United Nations | Department of Economic and Social Affairs

CEPA strategy guidance note on

Strengthening of national statistical systems

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The United Nations Committee of Experts on Public Administration (CEPA) has developed a set of principles of effective governance for sustainable development. The essential purpose of these voluntary principles is to provide interested countries with practical, expert guidance on a broad range of governance challenges associated with the implementation of the 2030 Agenda. CEPA has identified 62 commonly used strategies to assist with the operationalization of these principles. This guidance note addresses the strengthening of national statistical systems, which is associated with the principle of sound policymaking and can contribute to strengthening the effectiveness of institutions. It is part of a series of such notes prepared by renowned experts under the overall direction of the CEPA Secretariat in the Division for Public Institutions and Digital Government of the Union Nations Department of Economic and Social Affairs.

In reading this guidance note, individuals in government ministries and agencies who are less familiar with the topic will be able to understand the fundamentals. Those who have perhaps taken initial steps in this area with limited follow-through or impact will be able to identify how to adjust elements of their practice to achieve better results and to better embed and institutionalize the strategy in their organizations. Those who are more advanced in the strengthening of national statistical systems will be able to recognize the practices which contribute to its success.

Understanding the strategy

The national statistical system (NSS) is the ensemble of agencies and units in a country that produces official statistics on demographic, economic, social, environmental and technological situations, among others. The structure of such systems can be viewed in a continuum – from a system where a single agency is responsible for most of the official statistics, to a system in which there are numerous statistical agencies responsible for various statistics. The first end of the continuum is referred to as the centralized system and the other end refers to the decentralized system. The single agency in a centralized system, referred to as the national statistics office, is tasked with producing most official statistics for the system through censuses and surveys as well as compiling various data sources. Some statistics, usually sectoral statistics, are produced by the other agencies in the NSS.[1]

NSSs have achieved a reputation for producing reliable statistics for evidence-based monitoring and decision making. Examples of these statistics are: population count, gross domestic product, labour-force statistics, inflation, health statistics and vital statistics. Official statistics have unique advantages, listed in the United Nations Fundamental Principles of Official Statistics,[2] which make them indispensable.

- Official statistics are trusted because they are impartial: Good official data are produced free from political or commercial influence. Those who compile the statistics have no vested interests and are bound by a strict professional duty of impartiality.
- Official statistics are produced to recognized standards: Official statistics are based on open methodologies and produced to internationally recognized standards and are thus internationally comparable. They are produced transparently so that users can assess their accuracy and reliability.
- Official statistics are firmly based on evidence: They are generally based on survey and/or administrative data sources which are larger in scale than most non-official

[1] UN DESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf
[2] Principle 1 requires that official statistics are compiled and made available on an impartial basis by official statistical agencies. Principle 2 provides for methods and procedures for the collection, processing, storage and presentation of statistical data to be decided according to strictly professional considerations, including scientific principles and professional ethics. Principle 3 requires that information be presented according to scientific standards on the sources, methods and procedures of the statistics. Principle 4 entitles statistical agencies to comment on erroneous interpretation and misuse of statistics. Principle 5 states that data for statistical purposes may be drawn from all types of sources, be they statistical surveys or administrative records with consideration to quality, timeliness, costs and the burden on respondents. Principle 6 requires that individual data are to be strictly confidential and used exclusively for statistical purposes. Principle 7 states that the laws, regulations and measures under which the statistical systems operate are to be made public. Principle 8 emphasizes that coordination among statistical agencies within countries is essential to achieve consistency and efficiency in the statistical system.

> statistics. They are conducted and resourced according to national need rather than commercial expediency.[3]

However, a major challenge to the system is the proliferation of easily accessible data from other sources that address the increasing demands of various users especially for faster and more granular information. This challenge is reflected in the Report of the High-level Panel of Eminent Persons on the Post-2015 Development Agenda,[4] which called for a data revolution to support the eradication of poverty and to transform economies through sustainable development. Data revolution refers to the exponential increase in variety, volume and accessibility of available data to address development initiatives. The subsequent adoption of the Sustainable Development Goals (SDGs)[5] has given national statistical systems the crucial but challenging role of leading the production of data to ensure that no one is left behind. This leadership role includes coordination with organizations producing statistics that lie outside the existing statistical system, coverage of topics beyond the existing range of official statistics and, arguably most difficult of all, responding to the overarching principle of data disaggregation of the global SDG indicators:

"Sustainable Development Goal indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics, in accordance with the Fundamental Principles of Official Statistics (General Assembly resolution 68/261)."[6]

National statistical systems play a vital role in the achievement of the SDGs by providing data used in the Voluntary National Reviews (VNRs) that are presented at the United Nations High-level Political Forum on sustainable development and uploaded to the VNR online platform.[7] This role is acknowledged in the 2020 VNR Synthesis Report where it is reported that the majority of countries have incorporated data into their reviews, and over half of all VNRs in 2020 include a statistical annex.[8] NSSs have also started illustrating their vital role in their countries' commitment to the 2030 Agenda by providing data to global SDG data custodians for global and regional reporting. However, these reports show that data availability is a major challenge for all countries. In this regard, the global and regional development system has focused on providing support to strengthen national statistical systems to respond to the data demands of various users, in general, and of the 2030 Agenda, in particular.

