Empowering citizens and communities in public service delivery: Using citizen data to monitor progress on SDG 16

This policy brief provides insights into an initiative that empowers communities in public service delivery through citizen data approaches. It offers key recommendations for leveraging citizen data to improve governance monitoring and outcomes. It is aimed at policy makers interested in enhancing service delivery and exploring innovative approaches on their measurement.

The United Nations Development Programme (UNDP)[1] and the Ghana Statistical Service (GSS) conducted a pioneering citizen data initiative that involved public participation in research and knowledge production. This initiative aimed to empower individuals and communities to express their opinions and experiences on public services, contributing to a more inclusive data ecosystem for monitoring Sustainable Development Goal (SDG) 16: Peace, Justice, and Strong Institutions. The initiative had a special focus on increasing accessibility for persons with disabilities in the SDG monitoring and reporting processes. It serves as the first example of a UN agency collaborating with a National Statistical Office (NSO) to jointly utilize citizen data approaches for monitoring a global SDG 16 indicator in the SDG framework[2].

What is citizen data?

UNDP uses the term "citizen data" in alignment with the global terminology and working definition provided by the *Copenhagen Framework on Citizen Data* in which citizen data refers to data originated from initiatives for which citizens are engaged at various stages of the data value chain, guided by key principles that promote inclusive, professional and ethical production and use, regardless of whether or not these data are integrated into official statistics. The *Copenhagen Framework* was welcomed by the United Nations Statistical Commission in its 55th session in 2024.

Citizen data initiatives come in many forms, based on the objectives, contexts, and fields in which they operate. Actors involved and approaches used vary, ranging from individuals using smartphone apps to report on biodiversity observations for scientist-led research to marginalized communities gathering data on gender-based violence to advocate for solutions.

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[1] UNDP Global Policy Centre for Governance and UNDP Ghana.
[2] Fraisl, D., Campbell, J., See, L. et al. Mapping citizen science contributions to the UN sustainable development goals. Sustain Sci 15, 1735–1751 (2020). https://doi.org/10.1007/s11625-020-00833-7

Recommendations

Strengthen national statistical systems in monitoring effectiveness of service delivery by providing resources and building capacity for designing and implementing citizen data initiatives. Citizen data is recognized as a possible complementary source of statistics within official statistics but has to date limited guidelines on aspects such as design, testing, community engagement, and feedback mechanisms. National statistical systems already possess detailed guidelines for other operations, but the unique characteristics of citizen data necessitate specific protocols within the context of official statistics, particularly in evaluating implementation.

Foster a *Community of Practice* for monitoring effectiveness of service delivery through citizen data. The community of citizen data practitioners, within the official statistics domain is growing rapidly and addressing a diverse range of policy priorities, from climate action to gender equality. A considerable knowledge base has been generated; however, consolidation and focused discussions around governance statistics, which are highly specific in monitoring government performance, is needed. Furthermore, while there is substantive experience within the citizen data community, this may not always be relevant or directly apply to governance statistics, which s specific considerations for capturing experiences, perceptions, attitudes, and behaviours.

Advocate for the integration of citizen data in governance monitoring. Governance is a complex, multi-dimensional concept with several interconnected domains, serving as an enabler and driver of sustainable development. The complexity of governance measurement necessitates a diverse approach that incorporates censuses, household surveys, administrative records, satellite imagery, social media analysis, and more. No single data source can provide a comprehensive understanding of governance and the use of emerging approaches and tools to complement existing approaches is encouraged. Citizen data can be particularly effective for identifying the needs of specific communities, locations, or issues that are not adequately captured by other resources due to methodological limitations and budgetary constraints. For instance, household surveys might struggle to capture small population groups as they require larger sample sizes. The targeted nature of citizen data can serve as a valuable complement for these population groups.

Strengthen the evidence base on the use of citizen data by national statistical systems. The pilot projects for implementing citizen data initiatives as part of official governance statistics remain limited. To establish a more robust evidence base concerning the effectiveness of these initiatives, including their strengths and limitations, it is essential to assess their applicability in a wider range of cultural, political and geographical contexts. The pilot project measuring service delivery in Ghana lays the groundwork for application in various settings, including challenging contexts where other methods might underperform. It is also important to test these approaches at the national level to assess their effectiveness in large-scale projects.

