

# Validation of methods and data for SDG indicators<sup>1</sup>

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**Abstract.** The Sustainable Development Goals (SDG) indicator framework represents a major challenge and a unique opportunity for the advancement of the global statistical system, both in terms of methodological development and governance. Over the past three years, the Inter-Agency and Expert Group on SDG indicators (IAEG-SDG) has gradually developed a number of documents providing criteria and guidelines for regulating data flows between countries and custodian agencies needed to inform the global SDG reporting process. The validation of methods and data for SDG indicators, while apparently consisting of two completely separate matters, have been closely linked in the SDG process. When validating country data, National Statistics Offices (NSOs) are effectively also certifying the specific methodology used by the custodian agency for the compilation of the indicator, in particular the data source used and the adjustments made to harmonize national definitions and classifications. This article highlights some of the main challenges in the practical implementation of the guidelines on data flows, identifies areas in need of further guidance from the IAEG-SDG and provides some proposals aimed at improving the global SDG reporting process.

**Keywords:** Guidelines on data flows, global statistics governance, international standards, non-official data sources, independence of official statistics

## 1. Introduction

The SDG indicator framework, initially adopted by the UN Statistical Commission in 2016 and subsequently endorsed by UN General Assembly in July 2017, represents a major challenge and, at the same time, a unique opportunity for the advancement of the global statistical system, both in terms of methodological development and governance. Since many indicators included in the framework were completely new and did not have an internationally agreed methodology (the so called “Tier III indicators”), the main focus of the international statistical community during the past three years has been the development of sound and feasible methodologies for their compila-

tion at national and international levels. In terms of governance, the UN Statistical Commission has established the Inter-Agency and Expert Group on SDG indicators (IAEG-SDG)<sup>2</sup> as the intergovernmental body responsible for leading the work on the selection of the global indicators, as well as on their methodological development and implementation at country level. Given that the IAEG-SDG’s approval of new methods

<sup>1</sup>The views expressed in this publication are those of the author(s) and do not necessarily reflect the views or policies of the Food and Agriculture Organization of the United Nations.

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<sup>2</sup>On 6 March 2015, at its forty-sixth session, the United Nations Statistical Commission created the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs), composed of 28 Member States representing their respective regions. In addition, the Chair of the United Nations Statistical Commission is an ex-officio member of the IAEG-SDGs. NGOs, regional and international agencies can attend the meeting of the IAEG-SDGs as observers. The IAEG-SDGs is principally tasked to: A. Develop the global indicator framework for the Goals and targets of the 2030 Agenda; B. Provide technical support for the implementation of the approved indicator and monitoring framework; C. Regularly review methodological developments and issues related to the indicators and their metadata; D. Regularly review capacity-building activities in statistical areas relevant to SDG monitoring.

was a prerequisite for initiating country and global reporting on new SDG indicators, the “reclassification” of Tier III indicators was highlighted as a priority already in the report of the 2016 UN Statistical Commission. The modalities for this process of methodological development, however, were not codified at the beginning of the IAEG-SDG process, and have changed significantly over time.

Another key challenge that countries and custodian agencies have faced in global SDG reporting is data validation. Multiple decisions by the UN Statistical Commission have urged custodian agencies to produce SDG indicators based on data produced by national statistical systems. In fulfilling their global monitoring role, however, custodian agencies may need to adjust national data to ensure their compliance with global statistical standards and their international comparability, which is a prerequisite for compiling regional and global estimates. For the same purpose, custodian agencies may also estimate country-specific values of SDG indicators when national official data do not exist, are incomplete, or are of poor quality. In all these cases, custodian agencies are requested “to consult with concerned countries to produce and validate modelled estimates before publication”.<sup>3</sup> Specific guidelines on global data flows between countries and custodian agencies, however, were not available in the initial stages of the process. To address this gap, the IAEG-SDG prepared a series of documents<sup>4</sup> defining “guidelines of how custodian agencies and countries can work together to contribute to the data flows necessary to have harmonized statistics” for monitoring the SDG targets.