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[3] UNECE, 2018, p.55. https://unece.org/fileadmin/DAM/stats/publications/2018/ECECESSTAT20182.pdf
[4] UN, 2013, https://www.post2020hlp.org/wp-content/uploads/docs/UN-Report.pdf
[5] UN General Assembly, 2015, https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E
[6] ECOSOC, 2017a, https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202020%20review_Eng.pdf
[7] UN DESA, 2020, https://sustainabledevelopment.un.org/vnrs/
[8] UN DESA, 2020, https://sustainabledevelopment.un.org/content/documents/27027VNR_Synthesis_Report_2020.pdf

The strategy of strengthening a national statistical system refers to making the system more effective in producing trusted official statistics for all of its users. Trust in official statistics has three underlying factors, which should be addressed by the strategy:

- Structural factors including the extent to which the statistics are, or are perceived as being, objective and independent, impartial and non-partisan (that is, not subject to political interference), and transparent (for example, release dates are publicized in advance and clear explanations are given for changes or revisions);

- Statistical factors including complying with international standards and having sound methodological practices, robust statistical processes and quality outputs;

- Reputational factors, which determine the public's opinion of official statistics, including practices such as the publication of relevant data on important and topical policy issues, public consultation, effective stakeholder management (such as with the media), and correction of inaccurate data, among others.[9]

The strengthening of national statistical systems is identified as a strategy for sound policymaking[10] and this note aims to provide guidelines for implementing this strategy. The vision of the statistical system of the future has been described in many ways and they all refer to a trusted system that produces official statistics from various sources guided by the United Nations Fundamental Principles of Official Statistics. The theory of change starts with legal and institutional frameworks (such as legislation), and financing support (especially from the government, champions and stakeholders). Collectively, they provide an enabling environment that promotes necessary changes in the key areas of coordination, standards, quality assurance, data production and use.

Public sector situation and trends

The global statistics community has discussed the strengthening of national statistical systems given the challenges brought by the SDGs and, since 2014, a number of significant milestones in these discussions have influenced the proposed strategy.

There is recognition of the need to transform official statistics so that they are able to support evidence-based decision making in their respective countries and to provide statistical information to meet commitments for the 2030 Agenda. The following strategic areas were identified by the global statistics community in a series of global and regional conferences in

[9] PARIS21, 2019, https://paris21.org/sites/default/files/inline-files/CRF_BackgroundNote_0.pdf
[10] ECOSOC, 2018a, https://publicadministration.un.org/Portals/1/Images/CEPA/Principles_of_effective_governance_english.pdf

2015–2016 for transformation to happen (i) coordination and partnerships; (ii) communication and advocacy; (iii) integrated systems for the production of statistics; (iv) innovation through the use of new technologies and data sources; and (v) capacity-building and resource mobilization.[11]

The urgency for national statistical systems to be most responsive to the statistical needs of the SDGs is reiterated by the Cape Town Global Action Plan for Sustainable Development Data adopted by the global statistical community in 2017. The goal of the action plan is to support innovation and address the widening, increasing and evolving needs of data users, including for the full implementation of the SDGs.[12] Many initiatives have already been completed under the guidance of the plan and reported by the United Nations Statistics Division.[13]

A survey conducted to update the Fundamental Principles of Official Statistics[14] revealed that most countries have the enabling environment needed to strengthen national statistics systems. However there are still areas that need improvement, such as: integration of the Fundamental Principles in legal frameworks; clarification of the role and responsibilities of actors other than the national statistics office within the national statistical system; level of awareness of the Fundamental Principles by other members of the national statistical system; coordination of both data production and data dissemination among members of the statistical system, and between national and international statistical agencies; national statistics office access to administrative data; use of innovative sources of data, such as big data and citizen-generated data; information to users about the quality of statistical data published by national statistics offices; data literacy among users and more proactive efforts to avoid the erroneous interpretation and misuse of statistics; sharing of resources and the implementation of joint data collection activities; data dissemination through common data portals; implementation of international statistical standards; and coordination mechanisms among donors that provide support for statistical activities.[15,16]

Consultations done in relation to updating the Handbook of Official Statistics[17] resulted in the recommendation that increased focus should be on the national statistics system as a whole, not just on the national statistics office, in terms of: (i) the implementation of the

