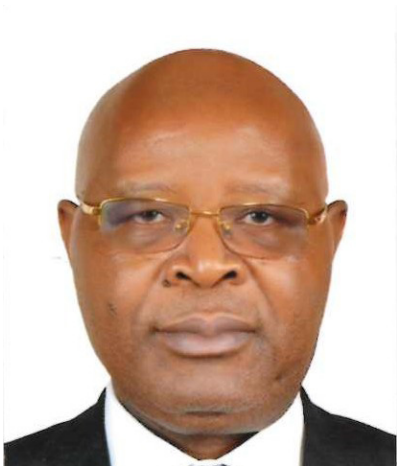
LIST OF ACRONYMS

CAPI	Computer Assisted Personal Interview
CGD	Citizen Generated Data
CRC	Citizen Report Card
CSC	Community Score Card
CSOs	Civil Society Organizations
DQACF	Data Quality Assessment and Certification Framework
DR	Data Revolution
DTWG	Data Technical Working Group
ESARO	East and Southern Africa Regional Office
FGD	Focus Group Discussion
FPOS	Fundamental Principles for Official Statistics
HLG	Higher Local Governments
GBV	Gender Based Violence
GEWE	Gender Equality and Women's Empowerment
IAEG	Inter-Agency and Expert Group
ICT	Information and Communication Technology
ILO	International Labor Organization
INGO	International Non-Governmental Organization
MDA	Ministries Departments and Agencies
NGO	Non-Government Organization
NHRDP	Human Resource Development Plan
NPGEI	National Priority Gender and Equality Indicators
NSDS	National Strategy for Development of Statistics
NSO	National Statistical Office
NSS	National Statistical System
NVR	National Voluntary Review
PC	Phone Call
PSI	Private Sector Institutions
QS	Qualitative Studies
SDG	Sustainable Development Goals
SM	Social Media
SMS	Short Message Services
SVC	Statistical Value Chain
UBOS	Uganda Bureau of Statistics
UN	United Nations
UNDQAF	United Nations Data Quality Assessment Framework
VNR	Voluntary National Reporting

FOREWORD



Chris N. Mukiza (PhD)
Executive Director

Uganda adopted the UN Resolution on the need to advance generation and use of complementary data – 'Citizen Generate Data', to inform policymaking and interventions on SDG 5 Gender Equality and Women's Empowerment (GEWE) indicators. Citizen Generated Data (CGD) is data that individuals or agencies produce and use to monitor progress of different interventions, demand or drive change on issues that affect them. Information from traditional data sources shows that Uganda has invaluable data concerning the status of GEWE at national level. Citizens need reliable data to demand prioritization of the community concerns and support advocacy efforts, as well as strengthening accountability processes in response to GEWE among others.

The different data production methodologies used by Non-Government actors especially the CSOs and the private sector informed the development of this toolkit. This toolkit provides a standard approach that current and potential CGD producers should use during the collection, analysis and dissemination of statistics. This will reduce the data demands presented by the different development frameworks especially the aspiration of the Sustainable Development Agenda 2030 of "leaving no one behind" which makes it incumbent for potential data producers to ensure that the voices of citizens especially the marginalized groups and individuals are embraced and elaborated.

The Uganda Bureau of Statistics would like to acknowledge the contribution of several stakeholders who contributed to the finalization of this piece of work. Special thanks go to the UN Women Uganda for providing technical and financial support during the compilation of this publication. UBOS further extends its appreciation to the Consultant, Norah Madaya (PhD) for leading the entire process of developing the Toolkit in addition to the UBOS Management and staff.

The Bureau therefore, calls upon the general public to utilize the proposals suggested in this guide to inform the compilation of Citizen Generated Data (CGD) in the National Statistical System as a precursor to quality data for efficient decision making at all levels.

Chris N. Mukiza (PhD)
Executive Director

EXECUTIVE SUMMARY

Uganda adopted the UN Resolution on the need to advance generation and use of complementary data – 'Citizen Generate Data', to inform policymaking and programming on SDG 5 Gender Equality and Women's Empowerment (GEWE). Citizen Generated Data, "*are data that people or organizations provide, produce and use to monitor, demand directly or drive change on issues that affect them*" (Lämmerhirt 2018a). The data is equally needed to monitor the much sought GEWE aspirations also articulated in the Constitution of the Republic of Uganda (1995) including; gender balance, and representation of marginalized groups on all constitutional and other bodies, guarantees women equal rights with men and affirmative action to redress imbalances created by history, traditions and customs among other factors. The GEWE Indicator Framework comprises 54 of the 201 relevant indicators for Uganda. The GEWE indicators were localized and domesticated in the National Priority Gender Equality Indicators (NPGEIs) framework for Uganda, and must be monitored and reported based on reliable data and statistics.

Rationale of the CGD Toolkit/ Guideline

Citizens need reliable data to demand prioritization of the community concerns, and support advocacy efforts, as well as strengthening accountability processes in response to GEWE among others. Anecdotal information from censuses, surveys and administrative data sources shows that Uganda has invaluable data concerning the status of GEWE at national level. There is however an exceptional demand for data and statistical information to explain the 'why and how' of the systemic barriers that women and girls experience. Contrarily, the much-needed granular data that highlight the economic value of women's Unpaid Care work, the subjective dimensions of 'empowerment', 'social institutions', Gender Based Violence, Violence Against Women and Girls, not only remain underdeveloped, they are incomparable, unreliable and cannot be used to infer to the country.

The varying data production methodologies and approaches used by CSOs and the private sector are a litmus to the development of this toolkit. The toolkit provides a standard approach that current and potential CGD producers should adopt to compile reliable, usable and accessible data. More so, the need to address aspiration of the Sustainable Development Agenda 2030 of "leaving no one behind" makes it incumbent for potential data producers to ensure that the voices of citizens especially the marginalized groups and individuals are embraced and elaborated. All non-traditional data producers should comply, as appropriate, with the provisions of this toolkit, the Statistical Standards referenced and in print as well as the web-based publications, they prepare for users.

The Toolkit/Guideline

This Toolkit provides basic guidelines for producers of non-traditional source data such as the Civil Society Organizations and Private Sector Institutions implementing GEWE related Programmes. It builds on current data compilation practices of this fraternity inquiry that preceded the development of this Toolkit. Users of this Toolkit will be able to systematically compile reliable data to support own evidence-based decision-making, monitoring and evaluation, and, reporting progress of their interventions. The Toolkit provides acceptable and easy steps to follow in order to produce CGD that can be assessed for compliance against Uganda Standards

for data quality before the Uganda Bureau of Statistics (UBOS) pronounces them as official. All non-traditional data producers in Uganda are encouraged to comply, as appropriate, with the provisions of this toolkit, the Statistical Standards referenced and in print as well as the web-based publications, they prepare for users.

Status of existing CGD sources and processes

The SDG transformative agenda emphasizes critical drivers and challenges that countries should note to ensure successful implementation of the 2030 Agenda. These include adoption of non-official statistics for SDG reporting, leaving no one behind, production of disaggregated data, ensuring gender responsiveness, and observation of Human Rights Based sustainable data, among others. Citizen-generated data are associated and contrasted with a wide range of other fields and labels such as; citizen science, citizen journalism, citizens' observatories, civic technology, community-based monitoring, crowdsourcing, grassroots mapping, Participatory Action Research, Participatory Data Collection, Participatory Design, User-Generated Content and Volunteered Geographic Information, among others. The toolkit defines the – 'Citizens' 'Generate' and 'Data', as follows;

The toolkit provides a standard that all potential CGD producers need to adopt so as produce reliable, usable and accessible data. This Toolkit is not a 'one size fit all'. Organisations are at liberty to select what is feasible within their means without compromising the objective data collection. The realization of this toolkit is subject to the new law governing NGOs, which limits their interaction with communities. The compilation of quality CGD emphasizes compliance to the established Statistical Standards (US942 & US943). *Standards are parameters based on international good practices harmonized by OECD and used to define the compliance of an item'.*

Link with other CGD Methodological guidelines

The Toolkit is consistent with the UN Women East and South African Regional Office (ESARO) Methodological Guidelines for collection and use of CGD for reporting SDG 5 and gender specific indicators in other SDGs (2019). This Ugandan oriented CGD Toolkit underpins local practices and examples.

The Toolkit provides building blocks of coordinating and governing the data ecosystem with new actors. Emphasis on stakeholder analysis and engagement as well as enhancing of capacity are key drivers underlined for the success of this Toolkit. A CGD/CSOs data coordination initiative is provided to steer partnership between CSOs, government entities and Higher Local Governments. The success of this structure will immensely support the multi-stakeholder Hub coordinated by the SDG Secretariat under the Office of the Prime Minister. UBOS will seek membership of the CSO Reference Group on Gender (FOWODE) to nurture focused dialogue on the CGD agenda, priorities, methodological issues, CGD metadata structures, support systems, and best practices, among others.

The UN Women ESARO CGD Guidelines and Uganda CGD Baseline Inquiry outline the following foreseen benefits of integrating CGD into the NSS including:

a) Institutionalization of CSOs in the NSS: by creating coordination mechanisms, agreeing on common metadata frameworks, human resource capacity building, consensus on SDG targets and indicators to report, and frequency and intra collaboration strategies.

b) Enhancing skills and competencies of CGD data compilation: by agreeing on structuring, tools, and processes for systematic collection, processing, analysis, reporting, and disseminating information.

c) Increasing the availability of quality CGD: By developing a common CGD, gender metadata dictionary and standards, and agreeing on data management policies across CSOs and the respective private sector entities.

d) Raising the public profile for CGD as a reliable source: by developing an inclusive CSO data advocacy strategy.

Format

The Toolkit opens with an executive summary of the Toolkit. Chapter 1 presents CGD and SDG Gender Indicators. Chapter 2 the CGD Toolkit, Chapter 3 is about GEWE and CGD, and Chapter 4 presents the Framework for mainstreaming CGD in the NSS.

Note:
An element of repetition is present in the *Toolkit, as* CGD sources and techniques in different parts of the Toolkit are used.

1 CGD AND SDG GENDER INDICATORS

1.1 Introduction

In Uganda, gender responsive data is a technical and a development issue. It drives planning, policy formulation, evidence-based decision-making, accountability and good governance of Gender and Women's Economic Empowerment (GEWE). Monitoring and reporting progress of Gender Equality and Women Empowerment requires quality data. As one of the Pathfinder countries at the frontline of producing gender statistics to inform GEWE, the government of Uganda signed up to the UNWomen Programme of 'Every Woman and Girl Counts' in 2017, executed by the Uganda Bureau of Statistics (UBOS). The development of Citizen Generated Data raises more user expectations as a complement to official statistics.

1.2 Legal and policy framework basis for CGD

Globally, statistical legislations and policy frameworks espouse an inclusive NSS. Contemporary legal and policy frameworks governing statistics fully support the need for, and the role of, non-traditional data sources, including CGD, in bolstering national statistics. The Uganda Statistics Act of 1998, which established the Uganda Bureau of Statistics (UBOS), defines the NSS as *"Includes all agencies in Uganda, whether Government or not; under any enactment or otherwise; responsible for gathering statistical data through either surveys or administrative action."* The Act goes further to designate UBOS as the coordinator of the NSS stating in Article 4 (1), "The Bureau shall be the principal data collecting and disseminating agency responsible for coordinating, monitoring and supervising the National Statistical System".

Global and continent-wide declarations and agreements relating to statistics and support creative ways of data production and use include;

- The United Nations Fundamental Principles of National Official Statistics (1994);
- The Africa Charter on Statistics (2009),
- The Strategy for the Harmonization of Statistics in Africa (SHaSA) (2018),
- The Africa Data Consensus (2015),
- The Cape Town Sustainable Development Data Action Plan (2017), and
- A Plethora of National Statistical Development Strategies (NSDSs).

1.3 Link of the guideline/Toolkit with other Statistical frameworks and policies

The relevant national, regional, continental and international level Statistical Standards, framework and principles edify this CGD Toolkit. The Toolkit is consistent with the African Charter on Statistics, the Fundamental Principles of Official Statistics, the UN Data Quality Assessment Framework (UNDQAF), the Balance of Payments guide, Qualitative data Marker Standard and, Monitoring and Evaluation frameworks, among others.

1.4 Traditional and non-traditional data sources

The UBOS and other government entities produce diverse social, economic, population, and environment statistics from traditional sources (censuses, national surveys, and administrative data). However, these sources are limited in informing key development indicators due to the limited level of disaggregation, time lag between surveys, and inadequate coverage of regular grass root activities. The Sustainable Development notion of 'Leaving no one behind' underlines the need for more granular data,

that is only feasible from organisations with interventions at the community level. Public and private practitioners acknowledged non-traditional data sources as having the potential of enabling governments to detect anomalies in the interventions, test the accuracy of monitoring processes, understand contextual factors, and initiate corrective measures.

1.5 What is Citizen Generated Data?

Citizen Generated Data, "*are data that people or organizations produce to monitor, demand directly or drive change on issues that affect them*" (Lämmerhirt 2018a). They are directly collected from individual citizens, groups of persons in communities under given programs, and projects, which in this context are 'gender' related. In the statistical context, CGD compilation must be consistent with international best practice and standards, and independent of government support to avoid possible influence on methodology and results. Citizen-generated data (CGD) expands on the 'what', 'how' and 'purpose'. In view of SDGs, CGD provides deeper insight of achievements and challenges that can undermine progress toward SDG 5 and other SDG gender related indicators unlike survey and administrative data.

Citizen Generated Data can be qualitative or quantitative regardless of the approach used to compile it. Qualitative data is very useful for drawing hypothesis. It helps in raising awareness on undermined yet intricate issues that impinge communities or rights of vulnerable groups such as women and girls. The information provided by such groups serve as alternative sources of data to what government or international institutions collect. The data elucidate the 'what', 'how' and 'purpose' of relevant development agenda and interventions.

