



Technical Sampling Report

ICAN-ICAR: 2025 Cycle (Published in January 2026)

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1. Executive Summary

The ICAN (International Common Assessment of Numeracy) and ICAR (International Common Assessment of Reading) represent a significant large-scale initiative by the PAL Network, a South-South partnership of 17 member organisations. This assessment is designed to provide rigorous, nationally representative data on the foundational skills of children in contexts often characterized by limited resources. By measuring essential skills in reading and mathematics, the assessment addresses the critical commitment of PAL Network, i.e., "measure early, measure all, and measure well".

The 2025 administration cycle of ICAN-ICAR was conducted across 11 countries at a nationally representative level: Bangladesh, Kenya, Mali, Mexico, Mozambique, Nepal, Nicaragua, Pakistan, Senegal, Tanzania, and Uganda. It also included a school-based, proof of concept, pilot study in Botswana. The assessment targeted a universal population of children aged 5 to 16 years, intentionally including both in-school and out-of-school children. To ensure national representativeness, the sampling was pegged to the most recent National Population and Housing Census data in each participating country. The planned scope included approximately 2,969 Enumeration Areas (EAs) and 20 households from each EA.

The assessment is strategically designed to fulfil several critical objectives, beginning with its alignment to SDG 4.1.1(a) by providing high-quality data to track global proficiency in reading and mathematics at grades 2/3 level. Beyond immediate data collection, it serves as a vital mechanism for trend tracking, establishing a necessary baseline to monitor educational progress and equity as the world moves toward the 2030 Agenda. These findings contribute to evidence-based policy by generating actionable insights that inform education sector planning, resource distribution, and decision-making across local, national, and global scales. Furthermore, the assessment incorporates a deep socioeconomic analysis, relating specific learning outcomes to household characteristics including infrastructure, parental education levels, and asset indices to better understand the broader drivers that influence a student's ability to learn.

To ensure the findings are both valid and generalisable, the survey utilized a multi-stage stratified cluster sampling design that began with the selection of Primary Sampling Units (PSUs) such as census wards, villages, or enumeration areas (EAs) using Probability Proportional to Size (PPS) in the first stage. This was followed by systematic random selection of a fixed number of households, typically 20 per PSU, based on a fresh household listing or spatial mapping. Finally, rigorous weighting procedures were employed, where sample weights were calculated and applied to adjust for unequal selection probabilities and non-response, ensuring that the final estimates accurately reflect the national population.

The implementation successfully reached 2,917 Enumeration Areas and 56,913 households, resulting in the assessment of 89,185 children. This robust sample provides the statistical precision (typically a 95% confidence interval with a margin of error of $\pm 3\%$ to $\pm 5\%$) required for reporting to the UNESCO Institute for Statistics (UIS) and other international bodies.

2. Requirements for Representative Sampling

To ensure that findings from the ICAN-ICAR assessment can be generalized to the broader national population and are eligible for global reporting, the sampling strategy must adhere to rigorous international standards. Representative sampling is critical for understanding population-level trends and enabling policymakers to design effective educational interventions.

SDG 4.1.1(a) Reporting Criteria

The ICAN-ICAR assessment is designed to meet the specific requirements for reporting on SDG 4.1.1(a), which tracks the proportion of children achieving minimum proficiency in reading and mathematics in grades 2/3. The following table summarizes the core criteria for representative sampling required for this global indicator:

Requirement Ref	Description of SDG 4.1.1(a) Requirements
Target Population	The national desired target population must be clearly described.
Documentation of Exclusions	Any systematically excluded subgroups (e.g., children in conflict areas or with special needs) must be documented and justified. Exclusions should not exceed 10% of the sampled population.
Methodological Design	The sampling approach, including stratification and clustering, must be fully documented to show how representation by geography, gender, and socio-economic status was achieved.
Statistical Precision	The sample must be designed to achieve a 95% confidence interval with a margin of error of ± 5 percentage points for proficiency estimates.
Sampling Frame	The development and suitability of the sampling frame (typically a national census) must be justified.
Sampling Weights	Sampling weights must be calculated and applied to all national estimates to account for unequal selection probabilities.
Response Rate	An overall response rate of at least 70% (combining cluster and individual levels) is required.
Substitution Limits	Replacement of non-responding primary units must be documented and limited to no more than 15% of the weighted sample.

