



# Economic and Social Council

Distr.: General

21 December 2017

Original: English

---

## Statistical Commission

### Forty-ninth session

6 – 9 March 2018

Item 4(c) of the provisional agenda\*

### Items for information: poverty statistics

## Report of the World Bank on poverty statistics

### Note by the Secretary-General

In accordance with Economic and Social Council decision 2017/228 and past practices, the Secretary-General has the honour to transmit the report of the World Bank on poverty statistics. Because reducing poverty is a goal on both national and international development agendas, poverty statistics are central to monitoring development progress. This note has four purposes: (1) Identify concepts, definitions, methods, and data requirements commonly used in government measurement of national poverty, with a focus on monetary poverty. (2) Summarize the history and foundation of international poverty measures and explain how international poverty statistics rely on national data, methods, and definitions. (3) Assess the availability of poverty statistics and highlight data gaps, and review challenges of comparability and disaggregation. (4) Outline ways to improve national and international poverty statistics to better report progress toward the Sustainable Development Goals.

---

\* E/CN.3/2018/1.

## I. Introduction

1. Reducing poverty is a headline goal in the international development agenda. The first target of the Millennium Development Goals (MDG) was to halve the percentage of people living in extreme poverty between 1990 and 2015. The first goal of the Sustainable Development Goals (SDGs) the United Nations adopted in 2015 is to end poverty in all its forms by 2030.<sup>1</sup> National governments, development agencies, and nongovernmental organizations are also committed to reducing, and ultimately eradicating, poverty in all its multiple forms and dimensions. Thus, monitoring the number of people who live in poverty has become increasingly important for national governments and statistical offices, as well as for international organizations.

2. SDG Goal 1 sets out both national and international measures of poverty. Target 1.1, “eradicate extreme poverty for all people everywhere,” is tracked by indicator 1.1.1, which measures the “proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural).” Recognizing that countries have different notions of poverty, Target 1.2 is to “reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.” This target is measured by indicators 1.2.1, the “proportion of population living below the national poverty line, by sex and age” and 1.2.2, the “proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.” Unlike the MDGs, disaggregation by groups and monitoring poverty in “all its dimensions” raise challenges for current approaches to poverty statistics.

3. Though national household surveys and poverty measurements are the foundation for all poverty statistics, national and international, there is substantial heterogeneity in how poverty is measured and in the resulting statistics, not only between countries but also within countries over time. This note summarizes customary methods for measuring poverty. Furthermore, it illustrates how national data and methods inform international poverty measures. A goal is to review the approaches to measuring poverty commonly used by statistical offices and international organizations and assess how well the poverty statistics available respond to the poverty-related goals and reporting requirements of the SDGs. The note does not provide an exhaustive review of various conceptualizations and methods used. The main focus here is measures of monetary poverty. The increasing use of nonmonetary measures merits a separate report.

4. The availability of both national and international poverty statistics improved considerably during the MDG period, but the gaps are still substantial. In particular, the SDG focus on leaving no one behind and disaggregating by sub-groups, such as sex, age, employment status, and geography, poses several new data and measurement challenges. Although on the whole more data are available, they are not always comparable within countries over time or across countries due to differing measurement methods. Clearly, continued investment in and strengthening capacity for household survey work will be crucial.

5. In what follows, section II reviews common poverty measurement concepts, definitions, and methods. Section III outlines the data required for measuring national poverty. Section IV summarizes the history of international poverty measures and explains how international poverty statistics rely on national definitions, methods, and data. Section V assesses the availability of poverty statistics, the data gaps, and the comparability and disaggregation difficulties that arise. Finally, section VI outlines ways to improve national and international poverty statistics, especially in terms of reporting on SDG progress.

## II. Concepts and Methods: An Overview<sup>2</sup>

---

<sup>1</sup> For details see <https://sustainabledevelopment.un.org/sdg1> and UN Economic and Social Council’s (ECOSOC) recent report (E/2017/64) on poverty eradication in the context of the 2030 agenda.

<sup>2</sup> Poverty measurement has not recently been discussed at UN Statistical Commission (UNSC). The UNSC set up an Expert Group on Poverty Statistics (Rio Group) in its 1996 session, which in September 2006 published a [Compendium of Best practices in Poverty Measurement](#) bringing together varied perspectives on the measurement, interpretation and use of poverty statistics.

6. To measure poverty, it is fundamental to define one or multiple dimensions of welfare against which to assess whether people are deprived. This section first discusses concepts for measuring both monetary (consumption and income) and nonmonetary welfare. It then discusses how countries usually estimate poverty in terms of monetary welfare.

## A. Measures of Welfare

### 1. Monetary Measures of Welfare

7. Although welfare and poverty are inherently multidimensional concepts, in national and international poverty statistics, consumption and income are commonly used as measures of welfare. Consumption and income refer to the resources people absorb or have command of. The consumption measure is based on the estimated value of food and nonfood items households consume; nonfood items often include clothing, services, transportation, and the estimated use-value of housing and durable goods. To the extent that market prices reflect - at least in part - the relative value people place on these items, the valuation of consumption is a useful indicator of general welfare.<sup>3</sup> Because these measures cover many different items (or for income, the ability to purchase these different items), the measures can be thought of as reflecting multidimensional aspects of welfare, where the price for each item provides a relative “weight” for each dimension.

8. Not all aspects of welfare can be acquired in markets, however: markets are imperfect and for some dimensions of welfare, no market exists. The conditions laid out in footnote 3 do not hold in practice. Thus, a monetary measure alone cannot fully reflect key dimensions of welfare, such as life expectancy, public goods and services, security, and freedom. Such aspects can in some instances be measured directly, in multidimensional approaches to assessing poverty, as discussed below.

9. Income and consumption are often treated as if they are interchangeable, but it is important to distinguish between them, both conceptually and in terms of the reliability of the estimates they produce. Income provides a measure of *opportunities* to consume and save for the future. Consumption reflects the *realization* of those opportunities and is a more direct measure of material welfare. Thus, income and consumption can be considered complementary measures of welfare. However, consumption is typically viewed as conceptually the preferred measure of monetary welfare used in poverty measurement.<sup>4</sup> As an example of the importance of the conceptual distinctions, it is implausible for someone to live with zero consumption, but there are many people with zero income over a given period that may in fact not be poor. Given the prevalence of zero incomes in survey data, the distinction between consumption and income is particularly important in terms of “ending” poverty—a goal that may be unattainable if the measure is income.