While the work done under the overall umbrella of the IAEG-SDG has contributed to clarifying many of the issues involved in the validation of methods and data for SDG indicators and the governance of the international statistical system, numerous issues remain to be solved. A nascent body of literature has already grappled with some of these challenges, including the huge capacity constraints hampering the compilation of SDG indicators<sup>5</sup> in most countries; the need to resort

to new data sources and big data for overcoming these constraints;<sup>6</sup> and the tendency to overly focus on the global indicators framework to the detriment of substantive debates on key policy issues.<sup>7</sup> This article, by contrast, highlights some of the main challenges in the practical implementation of the Guidelines on global data flows, identifies areas in need of further guidance from the IAEG-SDG, and provides practical proposals aimed at improving the global SDG reporting process.

## 2. Challenges for methodological validation

The procedure to validate the methodology for the compilation of the SDG indicators was instituted at the third IAEG-SDG meeting in March 2016, when the newly introduced “Tier classification” resulted in the categorization of one third of the SDG indicators in the “Tier III category”, meaning that their methodology was still not internationally agreed. Initially though, the exact criteria for validating a new method – and thus approving the reclassification of a Tier III indicator – were not known. Only at the fifth IAEG-SDG meeting in Ottawa (March 2017) were “criteria for Tier III indicator reclassification” issued, which were manifestly more stringent than the hitherto unwritten criteria previously used, particularly in their stipulation that pilot tests had to be undertaken in a regionally balanced sample of countries<sup>8</sup> to demonstrate the feasibility of the new methods even in less advanced statistical systems.

The increased severity of the methodological validation process suggests that many of the indicators reclassified in the initial phase of the process would possibly not have qualified for reclassification at a later

<sup>3</sup>UNGA resolution 71/313, Op. Cit.

<sup>4</sup>“Guidelines on Data Flows and Global Data Reporting for Sustainable Development Goals”, Op. Cit; “Criteria for the Implementation of the Guidelines on Data Flows and Global Data Reporting for Sustainable Development Goals”, Op. Cit; and “Best Practices in Data Flows and Global Data Reporting for the Sustainable Development Goals”, Op. Cit.

<sup>5</sup>MacFeely S. The 2030 Agenda. An Unprecedented Statistical Challenge. *International Policy Analysis*, Friedrich-Ebert-Stiftung;

2018; MacFeely S. The Political Economy of Measuring the Sustainable Development Goals, UNCTAD Research Paper No. 32, June 2019.

<sup>6</sup>MacFeely S. The Big (Data) Bang: What will it mean for compiling SDG indicators? UNCTAD Research Paper no. 23, June 2018.

<sup>7</sup>Razavi S. (2019) Indicators as Substitute for Policy Contestation and Accountability? Some Reflections on the 2030 Agenda from the Perspective of Gender Equality and Women’s Rights. *Global Policy*, 10 (1).

<sup>8</sup>The criteria for the reclassification of Tier III indicators adopted by the IAEG-SDG in March 2017 are the following: 1) The National Statistical System should be involved in the methodological development of new indicators; 2) New methods should be pilot-tested in a sufficient number of countries with comprehensive regional coverage (at least 5 countries, 1 per region); 3) Information should be provided on how the proposed methodology has become an international standard; 4) Comprehensive metadata should be provided to UNSD according to an agreed template.

stage. Indeed, a few countries have recently questioned the reclassification of some SDG indicators and have requested that their methodology be reviewed once again. For the time being, the IAEG-SDG has discreetly distanced itself from such requests, under the UN Statistical Commission's constant urge to "accelerate the development" of Tier III indicators. There is a strong likelihood, however, that requests to review the indicator methodology itself may re-emerge during the 2020 Comprehensive Review process. Greater clarity on how the IAEG-SDG plans to deal with such requests would be beneficial both for countries and custodian agencies.