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[11] ECOSOC, 2017b, https://unstats.un.org/unsd/statcom/48th-session/documents/2017-5-TransformativeAgenda-E.pdf
[12] HLG-PCCB, 2017, https://unstats.un.org/sdgs/hlg/Cape-Town-Global-Action-Plan/
[13] ECOSOC, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/2019-28-CapacityDevelopment-E.pdf
[14] UN DESA, http://unstats.un.org/unsd/dnss/gp/searchgp.aspx.
[15] UN DESA, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3b-FPOS-survey-results-E.pdf
[16] UN DESA, 2020, https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3v-Guidance_OD-E.pdf
[17] United Nations Economic and Social Council, 2018b, https://unstats.un.org/unsd/statcom/49th-session/documents/2018-5-Handbook-E.pdf

Fundamental Principles; (ii) the need for coordination among national statistical system members; (iii) the systematic reuse and exchange of data; (iv) the improved understanding of technological developments that have significant implications for data collection, handling and dissemination; and (v) the consideration of new data needs at the national and international levels by the producers of official statistics.

A survey in 2017 on New Approaches to Capacity Development and Future Priorities points to the need to strengthen coordination within national statistical systems, improve capacity in the use of new data sources, establish partnerships with the private sector to access big data and geospatial data, and provide training on management skills to improve planning and reporting. National statistics offices specifically note that they need to improve cooperation with providers of administrative data and other producers of statistics including non-traditional data sources. [18]

Financing, as an important enabler of the strengthening of national statistical systems, has been a key area of discussion during the first and second World Data Forums. A declaration of support to the implementation of the Cape Town Global Action Plan with appropriate financing was made in 2018. In 2020, a call was made to establish an innovative funding mechanism open to all stakeholders to respond quickly and efficiently to the priorities of national data and statistical systems. The call included the mobilization of domestic funds and the activation of partnerships.[19]

Methods of implementation

The following are the suggested methods for implementing the strategy.

Review of the National Statistical System

Reviews of the system are done for various purposes and the following are for the proposed strategy:

- for possible updating of legislation and institutional frameworks; and
- as a first step in crafting a medium-term national development plan for statistics.

The reviews can be led by stakeholders outside the system or by agencies within the system. In both cases, emphasis is placed on getting inputs from users as well as producers of new data. The virtuous data cycle of the Organisation for Economic Cooperation and

[18] PARIS21, 2018a and PARIS21, 2018b, http://www.paris21.org/sites/default/files/inline-files/CD40-survey-results-UNSC_Draft.pdf.
[19] HLG-PCCB, 2017, https://unstats.un.org/sdgs/hlg/Cape-Town-Global-Action-Plan/ and HLG-PCCB, 2020, https://unstats.un.org/sdgs/hlg/Global-data-communitys-response-to-COVID-19/

Development (OECD), based on PARIS21 and Open Data Watch[20] and used by the World Bank in its construction of the Statistical Performance Index, emphasizes that a successful statistical system is one whose products are highly used. See the section below on Peer-to-peer learning for more discussion on peer reviews.

Suggested references are the Handbook of Statistical Organization,[21] the United Nations Fundamental Principles of Official Statistics,[22] the United Nations Quality Assurance Frameworks,[23] and Capacity Development 4.0 of Paris21.[24] The following tools that provide indicators of performance may also be used: PARIS21's Statistical Evaluation and Progress Tool (STEP), National Strategies for the Development of Statistics (NSDS) Evaluation Tool and peer reviews; the Food and Agriculture Organization's In-depth Country Assessment; and the Data4SDGs produced by the Global Partnership for Sustainable Development.[25]

The performance of national statistical systems can also be tracked using the following indicators:

- World Bank Statistical Capacity Index;
- World Bank Statistical Performance Index, which is expected to be launched in 2021;
- PARIS21 Statistical Capacity Development Outlook; and
- Open Data Watch Open Data Inventory (ODIN).

Creating a national development plan for statistics

A clear national development plan for statistics is key to strengthening the national statistical system. This is usually a multi-year plan that includes the areas of development presented in Figure 1. The vision statement and the goals vary by country but they are aimed at strengthening the NSS to address the data needs of the country to support the national development plan. Developing the plan is usually done as a planning exercise of the whole

[20] Jutting, J. and I. McDonnel, 2017, *Overview: What will it take for data to enable development?* in *Development Co-operation Report 2017: Data for Development*, OECD Publishing, Paris. https://www.oecd-ilibrary.org/sites/dcr-2017-en/1/2/2/index.html?itemId=/content/publication/dcr-2017-en&_csp_=fbe5c4b8752a4197425bcc9e4401a633&itemIGO=oecd&itemContentType=book

[21] UN DESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf. and United Nations Economic and Social Council, 2018, https://unstats.un.org/unsd/statcom/49th-session/documents/

[22] United Nations General Assembly, 2014, https://unstats.un.org/unsd/dnss/gp/FP-New-E.pdf; UNGA, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3b-FPOS-survey-results-E.pdf; and United Nations Statistical Commission, 2020, https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3q-Supplementary_chapter-E.pdf

[23] Expert Group on National Quality Assurance Frameworks, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3d-NQAF-E.pdf.