10. Despite the preference for consumption conceptually, the reliability of *measured* consumption and income varies significantly. In highly informal economies, for example where a significant proportion of the population are subsistence farmers, it is typically assumed that people can answer questions about what they consume much more reliably than about their income. In contrast, in countries where most people are engaged in formal labor markets receiving paychecks regularly, reported monthly income may be more reliable than recollections of everything that has recently been consumed.

11. In aggregating income and consumption data for the purpose of poverty analysis, households are often used as the unit of analysis.<sup>5</sup> But the fact that households of different sizes and compositions have different needs is not trivial. It is important that assessments of welfare take into account how needs vary between age groups and potentially also the sex of

<sup>3</sup> Economic theory suggests that if markets were complete and perfectly efficient – no missing markets, public goods, externalities, etc. – prices reflect social assessments of value, and the value of total consumption would be a sufficient statistic for a measure of welfare.

<sup>4</sup> Meyer, B.D., Sullivan, J.X., 2003. “Measuring the Well-Being of the Poor Using Income and Consumption.” *The Journal of Human Resources* 38(special issue):1180–1220. <https://doi.org/10.2307/3558985>

<sup>5</sup> Deaton, Angus, and Salman Zaidi. 2002. “Guidelines for Constructing Consumption Aggregates for Welfare Analysis.” LSMS Working Paper 135. World Bank. <https://openknowledge.worldbank.org/handle/10986/14101>.

household members.<sup>6</sup> Furthermore, needs may depend on the size of the household, reflecting the fact that larger households can economize on the purchase of some products, especially consumer durables.<sup>7</sup>

## 2. *Measures of Welfare in Multiple Dimensions*

12. Although monetary measures of welfare are the ones most commonly used by governments to measure poverty today, the multidimensionality of welfare is not only widely recognized, it is also embodied in the SDG commitment to reducing poverty in all its forms and dimensions. SDG Target 1.2 (and indicator 1.2.2) explicitly refers to halving the proportion of men, women, and children of all ages living in poverty “in all its dimensions according to national definitions.” Furthermore, even beyond the specific poverty goals and targets, many other SDG goals can be considered dimensions of welfare relevant to the measurement of poverty.<sup>8</sup>

13. Beyond income or consumption, an individual’s welfare can be measured in terms of health, nutrition status, literacy, freedom, security, and subjective wellbeing (e.g. happiness or life satisfaction). It is beyond the scope of this note to review the wide range of methodologies proposed to assess the many dimensions of poverty comprehensively.<sup>9</sup> However, given the attention the SDGs give to poverty, directly and indirectly, it is useful to summarize several common approaches to conceptualizing and measuring multidimensional poverty.

14. Of the two broad methods used to measure multidimensional poverty, one group of measures assesses dimensions in isolation and often draws from a variety of surveys and administrative data. These are often referred to as “marginal methods” where each deprivation can be displayed side-by-side, and therefore also referred to as a “dashboard approach”. Though the approach can measure how many people live below a certain threshold in a certain dimension, it cannot easily assess how many people are deprived in many ways. Each indicator or dimension is assessed independently but because this approach fails to reveal joint distributions, it cannot identify who is “multidimensionally poor”. Looking at each dimension separately may also find opposing trends, leading to ambiguous assessments of changes in overall welfare or poverty. To address the problem of how to interpret mixed signals from different dimensions, the multiple indices can be combined into a single measure, but the approach still does not identify joint deprivations, which many consider central to assessing multidimensional poverty.

15. A second general approach goes beyond considering multiple measures side-by-side by focusing on overlapping deprivations, often using Venn diagrams to illustrate overlaps. Another version of this approach relies on statistical techniques that collapse information on co-variation of all the dimensions into a scalar ranking. This includes techniques such as factor analysis, principal component analysis, multiple correspondence analysis, and cluster analysis to assess correlations in deprivations and identify groups of individuals facing similar levels of joint deprivations. Other approaches include: stochastic dominance analysis of joint deprivations; analysis of fuzzy sets, which also looks at joint deprivations, but incorporates the ambiguity in identifying who is deprived. All of these approaches require that indicators for each dimension be captured for each household in a single dataset, usually through a multitopic survey.

16. One example used in many countries is the counting approach proposed by Alkire and Foster, which aggregates overlapping dimensions.<sup>10</sup> This method first identifies dimensions of poverty, then indicators for each dimension, and thresholds for each indicator below which individuals are considered deprived. The number of dimensions on which each

---

<sup>6</sup> Buhmann, Brigitte, Lee Rainwater, Guenther Schmaus, and Timothy Smeeding, 1988. “Equivalence Scales, Well-Being, Inequality, and Poverty.” *Review of Income and Wealth* 34(2):115–42. <https://doi.org/10.1111/j.1475-4991.1988.tb00564.x>.

<sup>7</sup> Lanjouw, Peter, and Martin Ravallion, 1995. “Poverty and Household Size.” *The Economic Journal* 105(433):1415-34. <https://doi.org/10.2307/2235108>.

<sup>8</sup> See ECOSOC report (E/2017/69) “Beyond gross domestic product: multidimensional poverty and the Sustainable Development Goals,” for approaches to reduce multidimensional poverty.

<sup>9</sup> For details, see Alkire, Sabina, James E. Foster, Suman Seth, Maria Emma Santos, Jose Manuel Roche, and Paola Ballon. 2015. “Multidimensional Poverty Measurement and Analysis: Chapter 3—Overview of Methods for Multidimensional Poverty Assessment” and Ferreira, Francisco HG, and Maria Ana Lugo. 2013. “Multidimensional Poverty Analysis: Looking for a Middle Ground.” *The World Bank Research Observer* 28 (2):220-35), on which this section draws.

<sup>10</sup> Alkire, S., and J. Foster. 2011. “Counting and Multidimensional Poverty Measurement.” *Journal of Public Economics* 95:476–87.

individual is deprived are then added up based on “importance” weights. A deprivation threshold – in terms of the count of weighted deprivations – is used to identify which individuals are multidimensionally poor. The proportion of the population that are deprived forms the headcount ratio of multidimensional deprivation. The simple headcount approach has been criticized for failing to satisfy “dimensional monotonicity,” which requires that the index change if any individual stops being deprived in any dimension. Thus, Alkire and Foster propose an adjusted headcount ratio that multiplies the simple headcount ratio by the average deprivation among the poor.