The assessment aims for high statistical reliability by accounting for intra-cluster correlation (ICC) and the design effect (DEFF). Most participating countries utilize a design effect assumption of approximately 2.33, consistent with previous large-scale household surveys. This allows the study to capture the heterogeneity across different regions while maintaining homogeneity within clusters.

Transparency is a core requirement for international eligibility. Every participating country is required to document its stratification plan (typically by administrative region and urban/rural domains) and the specific methods used for household selection (e.g., fresh household listing or spatial mapping). This documentation ensures that the results are comparable across different national contexts and can be reviewed by the UNESCO Institute for Statistics (UIS) for global policy review.

3. Target Population and Sampling Frame

To ensure that the ICAN-ICAR assessment generates nationally representative data, the study defines a universal target population and utilizes the most recent and robust sampling frames available in each participating country.

The primary target population for this survey consists of all **children aged 5 to 16 years**. The assessment is designed to be inclusive, capturing the learning levels of:

- **In-school and out-of-school children:** By conducting the assessment in households rather than schools, the survey ensures the inclusion of children who have never enrolled or have dropped out.
- **Linguistic and gender diversity:** The sample is designed to represent children across various language groups and genders.

In addition to the target age group, households where children aged 5–16 were not available for assessment also included in the survey sample. This allowed for the collection of socioeconomic data (such as infrastructure, parental education, and asset indices) to analyse the broader drivers of learning and compare the economic status of households with and without school-going children.

The survey follows the standard practice of national statistics offices regarding household definitions and exclusions.

- **Household Definition:** A household is generally defined as a group of individuals living under the same roof and sharing meals.
- **Standard Exclusions:** The sample universe excludes institutionalized populations, such as children and adults residing in dormitories, prisons, army barracks and cantonments, hospitals, or nursing homes.
- **Safety and Accessibility Exclusions:** In some contexts, specific geographic areas were excluded due to prolonged insecurity or natural disasters. For instance, Mali excluded several regions (e.g., Gao, Kidal, Ménaka) due to the security situation, and Uganda excluded refugee camps and forest reserves. All such exclusions are documented to ensure transparency.

The sampling frame for each country is drawn from the most recent **National Population and Housing Census**, providing the most comprehensive and up-to-date list of households and geographic identifiers.

Country	Sampling Frame Source	Sample Frame Year
Bangladesh	Population and Housing Census	2022
Kenya	Kenya Population and Housing Census	2019
Mali	5th General Population and Housing Census (RGPH5)	2022
Mexico	Censo de Población y Vivienda	2020

Mozambique	IV Recenseamento Geral da População e Habitação (RGPH)	2017
Nepal	National Population and Housing Census (NPHC)	2021
Nicaragua	Population and Housing Census	2005
Pakistan	7th Population and Housing Census (P&HC)	2023
Senegal	Recensement Général de la Population et de l'Habitat (ANSD)	2023
Tanzania	Tanzania Population and Housing Census	2022
Uganda	National Population and Housing Census	2024

The **Primary Sampling Unit (PSU)** is typically the smallest identifiable geographic area defined in the census frame with known population counts. While the terminology varies by country, these units represent the first stage of selection:

- **Enumeration Areas (EAs) or Blocks:** Used in Kenya, Pakistan, Tanzania, and Mozambique.
- **Wards or Villages:** Used in Nepal, Bangladesh, and Uganda.
- **Enumeration Sections (SEs) or Districts (DRs):** Used in Mali and Senegal.
- **Municipios:** Used as the first stage in Mexico's multi-stage design as well as in Nicaragua.

These frames include metadata such as total household counts, population size, and urban/rural classifications, which are essential for calculating selection probabilities and applying weights. Some of these frames also include disaggregated data by age, for example, in Mali the sampling frame only included households with children 5-16 years of age.

4. Sampling Design and Approach

To achieve a representative sample of households and children at the national level, all 11 participating countries employed a common methodological framework: multi-stage stratified cluster sampling. This approach ensures that every eligible household has an equal and known chance of selection, minimizing bias and meeting the rigorous requirements for international reporting under SDG 4.1.1(a).

The assessment design typically consists of two primary stages of selection, though some countries incorporated additional intermediate stages to address specific geographic or logistical needs.