Sources/Techniques of Citizen Generated Data

Citizen Report Card (CRC), Short Message Service (SMS), phone calls (voice messages), emails, programme reports, remote sensors, social media, big data, qualitative studies, satellite imagery, crowdsourcing, engagement exercises, Community Score Cards (CSC), Spatial Data and Focus Group Discussions.

The quickest means of collecting such data in contemporary Uganda is the use of a 'smartphone'. Most CSOs use mixed data collection modes and tools namely; tablets, offline surveys, telephone interviews. These gadgets facilitate collection of real time data and can complement other non-traditional techniques such as observation. The hard copy paper questionnaires for the face-to-face and self-administered data collection are laborious but handy for organisations faced with resource constraints.

Table 1. Attributes of CGD in relation to the traditional data generation

Citizen Generated Data Approach	Traditional Data Collection Approaches
Captures and reports events and disasters, including poor service delivery in real time	A wider data collection exercise can be launched to investigate and also assess the extent of the problem
Provides additional information to explain the findings of surveys and censuses	More information may be required during data analysis and report preparation
Provides real time data and information	Data based on periodicity of survey or census
Feedback to the citizens is required to sustain the reporting	Feedback to localities may not happen. The emphasis is on generalization

The different sources present invaluable data, but to increase trust, CGD producers must be as transparent as possible about their processes. They must comply with the principles governing official statistics or data by ensuring their metadata is readily available as elaborated in the Guide under (Chapter 2). Similarly, potential users of CGD must endeavor to understand and utilize data in an appropriate manner.

Importance and attributes of CGD

The data revolution demands volumes of data disaggregated to the lowest level to inform evidence based decision-making. CGD would enable women and girls in their diversities to share transformation and challenges in their localities in real time for the urgent attention of the service providers and the enforcement teams.

The Private Sector businesses with supply chains such as clothing, food processing, agriculture, home goods provide employment to a vast number of women and could be a good source of GEWE data. Similarly, contemporary communities appreciate data generation interventions, which provide feedback on service provision. The CGD is the best approach to ensure that feedback is provided.

The CGD has the potential to capture rare occurrence of disasters like; Pandemics (Covid19, Ebola, HIV) lightening, Climate, Gender based violence, Violence Against Children (VAC), Wealth Creation, landslides, volcanic eruptions, population migrations, unpaid care work and other events.

According to the UNWomen ESARO CGD Guideline (2020), data gaps arising from infrequent surveys and other long periodical data collection processes like censuses pave way for CGD. For example: UBOS undertakes the Demographic Health Surveys every five years, the National Service Delivery Survey (NSDS) every four years, Population and Housing Census and Census of Agriculture every ten years etc.

The identification of regularly produced CGD by CSOs and the Private sector institutions could fill the potential inter survey and census data gaps, enhance data user satisfaction and bridge service recipients to providers. (UBOS currently is running an annual panel survey with detailed information on gender issues.

Most of the CSO have very small coverage, we need to be clear on how the data will be aggregated to provide estimates at District/ Subcounty and Parish. We need to provide data gaps which are a result of using traditional data collection methods.

We may need to be show the linkage between big data and CGD.

Citizen Generated Data has the potential to complement, validate and enhance official statistics and among others:

- fill data gaps not addressed by the traditional data collection methods;
- ease the extension of humanitarian support to the affected households and communities;
- provide for continuous compilation of data, offering technical assistance to the reporters to ensure quality and consistency of information;
- explain, enrich or disprove findings for better understanding of the situation;
- ensure that the data used to monitor the SDGs includes special interest groups; and,
- enhance valuable accountability and advocacy for citizens. [1]

1.6 Advantages and limitations of CGD

Citizen Data Generation (CGD) is versatile and presents citizen voices from communities and interest groups, through participation in those programmes to support identification of relevant GEWE programmes that affect them, understand how they work, facilitate their monitoring and reporting and unveil satisfaction of service recipients. Current practice revealed by the baseline Inquiry showed that most CSOs compile gender related data majorly through community engagements (Focus Group Discussions (FGDs), self-administered questionnaires, score cards, observations,

1 UNWomen (2020) Methodological Guidelines for collecting CGD for reporting on SDG5 and other gender related SDG indicators. ESARO, Nairobi.

case studies, voice through telephone calls and radio, and key informant interviews. Use of technology-based techniques such as crowdsourcing, Short Message Service (SMS), social media, satellite, drones, imagery among others was minimal as showed in the Examples 1 - 4 below.

Overall, the CGD technology and phone based CGD techniques facilitate quick means of sending and receiving information, they are faster response mechanisms, and enable engagement of numerous community members making it easy to collect and validate the information at that level. The techniques also help service providers to engage with recipients, triangulate information and address the unmet needs in a timely manner. Contrarily, the technique also present limitations that potential CGD producers and users need to appreciate and mitigate as enlisted in Fig. 1.

Example 1: Social media data mining (UNPulse Lab)

In 2016, Pulse Lab Kampala in collaboration with UNDP mined social media data and examined, in aggregate, the level of public satisfaction with the overall organization of the Presidential debates and how they were viewed as relevant to the electoral process. Pulse Lab Kampala created a taxonomy of keywords and categorized the comments into "general" and "thematic". The analysis yielded 50,000 relevant public Facebook posts from January and February 2016, when the first and second televised debates took place. It also revealed four specific topics of discussion related to the candidates, the organizers, the moderators, and the outreach of the debates–in Uganda, not all of the population owns a TV. Results from the corpus of analysed data showed a generally high degree of positive perceptions, with debates being viewed as an important milestone for democracy in Uganda.

Example 2. Satellite and radio mining (mama FM)

Radio is the most powerful yet the cheapest mass medium for reaching large numbers of people who are marginalized or in isolated areas. Radio builds on the oral tradition of rural populations. For the disadvantaged groups, radio is a great opportunity to interact with the wider world, as well as voice their concerns and issues. The freedom of expression underpins all other human rights. Development programs shift their thinking and practice towards people-centered programs.

Example 3. EduTrac

This is a mobile phone-based data collection system developed by UNICEF in partnership with the Ministry of Education and Sports to collect timely data including teacher and student attendance and delivery of materials. EduTrac helps districts to improve their education planning and provides better and more timely supervision to schools based on system reports. The system complements the Education Information Management System and was launched in 2011. Teachers and administrators send data into the system on regular basis say weekly.

Example 4. U Report

The U-Report is a free social monitoring tool for community participation, designed to address issues that concern particular population groups. It is based on simple Short Message Service (SMS) messages (poll questions, results, and sharing of useful information) designed to strengthen community-led development, citizen engagement and positive change. SMS polls and alerts are sent out to U-Reporters and real-time response information is collected. Issues polled include among others health, education, water, sanitation and hygiene, youth unemployment, HIV/AIDS, disease outbreaks, social welfare sectors.

NB. These above examples involve government agencies supported by UNICEF.

Figure 1: CGD Limitations

CGD Technique	Limitations
Remote sensors, emails, internet, social media, drones, etc.	• Technology intensive hence costly • Limited access, penetration and unreliable connectivity • Only few people are engaged due to limited ICT knowledge, skills and innovation capacity.
SMS, phone calls, social media, big data	• It is costly • Coverage and scope is usually limited. • Few people are engaged. • Risks of Cybercrime
Qualitative assessments, CSC Cards, CRC,	• Time consuming during data collection, data analysis and reporting

2 THE UGANDA CITIZEN GENERATED DATA TOOLKIT

This chapter presents the standard approaches to follow in collecting reliable and quality Citizen Generated Data. It presents a systematic approach for all data collection approaches qualitative and quantitative data. Generally, Uganda is to report on 201 indicators of which 54 are the GEWE and NPGEI found in 11 of the 17 goals (1, 2, 3, 4, 5, 8, 10, 11, 13, 16, & 17). The NPGEI framework is the domesticated Sustainable Development GEWE indicator framework of prioritized indicators adopted by the Member States of the United Nations through the Inter-Agency and Expert Group on SDG Indicators (IAEG-SDGs).

Citizen Generated Data approachzes

Citizen Report Card (CRC), Short Message Service (SMS) using mobile phones, phone calls (voice messages), emails, programme reports, remote sensors, social media, big data, qualitative studies, satellite imagery, crowdsourcing, engagement exercises, Community Score Cards (CSC), and Focus Group Discussions.

2.1 Compiling CGD through the Data Value Chain

The compilation of Citizen Generated Data takes different forms. In the contemporary world, it may involve technology, phone or community based approaches. The approaches may adopt a combination of quantitative and qualitative techniques or either one of them as demonstrated below. For example, the UBOS led - Social Institutions and Gender Index (SIGI) qualitative study (2015) preceded the main SIGI survey (Uganda).

The modern-day approaches include; social media, crowdsource data, data scrapping, remote sensing among others. Careful consideration dictated by available resources; finances, time, space and people is pertinent. It is essential for all CGD producers and users including CSOs, private sector and government institutions including UBOS, MDAs and HLGs to appreciate the advantages and disadvantages of each approach before choosing a given technique. Owing to the dominance of qualitative approaches used by CSO data processes, the guide presents the systematic approach of producing data and statistical information that is fit for use using unstructured and structured means.

Qualitative approaches

Qualitative data are collected using participatory approaches namely; Focus Group Discussions, Interviews, Case studies and Observations. Qualitative methods can be used to derive hypothesis that are tested using quantitative methods. The following Figure 2 illustrates the different approaches an organization can use to collect data or even triangulate them to gather vast data from communities, women's groups, individual women and girls are household or other context.

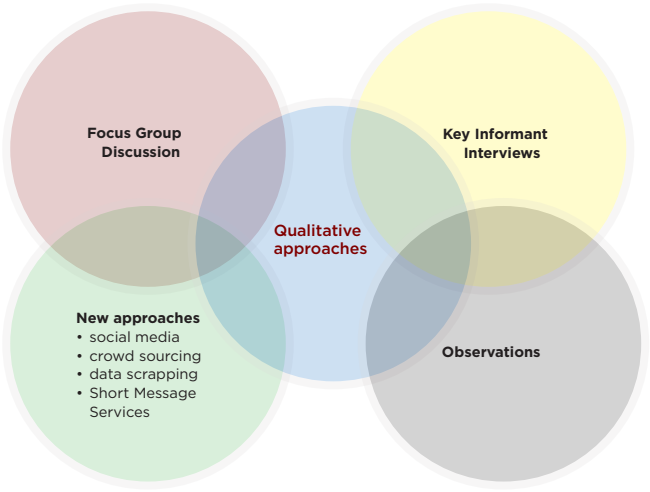


Fig. 2. Qualitative data collection approaches

Measuring GEWE requires a multi-dimensional approach because the intrinsic value of CGD rises with collation of data from different sources for evidence-based tracking of SDGs. Employing the Citizen Generated Data compiled and utilized by service recipients, is one of the effective ways of monitoring performance under the SDG framework. The data and information (stories/narrations) reveal the realities of targeted locals at community level interventions and can complement official statistics from UBOS surveys and MDA administrative data. To compile reliable CGD, potential producers should follow these five broad phases along the Statistical Value Chain;

1) Collecting

2) Production

3) Publication

4) Uptake & Use and,

5) Impact[2].

The key activities under each phase are illustrated in Table 2 below;

2.1.1 Collection

This phase involves identification of user needs, designing, building and collecting the data under the chosen approach. Scheid, 2019 in a project on collecting data for Social Accountability of service providers posited that it is important to know that 'Citizens' needs are different; start by asking them what's useful'.

2 Data2X by Open Data Watch (2018). Data Value Chain.

Table 2: Gender responsive Data Value Chain

COLLECTION	PRODUCTION	PUBLICATION	UPTAKE & USE	IMPACT
1. Identify Consult with users to determine their data needs or issue **2. Design** Designing gender responsive instruments and training materials **3. Build** Construction of data collection instruments, pre-testing, revising and refining. **4. Collect** Actual data collection using different collection methods.	**5. Process** Data cleaning and anonymization, as well as integration of data from more than one data source into a harmonized dataset. **6. Analyze** Production of sex disaggregated data and gender statistics showing underlying patterns and trends; checking for detail, interpreting and packaging for users.	**7. Disseminate** Release is the sex disaggregated data and gender responsive results showing inequalities and differences between women and men; metadata using varied methods; and reach out to citizens through diverse Media. **8. Archive** Storage and distribution of statistical data and metadata.	**9. Connect** Connecting data to users. CSOs and PSIs producing agencies must ensure data is accessible by potential user via press releases, data portals, trainings, workshops etc. **10. Incentivize** Motivate potential users by producing user-friendly material that are easily understood.	Evaluate Assess the product and all activities across the value chain within the existing M&E framework of the institution.

Identify data user needs/ Assessment

Preparing for CGD data collection begins with understanding the issue and obtaining broad expectations of potential users, reviewing existing literature, comparing interventions with other practices and gaining perspectives on the capabilities of the community or population group of diverse categories of Women and Girls in this regard. Every organization creates or affects people differently. The inclusive consultations are essential in respect of 'Leaving no one behind' and embracing views on requisite data needs based on experience. For example identifying local and central government entities, other CSOs, Private Sector, Academia interested in the data from the intervention is essential. Hence, GEWE CGD producers should ask themselves questions including;

a. Which stakeholders are relevant for consultation on the priority CGD to meet vast user need at community, local government, national and international level?

b. What data/information is needed for internal decision-making (organization)?

c. What data/information is necessary for performance monitoring and global reporting (NDP, SDG)?

d. What critical targets or indicators will signal progress on the intervention?

e. In what format, frequency, and medium should the information/data be packaged and delivered to the potential user?

f. Who must participate to trigger demand for better services, empowerment opportunities, rights etc, using the data/statistical information?

i. Identify and map out key potential users of the data/information from the programme intervention at community, local and central government.

ii. understand the context and situation that surrounds the issue behind the intervention and therefore the data/information (indicators) needed for SDG 5 and other gender related SDGs.

iii. discuss CGD user priorities and expectations in respect to quantity, quality, timeliness and access.

iv. ensure involvement of the 'women and girls' in their different categories following the HRBAD – 'the Poor, having functional disabilities, living with HIV/ AIDs, vulnerable' to determine data gaps.