Greater clarity on the Tier III reclassification criteria themselves would also be beneficial. For instance, the third criterion, regarding "how the methodology has become an international standard", presents a strong paradox: if another international institution has already approved the methodology as an international standard, then what exactly is the role of the IAEG-SDG in this regard? Is it to act as an appellate body and either confirm the decision or reject it? Fundamentally, therefore, the question is whether the IAEG-SDG is in fact the only body that can decide when an SDG-related methodology becomes an international standard. Replying to this question would need to take into account that many UN agencies are governed by intergovernmental bodies that already have a prerogative to approve statistical methods and standards in their area of expertise. It would also need to deal with the fact that many new international definitions and standards have cascading effects beyond the strict confines of the relevant SDG indicator. In such cases, it may be necessary to consult a body with an even higher level of country representation and a wider mandate, i.e. the UN Statistical Commission.

Custodian agencies have also faced important difficulties in pilot testing new methods/indicators. Although this criterion implies the necessary involvement of countries, in practice, the responsibility for testing new methods/indicators is left entirely to custodian agencies. Pilot testing is a very complex endeavour that requires huge investments in time and resources to verify the feasibility of new methods/indicators, especially for less advanced statistical systems and when new survey tools are needed. In such cases, it has often been difficult for custodian agencies to identify countries willing to participate in pilot tests, as this also implies some additional burden on countries themselves. As a result, custodian agencies have found themselves struggling to fulfil what is a key requirement for ob-

taining the reclassification of a new indicator. A more proactive role of the Secretariat and the IAEG-SDG Co-Chairs is thus needed to promote country collaboration on pilot testing once the work plan for a Tier III indicator is approved.

Looking beyond the specific list of criteria for the validation of methods, this process has brought with it a whole other set of challenges. The approval of dozens upon dozens of new SDG indicator methodologies has immediately clashed with the crude reality of the existing data collection capabilities of most National Statistical Systems (NSSs). In a situation where most NSSs were already struggling to produce even the most elementary data, there was no easy answer to the question of how countries would actually be producing new SDG indicators. One of the often-cited possibilities was to embrace the "data revolution for sustainable development", which suggested a radical enlargement of the portfolio of potential data sources, particularly by including big data and geospatial information. However, this produced a serious conundrum for the IAEG-SDG. On the one hand, the UN Statistical Commission did not tire in reminding that "the compilation of global indicators should be based to the greatest extent possible on national official statistics provided by countries";<sup>9</sup> on the other hand, expecting already overburdened national official statistics to produce all the necessary data for hundreds of new SDG indicators was clearly not realistic.

To try to solve this conundrum, the 2016 UN Statistical Commission report recommended that "when other sources and methodologies are used, they will be reviewed and agreed by national statistical authorities and presented in a transparent manner". Nevertheless, in practice, a multitude of countries have refused to authorize the use of data produced outside the NSS, even when the approved methodology of the relevant indicators explicitly foresaw this possibility as an interim measure until the NSS is able to produce the indicator with official sources. The main reason cited by those countries refusing to authorize the publication of country estimates is the non-official nature of the data source. The result is that for those countries, no country value is published, as the NSS itself has not yet produced the indicator. Such an approach effectively presents custodian agencies with a catch 22 situation: they are obligated to request countries' authorization, due to the use of non-official sources, yet most coun-

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<sup>9</sup>47/101 (I), Statistical Commission, Report on the forty-seventh session, 8–11 March 2016.

tries deny the authorization precisely because of the non-official nature of the data source.<sup>10</sup>

Another problem with the UN Statistical Commission's recommendation was that, at the time, no agreed mechanism existed for such a review, not even a set of key principles able to give guidance on fundamental questions such as what to do in case countries did not respond to custodian agencies' solicitations or outright rejected the estimate proposed. This was clearly not a satisfactory situation, as it meant that even SDG indicators with approved methodologies could go unreported by the majority of countries. Such an outcome would evidently hamper the ability to monitor progress toward the SDGs and risked undermining the credibility of the entire edifice of the 2030 Agenda's mutual accountability mechanism, grounded on the SDG indicator framework. In the next section, this article will review the main guidelines that were developed to address this gap, and highlight some of their key shortcomings with regard to data validation.