- **Stage 1: Primary Sampling Units (PSUs):** The first stage involves selecting geographic clusters, typically defined as Enumeration Areas (EAs), blocks, or villages from the most recent national census frame. These units are selected using Probability Proportional to Size (PPS), where the measure of size (MoS) is generally the total number of households within the cluster. This ensures that more populous areas have a higher probability of being represented in the sample.
- **Stage 2: Secondary Sampling Units (SSUs):** The second stage is the selection of households within the sampled PSUs. In most countries, a fixed number of 20 households is randomly or systematically selected per cluster after a fresh household listing or spatial mapping exercise.
- **Respondent Level:** All children aged 5 to 16 years residing in the sampled households are included in the learning assessment.

2. Country-Specific Modifications

While the two-stage design is the standard, several countries utilized a three-stage design to refine their sampling:

- **Nepal:** Between selecting the ward (PSU) and the household, enumerators mapped all settlements within a PSU and select a settlement segment of approximately 150–200 households using Simple Random Sampling (SRS).
- **Mexico:** The design uses three stages, selecting municipalities first, followed by localities, and then households. In urban areas, an additional step involves selecting AGEBS (Basic Geostatistical Areas) before household selection to improve representativeness in high-density areas.
- **Nicaragua:** The first stage selects one municipality per region, followed by 30 or 60 communities/barrios (PPS), and finally 20 households per community.

3. Stratification Strategies

Stratification is used to enhance the precision of national estimates and ensure that key subgroups, such as urban and rural populations, are adequately captured.

- **Explicit Stratification:** All countries stratify their sampling frames by major administrative divisions (provinces, states, or counties) and by urban/rural domains. For

example, Nepal uses 14 explicit strata representing seven provinces divided into urban and rural domains.

- **Implicit Stratification:** Some countries, such as Kenya, apply implicit stratification by sorting the sampling frame by smaller administrative units (down to the sub-location level) before selection to ensure the sample is geographically well-spread.
- **Zonal Grouping:** Countries like Tanzania and Mexico further group their administrative regions into broader zones (e.g., Western, Northern, Central) to facilitate analysis at the regional level and capture geographic heterogeneity. Sub-national analysis of the results is only possible in Tanzania and Mozambique where the sample was powered for zonal representation.

The design parameters (confidence level of 95% and margin of error typically between $\pm 3\%$ and $\pm 5\%$) are standard across the network. By using PPS selection and applying appropriate sampling weights, the assessment accounts for the unequal selection probabilities inherent in stratified designs, ensuring that the results can be generalized to the national population.

5. Sample Size Determination

The sample size for the ICAN-ICAR assessment is designed to provide a representative cross-section of all households in each participating country, ensuring every eligible unit has a known and equal chance of selection. The primary objective is to generate foundational learning estimates with the statistical precision required for national generalizability and global reporting under SDG 4.1.1(a).

To determine the required sample size (n), the PAL Network utilizes a standard formula for clustered sampling that accounts for intra-cluster correlation and design effects:

$$n = \frac{Z_{\alpha}^2 * p(1 - p) * DEFF}{se^2}$$

The parameters utilized in this global framework include:

- **Confidence Level (Z_{α}):** Set at 1.96, corresponding to a 95% confidence interval. Senegal opted for a higher 99% confidence level ($Z = 2.576$) in its initial theoretical calculation.
- **Proportion (p):** Set at 0.5 to maximize the variance, thereby ensuring a sufficiently large sample size to capture foundational learning characteristics even when baseline data is unavailable.
- **Desired Precision (se):** Typically set between $\pm 3\%$ and $\pm 5\%$ (standard error of 0.03 to 0.05).
- **Design Effect (DEFF):** Adjusted to account for the clustering of households within Enumeration Areas (EAs). It is calculated as $DEFF = 1 + (b - 1) * p$, where b is the cluster size and p is the intra-cluster correlation.

The assessment assumes a high degree of variation (heterogeneity) between clusters (EAs) and moderate homogeneity among households within a cluster.

- **Cluster Size (b):** Standardized at 20 households per EA for most countries.
- **Intra-cluster Correlation (p):** Typically assumed to be 0.07, a value consistent with large-scale education surveys in Africa and Asia.
- **Resulting DEFF:** A standard Design Effect of 2.33 is applied in both sample size calculation and variance estimation.