Establish national frameworks that regulate the production of citizen data within the national statistical system ensuring legal requirements for citizen data implementation. Globally, regulations concerning access to information have increased significantly, alongside a substantial rise in digitalization and e-governance. Both trends require specific regulations related to data collection, transmission, storage, access, and dissemination, as well as citizen engagement. Depending on the national context, existing legal frameworks may not encompass all the necessary legal provisions. It is advisable to assess the specific legal needs for implementing citizen data initiatives and explore how they can be integrated into the national legal context, where relevant. Citizen data may also require specific protocols, for instance on live transmission of data.

Introduction

This policy brief draws on a citizen data initiative spearheaded by the UNDP GPCG and the GSS. The outcomes of this initiative demonstrate how citizen data can complement official survey methods in tracking progress toward SDG indicator 16.6.2, offering richer insights into citizen experiences and reaching certain populations groups.

The 17 Sustainable Development Goals (SDGs) constitute a comprehensive framework for promoting human well-being, environmental sustainability, and economic prosperity, serving as a global strategy to address a wide array of critical challenges, including poverty, inequality, climate change, environmental degradation, peace, and justice[3]. Specifically, SDG 16 emphasizes the promotion of effective, accountable, and inclusive institutions. However, assessing progress toward this objective is hindered by the lack of adequate data, especially population survey data which nearly half of the 24 SDG 16 indicators require. Household surveys must strike a balance between cost efficiency and data granularity, which is a barrier to produce reliable statistics, particularly concerning SDG indicator 16.6.2, which measures *the proportion of the population satisfied with their most recent experience of public services*—services that are often vital for underrepresented and hard-to-reach individuals and communities [4].

SDG Indicator 16.6.2: Measuring People's Satisfaction with Public Service

The 2030 Agenda for Sustainable Development recognizes that developing effective, accountable, and transparent institutions at all levels (SDG target 16.6) is necessary to build more peaceful, just, and inclusive societies. The first indicator under this target, SDG indicator 16.6.1, aims to measure the effectiveness of public institutions by looking at government expenditure as a percentage of the originally approved budget, by sector, as reported in national Budget Laws. SDG indicator 16.6.2 complements SDG 16.6.1 by measuring the actual experience of service users and their satisfaction with three service areas (health care, education, and government services). Note that SDG 16.6.2 is an experience-based indicator, insofar as it measures satisfaction based on people's last experience with selected public services in the past 12 months. Focusing on this specific reference period provides more reliable results, since only those who have used health care, education and government services in the past year answer the survey questions. Countries are already measuring this indicator using the methodology developed by UNDP and integrated into the *SDG 16 Survey.*

Source: Policy Brief on SDG 16.6.2, UNDP Global Policy Centre for Governance (2023)

Information regarding SDG 16 as it pertains to persons with disabilities remains limited and fragmented. Of the 24 indicators of SDG 16, six explicitly call for disaggregation of data by disability status, and only one indicator -pertaining to birth registration has sufficient data to provide a global perspective. Findings from the latest Global Progress Report on SDG 16 underscore the urgent need for more comprehensive and inclusive data collection strategies to better understand the various forms of exclusion and their impact on diverse demographic groups. Such insights are essential for designing and implementing targeted interventions that address the needs of all individuals, ensuring no one is left behind.

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[3] UN. A/RES/70/1 UN General Assembly Transforming our World: the 2030 Agenda for Sustainable Development. Seventieth session of the General Assembly on 25 Sept 2015. 2015.
[4] UNDP, UNODC, OHCHR. (2022). SDG 16 Survey Initiative: Implementation Manual and Questionnaire

Citizen data can address these data deficiencies, particularly for vulnerable populations. By augmenting traditional data collection methods for official statistics these participatory approaches facilitate more inclusive and engaged monitoring of governance and the SDGs. In the context of SDG monitoring, citizen data offers several advantages, including:

- Enhancing data availability for specific population groups, such as persons with disabilities.
- Providing more timely data through near real-time data collection, predominantly via digital platforms and rapid reporting mechanisms.
- Promoting citizen engagement in co-design processes, fostering a sense of ownership, contextual relevance, and sensitivity to user needs.
- Facilitating broader stakeholder engagement and fostering trusted partnerships involving diverse actors, particularly citizens and communities that are traditionally marginalized.
- Potentially being more cost-effective compared to other data collection operations.