17. In theory, because any country with a multitopic household survey should be able to develop a set of measures for multidimensional poverty, well-designed surveys will be vital for monitoring this goal.

## **B. Poverty Lines for Monetary Measures**

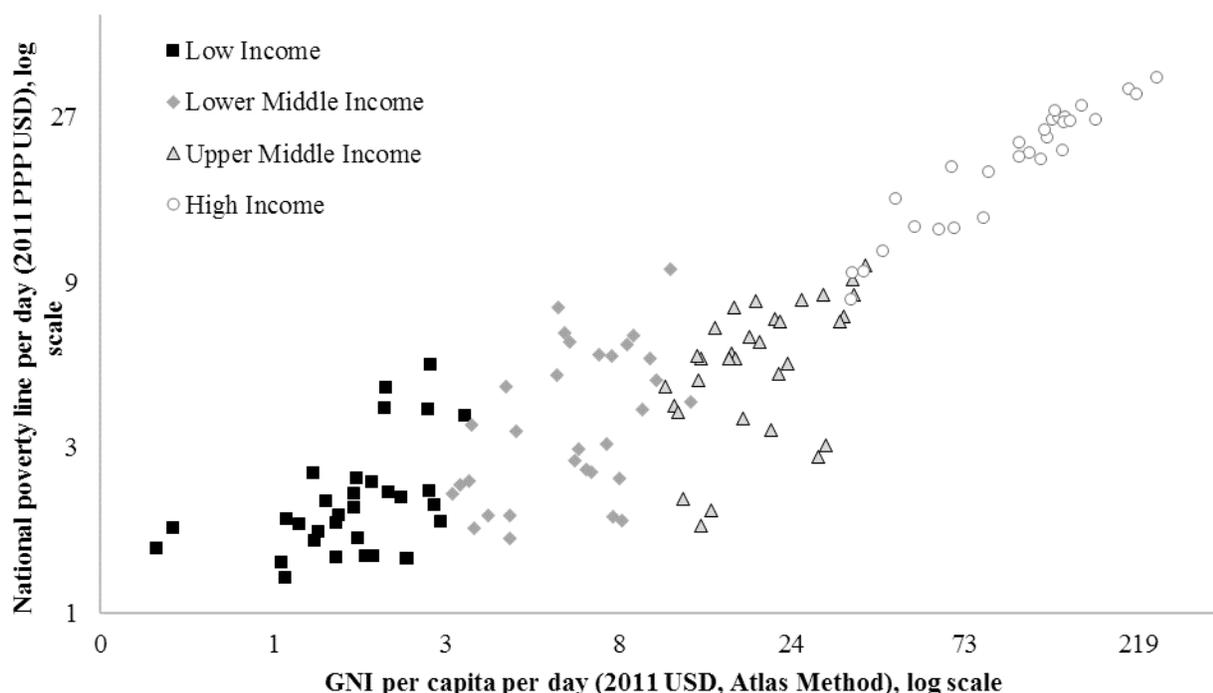
18. Once a measure of welfare is defined, the poverty line needs to be set, below which an individual is considered poor. There are several approaches to setting the poverty line, three of which are described here.

### **1. Absolute Poverty Lines**

19. **Cost of basic needs (CBN):** The CBN approach often used to set the national poverty line first estimates the cost of acquiring enough food for adequate nutrition, which is usually set at 1,800 to 2,300 calories per person per day. It then adds a component for essential nonfood consumption, such as housing, clothing, and other goods and services. This component is often assessed by examining the amount spent on non-food items by those who are consuming the minimum acceptable nutrition basket. The poverty line is the sum of basic food and nonfood costs.

20. **Food-energy-intake (FEI) method:** An alternative method used by some countries is the FEI method, which assesses the relationship between expenditure (or income) and caloric intake. The poverty line is defined as the average total spending on food and nonfood items by those who are meeting basic caloric requirements. The FEI is useful when detailed information on the price of food consumed is not available.

21. CBN and FEI poverty lines are generally considered absolute. Updated for changes in prices over time, they continue to represent the same level of material welfare or absolute needs. However, such absolute poverty lines are typically higher in richer countries and are in fact revised upward as countries get richer (see Figure 1), which suggests that even definitions of absolute poverty have a relative element.

**Figure 1: Poverty Lines Across the World**

Source: Jolliffe, D., and E. B. Prydz. 2016. "Estimating International Poverty Lines from Comparable National Thresholds." *Journal of Economic Inequality* 14(2):185-98.

## 2. *Relative Poverty Lines*

22. The relative nature of poverty lines is made explicit when they are set as a constant proportion to the overall distribution of income or consumption of a society, often 50 or 60 percent of median or mean income or consumption.<sup>11</sup> While relative poverty lines are common in OECD and EU countries, they can be somewhat confusing when everyone gets better off but poverty does not drop. Specifically, if the relative poverty line is a fixed proportion of the mean or median income, and if everyone's income increases by the same percentage, poverty will remain unchanged.

## C. *Measures of Poverty*

23. With a measure of welfare and a poverty line it is possible to calculate measures of poverty in a society, a group, or the world. Most popular is the poverty headcount ratio, which measures the share of the relevant population whose income or consumption is below the poverty line. The index is also often used in nonmonetary measures of poverty to reflect the share of the population that does not reach a defined threshold, such as minimum years of education.

24. A second measure is the "poverty gap," which is affected by both the total number of poor people and the distance between the average standard of living of the poor and the poverty line. The poverty gap expresses average income shortfall as a proportion of the poverty line, where the average is for the entire population and counts the nonpoor as having a shortfall of zero. For example, for a poverty gap of 0.05 the average shortfall is 5 percent of the value of the

<sup>11</sup> SDG indicator 10.2.1 measures "Proportion of people living below 50 percent of median income, by sex, age and persons with disabilities."

poverty line. Multiplying the poverty gap by the value of the poverty line and the population provides an estimate of the income shortfall of the poor. The poverty gap is one of the Foster-Greer-Thorbecke poverty measures.<sup>12</sup>

25. Both measures can be calculated for individuals or for households. Although data on living standards and poverty are generally based on household per capita consumption or income, poverty is typically defined in terms of individuals and therefore most often reported in terms of total poor individuals in a country.