### 3. Challenges for data validation

Acutely aware of the serious implementation challenges posed by the global reporting process, the UN Statistical Commission in 2017 instructed the IAEG-SDG to "develop guidelines on how custodian agencies and countries can work together to contribute to the data flows necessary to have harmonized statistics". The resulting "Guidelines on Data Flows and Global Data Reporting", developed in consultation with the Committee for the Coordination of Statistical Activities (CCSA),<sup>11</sup> are a critical document advancing con-

sensus and collaboration among national statistical systems and custodian agencies. However, the Guidelines also have several limitations. Firstly, some of the provisions in the Guidelines appear to be contradictory and thus risk hampering the global reporting process. Secondly, even where the Guidelines are unequivocal, many countries still oppose their practical implementation, which can put custodian agencies in difficult situations. Thirdly, the "guidelines" mainly outline general principles, and despite additional supporting documents subsequently produced<sup>12</sup> to clarify implementation modalities, there is still no specific mechanism foreseen for data validation, in case the estimates have not been produced by the national statistical system.

#### 3.1. Contradictory provisions that may hamper mutual accountability in the global reporting process

One of the most controversial provisions in the Guidelines is included in paragraph 24.c), which foresees that "if a country disagrees with the methodology used to produce the internationally comparable indicators or the indicator value itself"... and a mutually agreeable solution cannot be found, then the country data for the indicator should not be published. This provision is problematic on a number of counts, but it also marks a clear instance in which the validation of methods and data can be conflated. Firstly, in principle, individual countries should not be in a position to question the methodology of SDG indicators, which is a prerogative of the IAEG-SDG, through the Tier classification system. Secondly, even if we assume a broad reading of the term "methodology" to also include "selection of a data source", then this raises another question: is the purpose of the validation procedure to provide a country with the opportunity to question the data source per se, or should it rather be to check that the internationally established methodology has been properly applied in calculating the country estimate? In the authors' view, the latter alternative is correct, which is also corroborated by a preceding provision under article 23.b) that suggests that:

"The decision on whether to utilize the data set [provided by an entity outside of the NSS] shall... take into account the professional and scientific independence of the data provider, the use of scientific methods and impartiality, while also keep-

<sup>10</sup>The CCSA has developed recommendations and collected best practices on the use of non-official data for international statistics, see Op. Cit.

<sup>11</sup>Established in September 2002, the Committee for the Coordination of Statistical Activities (CCSA) is the main worldwide forum for coordination of statistical activities among (UN and non-UN) international organizations, promoting interagency collaboration and cooperation on statistical programmes. In particular, the Committee focuses its work on the following six main activities: A. Efficient functioning of the global statistical system; B. Establishment and implementation of common standards and platforms; C. Development of methods for international statistics; D. Provision of inter-institutional support and cooperation; E. Outreach and communication; F. Advocacy for importance and role of statistics at international level. Members of the Committee comprise 45 international and supranational organizations, whose mandate includes the provision of international official statistics in the context of the Principles Governing International Statistical Activities, and which have a permanent embedded statistical service in their organization and regular contacts with countries.

<sup>12</sup>Op. cit., 4.

ing in mind the two important principles of country ownership of SDG monitoring and the value of internationally comparable data and statistics”.

The third reason that provision 24.c) is problematic is that it foresees the possibility for a country to disagree with the *indicator value itself*. This effectively means that regardless of whether a methodology is internationally approved, or whether the non-official source is properly vetted, or whether the national estimate has been produced in accordance with the established methodology, a country could still veto the publication of the estimate. As there are apparently no statistical reasons left to claim, countries may refuse the publication of country estimates presumably on the basis of non-statistical considerations. Custodian agencies are further compelled to follow the same procedure “for subsequent years until the country is able to compile the indicator according to international standards and definitions”. This means that even if a country has validated an estimate produced by a custodian agency in one year, the custodian agency should validate new estimates every year even though they may have been produced using the exact same methodology and data source. Once again, one is easily left wondering on what grounds the validation could be denied after it has been granted in the past, all else being equal.