Piloting a citizen data approach to monitor SDG 16.6.2

In late 2023 and early 2024, a mobile application was developed and piloted by GSS in collaboration with UNDP to collect data on public satisfaction with government services. The pilot was conducted over a three-week period in two districts in Ghana—Ga East and Suhum. The pilot aimed to (i) evaluate the extent to which citizen data approaches can complement existing methodologies for measuring SDG indicator 16.6.2, and (ii) explore the added value of these approaches in enhancing governance and monitoring SDG 16 progress.

The citizen data pilot involved three main steps:
- Step 1: Reviewing the global methodology of indicator 16.6.2 and a citizen data feasibility study
- Step 2: Designing and implementing the 16.6.2 pilot project in Ghana
- Step 3: Analyzing the Results

Step 1: Reviewing the global methodology of indicator 16.6.2 and a citizen data feasibility study

SDG indicator 16.6.2 assesses the level of public satisfaction with public services based on citizens' most recent experiences. This encompasses sectors such as healthcare, education, and government services, including the issuance of identification documents and the civil registration of life events like births and deaths. Data for this indicator are derived from representative household surveys, with the methodology recommending disaggregation by sex, income, place of residence, and disability status.

A feasibility study was carried out to evaluate the potential of leveraging citizen data approaches to complement a household survey on satisfaction with public services conducted by GSS in 2019. This study involved a comprehensive literature review and interviews with representatives from a National Statistical Office (NSO) experienced in citizen data methodologies and in monitoring 16.6.2. The findings suggested that citizen data methodologies have the potential to establish a continuous feedback loop between citizens and public authorities, thereby enhancing public services. Additionally, these approaches could empower hard-to-reach individuals and communities, fostering more inclusive decision-making.

The study also underscored the necessity of robust legal frameworks and national-level regulations to facilitate the engagement of NSOs, government agencies, and other stakeholders in utilizing citizen data and alternative data sources in relation to SDG monitoring. It highlighted the importance of financial support, particularly in the initial stages, to encourage the adoption of citizen data approaches.

The feasibility study recommended developing a pilot project in Ghana using a smartphone and basic phone applications for data collection and employing suitable engagement methods to ensure access for harder-to-reach communities.

Step 2: Designing and implementing the 16.6.2 pilot project in Ghana

The pilot aimed to assess the extent to which citizen data approaches could enhance existing methodologies for measuring SDG indicator 16.6.2 and to examine the additional value these approaches could bring to governance and the broader monitoring of SDG 16.

The process commenced with a **stakeholder workshop** that brought together representatives from different NSOs to identify the opportunities and challenges associated with using citizen data for monitoring indicator 16.6.2. The workshop also focused on designing and implementing a pilot activity in Ghana. Two districts, Suhum (rural) and Ga East (urban), were selected for the pilot implementation.