### **III. Data Sources**

#### **A. Household Surveys**

26. Household surveys are the most central data source for national and international poverty statistics. Most fundamentally, household surveys provide the data necessary to construct the welfare indicators used to measure poverty, such as total spending on consumption or total income. Consumption surveys also collect the data on food energy consumption that many countries use to set a poverty line. In measuring poverty, the most essential modules are those related to household consumption patterns for both food and nonfood goods and services, as well as information on income from employment, self-employment, and business activities. Household surveys also are often an important source of price data, either from the household consumption module or from separate price modules (see the next section).

27. In isolation, the raw number or share of the poor is of limited usefulness to policy makers. But, when combined with a descriptive profile of the demographic and socioeconomic characteristics of the poor, along with determinants of poverty, this larger set of poverty statistics is of great value to the improved design of poverty-reduction policies. For this reason, data collection for poverty statistics focuses on multi-topic household surveys that collect information on the many dimensions of living standards and economic activities. For example, while there is significant variation across countries in what is included in the questionnaire, it is not uncommon for a household survey to collect information on sector of employment; sociodemographic variables like education, health, migration, and fertility; and sometimes also anthropometric information, such as the height and weight of children. These multi-topic household surveys are the primary sources used by analysts to inform policy makers on the factors underlying poverty and candidate policies to reduce it.

#### **B. Price Data**

28. Adjusting for time and space variations in prices is essential for correct comparisons of material welfare and ensuring that a poverty line reflects the same level of welfare in different places and at different times. To hold the monetary welfare measure (or poverty line) constant, intertemporal price indices are typically used. The most common is the national consumer price index (CPI), a measure of the value of a basket of goods and services typically consumed by households. Occasionally alternative inter-temporal deflators estimated from price or unit value data in household surveys or other sources are used—generally when CPI data are nonexistent or of questionable accuracy.

29. Prices can vary not only across time but also across space within countries. For example, food and housing are typically cheaper in rural than in urban areas. Poverty analysts therefore often adjust for domestic spatial (geographic) price differences at a given point in time. Without such adjustments, living standards can be underestimated in areas with relatively lower prices and overestimated where prices are higher. To reduce this type of error, many countries adjust prices by either using separate poverty lines for urban and rural areas (or other subnational geographies) or adjusting consumption and income-based welfare aggregates to account for price differences.

30. Useful adjustment of prices depends on good price data, which may be collected through household surveys, as part of the data collected for a parallel consumption or community price module, or through specialized price surveys, sometimes as part of data collection for the CPI.

---

<sup>12</sup> Foster, James, Joel Greer, and Erik Thorbecke (1984). "A Class of Decomposable Poverty Measures." *Econometrica*, 3(52):761–66.

### C. Census and Population Data

31. Measurement of poverty also depends on many other aspects of the national statistical system. For instance, population data, typically from housing and population censuses, are used in sampling for household surveys and are essential for creating weights (adjustment factors that account for the varying probability of an individual being included in the survey) to ensure that survey estimates are representative of the country or of specific geographic areas. Outdated or low-quality census data can lead to inefficient samples and thus to large margins of errors, or even biased estimates of poverty. Flawed population data can misestimate poverty by millions. Census data are also essential to produce geographic poverty estimates that are more granular than what typically result from household surveys. The small area estimation technique combines poverty or consumption estimates from household surveys with census data to impute a spatially disaggregated poverty measure using variables common in the household surveys and the census.<sup>13</sup>

### IV. Global Measures of Monetary Poverty

32. Poverty measurement is typically a national exercise, with governments conducting household surveys, other data collection, and analysis sometimes with technical assistance from international or regional bodies. These efforts usually assess and compare poverty within countries across time, groups, and geographic areas. However, for purposes of international poverty statistics and comparisons, researchers and international organizations build on national data and methodologies to produce internationally comparable estimates. Thus, the production process and methodologies used for national and international poverty statistics are closely related with international poverty measurement fundamentally depending on availability of national household survey data, as well as national poverty statistics and methods.

#### A. Adjusting for Price Differences between Countries

33. Income and consumption measures from national household surveys, and national poverty lines, are typically denominated in local currency units. To compare living standards between countries, however, consumption or income must be expressed in common units. One option might be to use market currency exchange rates, but it is widely recognized that these rates fail to accurately reflect relative purchasing power.<sup>14</sup> For example, one U.S. dollar converted at market exchange rates typically buys more goods and services in a low-income country than in the United States. One reason for this is that nontraded goods, and (especially) services, are typically cheaper in poorer countries.<sup>15</sup> Thus, using market exchange rates to convert consumption or income data underestimates the real standard of living in low-income countries.

34. International poverty measurement therefore uses exchange rates based on purchasing power parity (PPP) conversion factors for private consumption available from the International Comparison Program (ICP). These are essentially exchange rates that ensure that a dollar has the same purchasing power, in terms of the goods and services that it buys, across countries and thus ensure comparability.

35. PPP factors convert the value of consumption from the LCU into a common currency (i.e. USD) in a manner that allows for comparability across countries. PPPs actually enter international poverty calculations at two stages: First, they are used in estimating an international poverty line based on national poverty lines (see section on International Poverty Statistics). Then, to assess poverty in each country, PPPs are used to convert the international poverty line into local currencies or, equivalently, to convert consumption and income distributions from local currencies to PPP dollars.

---

<sup>13</sup> Elbers, C., Lanjouw, J.O., Lanjouw, P., 2003. "Micro-Level Estimation of Poverty and Inequality." *Econometrica* 71(1):355–364. <https://doi.org/10.1111/1468-0262.00399>

<sup>14</sup> Taylor, A.M., Taylor, M.P., 2004. The Purchasing Power Parity Debate. *Journal of Economic Perspectives* 18(4):135–158. <https://doi.org/10.1257/0895330042632744>

<sup>15</sup> Frenkel, Jacob A., 1981. "Collapse of Purchasing Power Parities during the 1970s." *European Economic Review* XVI(1):145–65.

## B. Defining and Updating International Poverty Lines

36. The precise methods used to measure poverty internationally have changed over time, but one guiding principle throughout has been to anchor estimates on national methods of poverty measurement and data.<sup>16</sup> The international extreme poverty line has typically been set to reflect how the world's poorest countries estimate a minimum threshold of living that meets basic needs in their societies. Absolute national poverty lines, when well-constructed, are anchored in core caloric needs but also reflect country context and thus allow for substantial variation in nonfood needs. The requirements for being considered poor are often debated by national politicians, civil society and the press, which can often ensure a common understanding of what are minimum needs.