[24] PARIS21, 2020, https://paris21.org/news-center/news/paris21-launches-capacity-development-40-guidelines

[25] PARIS21, 2018c, https://paris21.org/nss-assessments

NSS with the leadership of the national statistics office and participation of both data producers and data users of official statistics. It includes clear goals, strategic activities in the areas of development, participation of partners and champions, and identification of financing strategies. The core element is the medium-term objectives of the system. The statistics strategy is an explicitly political document which requires authorization and active participation from decision makers. The most common methodology for developing a statistics strategy is the National Strategies for the Development of Statistics (NSDS).[26] PARIS21 provides updated guidelines on the development of a national development plan, NSDS Guidelines 2.3, released in 2017 that contains chapters on key emerging issues, subnational statistics, data dissemination, the data revolution, SDGs, open data, and a data planning tool (ADAPT) that helps identify budgets for various official statistics.[27]

Development of a medium-term expenditure programme

The medium-term expenditure programme is envisioned to be the companion document of the National Development Plan for Statistics. It provides the budgets for the censuses, surveys and other programmes in the plan. It also serves as a reference when requesting annual budgetary allocations from the government as well as funding from external sources. PARIS21's ADAPT planning tool may be used to craft the expenditure programme. An external expert on finance is usually tasked to develop it.

Capacity development

Capacity development is the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time.[28] Essential to sustained capacity development is the leadership and culture of the national statistical system. A culture that fosters learning, innovation and collaboration is a pre-requisite for the necessary radical adaptive changes that are required as the external environment continues to change rapidly. The World Bank, in developing a statistical performance index, defines statistical capacity as the ability of a national statistical system to meet user needs for relevant and good quality statistics in a timely manner. A well-functioning system is described as one that is able to collect, analyse and disseminate high-quality data in a format that users can access and use with transparency through the availability of adequate metadata. A capable statistical system should also be able to bring about transformation that is generated and sustained over time.[29]

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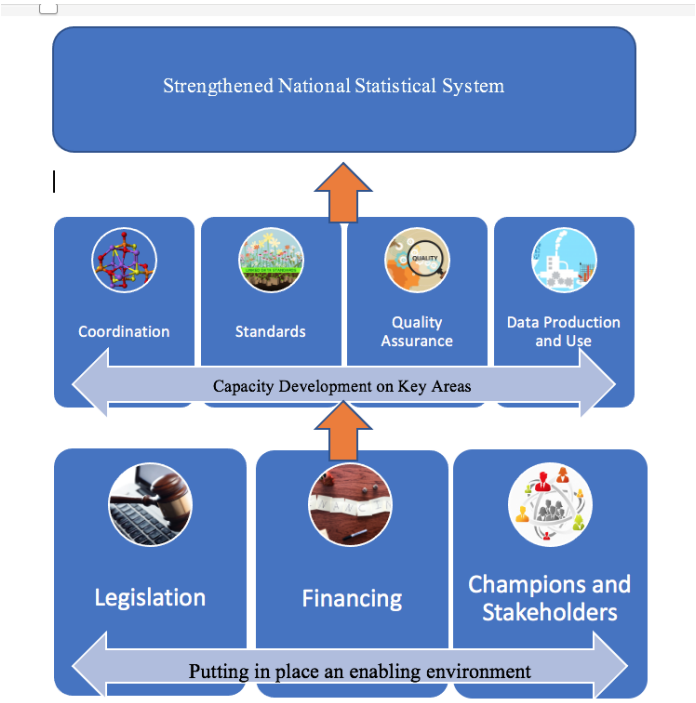
[26] https://ec.europa.eu/eurostat/statistics-explained/index.php/Statistics_in_development_cooperation_-_National_Strategies_for_Development_of_Statistics#:~:text=National%20Strategies%20for%20the%20Development%20of%20Statistics%20(NSDS)%20is%20the,for%20the%

[27] PARIS21, 2017a, https://nsdsguidelines.paris21.org/

[28] UNDP, 2009, https://www.undp.org/content/undp/en/home/librarypage/capacity-building/capacity-development-a-undp-primer.html

[29] World Bank, 2019, *The World Bank Statistical Performance Index: Assessing country-level statistical performance on a global scale.*

Figure 1. A new strategy to strengthen the national statistical system



Source: Author

The diagram presented in Figure 1 reflects the theory of change that starts with legal and institutional frameworks collectively providing an enabling environment that promotes the necessary changes in key areas of coordination, standards, quality assurance, data production and use. Capacity development is the main method of implementation in the actualization of this diagram.