The fourth reason that this provision is problematic is the end result that it foresees, i.e. the non-publication of data in case a mutually acceptable solution has not been found and a country still disagrees with the indicator value. Effectively, this represents a severe limitation on the autonomy and independence of international organizations, which have been assigned the function, by member countries, to collect and disseminate statistics in their relevant domains. Disallowing international organizations from publishing their estimates, especially when a country has none of its own, also blindfolds the international community, which in such cases may not have any other instrument for assessing a country’s situation objectively, or for corroborating the degree of independence of national figures from political considerations. Without independent international statistics, efforts to improve transparency and accountability around the world are undermined. It is for these reasons that the CCSA strongly recommended that in cases where a mutually acceptable solution could not be found, an international organization should still be able to publish these country estimates alongside the national estimate, when available, explaining the reasons for the discrepancies. This rec-

ommendation, though, was eventually rejected by the IAEG-SDG.

This outcome becomes even more controversial as, in many countries, the independence of the NSO may be vulnerable and its capacity to produce objective estimates of SDG indicators may be curtailed, especially when these indicators are politically sensitive. There are known cases where the NSO was not consulted in the preparation of the Voluntary National Review or even in the national SDG indicator framework. Even where the NSO enjoys a higher degree of autonomy, it still struggles to fulfil the role of “coordinator of the national statistical system”. This role may not be formally recognized in national legislation or it may be difficult to implement in practice. Communication between the NSO and other data producers may be an issue and there may not be appropriate mechanisms of coordination and data transmission across data producers. NSOs are often not aware of already existing data flows between other national entities and custodian agencies, especially for non-statistical indicators. More importantly, NSOs may lack the capacity and experience to certify the quality of datasets produced by other institutions (public or private).<sup>13</sup> An often-cited reason for not authorizing the publication of international estimates is that “we [the NSO] are not in a position to validate these estimates”. In order to overcome this conundrum it is therefore essential to develop systematic data transmission and validation mechanisms at national level and to build the capacity of the NSO to effectively fulfil its role of quality assurance institution and coordinator of the national SDG reporting process.<sup>14</sup>

### 3.2. *Specific provisions of the guidelines not followed in practice*

The Guidelines contain other provisions that are non-controversial, but may become challenging when custodian agencies attempt to implement them. One such provision is 22.k), which describes the situation where a custodian agency has contacted the designated national focal point but no response has been provided within a reasonable timeframe. In such a case, a non-

<sup>13</sup>MacFeely S. (2018). Op. Cit.

<sup>14</sup>Another symptom of NSOs’ struggle with assuming a coordinating role is that less than 60 percent have identified an SDG focal point, “expected to respond to requests from custodian agencies in a timely manner and facilitate the coordination of data transmission within the NSSs for global reporting on the SDGs”.

response “will be taken as agreement with the statistics shared by the custodian agency”. Many countries, however, take issue with this provision, which is perceived by them as a way for a custodian agency to bypass the authority of the NSO. Despite this explicit provision therefore, a number of countries have transmitted formal complaints to custodian agencies about this practice, which has led many organizations to self-censor themselves by publishing only the estimates of those countries that have explicitly validated them. The consequence is a significant drop in the country coverage for the indicator, with crucial information being withheld from the international community; moreover, this implies a lack of transparency on how regional estimates are compiled.