37. Among the first to estimate international poverty were Ahluwalia, Carter, and Chenery, who used India's national poverty threshold to estimate the prevalence of poverty in the world, using 1975 PPP figures.<sup>17</sup> Their estimate was based on consumption and income data for 25 countries. It was the first attempt to measure global poverty against a common absolute poverty line. It also began the practice of measuring international poverty based on national poverty standards and the use of PPP exchange rates to adjust for price differences not reflected in market exchange rates.

38. Since the 1990s, the World Bank has defined the international poverty line based on a sample of national poverty lines in some of the world's poorest countries. Ravallion, Datt, and van de Walle in 1991 examined 33 national poverty lines and identified six countries (Bangladesh, Indonesia, Kenya, Morocco, Nepal, and Tanzania) as among the poorest in the sample; all were within \$1 of a poverty line of US\$31 per person per month at 1985 PPPs. This was the basis for the "dollar-a-day" global poverty line.<sup>18</sup>

39. Estimates of global poverty are regularly updated with new household-survey data and expanding country coverage, though with some substantial modifications in data and estimates. These modifications typically occurred in response to each new ICP price data collection exercise, and the subsequent release of new PPP exchange rates reflecting the latest information on relative prices across countries. In 2008, price data from the 2005 ICP data, and new data on national poverty lines, led to revision of the poverty line upward to \$1.25, based on the average of the national poverty lines of 15 of the poorest countries, converted to US\$ at 2005 PPPs. In 2015, with the 2011 PPPs recently available with revised information of relative prices across countries, the World Bank's poverty line was updated again. The value of same 15 national poverty lines (from the same countries and years) at 2011 PPPs would give an average of \$1.88 (rounded to \$1.90), which currently is the international poverty line used by the World Bank. Table 1 shows these national lines converted at 2005 and 2011 PPPs. By keeping the national poverty lines the same, the poverty line can be seen as having been fixed with reference to its definition, although its value changed.

<sup>16</sup> For a criticism of this approach, see: Allen, Robert, 2017. "Absolute Poverty: When Necessity Displaces Desire." *American Economic Review* 107(12):3690–3721. <https://doi.org/10.1257/aer.20161080>.

<sup>17</sup> Ahluwalia, Montek, Carter, Nicholas and Hollis Chenery. 1979. "Growth and Poverty in Developing Countries." *Journal of Development Economics* 6 (3):299-341.

<sup>18</sup> Ravallion, Martin, Gaurav Datt, and Dominique Walle. 1991. "Quantifying Absolute Poverty in the Developing World." *Review of Income and Wealth* 37 (4):345-61.

**Table 1: Re-estimating \$1.25-line at 2005 PPPs, using the 2011 PPPs**

Country	Poverty Line Years	2005 PPP	2011 PPP	CPI 2011 (2005=100)	Poverty line 2005 PPP	Poverty line 2011 PPP
Malawi	2004-05	56.92	78.02	214.6*	0.86	1.34
Mali	1988-89	289.68	221.87	119.8	1.38	2.15
Ethiopia	1999-2000	2.75	5.44	297.1	1.35	2.03
Sierra Leone	2003-04	1396.21	1767.19	203.9 <sup>±</sup>	1.69	2.73
Niger	1993	267.33	228.75	116.3	1.10	1.49
Uganda	1993-98	744.62	946.89	178.0	1.27	1.77
Gambia, The	1998	10.34	10.83	129.3	1.48	1.82
Rwanda	1999-2001	236.75	246.83	157.8	0.99	1.50
Guinea-Bissau	1991	284.28	248.24	124.8	1.51	2.16
Tanzania	2000-01	482.45	585.52	169.9	0.63	0.88
Tajikistan	1999	0.93	1.88	334.2*	1.93	3.18
Mozambique	2002-03	11.63	15.53	173.5	0.97	1.26
Chad	1995-96	327.57	251.30	112.4	0.87	1.28
Nepal	2003-04	26.47	25.76	164.8	0.87	1.47
Ghana	1998-99	0.45	0.79	295.2*	1.83	3.07
<b>Mean</b>					<b>1.25</b>	<b>1.88</b>

*Source:* Ferreira, F.H.G., Chen, S., Dabalen, A., Dikhanov, Y., Hamadeh, N., Jolliffe, D., Narayan, A., Prydz, E.B., Revenga, A., Sangraula, P., Serajuddin, U., Yoshida, N., 2016. "A Global Count of the Extreme Poor in 2012." *The Journal of Economic Inequality*, 14(2):141-72.

40. This relatively large and heterogeneous revision in the PPPs across countries and regions, led to some changes to the poverty numbers at the country level. However, at the global level, updating the poverty line to 2011 PPPs only led to a minor revision with global poverty rate for 2011 being revised down from 14.5 percent (or 1,011 million people) under the old method (\$1.25/day at 2005 PPPs), to 14.2 percent (or 987 million) under the new method (\$1.90 at 2011 PPPs). Compared to the incorporation of the 2005 PPPs and update of the international poverty line from \$1.08 to \$1.25 at corresponding PPPs, the most recent revisions were much smaller.

### **C. Aligning for Aggregate Estimates**

41. Since survey estimates of poverty are not available for every country every year, producing aggregate poverty estimates for certain years requires some realignment of the data available. Aggregate international poverty estimates for a given reference year are adjusted on the basis of national accounts data on the growth of the economy. For countries where household survey data are not available for the reference year, growth rates from national accounts data are used to project consumption or income forward or backward as needed to “line up” estimates with reference years so that poverty can be estimated at the same point in time for all countries.