Putting in place an enabling environment

Legislation. A country's national statistical system is created by legal instruments,[30] usually a statistics act which includes: (i) the main actors and their rights and responsibilities; (ii) the relationships among those within the system and other entities outside the system, including the coordination mechanism; (iii) the statistical products and services that the system is to produce; (iv) obligations and rights of respondents; (v) confidentiality of collected information; and (vi) professional independence of national statistical authorities with exclusive authority on methods and dissemination with protection against political interference. The main actors include the agencies in the system as well as their leaders. The agencies are the country's national statistics office and other agencies that generate sectoral

[30] The NSS of the Philippines, for example, was created by an Executive Order before it was reorganized through the Philippine Statistical Act of 2013.

statistics such as those in agriculture, education, health, the environment, banking and finance. The leading authority is the chief statistician who heads the national statistics office and the body that oversees the system. Other actors that are part of the system are the staff of the agencies comprising the NSS as well as the respondents: individuals, households and establishments. In many countries, there is a national statistics council that serves as the country's policymaking body in statistics. The national statistics office is usually tasked with conducting censuses and general-purpose surveys and serves as the coordinator of the NSS.[31] The United Nations Statistics Division, of the United Nations Department of Economic and Social Affairs, provides a compilation of legislation governing statistical systems of United Nations Member States.[32]

Financing. Assuring the adequacy of resources is an important principle for quality assurance of official statistics. The financial, human and technological resources available to statistical agencies should be adequate both in magnitude and quality, and sufficient to meet their needs regarding the development, production and dissemination of statistics. Requirements under this principle are that financial, human and technological resources are sufficient to implement the statistical work and development programme; planning and management principles are aimed at the optimal use of available resources; and the statistical agencies' use of resources is reviewed.[33] Two sources for the domestic financing of official statistics, with the first more important than the other, are: (i) appropriations through the government budget, both for the central statistical agency (if there is any) and for statistical cells in ministries; and (ii) revenue that statistical offices generate by selling products and services at market prices.[34,35] It must be noted, though, that in many countries, donor support continues to be essential to enable the future development of the NSS. The primary goal for such support should be to help the country achieve a sustainable system.

Champions and stakeholders. The national statistical system should have stakeholders that support its work. Champions are individuals that support the system in various areas such as human resources requirements, infrastructure needs, and budgetary support. Data advocates and champions are influential persons who draw some audiences to technical issues and discussions. Employing these individuals as the face of the national statistical system can extend the reach of statistical products and services to new, especially non-specialist, audiences. They are well-respected figures who have the power to bring people together for information gathering or promotion of the system.[36] As well as stakeholders that support the work of the NSS, the future NSS is likely to bring on board many more partners as active

[31] UNDESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf pp. 37-38.
[32] https://unstats.un.org/unsd/dnss/kf/LegislationCountryPractices.aspx
[33] https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3d-NQAF-E.pdf p. 24.
[34] UNDESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf pp. 56-57.
[35] UNDESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf pp. 56-57.
[36] UNECA, 2020, https://repository.uneca.org/bitstream/handle/10855/43833/b11988356.pdf?sequence=1&isAllowed=y

contributors to the system. Such partners will include new data providers, organizations that can contribute new methods and tools and help build the capability of the NSS, including universities, and others who support better use of data, including the media.

Capacity development in key areas

Coordination. Coordination is the activity that entails establishing meaningful and effective linkages among various agencies and units within the NSS. It includes the active participation of these agencies for priority setting, effective utilization of common resources, harmonization and integration of statistics and use of common standards.[37] Coordination has always been considered as an essential function specifically of the national statistics office[38] and it continues to be so in the changing data landscape brought about by the SDGs and technological advances. The advent of the Post-2015 Development Agenda data revolution and the increasing focus on digital data, the so-called big data era, have advanced the concept of a data ecosystem which includes the traditional data produced by NSSs as well as data beyond the NSS, such as data produced by the private sector, civil society organizations, academia and regional agencies.[39] Thus, coordination is needed not just with the various units of the national statistical system but also with emerging data sources (and in two contexts – as providers of source data to national statistics offices and national statistical systems for the production of official statistics and as providers of statistics which are used by the public and governments instead of official statistics from the NSS providers). Coordination may have to be viewed in a broader scope of data stewardship and engagement with various stakeholders. It is expected that as a country's data ecosystem evolves and matures, the role of a data ecosystem coordinator must be considered and existing coordinators, such as the national statistics office as coordinator of the NSS, is one such possibility (e.g. in New Zealand, the government has assigned the role of Chief Data Steward to the Government Statistician; in other countries, the role of Chief Data Steward may be with the Chief Digital Officer).

Standards. Statistical standards are a comprehensive set of statistical concepts, definitions, classifications and models, methods and procedures used to achieve the uniform treatment of statistical issues within or across processes and across time and space. The use of standards promotes the consistency and efficiency of statistical systems at all levels. The national statistics office is expected to provide support and guidance to all data providers and producers of official statistics in the implementation of statistical standards.[40] As well as meeting national user needs, NSSs should meet international, regional and national data standards. Any divergences should be documented and explained to all stakeholders.