Design

The compilation of CGD employs the collection of information about the population groups in the targeted intervention through use of instruments or direct observation and interaction with them to develop a deeper understanding of them. Develop gender responsive instruments and training materials based on the issue, context and category of the targeted population group. It may also facilitate a review of existing tools and customize them to the thematic area to ensure gender disaggregated data and HRBAD are embedded. The CGD producer therefore needs to consider the following questions and actions;

a. What data are required to produce needed indicators for the intervention?

b. What is the context, scope and coverage of the intervention?

c. What level of granularity best inform vast user need?

d. What questions will inform the extent of reliability and validity of results?

e. Does the design selected enable mapping of the data to related UBOS survey?

To address the foregoing questions, the following actions should be undertaken;

a) List anticipated and desired NDP and SDG gender indicators.

b) Determine the scope and coverage of the sample noting the unit of interest.

c) Determine the most appropriate and cheap data collection method to generate tangible and comparable results.

d) Check and ensure the chosen (complete or sample) size of the population is representative and reflects the granularity needed in the tabulations and other data products, and the level of precision required of key variables.

e) Choose an appropriate CGD approach based on affordability, user friendliness and real time availability of the output.

f) Design tools for collecting relevant data (quantitative or qualitative) within the geographical frame from UBOS to facilitate mapping to relevant surveys.

g) Prepare a tabulation plan to guide data analysis in case of quantitative data or content analytical structure for qualitative data to inform the required indicator/s.

h) Define terms of the responsible data collectors (women, girls, persons with disabilities) and their roles in the regular generation of data to ensure sustainability of the interventions.

i) Prepare the GEWE CGD manual to guide data collectors. Include basic information on the 'Do's and Don'ts' to control the quality of work, and,

j) Document process.

Build

Overall, planning for this stage helps to capture the context of the GEWE intervention and derive appropriate data collection tools/instruments. For example, background characteristics and the geographical setting of the targeted individuals or population group help to explain the results. The process of building data collection instruments should be a collaborative practice with experts. Hence, CGD producers need to engage UBOS or Academia to develop concepts, questionnaires, select and train data collectors, pre-test the instruments, revise and refine them for the main activity in an iterative manner. Implicitly, the process should follow consecutive rounds of feedback to users for validation to increase the value and satisfaction of the results. Particular attention should be on the following questions;

a. What approaches (phone based, technology based or community based) are most suitable for the context and type of data needed?

b. Are the tools gender responsive?

c. Who are main respondents? Who does what (roles)? Who gets what (resources)? Who owns what (access)? What do they do with it (Opportunities)? and, Where, Why, How, & When?

d. Is there need for translation of the questionnaires into different languages?

e. How can the beneficiaries be involved as volunteer enumerators?

In addition, there is need to ensure that;

a) the instrument captures the sex of the data providers, where applicable.

b) gender issues considered in the identification and design stages are incorporated in the instruments

c) data collection modes are specified namely; personal/telephone interview; PAPI, paper, hand held devises, CAPI, android phones etc., including data extraction routines used to collect data from administrative records.

d) instruments are pretested to ensure consistency with the manuals and metadata as well as their validity and reliability.

(a) IT experts are involved to ensure the existing software provides for capture of gender dimensions in the data entry frame, data repositories and workflows during data collection.

(b) the drawn sample will yield optimal gender perspectives during data processing, analysis and report writing.

Collect

Prior to collection of data, there is need to choose one or multiple approaches to use in collecting data. For example. If the approach is **Technology based, such as** Emails, Internet, Imagery, the following actions should apply;

a. Design the application(s) to facilitate the collection of CGD

b. Test the applications in preparation for data collection

c. Decide on the reporting sites

d. Identify the reporters (by sex) and the frequency of reporting

e. Streamline the flow of information, and,

f. Design the database

In case the choice is to use **Phone Based Approach**; Short Message Services (SMS), Social Media (SM), or Phone calls (PCs), the following actions should be considered;

a. Define the type of phone based approach for the application to be used.

b. Design the application(s) to facilitate the collection of CGD

c. Test the applications in preparation for data collection

d. Decide on the reporting sites

e. Identify the community reporters and the frequency of reporting

f. Streamline the flow of information

g. Design the database

However, if the approach chosen is a **Community Engagement Approach** then use the **c**ommunity Score Cards (CSC), Citizen Report Card (CRC), Sample surveys (SS) or Qualitative studies (QS). In this regard, the process should involve;

a. Identification of the SDG indicator suitable for the community engagement.

b. Introduce the SDG gender indicators to the community

c. Agree with the community members/ service recipients/ citizens on the priority issues/ indicators to report on the related scores.

d. Identify the service providers

e. Design the application(s) to facilitate the collection of CGD

f. Test the applications in preparation for data collection

g. Determine the representative sample/ study areas

Generally, regardless of chosen approach above, there is need to equip data collectors/ enumerators with the requisite knowledge about the intervention, and tools. Preparing enumerators for collecting CGD is essential for production of quality data regardless of the approach used – qualitative or quantitative, social media, data scraping, telephone among others. Where it is possible to engage Volunteers (groups or individual women and girls) from the community, they should be prioritized. In this regard there is need to ensure;

a) The ratio of citizen volunteer trainees to trainers is no more than 30:1 to ensure quality of training.

b) The training of volunteers should include classroom learning modules and practice fieldwork.

c) Training should include use of tools in the local languages to allow explanations in their mother tongue or home language.

d) Training of citizen volunteers must include a session on the importance of completing ALL sections of the tool to ensure no missing data.

e) All trainees are tested at the end of each training day, to determine citizen volunteers who require additional support or training.

f) Conduct an evaluation of the training at the end of every session to ensure they have adequate knowledge to participate in the fieldwork.

(a) Emphasise the value of ethics and confidentiality during data collection.

(b) Document the process.

2.1.2 Production

This stage of the data production chain involves Processing and analysis of data building on the collection phase steps. The activities at this level are majorly dependent on; user needs, data collection instruments and tabulation plan. The following questions are key at this level;

a. Does the tabulation plan capture all the priority internal and external data user needs?

b. Do the variables capture the key GEWE concepts?

c. Are all the questionnaires returned and captured?

d. Did all the information from phone based or technology-based approaches reach the servers?

e. Is the system free from cyber security risk?

f. What capacity exists to process the data?

The level of data processing entails cleaning and anonymization of information, and integration of data from more than one data source into a harmonized dataset if required. It involves matching of records concerning same units, and prioritizing where two data sources present different values to ensure consistency. It also encompasses coding, classification, editing and imputing data whether from surveys or administrative sources, and creation of weights for unit data records to adjust for non-response or gross up sample survey results to make it more representative of the target population.

Observing and applying these measures increase opportunities of transforming CGD to official statistics. During this phase, one should ensure;

(a) weighting of the data is done to know the effect on gender variables and how it can be used to infer the information consistent with the national surveys or population. A key step is to engage the survey methodologist/s and IT data specialist to guide the process.

(b) gender related data are in a single statistical database for ease of analysis and sharing with users.

(c) gender related variables are not lost during anonymization and cleaning.

(d) Documentation of the process is undertaken.

Integration of data refers to combining of data (structured and unstructured) from different sources and in different formats, to enable decision makers have a unified view and better understanding of available data as well as more easily gleaning insight from vast databases.

Analyze

Gender analysis is structured around access, knowledge, beliefs, and perception; practices and participation; time and space; rights and status; and, power and decision-making. After data are collected, there is need to perform validity checks to ensure the data are within acceptable range, they are consistent, and type of data is correct. The next step is to determine the variables that can be analysed to respond to the objective (s) for data collection. A decision on the statistical analysis techniques, review the tabulation plan and determine which software programmes will be appropriate for the analysis. The use of Microsoft Excel is preferred for small sizes of data from population groups and individuals. It enables the construction of charts and graphs. However, the following questions should guide the process;

a. How can the data be prepared for analysis?

b. How good is the data? Is it complete, reliable or valid?

c. Are there non-responses or blanks?

d. What statistical analysis technique is appropriate?

e. What analytical programme is most appropriate for the type of data?

f. What is the feel of the data? This needed to determine how good the scales are and how well the coding and data entry was handled.

To achieve this, one should;

(a) Determine the relevant variables for data analysis based on earlier user

consultations as well as gender and development frameworks.

(b) Review the data for non-responses or blanks. If 25% of the issues have no response disregard the question during analysis.

(c) Determine if the analysis will be univariate, bi-variate or multivariate, descriptive, relational or inferential among others, with support from technical persons (UBOS, Academia, Statistical experts, etc.).

(d) Search for gender related data and information from other studies, publications to understand the data better, and be able to explain the results.

(e) Analyse the information/data.

(f) Present findings in formats that visibly indicate potential gender issues, stereotypes, human rights based issues, and gender biases.

(g) Ensure analytical tables, narratives and forms of presentation facilitate comparison between women and men and are understandable by policy makers, planners and decision makers, among others.

(h) Generate indicators where required and subject them to internal consistency and quality checks by an independent team.

(i) Interpret results correctly about indicators needed to inform GEWE monitoring.

(j) Document the process.

2.1.3 Publication, Dissemination and Archiving

UBOS is the custodian for the national metadata warehouse. Each initiative of data production must be fedback to the public (dissemination). Dissemination of results detailing its metadata increases trust, credibility, facilitates information-sharing, comparison, and enables appropriate interpretation of information by producers and users. The PNSD III (2020/21 - 2024/25) underlines that each MDA, HLG and CSO should have an open data portal where data is publicized because it increases access to and the value of data when put in the public domain for use by all categories of data users. Rahman (2018) argued that government (UBOS) can offer to CGD sets so that both its need and that of civil society organisations are met because CSOs may experience cost limitations to host an open data portal.

Effective dissemination of CGD is a commendable mechanism of establishing and managing the data ecosystem. To this end, each GEWE CGD producers should;

a) identify the potential users and develop a mailing list and user database for communities, local government and central government.

b) design and implement a communication strategy and plan in its data production business processes to maintain rapport on gender statistics.

c) develop an effective and efficient data dissemination mechanism consistent with the standard policies developed by the UBOS to promote and enhance dissemination and use of statistics.

d) package and use data visualisation technologies to communicate/ disseminate statistics.

e) establish and maintain a mini-metadata warehouse structure consisting of the details in Fig.3

f) disseminate findings together with the metadata presented in Fig 3 above at all stages of the CGD value chain as well as anonymized data (where applicable), and, flag out the quality assurance plan.

g) make available real time and credible information defining the standard by which the CGD was produced for users.

h) publish CGD online for use by the organization, policy makers, researchers, and donors among others,

i) demonstrate anonymity of the CGD providers during dissemination of findings to cement citizen trust and participation,

Fig.3 Components of the Metadata warehouse structure

j) Harmonize CGD from different sources into one database, dissemination platform and annual report by sector and programme.

k) disseminate the data and statistical information following a release calendar.

l) archive record or data set, and,

m) document the process.

2.1.4 Uptake and Use

Civil Society and Private Sector Organisations should adopt innovative Information and Communication Technology (ICT) for dissemination, better visualization and increased access by would be users to their data and statistics. The need to share results from GEWE interventions helps to demonstrate the attributes of the programme in the community. The main purpose of CGD production is to meet user data needs. However, due to inadequate user capacity to analyse, interpret and utilise data for varying needs most GEWE CGD is not widely disseminated. Uptake relates to the extent to which users are able to access data or statistics. Most users cannot use CGD due to limited data literacy and other inherent characteristics that contrast with official statistics. There is limited evidence on citizen-generated data initiatives' impact on development policy and practice. However, some authors point to intermediate dimensions of citizen engagement and citizen-generated data initiatives' impact. Producers of GEWE CGD need to develop platforms that enable link with potential stakeholders by;

a) repackage the CGD into evidence based stories fit for public consumption, and partner with the media once the Uganda Bureau of Statistics certifies the data.

b) create linkages with app developers to maximise the value of open data and establish a long lasting partnership with, academia and private companies.

c) adopt technology that enables connectivity with potential users in government and public to increase uptake and efficiency.

d) engage experts (data scientists/ statisticians) to transform the CGD data to show precision and integrity.

e) re-process data for new user insights to fill prioritized gender related data gaps observed in GEWE SDG Tier 2 indicator.

f) Produce and avail free, printable, open-source materials with rich statistical information.

g) provide for open-Access printable posters and handouts, and,

h) Document the process.

2.2 GEWE CGD Quality Assurance Management

Quality is a core value of all data producers under the PNSD framework. It is essential for building user trust although different producers in the NSS adopt varying approaches that are not consistent with established Uganda Statistical Standards. This toolkit provides for compilation of GEWE CGD based on existing Quality standards and the Statistical Quality Assessment and Certification Framework (SQACF). The SQACF guides assessment and certification of official statistics in the NSS and is consistent with the European Statistics Code of Practice (CoP), the International Monetary Fund's Data Quality Assessment Framework (DQAF), Statistics Canada's quality assurance framework. Data quality assurance for GEWE

CGD is needed to ensure compliance to quality protocols under the Uganda Standard (US942) – 'Code of Practice'.

Thus, the CGD producer need to be conscious of the need to ensure the institutional environment, statistical processes and outputs comply to the Code of Practice protocols including: relevance, accuracy, reliability, timeliness, punctuality, accessibility, clarity, interpretability, coherence, comparability, credibility, integrity, methodological soundness, and serviceability. UBOS will through a pre-planned and agreed upon schedule build capacity of the CGD producers in managing data quality, undertaking self assessments of their data, develop tools and organize audit processes to check adherence the statistical standards;

Producers of CGD for GEWE are encouraged to embrace the data quality culture and embrace continuous improvement. Improvement of data quality is essential for maintaining production of acceptable and trusted CGD that respond to user data needs at all levels.