The theoretical sample size is inflated to account for two critical field realities:

- **Response Rate:** The global standard assumes a 70% minimum response rate (*combining cluster and individual levels*). However, some countries, such as Nepal and Uganda, planned for an actual response rate of 90% to ensure high-quality data and minimize non-response bias.
- **Households without Children:** Since the primary unit of selection is the household, the sample must be inflated to ensure a sufficient number of households with children aged 5–16 are captured. Countries applied local estimates for the proportion of "child-households"—for example, 58.35% in Nepal and 80% in the global model.

The following table summarizes the planned distribution of Enumeration Areas (PSUs) and households across the 11 countries for the 2025 cycle:

Country	Planned Enumeration Areas (n)	Expected Households (n)	Expected Children (n)
Bangladesh	275	5,500	8,250
Kenya	222	4,440	6,660
Mali	200	4,000	6,000
Mexico	364	7,280	10,920
Mozambique	259	5,180	7,770
Nepal	191	3,820	5,730
Nicaragua	361	7,220	10,830
Pakistan	283	5,660	8,490
Senegal	222	4,440	6,660
Tanzania	372	7,440	11,160
Uganda	220	4,400	6,600
Total Expected	2,969	59,380	89,070

While the sample sizes vary depending on national population distribution and desired regional disaggregation, every country meets the minimum threshold required for national representativeness.

6. Household Sampling Procedures

The household selection process is a critical stage in the ICAN-ICAR assessment, designed to ensure that every eligible household within a selected cluster has a known and equal chance of being surveyed. To achieve this across diverse geographic contexts, the assessment utilizes two standardized, primary sampling methods.

Across all participating countries, the survey follows a standardized definition of a household: a group of individuals living under the same roof and sharing meals for a significant portion of the year (typically at least 6 of the preceding 12 months).

- **Unit of Analysis:** In multi-household structures, such as blocks of flats or family compounds, each separate cooking and eating unit is treated as an individual household.
- **Standard Exclusions:** The assessment intentionally excludes institutionalized settings, such as students in dormitories, persons in hospitals, army barracks, or prisons.

Two distinct approaches are employed to select the typical target of 20 households per cluster.

Method A: Household Listing (Systematic Selection)

This approach is used in the majority of participating countries, including Kenya, Bangladesh, Pakistan, Tanzania, and Uganda.

- **Listing Phase:** Upon arriving at a selected Enumeration Area (EA), field teams conduct a "quick full listing" to update the census frame and create a fresh list of all households.
- **Selection Phase:** From this comprehensive list, 20 households are selected using systematic random sampling.
- **Nepal's Modification:** In Nepal, an intermediate stage involves selecting a settlement segment (150–200 households) within the EA. Listing and systematic sampling are then conducted only within that specific segment.

Method B: 5th Household Rule (Spatial Coverage)

Used primarily in **Mali, Senegal, and Nicaragua**, this method ensures even spatial distribution when official lists are unavailable or the population is highly dispersed.

- **Mapping Phase:** Enumerators divide the village or cluster into four equal sections (hamlets).
- **Walking Pattern:** Starting from a central point, enumerators follow a fixed walking pattern (e.g., always turning left) and select every 5th household encountered.
- **Spatial Distribution:** Five households are selected in each of the four hamlets to ensure the 20-household sample is spread across the entire EA.
- **Note on Mexico:** Due to higher non-response rates, Mexico utilized a modified 3rd household rule rather than the 5th.

The primary target group is children aged 5 to 16 years.

- **Standard Protocol:** All eligible children (aged 5–16) residing in a sampled household are assessed. This ensures no selection bias at the child level within the home.
- **Households without Children:** To collect socioeconomic benchmarks, households with children who were unavailable for assessments are still included in the sample to collect infrastructure and asset data.

To minimize bias and ensure community cooperation, the household selection process is conducted transparently.

- **Village Elders:** In many contexts, selection is done in the presence of a village elder or local leader to provide credibility and facilitate parental consent.
- **Reserve Lists:** While some countries (like Uganda) plan for oversampling to account for refusals, others (like Nepal and Senegal) maintain a reserve list of replacement households within the same strata to be used only in documented cases of refusal or natural disasters.