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[37] Majelantle, A. N., 2008, Coordination of National Statistical Systems and Reporting Mechanisms for MDG Data to International Agencies: Botswana Experience.
[38] UNDESA, 2003, https://unstats.un.org/unsd/publication/SeriesF/SeriesF_88E.pdf, pp. 113-114.
[39] OECD, 2017, https://doi.org/10.1787/dcr-2017-8-en
[40] Expert Group on National Quality Assurance Frameworks, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3d-NQAF-E.pdf, p. 29.

Quality assurance. Quality is the hallmark of official statistics and national statistical systems are expected to commit to quality. These are exhibited through: a quality policy or a statement of the agency's commitment to quality, which is publicly available; the promotion of a culture of continuous improvement; a specific body responsible for quality management or the existing coordination of quality management within the agency; national statistical system staff receive training on quality management; guidelines for implementing quality management are defined and made available to the public; indicators on statistical output quality are regularly measured, monitored, published and followed up on to improve statistical products and processes; statistical products and processes undergo periodic reviews; and risk analyses addressing the quality of important statistical products and processes are performed.[41] Other dimensions of quality such as timeliness, disaggregation and inter-operability also need careful assessment. The United Nations National Quality Assurance Frameworks Manual for Official Statistics addresses quality assurance in the development, production and dissemination of official statistics. Quality principles and associated requirements are enumerated, covering overarching institutional and cross-institutional management, statistical production processes, and outputs. NSSs are expected to fully observe international standards, guidelines and good practices to develop, produce and disseminate official statistics, while constantly striving for innovation.[42]

Data production and use. Users of statistics now expect that data and information should be instantaneous. National statistical systems need to modernize their data production systems and expand their data sources to address this expectation of users. The release of statistics may not be instantaneous but modernized systems can lessen the gap between data collection and data dissemination. A culture of innovation needs to be cultivated in the system in order to do this. Data collection in censuses and surveys need to consider the integration of collected geospatial information and data. This includes the use of computer-assisted interviews and monitoring of field operations in real time.

Other sources of data to augment those from censuses and surveys should be used to address the need for faster and more granular information, as well as the need to constantly deliver information with regard to costs. These data include administrative data, data from web scraping, data from satellite imagery, and mobile positioning data. The estimation of statistics using statistical modelling is another methodology that should be explored. For example, Singapore uses web scraping to generate price data; Indonesia uses mobile positioning data for tourism statistics; the Philippines used satellite imagery for conflict areas in the conduct of its Census of Population and Housing in 2020; the Asian Development Bank developed the use of night luminosity for poverty estimation and satellite data for estimating palay production in the Philippines; and Mexico uses the geostatistical framework of its national

[41] Ibid, p. 31.
[42] Expert Group on National Quality Assurance Frameworks, 2019, https://unstats.un.org/unsd/statcom/50th-session/documents/BG-Item3d-NQAF-E.pdf, p. 32.

statistics office in producing statistics at different levels of disaggregation in its national territory.

With regard to the dissemination of official statistics, it is important for the system to develop an open data culture. The International Open Data Charter defines open data as digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, at anytime and anywhere. It is operationalized through six open data principles: open by default; timely and comprehensive; accessible and usable; comparable and interoperable; for improved governance and citizen engagement; and for inclusive development and innovation.[43] For the NSSs and national statistics offices, specifically, adopting an open data culture following the principles of open data will allow the world to monitor the most pressing issues of development and ensure no one is left behind. It is reported that there is a lot of overlap between the Fundamental Principles of Official Statistics and the principles of open data. The adoption of an open data culture allows both of these frameworks to become enshrined at national statistics offices and their NSS partners.[44]

Case study

The Philippines has supported the strengthening of its national statistical system, the Philippine Statistical System. The following are good practices that have contributed to a continuous and sustainable development of the system.

Review and revision of legislation. The Philippine Statistical System is regularly assessed with a view toward providing updated legislation under which the system works. The review is initiated by the highest statistics policymaking body. The Philippine Statistical Act of 2013[45] was enacted after a 2007 assessment of the system by a special committee recommended that they system be reorganized.[46] Prior to the 2013 Act, the system's mandates were under a 1987 Executive Order of the President of the Philippines, which was the result of a 1986 assessment.[47] It must be noted that the assessments were two decades apart and the Act of 2013 was realized six years after the assessment. Despite this, the legislation has provided the system with a clear base for crafting its long-term and annual workplans and budgets from the government.