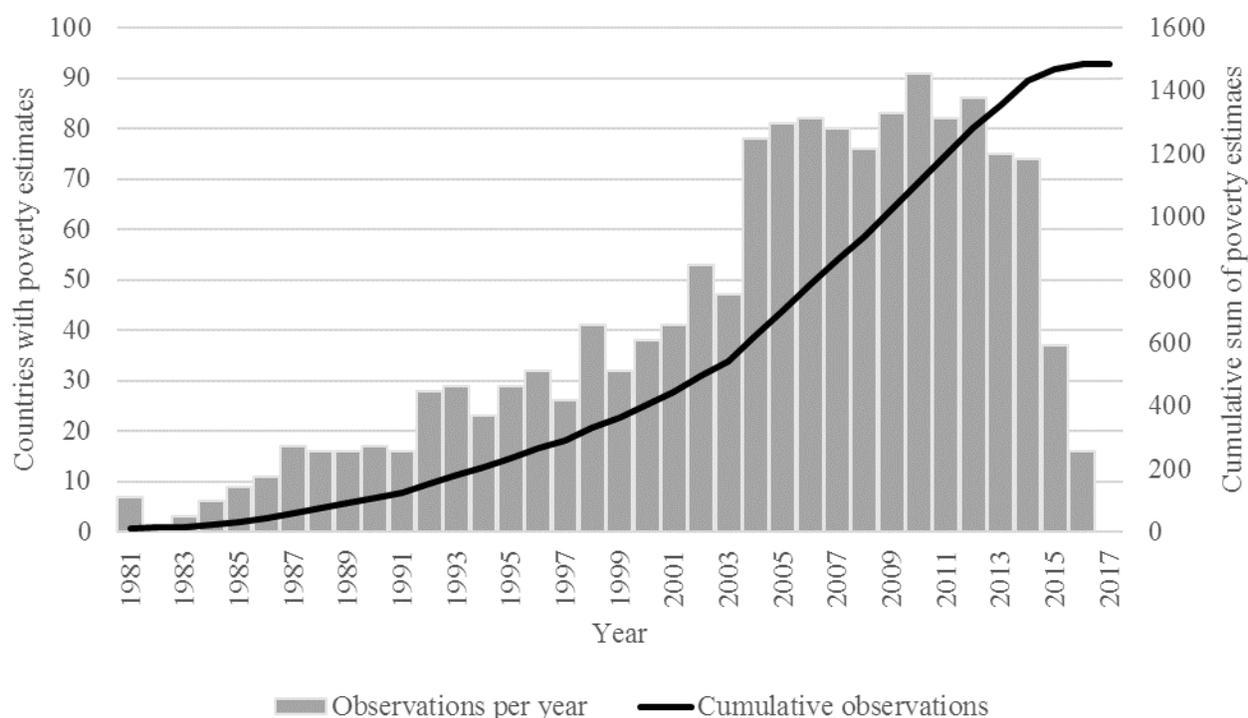
42. National accounts data represent the activities of economic actors—individuals, businesses, and government—at the most aggregated level. Usually annual, they provide the basis for calculating gross domestic product (GDP) and household final consumption expenditures. National income accounts are highly standardized and widely available at relatively high frequency. However, growth rates drawn from national accounts and from surveys are known to differ substantially, so that using the line-up method over long periods can cause substantial error and uncertainty in global estimates.

43. As noted, population data are fundamental for ensuring that estimates are representative in terms of both a sample frame and corresponding expansion weights for sample surveys. Population data is also important to ensure representativeness when aggregating poverty estimates across countries. In aggregating poverty estimates for regional or other groupings of economies and countries, the World Bank uses its own database, which compiles population estimates from various international and national collections. It does not aggregate poverty estimates at national poverty lines, because these are not comparable.

## **V. Data Availability and Comparability**

### **A. National and International Estimates**

44. Data for monitoring monetary poverty indicators have become ever more available in recent years (see Figure 2). The World Bank Poverty and Equity Database contains estimates for 168 countries, and each year for the past decade new estimates have been available for about 80 countries. Poverty estimates are now available for 1,500 country-year observations—more than triple what were available in the early 2000s. The decline in the availability of estimates for the most recent years (Figure 2) was caused by delays between when surveys were conducted and when the new estimates became available in international databases.

**Figure 2: Country Poverty Estimates by Year**

*Note:* Poverty and Equity Database: Country-level poverty estimates available by year (either at national or international poverty line), based on tabulation of SI.POV.DDAY and SI.POV.NAHC.NC.

45. Although the volume of poverty statistics has grown rapidly, a number of countries do not have enough estimates to track poverty over time—thorough assessment of country poverty trends requires frequent and comparable data. For example, to assess whether national poverty is rising or falling requires at least two comparable data points within a reasonable interval. Many countries, especially richer ones, have annual estimates available, but for many others observations are far less frequent. In an effort to address this shortfall, the General Data Dissemination System (GDDS) was developed to serve as a structured process through which member countries of the International Monetary Fund commit voluntarily to improve the quality of the data compiled and disseminated by their statistical systems in accordance with a set of recommended standards. As one such standard, the GDDS recommends that poverty statistics be updated at least at 3- to 5-year intervals, a useful benchmark.<sup>19</sup> Yet of 193 UN member states, 68 (35 percent) had no poverty estimates available between 2011 and 2015, and another 44 (23 percent) had only one. About 42 percent (81) had at least two estimates and could meet the GDDS recommendation.

46. For an assessment of survey data that can be used to estimate recent poverty trends, the data in the Global Database on Shared Prosperity provide useful information. This data requires two comparable income or consumption survey estimates within a 3 to 7-year period from approximately 2009-2014. In the most recent dataset, estimates were available for 95 economies, representing about 62 percent of the world population, which means that about 38 percent live in countries where it currently is not possible to track recent poverty trends. Table 2 shows the availability of data for UN member states by the regions and groups used in the UN Standard Country or Area Codes for Statistical Use. Availability is worse in poorer regions: 81 percent of the developed countries have enough data to calculate poverty trends, but in Africa just under 30 percent (16 of 54 countries, representing 35 percent of the population) have enough data. Among LDCs, surveys from 14 of 48 countries represent just 41 percent of the population.

<sup>19</sup> <http://dsbb.imf.org/pages/GDDS/TableB.aspx>

**Table 2: Data Availability for Comparing Poverty Trends. Circa (2009–2014)**

<b>Region or Grouping (M49)</b>	<b>Number of All Countries with Data</b>	<b>Share of Population Represented in Data</b>
Africa	16/54 (30%)	35%
Americas	17/35 (49%)	89%
Asia	21/47 (45%)	58%
Europe	38/43 (88%)	99%
Oceania	1/14 (7%)	2%
LDCs	14/48 (29%)	41%
Developed	39/48 (81%)	84%
Developing	54/145 (37%)	57%
All UN Member States	93/193 (48%)	62%

*Note:* Based on data available in The Global Database on Shared Prosperity, circa 2009 – 2014, <http://www.worldbank.org/en/topic/poverty/brief/global-database-of-shared-prosperity>. The database tracks annualized consumption or income growth of the bottom 40 percent for each country. The database contains estimates for 95 economies, 93 of which are UN member states, used in this analysis. The analysis uses Classification of Countries by Standard Country or Area Codes for Statistical Use (M49). Population numbers are for 2015 or latest available, World Development Indicators.