7. Sampling Probabilities and Weighting

Because the ICAN-ICAR assessment employs a stratified multi-stage cluster sampling design, it is not self-weighting. Households and children across different strata (regions or urban/rural domains) often have unequal selection probabilities. Consequently, sampling weights must be calculated and applied to ensure that final national estimates are unbiased and accurately reflect the target population.

Calculation of Selection Probabilities

Weights are derived from the probability of selection at each stage of the sampling process.

- **Stage 1: EA Selection Probability ($P0_{hi}$)** In the first stage, Enumeration Areas (EAs) or Primary Sampling Units (PSUs) are selected within each stratum (h) using Probability Proportional to Size (PPS). The probability of selecting the $i - th$ EA is calculated as:

$$P0_{hi} = \frac{a_h * M_{hi}}{M_h}$$

Where:

- a_h = Number of EAs selected in stratum h .
- M_{hi} = Measure of size (total households) for the $i - th$ EA according to the census frame.
- M_h = Total measure of size (total households) in stratum h .
- **Stage 2: Household Selection Probability ($P1_{hi}$)** The probability of selecting a household within a sampled EA depends on the fieldwork method used:

- **Method A (Household Listing):** In countries using a fresh listing, the probability is based on the fixed number of households selected (*typically 20*) relative to the total number of eligible households identified during listing (L_{hi}).

$$P1_{hi} = \frac{g_{hi}}{L_{hi}}$$

- **Method B (Spatial/5th Household Rule):** In countries like Mali or Senegal, the probability is reconstructed from visited-household tallies to create an estimated denominator (\hat{C}_e).

$$\hat{C}_e = \left(\frac{E_e}{V_v} \right) * size_e$$

(where E_e is visited households with children, V_v is total visited, and $size_e$ is the census household count).

- **Stage 3: Child Inclusion Probability** In all participating countries, **all eligible children** (aged 5–16) in a sampled household are assessed, making the conditional probability of child selection 1.

Weight Calculation Steps

- **Base Weights (Design Weights):** The base weight (W_{hi}) is the inverse of the overall selection probability (P_{hi}), which is the product of the probabilities from all stages.

$$P_{hi} = P0_{hi} \times P1_{hi}$$

$$W_{base} = \frac{1}{P_{hi}}$$

This weight represents the number of households in the population represented by the sampled household.

- **Non-Response Adjustment:** Base weights are adjusted to account for children who were sampled but not assessed due to refusal, absence, or other factors. This adjustment is typically calculated at the stratum level:

$$Adj_{nr} = \frac{\sum W_{base} (all\ surveyed\ children)}{\sum W_{base} (all\ assessed\ children)}$$

The non-response adjusted weight

$$W_{nr,i} = W_{base} \times Adj_{nr}$$

- **Post-Stratification and Calibration:** To improve accuracy, weights are often calibrated against known national population totals from the most recent census (e.g., NPHC 2021 in Nepal or 2023 Census in Senegal). This step ensures that the weighted sums of the sample data align with the target population's age, gender, and regional distribution.

Statistical Application

The final analysis weight allows for the generation of nationally representative snapshots of foundational learning. Weighted data is analysed using complex survey modules (*svydesign* from the *survey* package of R) to compute accurate standard errors, design effects (DEFT), and confidence intervals.

8. Field Implementation and Quality Control

To ensure the integrity of the nationally representative sample and minimize non-sampling errors, the ICAN-ICAR assessment employs rigorous field protocols and quality control mechanisms. These measures ensure that data collection adheres strictly to the multi-stage sampling design while maintaining high participation rates.

The assessment follows international standards, specifically SDG 4.1.1 Guideline 3.11, which limits the replacement of non-responding or inaccessible units to no more than 15% of the weighted national sample.

- **Justification for Replacement:** Replacements are only authorized in documented cases of natural disasters (e.g., flooding or landslides), prolonged insecurity, political unrest, or inaccessible terrain.
- **Reserve Lists:** To maintain representativeness, countries such as Nepal and Senegal pre-identify a 10% reserve sample of Enumeration Areas (EAs) from within the same strata.
- **Documentation:** All replacements must be justified, recorded on standardized reporting forms, and approved by supervisors or the National Statistics Office.

While the minimum acceptable global response rate is set at 70% (combined cluster and individual levels), many participating countries, including Nepal and Uganda, set operational targets of at least 90% to ensure high data quality and minimize non-response bias.