A collaborative co-design process, involving contributions from multiple GSS teams, led to the development of a **mobile application** for collecting data on public satisfaction with services.
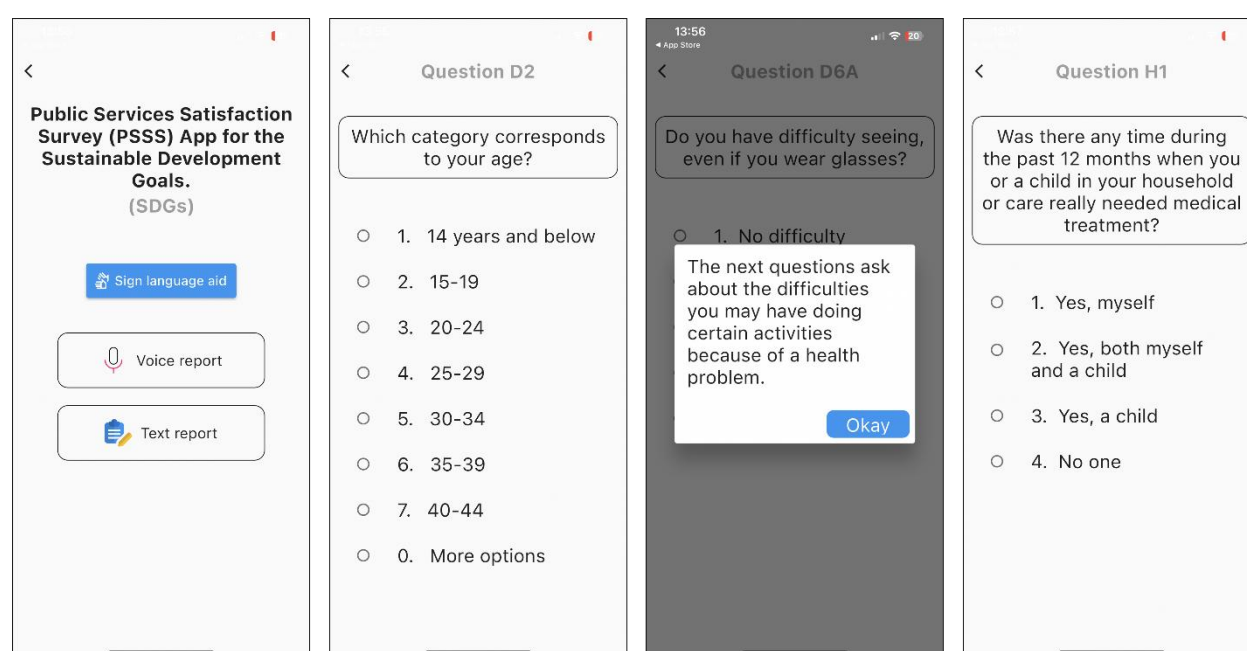
Screenshots from the Public Services Satisfaction Survey smartphone application developed as part of the citizen data initiative in Ghana

The design of the pilot and mobile application prioritized inclusivity from the outset to ensure active participation from all interested individuals, including persons with disabilities. To facilitate the involvement of diverse populations, the app was made available in English, Twi, and Ga, which are languages spoken in the piloted areas. Additionally, the app incorporated features such as a text reader, sign language interpreter, and dark and light mode options to support users with disabilities. To address potential literacy barriers, a voice recording option was integrated, allowing users to respond to the survey in Twi, Ga, or English. Furthermore, an Unstructured Supplementary Service Data (USSD) option was included, enabling participation from individuals without smartphones or internet access, as it functions similarly to text messaging.

Citizen data initiatives require a strong focus on engaging diverse actors with a strong engagement of the public. For the pilot project, **citizen engagement** was multi-layered, including the creation of National Technical Teams (NTT) and a district-level structure to connect various stakeholders. The District Technical Team (DTT)[5] was established to directly participate in the co-creation of the Public Services Satisfaction App and identify district-level communication channels. The DTT liaised with key actors to amplify the campaign, coordinate communication efforts, and assess the effectiveness of the communication strategy. The NTT, which was represented by senior public officials from the ministries as well as representatives from Civil Society Organisations (CSOs), provided leadership and a link with the national policymakers.

The District Technical Team played a key role in linking survey findings to the community by bringing lessons learned at the community level to the management team and advocating for the use of these findings in local decision-making. As a multi-disciplinary team, it was able to achieve a broader reach within the community.

Given that this is a pilot project, a **communication strategy** was developed under the slogan: "*Your direct feedback helps to improve public service delivery in your district.*" The campaign aimed to create awareness of the project, and inform the public about their roles and responsibilities, while gathering feedback from community members through community workshops to ensure inclusive co-creation of both the project and the application used in the project for data collection. The app was launched in January 2024, with **data collection** running for three weeks.

As part of the pilot, a **data dashboard** and **quality assurance** measures were implemented by GSS to ensure the completeness and accuracy of the data collected.