Qualitative Data Quality management

Lämmerhirt et al (2018b) posited that CGD quality can be comparable to official data collection standards, provided that tasks are *sufficiently easy to conduct,* the quality of tools is high enough and sufficient training, resources and quality assurance is employed. Thus, where qualitative approaches are adopted in CGD compilation, key markers of quality linked to the Code of Practice (US 942) that need to be observed include:

(a) Worthiness of the topic (relevance)

(b) Rich rigor (methodological soundness)

(c) Sincerity (accuracy)

(d) Credibility

(e) Resonance

(f) Significant contribution

(g) Ethics, and

(h) Meaningful coherence (Tracey 2010).

The Uganda Bureau of Statistics Quality Assurance team will adopt the key markers of qualitative data build capacity among key CSOs and MDAs and implement them.

Table 3. Data Quality Protocol for Quantitative Data

Quality Action	Compliance check
1. Managing the Institutional environment for CGD compilation.	*1.1 Professional independence* (Government agencies) *1.2 Impartiality and objectivity* in treating all users equitably. *1.3 Confidentiality and security* (statistics data protection) *1.4 Quality commitment* to ensure improvement of processes and product quality. *1.5 Adequacy of resources* for continuous provision of CGD that meets user need.
2. Managing Statistical processes	*2.1 Methodological soundness* showing adequacy of tools, design, procedures and expertise.
	2.2 Cost effectiveness to show if resources were used adequately.
	2.3 Respondent fatigue where potential data providers are not burdened over time.
3. Managing statistical outputs	*3.1 Relevance* in term so meeting user data/information needs in terms of completeness (coverage and detail) for the users.
	3.2 Accuracy and reliability of data and portrays reality of the coverage and size of the population group or sample.
	3.3 Timelines and punctuality of data releases following a specific calendar.
	3.4 Accessibility and clarity in that the CGD is clear and understandable, available and can be obtained easily with complete metadata.
	3.5 Comparability and coherence in that the data are consistent internally, over time and compared, related and integrated with other sources.
	3.6 Metadata management of all data in their custody for easy understanding by other users.
4. Quality assessment and reporting	*4.1 Measuring product and process* quality (quality indicators, targets and variables and descriptions)
	4.2 Communicating about quality -reports
	4.3 Obtaining *user feedback*
	4.4 Certification and labelling
	4.5 Continuous quality improvement

Source: US 942 – Code of Practice, UBOS (2016)

2.3. Monitoring and Evaluation

In addition to the Statistical Quality Assessment and Certification Framework (SQASF) will be accompanied by implementation and monitoring plans. As enshrined in the UBOS Act, 1998, the Bureau is responsible for monitoring and supervision of the NSS. Consistent with the PNSD, UBOS designed a Monitoring and Evaluation Framework to guide tracking of statistical programmes in the NSS. To ensure effective and efficient data production and management in CSOs or Private Sector organisations, it is imperative for each to;

a) develop a Strategic Plan for Statistics with a clear logical framework outlining the expected indicators (outputs), objectives, activities and inputs that guide monitoring.

b) develop mechanism that promotes participatory monitoring including evidence based results.

c) Identify potential actors among the GEWE implementers to monitor involve relevant groups of citizens and the responsiveness of public and private authorities to monitor their indicators.

d) provide feedback about the whole CGD value chain, including but not limited to assessment, design, implementation, quality assurance to build an effective CGD ecosystem.

Monitoring

Monitoring CGD initiatives should;

a) involve CSO and Private Sector stakeholders, including community leaders, business investors - especially women representatives - local government, relevant Ministries, and development partners.

a) continuously (monthly, quarterly) assess data production processes performance, depending on the lifetime of the programme.

b) re-check data collection needs along data quality framework processes to ensure data is available in real time, accompanied with spot checks.

Evaluation

As per the UNWomen ESARO (2020) CGD methodological guidelines, monitoring is essential for routine tracking of programme interventions. To the extent possible, evaluators should;

a) assess if the CGD approaches and resulting data play a complementary role to official data.

b) assess the contribution of CGD to GEWE intervention to beneficiaries.

c) Assess the contribution (impact) of the CGD towards meeting relevant SDG 5 targets and adage.

d) periodically review CGD related programme performance based on M&E dimensions (relevance, effectiveness, efficiency, value for money, & impact).

3 GENDER EQUALITY AND WOMEN'S EMPOWERMENT & CGD

This Chapter details the Gender Equality and Women's Empowerment Framework to illuminate the global expectations of harnessing non traditional data sources to increase reporting on vast indicators by the country. Examples of CSOs generating data that can inform the GEWE indicators are presented.

3.1 GEWE Framework

The GEWE framework underpins the Human Rights Based Data approaches in the design, implementation, monitoring and reporting about SDGs, among others. The government of Uganda has established legal and policy frameworks, and an online management information system that enables actors responding to GBV to safely collect, store, generate and analyze reports in real-time. The UBOS and the MoGLSD collaborate in surveys and programmes aimed at providing evidence on prevalence to determine interventions. Particularly, the harmful and prohibitive socio-cultural traditional practices that exacerbate gender discrimination, violation of rights and violence in some communities, unpaid care work, and persistent gender inequalities, economic and political opportunities are of key concern.

GEWE Indicator Framework

The 2030 Agenda for Sustainable Development has 232 SDG indicators, of which 54 are Gender GEWE indicators. The 54 indicators are categorized into; Tier 1, Tier 2 or Tier 3, and reporting on all depends on the methodology and availability data in the country. Twelve of the indicators in Tier 1 have an established methodology and data are already widely available from surveys or censuses. There are 21 indicators classified as Tier 2 indicators, i.e. these indicators that have an established methodology, but data are not easily available. Finally, 21 of the gender indicators lack internationally agreed methodology. While this analysis provides a global impression, the scenario varies by country due to diversities in development and political environment. The SDG GEWE indicators are presented in Annex 4.

The UNWomen Flagship Report (2018) however underlined the glaring gender data gaps, limited investment in gender statistics and inability of traditional sources to respond to all unmet data gaps in the country. Globally, Citizen Generated Data are a key source for filling some gaps. This CGD Toolkit therefore provides a comprehensive standard approach for compiling gender responsive data across the relevant SDG using diverse non-traditional source techniques. It is consistent with the Sustainable Development GEWE framework of prioritized indicators, and provides pathways for collecting relevant data and information.

New CGD data sources and Data Communities

There are several initiatives leveraging CGD practices to collect and use data in the most non-conventional way possible. These are using mediums ranging from Big Data Analytics to using citizens to collect SDG data at local levels. A few examples of these initiatives are provided below:

Radio voice Analysis

Radio is a vibrant medium for public discussion in Uganda. Talk shows and phone-ins hosted by community radio stations are popular ways for Ugandans to voice their needs, concerns and opinions—particularly in rural areas. Analysis of radio content therefore presents an opportunity to take the pulse of populations excluded by the digital divide. In 2014 there were 216 registered FM radio stations across the country, broadcasting on 299 different transmitters (source: Uganda Communications Commission).

Pulse Lab Kampala worked on a toolkit that makes public radio broadcasts machine-readable through the use of speech recognition technology and translation tools that transform radio content into text. This project seeks to support the Government of Uganda and development partners in incorporating the voices of Ugandan citizens into the development process. Better understanding of public opinion will support bridging the gap between policy and implementation of development programmes. The project has been initiated by Pulse Lab Kampala in partnership with Makerere and Stellenbosch (South Africa) Universities, with the support of the Embassy of Sweden in Uganda, and seeks to expand the scope of sentiment analysis in Uganda to rural areas developing a toolkit to track public conversations from radio. In Phase I of the project, recordings of public radio content were converted into text automatically from Kampala (English and Luganda) and Gulu areas (Acholi and English).

Pulse Lab Kampala in collaboration with UN agencies, NGOs and the Government of Uganda, is conducting a series of pilot case studies to assess the potential of the tool to inform on issues of relevance for the SDGs. This will be done by expanding the geographical coverage of broadcast analysis to new locations. A fully automated system will be developed to cut the time of the data flow from the radio broadcast to the dashboard to 1 day (from the time it is recorded to the time it appears in the dashboard developed as part of the tool). Additionally, protocols will be developed to ensure: (1) integration with other tools developed by Pulse Lab Kampala, (2) implementation of technical measures to address the risks associated with the development of the tool and (3) mechanisms that protect the privacy of individuals are in place. The tool is being used to identify trends amongst larger groups and communities with no intention of identifying opinions of individuals[3]. How it works[4]

U-Report

U-Report is a social messaging tool and data collection system developed by UNICEF to improve citizen engagement, inform leaders, and foster positive change. The program sends SMS polls and alerts to its participants, collecting real-time responses, and subsequently publishes gathered data.

It works by gathering opinions and information from young people on topics they care about – ranging from employment to discrimination and child marriage. U-Reporters respond to polls, report issues and support child rights. The data and insights are shared back with communities and connected to policy makers who make decisions that affect young people.

3 https://unfoundation.org/blog/post/when-old-technology-meets-new-how-un-global-pulse-is-using-radio-and-ai-to-leave-no-voice-behind/

4 https://radio.unglobalpulse.net/uganda/

U-Report is now active in 60 countries, benefiting 8 million users all over the world. Country U-Reports are run by UNICEF and partners on the ground, including local government, non-governmental organizations and young people themselves. U-Report is available via numerous messaging, social media and SMS channels, and even works on a basic mobile phone. It is free, anonymous and easy to use. Examples Uganda, Zimbabwe,

Barazas

The concept 'Baraza' is a Swahili word for "discussion platform". It is an initiative aimed at creating a space for citizens' participation to demand for accountability of public resources and enhance effective and efficient service delivery. In Uganda, Barazas are performance monitoring programmes which are implemented by the Government of Uganda in the local Governments. The programme creates a platform for the citizens to participate in the development cycle through monitoring the use of public resources in the delivery of services at local Government Level.

After inception in 2009 the Department of Monitoring and Evaluation in the Office of the Prime Minister piloted the initiative in four Districts of Masaka, Kumi, Nebbi and Bushenyi. The implementation has since then covered all Districts

The specific objectives for Baraza[5] include;

a) To establish a public information sharing mechanism, providing the citizens with a platform to influence the Government development programmes,

b) To authorise downward accountability so as to bring about improvement in public service delivery and transparency in the use of public resources,

c) To instill a home grown culture of independent citizens' monitoring for constructive criticism that improves public service delivery and sustains the wellbeing of the people.

d) To enhance central Government responsiveness to citizens' development demands and public delivery service concerns,

e) To create a collective strategy aimed at enhancing public accountability which through central Government's quick responsiveness shall rebuild the Government's popularity towards her citizens.

f) The scope of the Baraza include the frontline sectors particularly health, education, roads, NAADS, water and sanitation. The mechanism is a qualitative tool that informs the Government's annual performance reports.

Mapping of CGD Producers to SDG GEWE Framework

The Data Revolution created a paradigm shift in the management and modernization of statistics in National Statistics Offices (NSOs), and broadened the scope of National Statistical Systems (NSS) to that of a 'data ecosystem'. The data ecosystem is more inclusive than the 'NSS' as it embraces all actors that generate data regardless of methodology used. The Cape Town Global Action Plan for SDGs (2017) that emerged from the First UN Data World Data Forum (Cape Town, 2017) identified National Statistical Offices as the necessary and appropriate leaders of interactions between producers and users in the data ecosystem, which broadens UBOS spheres of coordination.

Examples 3.1-3.7 of the selected CSOs in Uganda contribute to the GEWE indicators namely;

5 https://opm.go.ug/baraza-program/

Example 3.1.

Center for Domestic Violence Prevention (CEDOVIP) which Mobilizing communities and inspiring activism to prevent and respond to VAWG. They create communities where VAWG is not acceptable. CEDOVIP responds to SDGs 5, 6 and 16.

Example 3.2.

Care International in Uganda produces disaggregated data that can inform SDG 1, 3, 5 to address discrimination in all its forms; economic opportunities, influence policy decision at all levels; strengthen capacity for self-help; and delivery of relief in emergencies.

Example 3.3

International Institute of Rural Reconstruction (IIRR) work focuses on SDGs; 1, 2, 3, 4, 5, 6, 8, 9, 11, 13 and 17. Specific to gender, the CSO produces data and indicators on Women Economic empowerment and Youth & Skilling.

Example 3.4

The NGO Forum aims to influence internal and external (including global) operating environment issues of CSOs. They also ensure a positive environment for NGO operations and citizen engagement in governance processes. They contribute to gender related indicators of 16 and 17.

Exa SDG mple 3.5

Transcultural Psychosocial Organisation **(TPO)** promotes and scales up violence prevention initiatives at national and community levels. It pilots community initiated Violence Against Children (VAC) prevention innovations. There are two in Lira district for cross-learning and scale up and uses the multi-stakeholder approach to ensure no one is left behind. The organisation supports GBV and other rights violations, to access psychosocial and mental health services. The data collected as part of the program informs SDG 5, and 16.2 and related indicators.

Example 3.6

National Association of Women Organisations in Uganda, is an umbrella organization that is founded and led by women. It trains women and other women's right organisations in areas such as gender and human rights, economic rights, health, women and the environment, and leadership. They generate data that inform SDG 3, 5, and 8.

Example 3.7

Law Reform Society promotes access to justice for Indigent, marginalized and vulnerable persons in Uganda, and contribute to upholding and promoting the rule of law in Uganda. The LRC contributes to SDG 16 and 5.