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[43] Open Data Charter, 2015, https://opendatacharter.net/wp-content/uploads/2015/10/opendatacharter-charter_F.pdf, p. 1.
[44] Working Group on Open Data, 2020, https://unstats.un.org/unsd/statcom/51st-session/documents/BG-Item3v-Guidance_OD-E.pdf
[45] Republic Act 10625, 2013, https://psa.gov.ph/content/philippine-statistical-act-2013
[46] Strategic Review And Evaluation of the Philippine Statistical System, (2007), https://pidswebs.pids.gov.ph/pss/FINALPSS.pdf
[47] NSCB, 2007, https://unstats.un.org/unsd/dnss/docViewer.aspx?docID=1577

Strong coordination within the system and with other stakeholders. The Philippine Statistical System is composed of statistical organizations at all administrative levels, the personnel therein and the national statistical programme. This includes:

- the Philippine Statistics Authority Board chaired by the Secretary for Socioeconomic Planning and head of the planning department, the National Economic and Development Authority;
- the Philippine Statistics Authority, which is a coordinating body with primary data collection capability;
- the Philippine Statistical Research and Training Institute; and
- all executive departments, bureaus, offices, agencies and instrumentalities of the national and local governments and all government-owned and government-controlled corporations and their subsidiaries that are engaged in statistical activities either as their primary function or as part of their administrative or regulatory functions.

A very strong coordination mechanism with the Philippines Statistics Authority as the coordinating agency exists. Coordination is done at various levels of the bureaucracy from the high-level coordination in the Philippines Statistics Authority Board to the Regional Statistics Committees of the country's 17 regions. Technical coordination is strong in the Interagency Committees and the Technical Working Groups which usually include private sector and development agencies in their discussions.[48] Coordination on standards setting is also clearly maintained in the system. These discussions start within the committees and working groups and are approved by the Philippines Statistics Authority Board and uploaded to their website.[49] An inventory of statistical standards in the Philippines (ISSIP)[50] and an archive of metadata for censuses and surveys, the PSA Data Archive (PSADA), following the data documentation initiative[51] are also on the Philippines Statistics Authority website. Some standards have yet to be adopted by the system, such as the Statistical Data and Metadata Exchange (SDMX). Other stakeholders that support the activities of the system and are included in the coordination mechanisms are academia (e.g., the University of the Philippines) and professional societies, (e.g., the Philippine Statistical Association and the Philippine Social Science Council). Joint activities of the system with these groups include the triennial National Convention of Statistics, National Statistics Month conducted nationwide annually every October, and the annual Philippine Statistics Quiz conducted nationwide during the last quarter of the year.

[48] https://psa.gov.ph/content/interagency-committees-statistics
[49] https://psa.gov.ph/psa-board-4
[50] https://psa.gov.ph/ISSiP
[51] http://psada.psa.gov.ph/index.php/home

Champions that support financing the activities of the system. Financing for the censuses and core surveys as well as statistics programmes have been fully funded by the government through the annual general appropriations act. The Philippines Statistics Authority benefits from high-level political support, particularly from the secretaries of the economic and development authority and legislators. Stakeholders, such as in the local news media and in social media outlets, promote interest in the products of the Philippines Statistics Authority and the whole statistical system through their reports and columns in the newspapers and social media and thus contribute to the reputation of the system as a trusted data provider.

Alignment of the national development plan for statistics with the national development strategy. The Philippines crafts a national development plan for statistics, the Philippine Statistical Development Programme (PSDP), every time there is a new government in power, which has proven effective in its continuous work on updating statistical activities and programmes. The PSDP for 2018-2023 includes a chapter on data for SDGs and a chapter on capacity development, considered a cross-cutting chapter compared to other chapters which focus on sectoral statistics.[52] The PSDP has been produced since the 1980s[53] and has adopted the NSDS guidelines of PARIS21. The PSDP is a product of planning by the various agencies and actors in the system as well as other stakeholders. The Philippines Statistics Authority Board approves it for adoption with corresponding budgets for the agencies of the system.

Institutional support for research and training. The Philippine Statistical Research and Training Institute[54] is tasked with providing the research and training needs of the system. In the past two years, it has offered trainings to local government units to monitor the SDGs, specifically with disaggregation in mind. In 2020, the Institute piloted, with PARIS21 and with the Philippines Statistics Authority, the use of the Capacity Development 4.0 framework at the subnational level with a focus on gender statistics for the SDGs, and as part of the community-based monitoring system.[55]

Culture of innovation. The Philippine Statistical System has adopted a culture of innovation and provides various officials and staff with the opportunity to learn about these advancements through international and national engagements. Some of these are:

- crafting of the medium-term expenditure programme (MTEP) with the World Bank for the Philippines Statistics Authority's censuses and surveys, which provide references for annual budgets of surveys and censuses;

[52] http://www.psa.gov.ph
[53] https://psa.gov.ph/philippine-statistical-system/psdp/program/2018-2023
[54] https://psrti.gov.ph/home/
[55] https://paris21.org/news-center/events/operationalising-cd40-philippines-strengthening-gender-statistics

- use of Computer Assisted Personal Interviews for the conduct of surveys with the World Bank for the Family Income and Expenditures Survey;
- having open data portals in the agency websites with the World Bank;
- developing new statistical products such as the multidimensional poverty index, and satellite accounts under the Wealth Accounting and Valuation of Ecosystem Services with the World Bank;
- developing a data ecosystem that considers new sources of data such as citizen-generated data with PARIS21 and satellite data for the estimation of palay production and poverty using nighttime luminosity with the Asian Development Bank;
- developing geospatial platforms from planning for the census to the dissemination of data in partnership with the private sector, Esri,[56] with this innovation used in selected provinces for the Census of Population and Housing 2020; and
- conduct of a Philippine Data Festival to expose young people to the Philippines Statistical System.