Following the completion of the pilot, a second **stakeholder workshop** was convened with representatives from selected NSOs to present the results and develop a roadmap for scaling this approach. The workshop revealed that NSOs require guidance in implementing citizen data approaches. The NSO representatives expressed the need for support in developing and implementing quality frameworks for citizen data initiatives, including technology development and co-design processes as provided by the *Copenhagen Framework on Citizen Data.* Additionally, NSOs showed interest in establishing peer-learning networks to share knowledge and experiences regarding citizen data initiatives.

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[5] The District Technical Team (DTT) included representatives from: Coordinating Director [Chair]; District Statistician [Lead]; Ghana Education Service (GES); Ghana Health Service (GHS); Commission on Human Rights and Administrative Justice (CHRAJ); Ghana Federation on Disability Organisations (GFD); and National Commission on Civic Education (NCCE).

Examples of communication materials developed and used in the SDG 16.6.2 project in the pilot districts of Ghana

Step 3: Analyzing the Results

The results of the pilot were initially compared with data from the 2021 Population and Housing Census (PHC) conducted by GSS to assess the extent to which the citizen data reflected the characteristics of the overall population in the two pilot districts of Ghana. Key demographic factors, including gender, age, educational attainment, and disability status, were examined. A subsequent comparison was made with data from the 16.6.2 survey conducted by the GSS in 2019 to provide insights into potential similarities and differences between the two data collection methods.

The results and the data from the pilot will be published in a forthcoming **scientific paper**. However, these comparisons should be interpreted with caution due to several factors. First, there is a five-year gap between the citizen data pilot and the 16.6.2 survey, during which the quality, accessibility, and other aspects of the services measured by this indicator may have changed. Second, potential biases inherent in citizen data projects must be considered. For example, because participation is open to all, certain demographics or individuals with extreme opinions -whether highly satisfied or dissatisfied - may be more inclined to participate, potentially leading to bias in the results due to their possible overrepresentation.

Main results

Demographic Data Comparison between the 2021 Population and Housing Census (PHC) and the Citizen Data Pilot

Demographics and Representation

- The gender distribution in the citizen data pilot closely matched the 2021 Population and Housing Census (PHC), with Ga East reporting 50.1% male and 49.9% female, and similar results in Suhum.
- Older age groups (35-54 and 55+) had higher participation rate in Ga East, while younger participants (15-34) had lower participation.
- In Suhum, participation among those 55+ was lower compared to the PHC, indicating potential underrepresentation of older individuals.

Disability Representation

- The citizen data pilot had higher participation of individuals with disabilities relative to their proportion in the PHC. For instance, in Ga East, 12.4% of participants reported difficulty seeing compared to 3% in the PHC.

Satisfaction with Public Services based on the Citizen Data Pilot Results

Healthcare

- 69.1% of participants in Ga East and 56.5% in Suhum needed healthcare in past 12 months.
- 45% in Ga East and 53% in Suhum reported no or inconsistent access to healthcare.
- Affordability was the biggest barrier (28% in Ga East, 43% in Suhum) for access.
- 77% in Ga East and 69% in Suhum reported being satisfied or very satisfied with public healthcare services.

Education

- Around 65% of Ga East and 49% of Suhum participants had school-aged children (5-18).
- Over 84% of children attended public schools, but more than 10% did not (15% in Ga East, 13% in Suhum).
- The most common barriers to attending public primary schools were lack of transportation and poor school conditions.
- While 40% were dissatisfied with school expenses and facilities, overall satisfaction with public education remained high (75.2% in Ga East, 72.2% in Suhum).

Government-Issued Identification (ID)

- Around 70% of participants needed an ID in the last 12 months.
- Over 80% in Ga East and 90.2% in Suhum cited affordability as the primary barrier to utilize government identification services.
- Dissatisfaction reasons varied from process inefficiency in Suhum to long wait times and discrimination experienced during the process in Ga East.