### 3.3. *The absence of a specific mechanism for data validation*

The Guidelines may have inherent shortcomings in their various provisions, but one of the key challenges that countries and custodian agencies have faced in recent years is the absence of a specific mechanism for data validation. This was, and still is, a major constraint, despite the fact that two additional supporting documents on “criteria for implementation” as well as “best practices” were subsequently produced<sup>15</sup> to facilitate their adoption. Neither the Guidelines nor any of these supporting documents attempt to suggest particular modalities for how parties should go about the procedure. As a result, different custodian agencies have hitherto had to “go it alone”, effectively improvising new procedures and tools. This has created various types of inefficiencies: a) an unnecessary duplication of efforts and waste of resources as different custodian agencies try to resolve the same problem in their own way; b) increased bewilderment and confusion among recipient countries, who are confronted with varying approaches depending on the custodian agency; and c) an increased response burden for countries that receive multiple uncoordinated requests of data validation at different times of the year for a large number of indicators. There is clearly a need to find pragmatic solutions, as data validation is a resource-demanding exercise for both countries and custodian agencies. At the same time, finding a more efficient mechanism for data validation could improve data quality, as well as provide an opportunity to find solutions to the decades’ old problem of having different data for the same indi-

cators available in countries and in databases of international organizations.

## 4. **Proposal for a global data validation process**

To address this situation, the authors have developed a simple yet effective proposal for a standardized, coordinated approach for data validation among custodian agencies. The proposal is based on two distinct components: a) privileged access by countries to the Global SDG Database that acts as a repository of national estimates awaiting their validation; and b) a web survey for each custodian agency with which countries can provide their feedback in case of disagreement with the methods/estimates, as well as information on the availability of alternative national data and related data sources. This proposal would improve the data validation process in a number of aspects.

Firstly, it would provide a single location where countries could review and validate the provisional national values of all SDG indicators within a set timeframe. Such a repository would eliminate the need for different custodian agencies to come up with their own method of data sharing, and would constitute a common interface that all countries would quickly become familiar with. Countries would be informed that new data are uploaded and would be provided login credentials and a password for privileged access to the unpublished SDG data. They would then be given 30–40 days for their review. The schedule of this validation could be synchronized with the February deadline for the transmission of new data for the global SDG database: custodian agencies would thus need to upload their country estimates by an agreed date, so as to provide countries with a reasonable timeframe for reviewing the data and if needed, interacting with the custodian agency. The validated estimates could then simply be automatically relocated to the public section of the global database and thus formally released.

Secondly, such a mechanism would provide a standardized on-line survey tool to facilitate direct communication between countries and custodian agencies. This second component, which incorporates elements of a similar UNICEF proposal submitted to the 9<sup>th</sup> IAEG-SDG, would allow countries to provide feedback only if and when disagreements on the country values/methods were to emerge. It would also provide a platform for a negotiation process whose outcomes could be tracked for future reference. Such an approach would be in line with the UN Statistical Commission’s

<sup>15</sup>Op. cit., 4.

reiterated call for better coordination, a strengthened Secretariat role, and a more efficient UN Statistical System overall.

## 5. Conclusions

This paper has highlighted some of the main challenges in the validation of new indicator methods and the validation of data within the scope of the global reporting of SDG indicators. In particular, the paper has identified a number of challenges in the practical implementation of the IAEG-SDG's Guidelines on Global Data Flows and identified areas in need of further guidance from the IAEG-SDG. A pervasive underlying theme, already signalled by a nascent literature in this domain, is the thorny conundrum between the rising number of established indicator methodologies, the increasing normative and effective restrictions in the use of non-official country data, and the insufficient capacities of National Statistical Systems to deal with data reporting and data validation. The Guidelines on Global Data Flows have clarified some aspects of this conundrum, yet a number of contradictory and problematic provisions still risk undermining global reporting. To this end, the final section of this paper has outlined a practical mechanism of data validation that would cover the present gap in this domain and thus improve the global SDG reporting process.

The considerations made in this paper, though focused on the SDG indicator framework and the IAEG-SDG Guidelines, have wider ramifications for the dissemination of international official statistics. In many ways, the SDG indicators provide a testing ground for new approaches, modalities and procedures in data flows and global reporting. It is expected that, once the new modalities of global reporting are established, fine-tuned and eventually accepted as "good practice",

they will spill over to the wider remit of international statistics, beyond the SDG indicator framework. Data validation is a prime candidate here – but this will require greater clarity on the relevant criteria and the respective prerogatives of NSOs and custodian agencies.

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