- **Monitoring:** Field teams utilize digital dashboards for real-time tracking of response rates, allowing supervisors to take immediate corrective action if participation falls below targets.
- **Revisits:** Standard protocol involves planning revisits to households where children or guardians were initially absent to fulfil response requirements.

Building trust within sampled communities is vital for obtaining informed consent and ensuring the safety of enumerators.

- **Local Coordination:** Field teams coordinate with local government representatives (e.g., ward offices in Nepal and Politically appointed village Leaders in Kenya) to inform communities about the survey's purpose.
- **Official Support:** In many contexts, enumerators carry official support letters from national or local authorities to establish credibility.
- **Village Elders:** In several countries, the random selection of households is conducted in the presence of a politically appointed village elder to ensure transparency and facilitate parental cooperation.
- **Language Adaptation:** To reduce mistrust and ensure clarity, enumerators are encouraged to use the dominant local languages of the zone when communicating with families.

Before the final selection of children, a critical "pre-data" phase is conducted to update the sampling frame.

- **Field Verification:** Enumerators conduct a quick **full listing exercise** of all households in a selected EA to account for migration or new settlements that may not be captured in the original census frame.
- **Mapping:** In areas using the **5th Household Rule** (Method B), enumerators create a physical map of the cluster, dividing it into sections (hamlets) to ensure even spatial distribution of the sample.

Data Verification is managed through the following process:

- **Training:** Enumerators undergo intensive training in effective communication, consent/assent protocols, and the technical use of the digital assessment tools.
- **Oversight:** Regular field supervision and daily data quality checks are used to monitor compliance with sampling instructions and address any deviations promptly.
- **Institutional Exclusions:** Quality control ensures that institutionalized settings (e.g., dormitories, barracks, or hospitals) are strictly excluded from the household-based sample to maintain the survey's scope.

9. Achieved Sample and Final Estimates

The 2025 administration cycle of the ICAN-ICAR assessment successfully reached its target of providing a robust, nationally representative dataset across 11 countries. This chapter details the final achieved sample sizes and the statistical metrics used to ensure the reliability of the resulting proficiency estimates.

The implementation successfully covered a diverse range of geographic and demographic contexts, generally meeting or exceeding the planned thresholds for representativeness. The final dataset comprises **2,917 Enumeration Areas** and **56,913 households**, resulting in the assessment of **89,185 children**.

The table below provides a country-by-country breakdown of the achieved sample:

Country	Enumeration Areas Visited (n)	Households Surveyed (n)	Children Surveyed (n)	Children Assessed (n)
Bangladesh	275	5,499	6,664	6,479
Kenya	222	4,459	7,076	6,669
Mali	200	3,882	10,091	9,588
Mexico	334	5,480	8,351	8,150
Mozambique	255	5,082	8,255	8,022
Nepal	191	3,820	4,801	4,694
Nicaragua	361	6,731	7,310	6,230
Pakistan	283	6,318	10,510	9,202
Senegal	202	4,059	9,117	8,098
Tanzania	372	7,220	14,796	13,167
Uganda	222	4,363	9,531	8,886
Achieved Coverage	2,917	56,913	96,502	89,185

Note on Participation: The gap between "children surveyed" and "children assessed" reflects cases where eligible children were present in the household but could not complete the assessment due to refusal, absence during the test, or severe disability.

To validate the findings, several key statistical measures are reported for each foundational learning indicator (*math and reading*). These measures account for the complex survey design (stratification and clustering) and provide a window into the data's reliability.

- **Weighted Prevalence Estimate:** The primary estimate of foundational proficiency, adjusted by sampling weights to reflect the national population. These are provided in the microdata under the variables *MathIRTScore* and *ReadingIRTScore*.
- **Standard Error :** A measure of the variability of the estimate. It is the square root of the variance and is calculated using the Taylor linearization method to account for the multi-stage design. These are provided in the microdata under the variables *StandardErrorMath* and *StandardErrorReading*.

The achieved response rate for the 2025 cycle was 92% which exceeds the global requirement of 70%, with several countries like Nepal and Uganda targeting over 90% through rigorous

community sensitization and revisits. By applying non-response adjustments and calibrating weights against the most recent national census (e.g., NPHC 2021 for Nepal, 2023 Census for Senegal), the final estimates provide a statistically sound baseline for tracking progress toward SDG 4.1.1(a).