3.2 Stakeholder engagement for CGD management

The outcome from the CGD stakeholder inquiry provided insights on the realm of the CGD data ecosystem. Actors in the CGD ecosystem are differentiated by; data type and status of GEWE indicators compiled, data production approaches, data coordination initiatives, collaboration with government (UBOS, MDAs and HLGs) and non-government Institutions (CSOs/Private Sector) among others. To harness "the data revolution", the 'ecosystem approach' better clarifies CDG stakeholder impact because it:

(a) provides a framework for reflection and appreciation of diverse components and transactions in the CGD data value chain;

(b) is a way of enhancing the value that accrues from improvements in interactions between the different stakeholders in production, processing, analysis and use of CGD data and information

(namely from an interconnected and multi-layered reality); and

(c) helps us to recognise that the benefits which are likely to accrue from successful use of CGD data in tracking gender dynamics of the 2030 agenda, will be evident both at individual stakeholder level and at a more holistic strategic national and international level.

Stakeholder Analysis

An assortment of Civil Society Organizations, data communities, innovation hubs, social media stakeholders, analysts and big data enthusiasts are involved in the CGD ecosystem. The attributes from citizen voices, the harnessing of startup technology innovations and other data infomediaries complement official statistics. They provide benchmarks that enable user appreciation of the complex development nexuses concerning; gender, vulnerable population groups including migrants, refugees, and minorities[6] such as the; Alur, Ik and Basongora in Uganda.

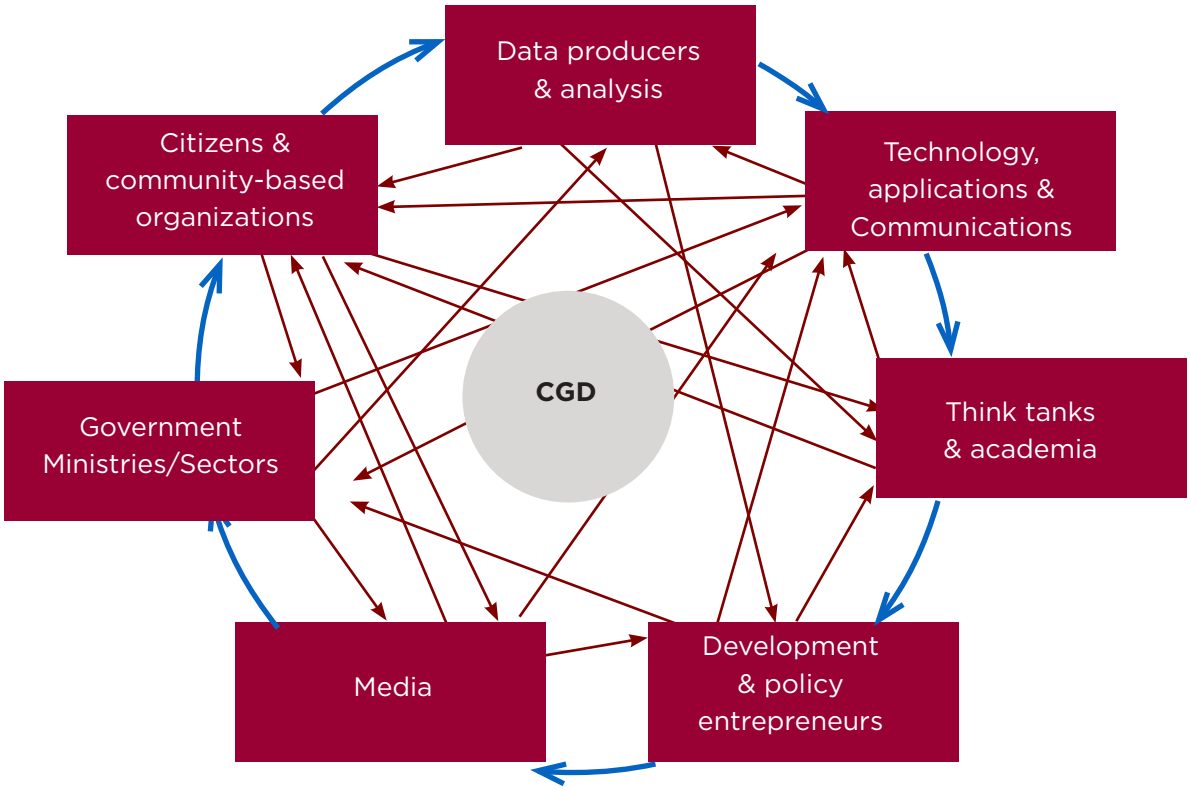
6 Minority people refer to a distinct, vulnerable, social and cultural group possessing certain characteristics in varying degrees (Equal Opportunities Report 2016/2017).

Interactions and linkages in the interwoven stakeholder maze of the data ecosystem in Fig. 4 that occur at different levels of CGD processes are crucial. Engagements by population groups at community level drive Local Governments decision making and service delivery. The decisions made at local government level affect resource allocation and usage at national level and contribute to the global development discourse.

The above conceptual and analytical framework demonstrates that:

- CGD is increasingly becoming a popular data source for collecting data on invisible/vulnerable populations whose characters are seldom fully collected in national surveys.
- For CGD to be of use it must be conceived within an interactive framework and ecosystem of components in data availability, access, use, and feedback (i.e. involving stakeholders in government, private sector, civil society and think-tanks);
- A legal and institutional framework for collection and access to data is necessary

Fig. 4 Interwoven stakeholder analysis in the CGD ecosystem



- Gradual, as opposed to hasty, introduction of CGD processes ensures more buy-in, capacity building, as well as establishment of links and networks between data providers and users;

The model depicts how the data /information needs at the different levels drive the decision-making process at the other levels – forward or backwards. A malfunction in the access and flow of data/information and decisions at one level affects decision making at the preceding and proceeding levels. Understanding stakeholder interest is essential for networking, identifying need and prioritization of data to be produced. Table 4 shows different stakeholders, interest, and impact on the data generated.

Table 4: Stakeholders in the GEWE _CGD ecosystem

Constituent group	What is their interest? Stake?	Preliminary impact
Citizens & Gender focused NGOs and Community-Based Organisations	Make day-to-day decisions about Women empowerment, girl child advocacy, and other issues of gender equality	These are the frontline collectors and users of CGD. They need good, issue-specific data to demand for effectiveness of development policies & programmes on gender,
Uganda Bureau of Statistics	Coordinator of the NSS Undertake large scale primary data collection & analysis (censuses, Surveys, etc.)	They are important allies for CGD. They ensure compliance of the data to acceptable quality standards before they are co-opted into official statistics for use by policymakers, analysts & citizens.
Data analysts/ Planners	Transform data into first-level messages and meaning.	Add value to the meaning of data through the interconnected interaction of stakeholders.
Technology, applications & communications	Interested in enabling communities to have access to technological tools for collection of gender relevant data.	Develop practical tools for making data and information mined easily available, accessible and useable
Think tanks & Academia	Use CGD data to conduct research and inquiries on gender priorities for development interventions.	Contribute to improvement and development of policy messages and programmes for women and girls.
Development and policy entrepreneurs (“datapreneurs”)	Translate and communicate policy research to users, policy makers & media outlets.	As info-mediaries, they communicate data and analyse information for policy-makers.
Media	Disseminate CGD and information & initiate debates on development priorities.	Communicate important and simplified messages to targeted citizens in communities about popular development discourses.
Political leaders	Winning political support by citing evidence of the positive nature of their policies	Justify policies and provide evidence of successful interventions.
Government Ministries/Local Governments	Define policies, develop, implement, monitor and make evidence based decisions on development programmes.	Evidence of relevance and effectiveness of their current policies & investments, and justification for increased budget allocation.

3.3. Creating ownership of CGD in the NSS

The notion of the 'Data Revolution' emphasizes a transformational and hybrid culture in the use of traditional, non- traditional and new sources of data. It promotes increased open access and uptake of different data for evidence-based decision-making. Traditional data providers, are overwhelmed by the 2030 Agenda adage of 'Leaving no one behind', which is synonymous with citizen-generated data. It is through deliberate engagement driven by the Uganda Bureau of Statistics that CDG can gain mileage in the NSS.

Engagement of the various stakeholders

The engagement of stakeholders is very critical for a successful CGD intervention to inform National development, meet the needs of the communities, and monitoring of SDG-5 and other gender related SDGs. In this regard, the starting point should be to conduct a stakeholder analysis and analyse the actors by their power and interest. Table 5 presents the stakeholder groups and their interests.

The stakeholder mapping by interest should be followed by the prioritization in order of importance. The high power, high interest stakeholders are key players in the process of producing statistics. The low power and low interest stakeholders are least important;

Table 5: Interest of the stakeholders

Stakeholder Group	Interest of Stakeholders					
	Development of CGD Tools	Community mobilization and engagement	Data Collection	Interface between service providers and recipients	Feedback to communities/ citizens	Dissemination of the information/ findings
NSO	●	●	●	●	●	●
CSOs	●	●	●	●	●	●
Academic Institutions	●					
Development partners/ Donors						●
Communities/ Citizens		●	●	●	●	

Table 6: Stakeholders Analysis

Influence/ power of stakeholders--HIGH		
	Meet the data needs • Engage/ consult on areas of interest • Endeavor to increase level of interest	**Key players** • Involved in governance and decision making • Engage and consult regularly • They are close partners
	Least Important • Communicate to them whenever it is necessary	**Group to consider** • Make use of interest through involvement • Keep them informed and consult them on the areas of interest
	LOW ---Interest of stakeholders--- HIGH	

hence, not a lot of efforts should be committed when involving them. Table 5 presents the stakeholders' analysis, which could benefit the CGD framework in the data ecosystem. The stakeholders' analysis is a common approach to map the interest and power or influence of each stakeholder group on the quadrant.

Table 6 shows the stakeholders group with their goals and interest, the level of influence and the action required. The CGD generation intervention would need to take into consideration the interests of the various stakeholders.

In the process of preparing the guidelines, tools were designed to solicit information from the CSOs generating CGD. The challenges arising from the data revolution era include amongst others, how to address the NSO non-recognition of other actors and data sources in the data ecosystem. In the Datashift report, A World that Counts (2018), the DR was viewed as a revolution for equality where dynamism in NSOs and other government ministries are required more than before to harness data that is human and machine-readable, compatible, with geospatial information systems and available quickly enough to ensure that the data cycle matches the decision cycle. There is a need to adapt and invest in new technologies and ways of doing things.

Most CSOs in the baseline indicated that they had neither sought nor received support needed to improve the quality of their data. The support required included capacity building from the UBOS to enable the CSO use statistical and qualitative software; provision of ICT infrastructure for data management like online databases; and capacity building in data management and analysis. The CSOs also indicated a need for collaboration and information sharing with the UBOS and Academia.

3.4 The role of UBOS, MDA, HLGs and non-state actors

It is important to elaborate the roles of the key data producers in the NSS and underline that CGD integration and ownership requires continuous dialogue, strengthening capacity of and the interdependency between the UBOS, MDA, HLGs and non-state actors.

a. Uganda Bureau of Statistics

As mandated by the Uganda Bureau of Statistics (UBOS) Act, 1998, besides the function of collecting and disseminating official statistics, it has a key role of providing technical support demanded by producers, users and providers of statistics. To raise the authenticity and trust in CGD, the Bureau will play a central role. This will inter alia involve; ensuring adherence to the CGD Toolkit provisions, assessing the quality of data/statistics produced for compliance to the Code of Practice (US 942) and strengthening capacity to produce and use CGD.

Table 7: Stakeholder engagement plan

Stakeholder Group	Goal/ Motivation/ Interest	Influence	Interest	Action/ Strategy
CGD data users, including Government, HLGs	Obtain information from the localities	High	High	- Obtain the data needs - Involve in planning - Share reports
CSOs	Availability of data/ information to inform their programmes	Low	High	- Obtain the data needs - Involve in planning
Academic Institutions	Data for research	Low	Low	- Avail the required data
Development Partners, Donors	Monitor progress on implementation of projects/ programmes	Low	High	- Involve them in planning - Share reports
Communities/ citizens	Improved service delivery	Low	High	- Provide feedback

b. Ministries, Departments and Agencies (MDAs), Higher Local Governments (HLGs)

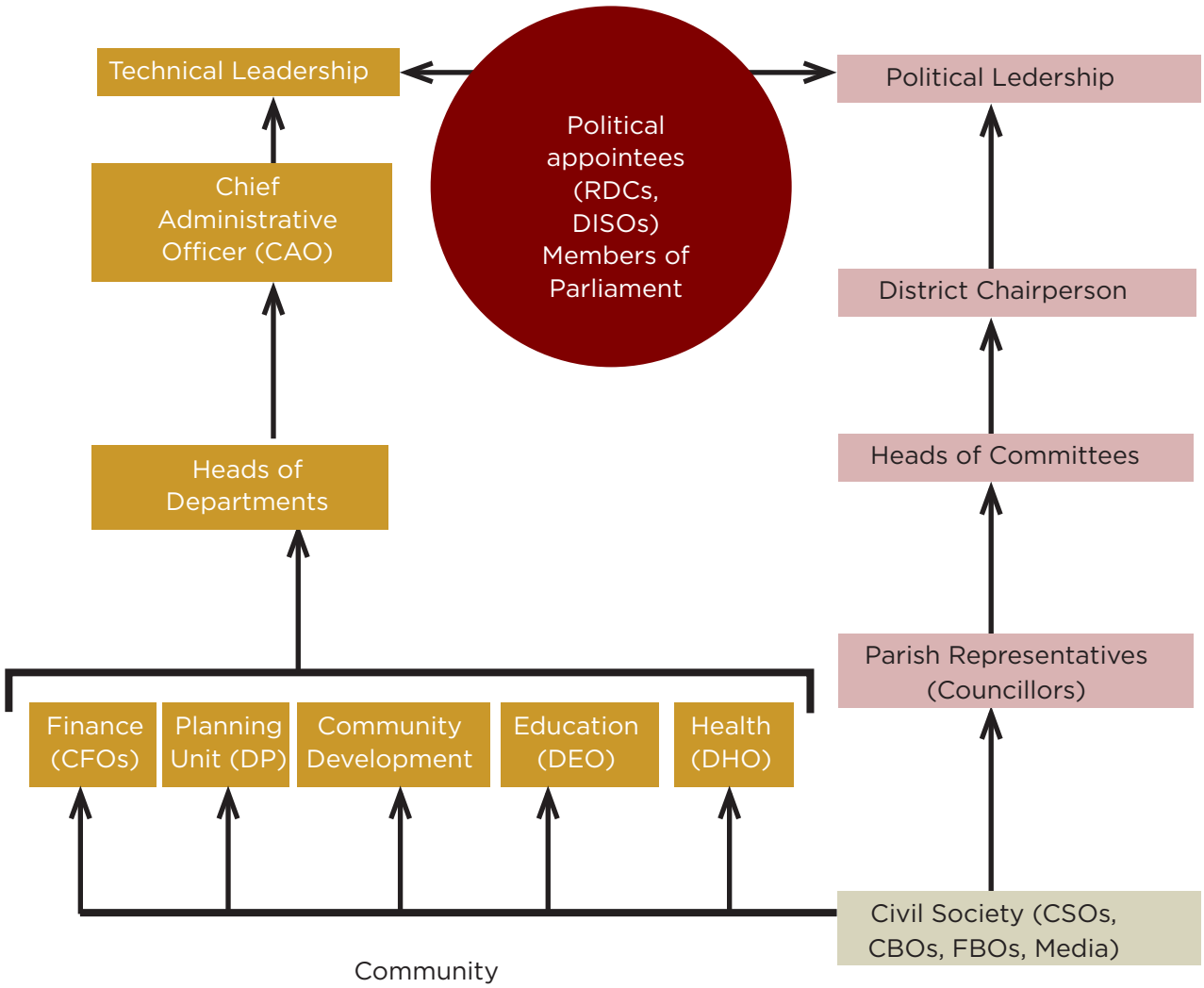
Government entities including Ministries, Departments and Agencies (MDAs) and Higher Local Governments (HLGs) are potential users of CGD and information. They also supplement the work of the UBOS in ensuring adherence to requisite data standards, adoption of statistical definitions, concepts, and principles, as well as development of metadata. Higher Local Governments constitute the point of service delivery in the villages where most CSOs are located as presented in the figure 5 below;