### **B. Data Quality and Comparability**

47. Although data availability has improved, the availability of comparable estimates for tracking recent poverty trends remains limited. When surveys are not comparable over time, they cannot be relied on for monitoring poverty trends. Differences in how surveys are conducted over time limits comparability. Often as economies evolve, surveys are updated to better capture consumption patterns; survey changes may also be introduced for other reasons, such as budget requirements. Questionnaires are often changed with the intent of improving measurement, but often little consideration is given to the possibility of creating noncomparable series.

48. Changes to questionnaires can have substantial impact on poverty estimates and make it difficult to answer simple questions, such as whether poverty has declined or not. In an experiment in Tanzania, for instance, different

consumption questionnaires were randomly assigned to different subsamples.<sup>20</sup> The experiment found that large variations in measured consumption and the resulting poverty estimates could be attributed to the questionnaire differences. For example, changing the recall period for consumption from one week to two (leaving everything else the same) pushed up poverty headcount estimates in the experimental sample from 55 to 63 percent. Other differences in questionnaires, such as how extensive the list of consumption items queried was, or in what order items are listed, have also been found to compromise comparability.<sup>21</sup>

49. To improve comparability, statistical techniques can sometimes be used to overcome challenges caused by changes in questionnaires, among them “survey-to-survey imputation” techniques.<sup>22</sup> Alternatively, experimental designs can help assess the effect of changes in household surveys, and help to restore comparability. Increasingly, statistical offices are advised to introduce experimental design when making substantial changes to questionnaires, to more precisely assess how the changes impact measures.<sup>23</sup>

50. Differences in survey methods and questionnaires are even larger across countries. Some degree of post-harmonization can be done, but many differences are irreconcilable. Several initiatives to harmonize survey design practices attempt to improve comparability between countries, but such harmonization can compromise comparability within countries. Ultimately, countries and international agencies considering questionnaire changes need to be well aware of the trade-offs.

## **VI. Poverty Statistics: The Way Forward**

51. Throughout the world there has already been considerable progress in both measuring and combatting poverty, but expanding demands for both international and national reporting on the SDGs are likely to similarly expand the requirements.

### **A. Leaving No One Behind: New Expectations for Poverty Statistics**

52. Disaggregated reporting “by sex, age, employment status and geographical location (urban/rural)” may be central to the SDG commitment to leaving no one behind, but it raises numerous problems related to poverty statistics, which are usually measured at the household level and assume that resources are distributed equally within households.

53. In its *Poverty and Shared Prosperity Report 2016*, the World Bank published subgroup estimates for children (ages 0–4, 5–9, 10–14, and 15–17), rural–urban residence, and some occupations; it is now working to make disaggregated reporting the standard. However, lack of comparable definitions of groups surveyed can undermine comparability. For example, countries often define rural and urban areas differently, and surveys may also capture employment status in very different ways. Ex-post harmonization of definitions and survey instruments thus becomes important to the comparability of both domestic and international poverty statistics.

54. Data limitations make sex disaggregation of poverty statistics difficult. For example, so far the World Bank has not been reporting poverty statistics by sex (male/female), as suggested by the SDGs and the Commission on Global Poverty. Consumption and income information is usually collected for the household as a whole. Some data may be collected on individual incomes, but many aspects of consumption are difficult to disaggregate by individuals, much less by sex. Thus, estimates of income and consumption distributions used for poverty measurement typically ignore intra-household inequalities, assigning everyone in the household the same level of material welfare. In particular, sex-

---

<sup>20</sup> Beegle, Kathleen, Joachim De Weerd, Jed Friedman, and John Gibson. 2012. “Methods of Household Consumption Measurement through Surveys.” *Journal of Development Economics* 98(1):3-18.

<sup>21</sup> United Nations Statistics Division. *Household Sample Surveys in Developing and Transition Countries*. Studies in Methods 96. New York, NY: United Nations, 2005. [https://unstats.un.org/unsd/hhsurveys/pdf/Household\\_surveys.pdf](https://unstats.un.org/unsd/hhsurveys/pdf/Household_surveys.pdf).

<sup>22</sup> For an early example of survey-to-survey imputation, see:

Gelman, Andrew, Gary King, and Chuanhai Liu. 1999. “Not Asked and Not Answered: Multiple Imputation for Multiple Surveys.” *Journal of the American Statistical Association* 93(443):846–857.

<sup>23</sup> Tourangeau, Roger. “Recurring Surveys: Issues and Opportunities.” National Science Foundation, 2003. [https://www.nsf.gov/sbe/ses/mms/nsf04\\_211a.pdf](https://www.nsf.gov/sbe/ses/mms/nsf04_211a.pdf).

disaggregated poverty statistics that assume equal sharing within households can be deeply misleading. Experimental approaches are currently underway to better capture within-household inequalities.

55. Another measurement problem posed by the SDGs is inherent in the goal of eradicating poverty by 2030 as measured by the international poverty line. The target of having no people living in extreme poverty by this measure makes it crucial that surveys capture people who are marginalized, homeless, or otherwise not likely to be part of standard samples. For example, where 30 percent of the population is poor, excluding 3 percent of the population from the sample because they are hard to reach may not fundamentally change the general national profile of poverty, although the sample would not be fully representative. But for the SDG target, capturing the entire population, especially marginalized groups who are likely to be poorer than the rest, is fundamental to assessing whether poverty is indeed being eradicated.

56. Similarly, as discussed in Section V, in several countries, especially in low-income countries and conflict-affected or fragile states where poverty tends to be pervasive, data needed for poverty measurement are often dated, sparse, or not available at all. Unlike the MDGs, the SDGs are explicitly global in coverage, so efforts to better collect national poverty measures from high-income countries have begun. Many high-income countries do not have official national poverty lines but instead rely on regional standards, such as the Eurostat relative poverty measures. Although traditionally UN and World Bank measurement of international poverty has focused on low- and middle-income countries, the SDGs have stimulated new thinking. Recently, rather than assuming that there is no extreme poverty in high-income countries as assessed by the international poverty line, World Bank aggregation has included survey estimates from high-income countries. However, because many of these countries use income as the monetary indicator of welfare, surveys there often report zero incomes which give poverty rates that may not be comparable with estimates based on consumption.