Peer-to-peer learning and research

Much research on strengthening national statistical systems has been done to emphasize the need to expand data governance to include new data sources and actors outside of the traditional sources and actors. The OECD Development Cooperation Report in 2017[57] focused on data and provided a chapter on the role of national statistical systems in the context of the post-2015 development agenda data revolution. The concept note of the World Bank's 2021 World Development Report focuses on Data for Better Lives. One of the chapters of the note is on data governance, which is defined as "the confluence of policies, platforms, and state and non-state institutions for the effective creation, collection, storage, management, sharing, use and destruction of data." A holistic view of data governance is discussed, encompassing "both formal and informal institutional arrangements, public and private sector roles, as well as the supply and demand-side of governance (including civil society participation)." [58]

[56] https://www.esri.com/en-us/home
[57] OECD, 2017, https://www.oecd-ilibrary.org/development/development-co-operation-report-2017_dcr-2017-en
[58] World Bank, 2020, http://documents1.worldbank.org/curated/en/778921588767120094/pdf/World-Development-Report-2021-Data-for-Better-Lives-Concept-Note.pdf, p. 35.

PARIS21 provides a comprehensive guide for various assessment tools for national statistics systems, including indicators for self-assessment.[59] Of the various assessment tools it enumerated, peer reviews have been used by the global statistical community to help accelerate the strengthening of national statistics systems. Peer reviews – in their current format – incorporate elements from both self-assessments and external assessments and complement them with examples from peers on how to perform better. Our research shows that peer reviews are beneficial to both reviewed countries and reviewers. Peer reviews are an effective mechanism to encourage action that does not unnecessarily speed reform beyond a country's capacity, avoiding capacity traps.[60]

Peer reviews have been used by the European Union to assess compliance with the European Statistics Code of Practice. These peer reviews include light peer reviews and sectoral peer reviews. Light peer reviews are for relatively well-developed statistical systems of those countries that are on the way to joining the European Union while sector reviews are those tailored to the needs of the partner country that aims to align important areas of statistics with European standards.[61] PARIS21 facilitates South-South learning in statistical development reviews with a focus on national statistics system governance, organization, strategic planning, service to users, funding and sustainability. Peer review teams typically include both senior statisticians (usually the head or deputy head of the national statistics system) and senior policymakers from two other countries. PARIS21 facilitated peer reviews from 2007 to 2017 for various countries including those in Southeast Asia and in Africa.[62] The peer reviews aim to accelerate the change processes in reforming statistical systems using first-hand experience of the good practices of peers.[63]

International development cooperation

There are many international development partners that national statistical systems can access for support. Development cooperation takes many forms, such as trainings, funding and technical assistance. This section focuses on the latter. The following are facilities for international technical assistance for strengthening national statistical systems:

[59] PARIS21, 2018c, https://paris21.org/sites/default/files/2018-08/NSS-Assessment-Guide%20-%20WEB.pdf
[60] Mohamedou, E., B. Baredes, G. Tejada and J. Matthiessen, 2019, *"Improving national statistical systems: The role of peer reviews",* PARIS21 Discussion Paper, No. 16. http://paris21.org/paris21-discussion-and-strategy-papers
[61] https://ec.europa.eu/eurostat/web/enlargement-countries/publications/reports
[62] PARIS21, 2017b, https://paris21.org/peer-reviews
[63] Ibid.

The Trust Fund for Statistical Capacity Building[64] supports the preparation and updating of National Strategies for the Development of Statistics (NSDS); and improving statistical capacity in key priority areas within the framework of NSDS, regional or global strategies.

The Statistics for Results Facility Catalytic Fund[65] is managed by the World Bank and consists of a new system-wide approach and new funds. It is specifically designed to support the implementation of NSDSs and provides funding for project preparation and supervision.

The World Bank Statistical Capacity Building Technical Assistance Partnership[66] aims to improve:

- institutional capacity (including statistical policy, regulatory and institutional frameworks, independence, confidentiality, dialogue with data users, statistical operations, and statistical procedures and training);
- statistical infrastructure (such as business registers, sampling frames, classifications, database structures and geographic information systems); and
- physical working conditions, including the use of information technology.

The Clearinghouse for financing development data has been created to support the Bern Network.[67]

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[64] https://www.worldbank.org/en/data/statistical-capacity-building/trust-fund-for-statistical-capacity-building
[65] https://www.worldbank.org/en/data/statistical-capacity-building/statistics-for-results-facility-catalytic-fund
[66] https://projects.worldbank.org/en/projects-operations/news-media/P083511
[67] https://paris21.org/sites/default/files/inline-files/12102020%20one%20pager%20Bern%20Network_1_4.pdf