The interplay between the different structures and positions at the HLG level is significant for statistics development. In Fig 1 above, the yellow shows elected leaders, red shows appointed officials mostly by the presidency, while blue shows technical employees of the civil service and grey shows CSOs who are normally at the periphery of government structures. All these wield different levels of power and influence which could be used for or against a good CDG data ecosystem and power relations at this level should be understood and managed.

c. Civil Society Organisations and Private Sector Institutions

Non-state Actors include Non-Government institutions such as Civil Society Organisations, Private Sector Institutions, Academia and Donors/Development partners. However, the targeted users of this toolkit are the Civil Society and Private Sector Organisations. Why? Most of them are located, implement their interventions targeting citizens at the grassroots, and have the potential to interface with communities, households and interest groups. Civil Society influences local development discourse, service

Fig. 5. Local Government linkage with CSOs



delivery, research, awareness and advocacy. They are fast growing actors in development issues, and are well organised in a broad variety of networks.

For example

Action Aid and MIFUMI with support from UN Agencies and development partners, continued to offer **GBV Shelters and psychosocial services i**n (17) GBV shelters for survivors across the country and three (3) GBV advisory centres in Kamuli, Namutumba and Mayuge, run by UWONET.

Overall, CSO's have good insights into local cultural and social development policies, have strong networking and coordination capabilities and are mandated to speak on behalf of their constituency such as the NGO Forum - CSO Reference Group.

d. The media and cultural associations

These also play a pivotal role in community mobilization and advocacy. The media deliver information using voice and written channels accessible to the entire population at all levels. Churches deliver permanent services in all sectors of social development.

e. Cultural associations and Religious Institution

The Cultural associations and Religious Institutions generate invaluable CGD from their recipients. Leaders under the National Culture Forum developed and implemented declarations on elimination of harmful practices that promote GBV in their kingdoms and chiefdoms. Religious Institutions particularly the Inter Religious Council of Uganda (IRCU) and the Uganda Episcopal Conference continued to sensitise about ending GBV using faith integrated human rights approach.

4 MAINSTREAMING CGD IN THE NATIONAL STATISTICAL SYSTEM

This chapter underscores the need to embed CGD production and use in the National Statistical System (NSS) including; the legal and institutional framework, strategies and initiatives to inform different development agenda GEWE data requirements.

4.1 Mainstreaming CGD in the legal framework

The UBOS Act, 1998, underlines Censuses, surveys and administrative sources of data. In light of the changing statistical landscape and the data revolution, integration of non-traditional sources changes in the legal framework will pave way and regulate compilation of critical data including; granular GEWE data on; discriminatory socio institutions, cultural norms, values and practices underlying gender inequalities, unpaid care work, inequitable resource distribution and restricted women's voice and decision-making.

Mainstreaming CGD in NSS programmes does not preclude the need for specific targeted actions (UN, 2002) to address the distinct challenges met by CSOs and the Private Sector Institutions (PSIs). The UN Women ESARO, CGD methodological guideline and the Baseline Inquiry that preceded the design of this toolkit show that the CSOs and the PSIs are typically disadvantaged in statistical knowledge, skills and infrastructure compared to public institutions. Mainstreaming CGD in the NSS begets the UBOS to fulfil its mandate of strengthening capacity, velocity, quality and representativeness of data from other sources including CGD.

Uganda's transition to embracing CGD for SDG 5 and other SDG gender related indicator reporting is a positive step. It however requires increased coordination of statistical programs in the data ecosystem and a review of relevant policy frameworks, statistical legislation and culture by making them more inclusive and comprehensive. For example, integration of CSOs and the PSIs into the Plan for National Statistical Development, the Inter Agency Committees, Gender Statistics Committees will increase their confidence and participation in the NSS.

The UBOS Act, 1998, Rules for Census and Surveys by other Organisations, and Data Quality Standards, Compendium of Statistical Concepts, and the National Metadata Dictionary enhance efficiency, effectiveness and relevance of statistics in the country guide statistical development in the NSS. Policies that relate to data quality such as the Code of Practice (US942), national Human Development Programme and the National Human Resources Development Plan (NHRDP) and Digital Transformation related to use of ICT for social and economic development (NDP III, 2019), and integration of new data sources and management of partnerships are central to this toolkit implementation.

Strategically, mainstreaming CSOs and the Private Sector Organisation data initiatives in the Plan for National Statistical Development (PNSD) provides an anchor for inclusive statistical planning and direction in the country. Mainstreaming CGD in the PNSD framework means potential CSOs and PSIs becoming part of its building blocks with developed statistical plans. It will in addition, harness the technical and institutional processes aimed at transforming data compilation practices to meet unmet user data gaps. It will also enhance compliance to statistical policies governing official statistics.

4.2 Transforming CGD into Official Statistics

As noted in chapter 1, the use of CGD for policy has been wanting due to limited trust in the CSO and Private Sector data. In developing this Toolkit, the initial step towards transforming CGD into official statistics was to map out potential CGD producers, understand their current practices in terms of issue focus, stakeholder engagement and coordination mechanisms, capacity for data production, publication, uptake, use, and consistency to the UN Fundamental Principles of Official Statistics among others. The CSO and Private Sector Institutions feedback unleashed the variability in GEWE interventions, data collection approaches, data type, available quantity of data, data quality management and regularity of data production among 80 percent of those targeted. The feedback also showed the quest for greater CSO and PSI engagement by UBOS to inter alia incentivise confidence and trigger development of plans for statistics that shape CGD production. Converting CGD to official statistics will entail quality compliance checks to ensure data are produced based on the DVC and meet the quality dimensions in the criteria provided in Chapter 2.

Integrating CGD in the national statistical system

At the core of integrating non-traditional data sources in the NSS is the objective to achieve balance and complementarity between official data sources and CGD approaches at all levels rather than preference for one over the other. Citizen Generated Data integration achieves win-win-win outcomes, if it enables production of mutually reinforcing information and goes beyond weighing trade-offs across the traditional and non-traditional sources of data.

Designing a framework for gender CGD tools requires that relevant data providers, producers and users participate. CSOs, private sector institutions and relevant government institutions responsible for SDG 5 and other SDG goals with gender indicators should form a coalition to mold, prioritize the indicators and agree on the relative contribution of each constituent player to their reporting. Integration of CGD should ensure the approaches concepts, tool, actors, and processes targeting GEWE leave no one behind.

This action will enable collective agreement on the types of data, scope and coordination and quality assurance strategies. Essentially, the integration process should facilitate the following:

i. *Institutionalization of CSOs in the NSS*: by creating coordination mechanisms, agreeing on common metadata frameworks, human resource capacity building, consensus on SDG targets and indicators to report, and frequency and intra collaboration strategies.

ii. *Improving the art of CGD data compilation:* by agreeing on structuring, tools and processes, for systematic collection, processing, analysis, reporting and disseminating information.

iii. *Increasing the availability of quality CGD:* By developing a common CGD, gender metadata dictionary and standards, and agreeing on data management policies across CSOs and the respective private sector institutions.

iv. *Raising the public profile for CGD as a reliable source*: by developing an inclusive CSO data advocacy strategy.

v. *Providing technical support* to CSOs and PSIs along the data value chain for CGD including data de-anonymisation, data management, data uptake and use, access, storage, dissemination, data protection and quality audits.

vi. *Aligning the transformed CGD to household survey and administrative data* from traditional data sources will result into comprehensive data and information that can inform a broad spectrum of user needs in the health, education, agriculture, water, social development, governance, road infrastructure, among others.

For example, the MoWT can leverage data from CSOs such as; '*First African Bicycle Information Organization (FABIO) , Civil society Coalition on Transport in Uganda (CISCOT) ,Ugandan Taxi Operators' and Drivers' Association (UTO-*

DA), International Forum for Rural Transport and Development (IFRD), Boda Boda Associations, Uganda special Hire organization (USHOA) and Uganda Bus Owners Association (UBOA)'.

Sustaining CGD in Official statistics

The data revolution puts CSOs and the private sector in the limelight as potential data producers. Data from private companies often covers information collected through survey or cloud sourcing methods; administrative and similar data used for billing customers and targeting services; and transactional data among others[7]. Hence, the inclusion of CSO and private sector in the NSDS design and implementation is the first step of CGD integration in the National Statistical System. To realize some visible results of improved CSO CGD systems, deeper collaboration and initiating 'quick wins' in partnership with UBOS is essential to identify indicators that can show immediate impact from the use of CGD and the functioning of the CSO data system.

Mapping CSO data related outputs to existing traditional and official data sources creates pathways of aligning CGD to official statistics. For example, CSOs involved in health interventions (SDG 2) such as Reproductive Health Uganda (RHU) should be assisted to realise the connection between their data and UBOS survey data by participating in the planning, implementation and dissemination of the Demographic Health Survey, the U-Report, UNHS, among others. The findings may illuminate glaring data gaps and extreme conditions that warrant in-depth analysis and citizen views to explain why and how.

How CSOs and Private Sector Institutions can nurture CGD in the NSS

CGD provides a good backbone for linking CSOs, the Private Sector and UBOS. Balancing the tensions between the need for real time information in the community, Local government and other levels calls for effective leadership and incentive for CSO and Private Sector institutions joining the NSS.

7 Innovations in Federal Statistics. Combining data sources while protecting privacy (2017)

a) Promoting flexibility in developing methodology

CGD methodologies, such as Citizen Report Card to assess satisfaction with public service providers like UMEME, Telecommunication, water, roads and road services and justice, and sample surveys require support from UBOS to ensure that the sample yield reliable results.

b) Strengthening Coordination and governance

A review of Legal mandates in each country is needed to ensure that responsibilities are clearly allocated to national statistical offices, the relevant Ministries, Agencies and Departments and Local Governments and CSOs for the collection or compilation of data that informs global frameworks as appropriate, preferably as part of the overall NSDS. Although CGD and their importance remains a subject debated among NSS experts, African legal and policy frameworks governing statistics fully support the need for, and the role of non-traditional data sources, including CGD in bolstering national statistics as part of the data ecosystem.

c) Enhancing planning and priority setting

The PNSDIII is gender responsive and the statistical systems across entities in the data ecosystem include assessment of user needs; setting of priorities to meet the broad needs within capacities and resources that can realistically be availed. CSO SPS also articulate gender responsive programmes, indicators, type of data, statistical outputs, and identify the training and other inputs, including the funding resources, needed to achieve the programme.

d) Nurturing partnerships

Fostering Public Private Partnerships will increase trust in and satisfaction with CGD, as well as the sustainability of processes and results. Indeed, the effective collaboration between the CSOs, Private Sector institutions and UBOS. The CSO baseline, revealed that CSOs generating gender data using the CGD methodology, had no working relationship with UBOS. Consistently, whereas the Private Sector undertakes business cases geared towards women's economic empowerment, deliberate data capture, management and use is limited. Access is limited due confidentiality of

their client data. Evidence of seeking technical support and collaboration from the UBOS to perfect their data collection methodologies is limited.

Twaweza, Uganda, and World Vision stand out for seeking statistical support to determine their sample sizes, obtain baseline information for their study areas, cartographic maps, sampling methodology reports, assessment/ data collection tools, training of fieldworkers on map reading, household sampling and listing, and monitoring assessment survey for quality assurance.

e) Promoting uptake of CGD

UBOS is the most trusted source of official statistics used by government. However, the relative importance of other data sources is growing exponentially due to changing user demands that accompany the data revolution. CSOs can leverage UBOS survey and census data to inform their baselines as complementary data sources. There are at least two opportunities when the use of CGD on girls and women can be tapped into as evidence, namely; during the VNRs and annual government review of the national strategies. Other reasons for which there is increased demand for GEWE CGD include:

- Enhancing traditional data with deeper, more granular, micro data from CSOs.
- Influencing decision makers to improve service delivery purposing to leave no one behind at community level.
- Illuminating the grey areas in government laws, policies and decision making that can avert social norms and harmful practices, discrimination, powerlessness of marginalized group among others.