## **B. Monitoring Poverty in All its Dimensions**

57. The SDGs focus not only on ending poverty for all groups but also *in all its forms and dimensions*, which recognizes that poverty manifests itself in many ways. As already noted, so far national and international approaches to monitoring poverty have mainly measured monetary poverty. However, many countries are also systematically monitoring other dimensions of poverty, such as health, nutrition, and education, and some have aggregated several dimensions into single measures of multidimensional poverty, often with a focus on “overlapping dimensions.” The Report of the Commission on Global Poverty emphasized the need for a portfolio of “complementary indicators” to be monitored along with the monetary poverty estimates. It suggests both a dashboard of such indicators and a measure of overlapping dimensions.

58. Because the SDGs set the target and indicators for measuring poverty in multiple dimensions in terms of national definitions, it is likely that the measures and methods countries use will vary considerably—as do the methods and data used for tracking national monetary poverty. Further work will be necessary to ensure comprehensive documentation and a system of reporting of such statistics, and to assess the degree of international coordination that will be necessary.

## **C. Improving Data Availability and Quality**

59. Although both the availability and quality of international poverty statistics is better today than ever before, the data gaps and the complexity of ensuring comparability suggest that there is considerable room for improvement. More frequent and complete coverage of multi-topic household surveys will be an important first step, but to ensure that poverty estimates are more reliable and comparable, attention should be paid not just to the quantity of surveys but also to their quality, accessibility and comparability.

60. For improved data quality, efforts will need to continue to focus on improved standards and training in the collection of household surveys. But, there is also a need to expand efforts to test new technologies such as recording locations and land area with handheld GPS devices, tablet-based questionnaires, integration of geospatial satellite data, and other innovations for improving data quality.<sup>24</sup> Data of good quality that is not openly accessible severely hinders the

<sup>24</sup> See chapter 5 in: Jolliffe, D., Lanjouw, P., Chen, S., Kraay, A., Meyer, C., Negre, M., Prydz, E., Vakis, R., and Wethli, R. *A Measured Approach to Ending Poverty and Boosting Shared Prosperity*. World Bank, 2014.

ability of the data to inform policy discussion and debates. While the global community has placed emphasis on the importance of open data, even more efforts are needed to push this agenda forward and create a common understanding of what open data means. While this may seem straightforward, countries follow very different approaches to access. Some provide full public access to their microdata, with immediate online access; others may provide access to microdata after review and approval or after paying a fee. And, regrettably it is still the case that many countries continue to only release data in processed tabular form, or not at all. The full value of survey data for improving poverty policy can only be realized with open access to the data.

61. Comparability is an issue of great importance for countries trying to monitor change over time or differences across different parts of their nations, or differences across sub-samples of their population. Comparability across countries also helps improve the scope for learning from experiences on neighboring countries, and better allows for global assessments of progress in poverty reduction. To this end, the Intersecretariat Working Group on Household Surveys, established by the Statistical Commission at its 46<sup>th</sup> session in 2015, is making an important contribution. The group aims to foster coordination and harmonization of household survey activities and improve the comparability and internal coherence of surveys both in a given country and across countries. Also relevant to the work of improving quality and comparability of poverty estimates based on consumption and expenditure data is the work of the Inter-Agency and Expert Group on Agricultural and Rural Statistics, which has developed guidelines for “Measuring food consumption and expenditures in household consumption and expenditure surveys” to be presented to the 49<sup>th</sup> session of the Statistical Commission.<sup>25</sup> Such efforts to set standards and document good practice will be crucial to improving quality.

62. It is also important to accept the fact that estimates are almost by definition uncertain. The Commission on Global Poverty recommends that a “total error” approach is adopted in international poverty monitoring, which would recognize that there are a number of sources of imprecision, such as inaccuracies in population statistics, sample frames, and the growth rates used to bring poverty estimates to a common reference year; inaccuracies in the estimation of PPP exchange rates and national consumer price indices; and problems arising from variations in the methods used in different countries. Thus, the precise number of poor in the world can only be estimated with some degree of uncertainty—as would be expected from such a large and dispersed statistical exercise.

#### **D. Investing in More and Better Data**

63. Conducting good household surveys for measuring poverty is both difficult and costly; it requires political commitment, professional capacity, and adequate resources. It is estimated that conducting multitopic household surveys for monitoring poverty in 78 of the poorest countries (390 surveys in total) will cost US\$945 million every three years between 2016 and 2030.<sup>26</sup> A much larger amount will be needed to properly track the SDG poverty indicators in all countries, especially to get data that can be disaggregated to give a more complete picture and ensure that nobody is left behind.

64. In addition to financial resources, improving coordination between donors supporting surveys could make more poverty data available.<sup>27</sup> Development organizations such as PARIS21 encourage countries to prepare National Strategies for the Development of Statistics (NSDS), which in turn can inform donor investments. Such strategies typically include plans for regular household surveys. If NSDSs are implemented as intended, the frequency of poverty data can be increased through better coordination of survey instruments, without necessarily affecting overall survey costs.

65. Resources are fundamental to collecting more data, but alone they are not sufficient. Country statistical capacity in survey questionnaire and sampling design, fieldwork management, data quality control, and data curation, analysis, and dissemination is essential to inform evidence-based and data-driven efforts to eradicate poverty. Building statistical

---

<http://elibrary.worldbank.org/doi/book/10.1596/978-1-4648-0361-1>.

<sup>25</sup> Report of the Food and Agriculture Organization of the United Nations on agricultural and rural statistics (E/CN.3/2018/3)

<sup>26</sup> Kilic, Talip, Umar Serajuddin, Hiroki Uematsu, and Nobuo Yoshida. 2017. “Costing Household Surveys for Monitoring Progress Toward Ending Extreme Poverty and Boosting Shared Prosperity.” Policy Research Working Paper WPS 7951. Washington, DC: World Bank.

<sup>27</sup> Serajuddin, Umar, Hiroki Uematsu, Christina Wieser, Nobuo Yoshida, and Andrew Dabalen. 2015. “Data Deprivation: Another Deprivation to End.” Policy Research Working Paper WPS 7252. Washington, DC: World Bank.

capacity to meet international best practices, incorporating emerging, validated, innovative, and cost-effective data collection solutions, must recognize the need to improve both household survey data and complementary data, e.g., on population and prices, if poverty statistics are to be meaningful.

**VII. Action required by the Statistical Commission**

66. The Commission is invited to take note of the report.