Comparison Between 2019 16.6.2 Representative Survey and 2024 Citizen Data Pilot

- The 2019 survey (4,369 respondents) and 2024 citizen data pilot (897 participants) had similar gender distributions, but there were differences in terms of the age groups of participants.
- Healthcare needs were comparable (64.3% in 2019 vs. 62.3% in 2024), but affordability was a greater barrier according to the citizen data pilot results (18% in 2019 vs. 34% in 2024).
- Education results showed similar school attendance trends (84.3% in 2019, 85.5% in 2024).
- Results regarding the ID service demand were different (36.5% in 2019 vs. 70.5% in 2024), with affordability being the dominant barrier according to the citizen data results (86.6% in 2024 vs. 11% in 2019).

Key Findings

The key findings from the Ghana's piloting experience include the following:

Complementing official statistics: Citizen data can complement official statistics by providing deeper insights into citizen experiences and perspectives related to SDG indicator 16.6.2, including those from vulnerable groups. For instance, the pilot reached a significantly higher proportion of participants with disabilities relative to the proportion in PHC. While the census data indicated that 3% of the Ga East population had difficulty seeing, the citizen data pilot project captured 12.4% of participants with seeing difficulties in the same district. This indicates that the citizen data initiative not only contributed to the data collection around satisfaction with public services but also promoted a more inclusive and participatory approach for this specific population group.

Raising awareness: The initiative raised awareness among the GSS, other government agencies and local authority staff in Ghana about the potential of citizen data approaches. This is particularly valuable given the data gaps and challenges faced by NSOs and National Statistical Systems globally, along with the high costs and limited resources associated with traditional data collection methods[6]. Moreover, by actively involving citizens, the project also raised public awareness of public services. The initiative also promoted a more inclusive and participatory approach to governance by involving citizens directly in data collection and potentially relevant local decisions, fostering a sense of ownership and encouraging more responsive governance.

Facilitating more frequent data collection: The initiative demonstrated that citizen data approaches can enable more frequent data collection after the initial investment in app development, stakeholder engagement, and other preparatory activities. This allows for better tracking of changes in citizen satisfaction levels over time, in response to policy shifts or progress. This time-sensitive data collection approach is essential for informing responsive governance actions that address citizens' evolving needs.

Ensuring inclusion in the design and data collection: While citizen data initiatives hold significant promise for monitoring SDG 16.6.2, they also present limitations. One key challenge is the potential for bias, especially concerning representativeness in monitoring SDG 16.6.2. Citizen data approaches, if poorly designed, may fail to include participants from diverse backgrounds, ethnicities, income levels, education levels, and marginalized communities. Ensuring broad participation from all segments of the population is crucial, both to mitigate biases and enhance data quality, as well as for ethical reasons. To address these risks, careful project design and inclusive community-building strategies are necessary, considering the specific characteristics of the localities where citizen data initiatives are implemented. In the case of the Ghana citizen data initiative, inclusivity was prioritized through the design of the pilot and the app used for data collection, as well as through community workshops and collaboration with local, national, and global teams, including the United Nations Development Programme – Global Policy Centre for Governance.

Addressing challenges with population surveys: Both representative surveys and citizen data initiatives offer distinct advantages and challenges. Today, population surveys face issues such as declining

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[6] Fritz S, See L, Carlson T, Haklay M (Muki), Oliver JL, Fraisl D, et al. Citizen science and the United Nations Sustainable Development Goals. Nat Sustain. 2019 Oct;2(10):922–30; UNODC, OHCHR, UNDP. Global Progress Report on Sustainable Development Goal 16 indicators: A wake-up call for action on peace, justice, and inclusion. https://www.undp.org/policy-centre/governance/publications/global-progress-report-sdg-16 [Internet]. 2023 [cited 2024 Jul 3]. Available from: https://www.undp.org/policy-centre/governance/publications/global-progress-report-sdg-16

response rates and non-response bias. Citizen data approaches, on the other hand, can increase response rates and provide a broader, more diverse range of participants, particularly from marginalized groups. By strategically combining the data provided from different types of operations and methods, we can leverage the strengths of diverse methodologies and mitigate their respective weaknesses, resulting in more comprehensive, reliable data and improved governance.

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