4.3 Governance structures for CGD

Governance of the SDG localization, coordination and monitoring in Uganda falls under the Office of the Prime Minister (OPM). An SDG Coordination Framework articulating structural levels supporting governance exist including the Data Technical Working Group (DTWG) that is responsible for collating and providing evidence required for tracking and reporting on the various SDG indicators bearing in mind the notion of 'leaving no one behind, headed by UBOS.

Governance of CGD initiatives in the country will be within the existing NSS coordination structures. The UBOS coordinates, monitors, supervises the NSS through established coordination structures to achieve set objectives of the PNSD including the Gender Statistics Technical Working Group (GSTWG). The GSTWG membership includes representation from government and non-government organisations. To increase visibility and probity of CGD in monitoring and reporting development progress in the country a separate structure is necessary for ease of management and support. The UBOS is committed to broadening its structures under the NSS coordination to include CSOs and the Private Sector. The Gender Statistics Technical Committee is comprised of both government and non-government representatives.

Need for Gender CGD mechanism/ Coordination structure

Coordination and collaboration of data producers in the data ecosystem increases opportunities and synergy in the production of gender responsive indicators. The Uganda Bureau of Statistics has an established structure and mechanism for Gender Statistics Coordination with each consisting of CSO representation namely; the Gender Statistics Technical Working Group and the Gender Statistics Advisory Committee. The later often constitute task force teams for specific short-term assignments including the review of survey instruments and indicator responsiveness to gender etc. The participation of CSOs on the different NSS structures enriches and broadens the scope of information and content shared on GEWE interventions and programmes.

The Civil Society reference group coordinated by the NGO Forum also has a cluster for Gender steered by the Forum for Women in Democracy (FOWODE). FOWODE is responsible for gender related interventions and coordinates other GEWE CSO actors. Civil Society work closely and collaborate with government entities to learn and contribute to CGD VNRs and other official data requirements. The VNR process

mirrors best practice for leaving no one behind.

It bridges government and non-government actors as well as the leadership at political and policy level. As such, CSOs should be engaged on the NSS Gender statistics structures for mileage, capacity, innovation, and knowledge enhancement. The UBOS should gradually profile relevant CSOs and Private sector institutions in the national data initiative database.

***CSO Profile development**: The CSO and PSIs profiles should ideally include; title of the program, SDG indicator targeted, data collection approach, type of data, scope, frequency, and expected users.*

Increasingly, the leadership from government, CSOs and Private Sector Institutions should regularly engage as illustrated in Figure 6.

4.4 Strengthening capacity for CGD production to report on SDG 5

Training is an important component of the citizen-led data initiatives because it brings together stakeholders from diverse categories of the interest group and can enhance the quality of the data collected. Training plays a key role in familiarising partner organizations, trainers and citizen volunteers with concepts, policies, monitoring activities, and quality control. The UBOS Act, 1998, Section 4 (2) (iii) UBOS provides guidance, training and other assistance demanded by producers, users and providers of statistics. However, the 'data ecosystem' concept presents uneasiness with new approaches brought about by the data revolution and changes on the statistical landscape.

Current practices by non-traditional data producers involved in the CGD baseline reveal eminent skills and competence gaps observed at

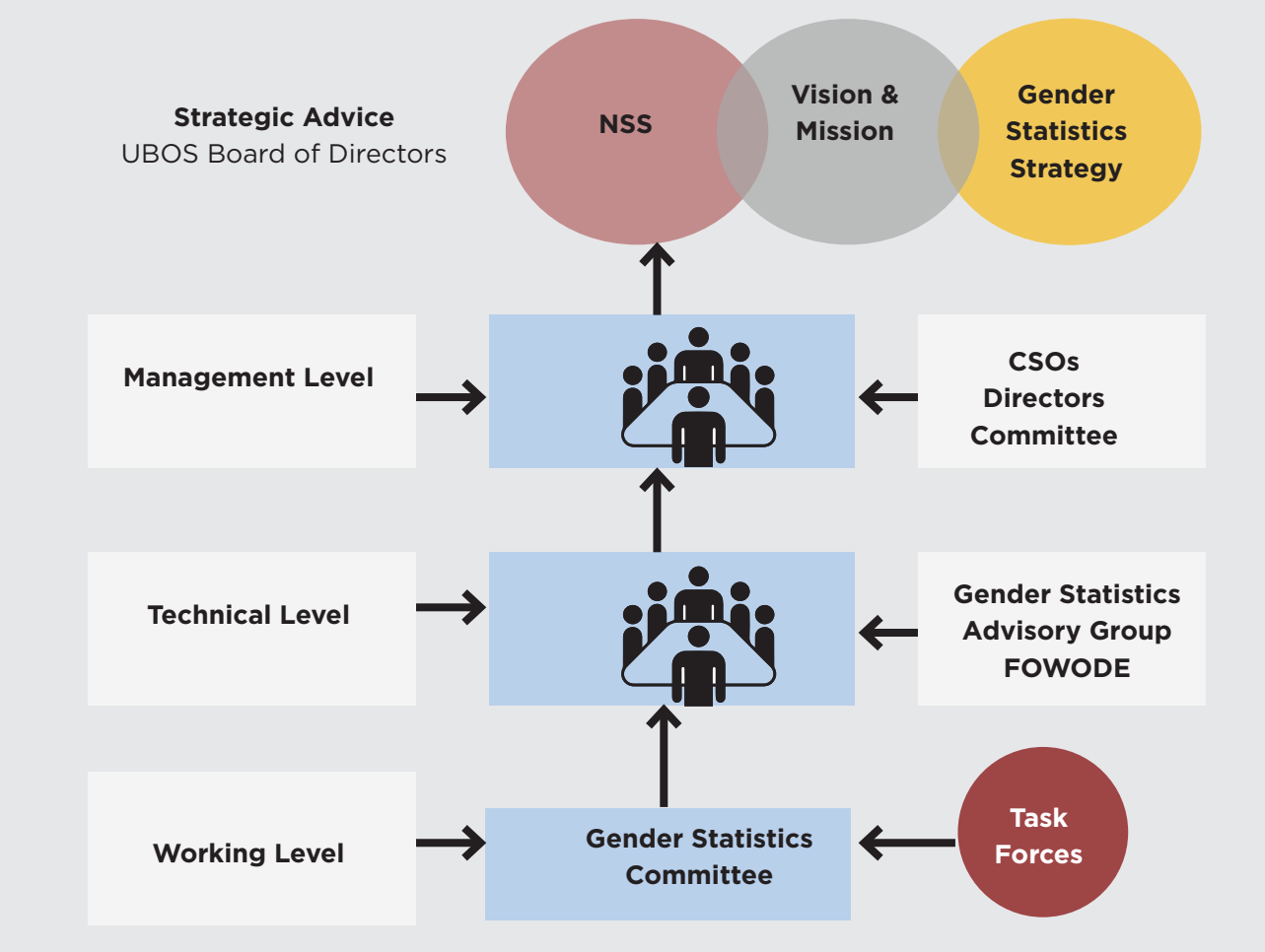


Fig. 6. CSOs and PSIs Participation in the NSS for GEWE

different stages of the Statistical Value Chain. The need for stronger user engagement including visualisation, communication of statistics and analysis of qualitative data by government entities was also registered. In building CSO and PS capacity for CGD, holistic and circular approaches to training should also address the production of new data and mining existing official data.

UBOS is obliged to provide technical support to CSOs and PSIs . The UBOS Act, 1998, Section 4 (2) (iii) articulates that 'UBOS provides guidance, training and other assistance demanded by producers, users and providers of statistics'. According to the PNSD III (2020/21-2024/25), training will be through the Bureau In-Service Training Centre. The UBOS will also tap into the expertise from Statistics Training Centres (STCs) and Academia such as the School of Women and Gender Studies to support potential CGD producers and users. Requisite skills and competencies especially data analytics (data science), visualization and utilization of development data, adaptation of new and innovative technologies to support gender statistics production from non-traditional data sources will be through the STCs and other potential organisations recommended by experts from the Ministry for ICT and NITA_U.

Partnerships with the Academia particularly the school of Gender and Women's Studies and other professional bodies as well as Development Partners, data providers and users will also be sourced for further training in gender and mentoring a critical mass of multi-skilled and competent gender related data producers. The broader ESARO CGD Methodological guidelines (2020) provide focused gender statistics capacity enhancement initiatives in the CGD ecosystem that can guide UBOS including:

a. Taking stock of the knowledge, demand and availability of sex disaggregated data in CSOs and UBOS skills in qualitative approaches.

b. Empowering and enabling communities to have a direct voice.

c. Promoting better understanding amongst governments, civil society, and donors about the complexity of delivering on the global agenda. The latter requires fulfilling the promise of putting people at the centre of the SDGs.

d. Enhancing CSOs learning and understanding of the data value chain and other methodologies that demonstrate engendering of information is necessary for GEWE CGD development.

e. Training technical personnel involved in data production from CSOs and PSIs to produce CGD that adheres to sound statistical practices through quantitative measures.

f. Strengthening data literacy, analytical capacity and resource endowment of CSOs.

g. Standardizing approaches of obtaining data from the grassroots, and,

h. Operationalizing and sustaining CGD methodology in the data ecosystem,

i. Documentation of the process.

On the other hand, UBOS may also need training in qualitative techniques, data science and analytics, harnessing big data. Alternative providers such as Makerere University will be reached for experts to undertake rigorous training for relevant UBOS staff and others from CSOs and the Private Sector Institutions.

5 Conclusion

This toolkit aims to guide producers of CGD needed to inform monitoring and reporting on SDG 5 and other SDG related gender indicators, and data requirements of other development frameworks. Operationalizing the proposed stages of the Data Value Chain, recognizing the HRBD principles that underline active and meaningful participation of relevant marginalized population groups, building analytical skills and monitoring of processes to ensure that there is effective stakeholder engagement and disaggregation that respond to the adage of 'leaving no one behind' will increase reliability and usefulness of CGD. They will not only amplify the voices of citizens, but also serve as a complementary source to official statistics. In all this, UBOS has a critical role to play in promoting, creating visibility of CGD production and use in the NSS. To increase the value and use, the choice of CGD approaches should follow the Data Value Chain and the statistical output subjected to data quality audits against dimensions for quantitative and qualitative data and certified as official statistics. Based on the purpose of this Toolkit, all non-traditional data producers in Uganda are encouraged to comply, as appropriate, with the provisions of this toolkit, the Statistical Standards referenced and in print as well as the web-based publications, they prepare for users.

Annexes

Annex 1. CGD Techniques

Technique	Definition	Structure/ unstructured	Method	Means of Transmission	Types of data	Limitations
Crowd-sourcing	Is a type of citizen science involving citizens to collect data through manual reporting of events eg. Rainfall, events in the community	unstructured	Citizen sensing, interpretation, problem definition and data collection, research design and implementation.	Smartphones/ internet, mobile networks, supervisor record	climate, settlements, livelihood etc	Uncertainty, accessibility, cost, dimensionality
Imagery	Use figurative language to represent objects, actions, and ideas in such a way that it appeals to our physical senses	Unstructured	Remote sensing, satellite imagery, aircraft, and drones. The data should be transcribed and interpreted	Smartphones/ internet, mobile networks	Climate, settlements, population, livelihoods, agriculture, etc	High cost of the technology, accessibility, capability to adapt the technology
Short Message Services (SMS)	Text messaging service component of telephones, internet and mobile device systems	Unstructured	Text messaging, interpret, and transcribe	Smartphones/ internet, mobile networks	Climate, settlements, population, livelihoods, agriculture, health, education, etc	High cost of the technology, accessibility, capability to adapt the technology
Social Media (SM)	Interactive web internet based applications. User generated content such as text posts or contents, digital photos or videos, and data generated through all online interactions	Unstructured	Internet based services, interpret, and transcribe	Smartphones/ internet, mobile networks	Climate, settlements, population, livelihoods, agriculture, health, education, etc	High cost of the technology, accessibility, capability to adapt the technology

Technique	Definition	Structure/ unstructured	Method	Means of Transmission	Types of data	Limitations
Phone calls (PCs)	Connection over a telephone network between the called and the calling party	unstructured	Voice messages, interpretation, and transcribe	Telephones, internet	Climate, settlements, population, livelihoods, agriculture, health, education, etc	High cost of the technology, accessibility, capability to adapt the technology
Community Score Cards (CSC)	A participatory community based monitoring and evaluation tool that enables citizens to assess the quality of public service delivery.	Structured	Community meetings, Focus Group Discussions, use of participatory tools to collect data, feedback, triangulation of data, dialogues, and action plan	Computers, paper, telephone, internet, etc..	Climate, settlements, population, livelihoods, agriculture, health, education, etc	Community awareness about policies and service delivery programmes
Citizen Report Card (CRC)	Participatory surveys that solicit user feedback on the quality and performance of public services in order to raise citizen awareness and ultimately bring about reforms in the public service delivery system	Structured	Community meetings, Focus Group Discussions, identification of issues, design methodology, use of sampling frame to select the sampled areas, collect data, process, feedback, triangulation of data, dialogues, and action plan	Computers, paper, telephone, internet, etc.	Climate, settlements, population, livelihoods, agriculture, health, education, Time use etc	Technical capacity, Cost, time, human resources, etc
Sample surveys (SS)	Conducting data collection in a selection of part of the population/ area to make an inference about the entire population/ area	Structured	Sampling units from the sampling frame, design the data collection tools, collect the data, process, interpret and disseminate	Computers, paper, telephone, internet, etc..	Climate, settlements, population, livelihoods, agriculture, health, education, Time Use etc	Technical capacity, Cost, time, human resources, etc

Technique	Definition	Structure/ unstructured	Method	Means of Transmission	Types of data	Limitations
Qualitative studies (QS)	A participatory community based monitoring and evaluation tool that enables citizens to assess the quality of public service delivery.	Unstructured	Community meetings, Focus Group Discussions, use of participatory tools to collect data, feedback, triangulation of data, and dissemination	Computers, paper, telephone, internet, etc..	Climate, settlements, population, livelihoods, agriculture, health, education, Time Use etc	Community awareness about policies and service delivery programmes
Remote sensors	Acquisition of information about an object or phenomenon without making physical contact with the object and thus is in contrast to on-site observation. The term is applied especially to acquiring information about the Earth.	Unstructured	Satellite and/or airborne based sensors to collect information about a given object or area. Include use of; Aerial Photography; Geodetic Survey; Hyperspectral Imaging; Long-Wave Infrared; Multispectral Imaging; and Near Infrared Surveys	Computers, paper, telephone, internet, etc..	Climate, settlements, population, livelihoods, agriculture, health, education, etc	High cost of the technology, accessibility, capability to adapt the technology

Annex 2. Concepts and Terminologies

Citizens	These are Ugandans who may act as; beneficiaries of an intervention, data providers, collectors, sensors, auditors, monitors, reporters, community members, observers, co-investigators, analysts or platform users.
Generate	This is the process of identifying, tagging, transcribing, compiling, mapping, describing, evaluating, quantifying, photographing, recording, translating, narrating, deliberating, writing, sensing, conceptualizing or noticing information to provide evidence.
Data	This relates to the output of the wide variety of devices, methods and infrastructures, including scientific.[8]
Gender	Is the differences between women and men, boys and girls within the same household and within and between cultures that are socially and culturally constructed and change over time. Gender determines access to opportunities and participation in development processes by women and men and shapes freedom of expression, mobility, accessibility and security.
Gender Equality	Is the equal valuing by society of the similarities and the differences of girls, women, boys and men, and the roles they play.
Data ecosystem	Entails data infrastructure, and the people, communities and organizations that benefit from the value created by it.
Participation	CGD initiatives engage different but relevant citizens in various capacities to ensure 'no one is left behind'. Participation of targeted citizens advances the realization of all components of the HRBAD. For example, involving women, girls, and other marginalized persons in CGD data production increases ownership of processes and results.
CGD business processes	Compiling CGD follows divergent methods. These show the type of GEWE data collected, as well as the protocols adopted to collect and organize the data.
Data Quality	Fitness of data consistent with the Uganda Standard 942 (Code of Practice) quality dimensions.

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Annex 4: Gender Equality and Women's Empowerment (GEWE) Indicators

	Indicator	Tier	SDG
1	1.1.1 Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)	1	1
2	1.2.1 Proportion of population living below the national poverty line, by sex and age	1	1
3	1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	2	1
4	1.3.1 Proportion of population covered by social protection floors/ systems, by sex, and distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work injury victims, and the poor and the vulnerable	2	1
5	1.4.2 Proportion of total adult population with secure tenure rights to land, with legally recognized documentation and who perceive their rights to land as secure, by sex and by type of tenure	3	1
6	1.b.1 Proportion of government recurrent and capital spending going to sectors that disproportionately benefit women, poor and vulnerable groups	3	1
7	2.3.2 Average income of small-scale food producers, by sex and indigenous status	3	2
8	3.1.1 Maternal mortality ratio	2	3
9	3.1.2 Proportion of births attended by skilled health personnel	1	3
10	3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations	2	3
11	3.7.1 Proportion of women of reproductive age (aged 15-49 years) who have their need for family planning satisfied with modern methods	1	3
12	3.7.2 Adolescent birth rate (aged 10-14 years; aged 15-19 years) per 1,000 women in that age group	2	3
13	3.8.1 Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, newborn and child health, infectious diseases, non-communicable diseases and service capacity and access, among the general and the most disadvantaged population)	3	3
14	4.1.1 Proportion of children and young people: (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex	3	4
15	4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex	3	4

	Indicator	Tier	SDG
16	4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex	2	4
17	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex	2	4
18	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict affected as data become available)	3	4
19	4.6.1 Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	2	4
20	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment	3	4
21	4.a.1 Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single sex basic sanitation facilities; and (g) basic hand washing facilities (as per the Water, Sanitation and Hygiene for All (WASH) indicator definitions)	2	4
22	5.1.1 Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex	3	5
23	5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner, in the previous 12 months, by form of violence and by age	2	5
24	5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner, in the previous 12 months, by age and place of occurrence	2	5
25	5.3.1 Proportion of women aged 20-24 years who were married or in a union before age 15 and before age 18	2	5
26	5.3.2 Proportion of girls and women aged 15-49 years who have undergone female genital mutilation/cutting, by age	2	5
27	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location	2	5
28	5.5.1 Proportion of seats held by women in national parliaments and local governments	3	5
29	5.5.2 Proportion of women in managerial positions	1	5
30	5.6.1 Proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care	2	5

	Indicator	Tier	SDG
31	5.6.2 Number of countries with laws and regulations that guarantee women aged 15-49 years access to sexual and reproductive health care, information and education	3	5
32	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure	3	5
33	5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control to promote the empowerment of women	3	5
34	5.b.1 Proportion of individuals who own a mobile telephone, by sex	1	5
35	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment	3	5
36	8.3.1 Proportion of informal employment in non-agriculture employment, by sex	2	8
37	8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities	2	8
38	8.5.2 Unemployment rate, by sex, age and persons with disabilities	1	8
39	8.7.1 Proportion and number of children aged 5-17 years engaged in child labour, by sex and age	1	8
40	8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status	1	8
41	8.8.2 Increase in national compliance of labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status	1	8
42	8.9.2 Number of jobs in tourism industries as a proportion of total jobs and growth rate of jobs, by sex	2	8
43	10.2.1 Proportion of people living below 50 per cent of median income, by age, sex and persons with disabilities	3	10
44	11.2.1 Proportion of population that has convenient access to public transport, by age, sex and persons with disabilities	2	11
45	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	3	11
46	11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months	3	11

	Indicator	Tier	SDG
47	13.b.1 Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth, and local and marginalized communities	3	13
48	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age	1	16
49	16.1.2 Conflict-related deaths per 100,000 population, by sex, age and cause	3	16
50	16.2.2 Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation	1	16
51	16.2.3 Proportion of young women and men aged 18-29 years who experienced sexual violence by age 18	2	16
52	16.7.1 Proportions of positions (by sex, age, persons with disabilities and population groups) in public institutions (national and local legislatures, public service, and judiciary) compared to national distributions	3	16
53	16.7.2 Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	3	16
54	17.18.1 Proportion of sustainable development indicators produced at the national level with full disaggregation when relevant to the target, in accordance with the Fundamental Principles of Official Statistics	III	17

Tier I Indicators for which an established methodology exists and data are already widely available

Tier II Indicators for which a methodology has been established but for which data are not easily available

Tier III Indicators for which an internationally agreed methodology has not yet been developed

Annex 5: List of Stakeholders consulted

1. Center for Domestic Violence Prevention (CEDOVIP)
2. CARE International in Uganda
3. Development Initiative, Uganda (DI)
4. Forum for women in Democracy (FOWODE)
5. International Institute of Rural Reconstruction (IIRR)
6. Ministry of Lands and Urban Development (MoLHUD)
7. Ministry of Works and Transport (MoWT)
8. National Association of Women Organisations in Uganda (NAWOU)
9. NGO Forum
11. Transcultural Psychosocial Organization (TPO)
12. Uganda Communications Commission (UCC)
13. Uganda Law Society (ULS)
14. Uganda Police Force (UPF)
14. Uganda Prisons Service (UPS
15. World Health Organisation (WHO)
16. Uganda Bureau of Statistics (UBOS)
17. UN Women Uganda

Annex 6: Acknowledgement

Contribution to the Toolkit	Name of Individual	Organization
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GLOSSARY

Big Data	This refers to large sets of diverse structured and unstructured information that grow at ever increasing rates. Big data is characterized by 3 V's – Variety, Velocity and Volume.
Citizens	These are groups of persons belonging to a given state with entitlement to protection as they give allegiance.
Citizen science	Is the engagement of ordinary persons to collect data that enables them understand their environment and make it better.
Citizen sensing	Where relevant persons and communities are engaged in the collection and generation of information to understand an issues using powerful tools such as sensor technologies.
Citizen journalism	The act of citizens, or a group of them playing an active role in the process of collecting, reporting, analyzing and disseminating findings and information about an event.[9]
CGD ecosystem	This is the environment where all CGD practitioners (producers and users) interact through different and interdependent roles, responsibilities and actions to address a given issues.
Citizens' observatories	These are community-based environmental monitoring and information systems where citizens participate in the observation of issues in their environment. The marginalized population groups can be deliberately involved by giving them applications fixed in portable or mobile personal devices.
Civic technology	Is the technology deployed to give population groups more voice to participate in public decision making and/or to enhance the relationship between people and government towards improve service delivery.
Community-based monitoring	Is where the local beneficiaries are involved (drawn in, activated and motivated and empowered) to participate and give feedback about the functionality of a service or development program to bring about optimal results. [10]
Community Policing	Is where the police cooperatively engages individual citizens and/groups of citizens, from both public and private organizations to identify, prevent and resolve issues which can potentially effect safety in the community and its neighborhoods areas, or the city as a whole.
Community Score Cards (CSC)	Is a participatory, community based monitoring and evaluation tool that enables citizens to assess the quality of public services such as a health center, school, public transport, water, waste disposal systems among others.[11]

9 Shayne, B. & Wills, C. (2003). We Media: How Audiences re Shaping the Future of News and Information. (Lasica, Ed0 Reston: The Media Center at the American Press Institute.
10 Suneela, G. & Ananya, R. L. (2010). Community-Based Monitoring: Key to Success of National Health Programs. Indian J Community Med. 2010 Apr; 35(2): 214–216.
11 https://civicus.org/documents/toolkits/PGX_H_Community Score Cards.pdf

Co-production	The interactions between people or groups 'identities and capabilities' and place that lead to ecosystem services (data production) here 'co-production', relates to the structures, services and their engagement that facilitate CGD production and use. [12]
Crowdsourcing	Is the practice of engaging a 'crowd' or group of citizens and empowering them with greater voice for a common goal — often innovation, problem solving, or efficiency enhanced by new technologies, social media and web 2.0.
Data communities	Refers to specialized groups that appreciate, value and harness data to report findings
Data literacy	Technical skills-building and efforts to inculcate a 'culture of data use.
Data revolution	Is "The integration of data coming from new technologies with traditional data in order to produce relevant high- quality information with more details and at higher frequencies to foster and monitor sustainable development. This revolution also entails the increase in accessibility to data through much more openness and transparency, and ultimately more empowered people for better policies, better decisions and greater participation and accountability, leading to better outcomes for the people and the planet".[13]
Data scrapping	Is when Internet-based data retrieval methodologies, used without the permission of the data owner. Data scraping can be manual or automatic - where conducted automatically, machine-to-machine interaction is used.[14]
Drones	These are the unmanned overhead or aerial imaging technology used for data collection. The images can show the location of all points of desired features.
Evidence Based	Use of facts to report events
Environmental monitoring	Processes and activities for assessing the quality of environment to against circumstances where human activities carry a risk of harmful effects.
Grassroots mapping	Is a set of technical practices and technologies that can be passed from experts to trainees without providing time for the development of shared norms or cultural meanings around the tools.[15]
Short Message Services (SMS)	The transmission of short text messages to and from a mobile phone, fax machine and/or IP address. Messages must be no longer than 160 alpha-numeric characters and contain no images or graphics.
Open Source Initiative (OSI)	An organization formed in 1998 to promote usage of Open Source Software.
Open development	Open development seeks to bring the philosophy of the open movement to international development. It promotes open government, transparency of aid flows, engagement of beneficiaries in the design and implementation of development projects, and availability and use of open development data.

12 Fischer, A. & Eastwood, A. (2016). 'Coproduction of ecosystem services as human–nature interactions—An analytical framework. Land Use Policy. Vol. 52, March 2016, Pages 41-50
13 UN Secretary General's Independent Expert Advisory Group (IEAG)
14 https://privacylawblog.fieldfisher.com/2019/data-scraping-considering-the-privacy-issues
15 Dosemagen. S, Warren, J. & Wylie, S. (2017). Grassroots Mapping: Creating a participatory map-making process centered on discourse. Public Laboratory for Open Technology and Science.

Participatory Action Research	An approach to research in communities that emphasizes participation and action. It seeks to understand the world by trying to change it, collaboratively and following reflection. PAR emphasizes collective inquiry and experimentation grounded in experience and social history.
Participatory data collection	Collection of data/ information of qualitative nature.
Participatory design	An approach to design attempting to actively involve all stakeholders (e.g. partners, citizens, end users) in the design process to help ensure the result meets their needs and is usable. Participatory design is an approach which is focused on processes and procedures of design and is not a design style.
Participatory Rural Appraisals (PRA)	An approach used by non-governmental organizations (NGOs) and other agencies involved in international development. The approach aims to incorporate the knowledge and opinions of rural people in the planning and management of development projects and programmes
Participatory mapping	A set of approaches and techniques that combines the tools of modern cartography with participatory methods to represent the spatial knowledge of local communities. It is based on the premise that local inhabitants possess expert knowledge of their local environments which can be expressed in a geographical framework which is easily understandable and universally recognised.
Satellite imagery	Images of Earth or other planets collected by imaging satellites operated by governments and businesses around the world.
Sensing devices	Devices, modules, machines, or subsystems whose purpose are to detect events or changes in its environment and send the information to other electronics, frequently a computer processor.
Social Media	Interactive computer-mediated technologies that facilitate the creation or sharing of information, ideas, career interests and other forms of expression via virtual communities and networks.
Citizen Report Card (CRC)	A participatory social audit tool based on user feedback on public service delivery.
User-Generated Content	The term used to describe any form of content such as video, blogs, discussion form posts, digital images, audio files, and other forms of media that was created by consumers or end-users of an online system or service and is publically available to other consumers and end-users.
Volunteered geographic information	The harnessing of tools to create, assemble, and disseminate geographic data provided voluntarily by individuals.

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