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Items for discussion and decision: information and communications technology statistics

Report of the Partnership on Measuring Information and Communication Technology for Development

Note by the Secretary-General

In accordance with Economic and Social Council decision 2021/224 and past practices, the Secretary-General has the honour to transmit to the Statistical Commission the report of the Partnership on Measuring Information and Communication Technology for Development. The Commission is invited to endorse the revised core list of indicators, to highlight the need to implement the revised guidelines with a view to improving the availability and quality of indicators on information and communications technology (ICT) and better assessing the digital readiness to face crises such as that caused by the coronavirus disease (COVID-19), to support the collection of indicators on waste electrical and electronic equipment and to recommend the use of the latest methodological material and related capacity-building resources produced by the Partnership.

* E/CN.3/2022/1.



I. Introduction

1. The Partnership on Measuring Information and Communication Technology for Development was launched in 2004 to improve the availability of internationally comparable statistics on ICT.¹ Since 2005, ICT statistics have been a regular item on the agenda of the Statistical Commission, recurring every two years. The Partnership issued its latest report in 2020 (E/CN.3/2020/23). In the present report, the Partnership provides an overview of the work it has undertaken since then and considers the impact of the COVID-19 pandemic.

II. Recent trends in the measurement of information and communications technology

A. Impact of the pandemic on the demand for and the production of information and communications technology statistics

1. Regional perspectives

(a) Latin America and the Caribbean

2. The COVID-19 pandemic has precipitated the digital transformation in Latin America and the Caribbean and shown the potential of digital solutions to support activities of all kinds and enable the exercise of fundamental rights such as education and health. At the same time, it has exposed how digital gaps between and within countries shape social inclusion and economic growth. The region needs effective policies and evidence-based strategic decisions to promote digital development and avoid accentuating pre-existing socioeconomic gaps.

3. During the pandemic, indicators of access to ICT and use of digital solutions such as teleworking, distance education, e-commerce and online banking acquired greater relevance for the design and definition of policies and specific strategies. The main challenge facing the region was that, in addition to the traditional connectivity indicators, it needed evidence of this type of use. That said, during the pandemic, connectivity indicators at the individual and household levels were crucial in identifying the socioeconomic effects of the digital divide within countries. For example, in 2018, nearly 23 million households, representing half of the total number of households with no Internet connection, were in the two lowest income quintiles. Of the children in the region aged between 5 and 12 years, 46 per cent lived in households that were not connected to the Internet, which means that more than 32 million children were effectively excluded from education when schools could not offer face-to-face classes. The inability to access education and work because of a lack of connectivity has profound effects in the short and medium term. It is a source

¹ As at November 2021, the following entities were members of the Partnership on Measuring Information and Communication Technology for Development: the International Telecommunication Union, Organisation for Economic Co-operation and Development; the United Nations Conference on Trade and Development; the Institute for Statistics of the United Nations Educational, Scientific and Cultural Organization; the Economic Commission for Latin America and the Caribbean; the Economic and Social Commission for Western Asia; the Economic and Social Commission for Asia and the Pacific; the Economic Commission for Africa; the Department of Economic and Social Affairs of the United Nations Secretariat; Eurostat; the United Nations Environment Programme secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; the Sustainable Cycles Programme of the United Nations University Vice-Rectorate in Europe; the World Bank and International Labour Organization.

of inequality that must urgently be addressed by adopting policies that promote universal access.

4. On the basis of traditional indicators and data innovation, the Economic Commission for Latin America and the Caribbean has drawn up a policy brief entitled “Universalizing access to digital technologies to address the consequences of COVID-19”. It contains policy recommendations in which the challenges of the pandemic and a future recovery are addressed. The recommendations have resulted in a proposal to create a basic basket of technological products comprising a laptop, a smartphone and a tablet that could be used, for example, to promote the participation of women in the digital economy and close the digital gender gap.

(b) Asia and the Pacific

5. In the Asia-Pacific region, the pandemic-related restrictions highlighted that digital connectivity and technology play a critical role in ensuring that critical infrastructure, services and supply chains continue to operate and in enabling remote work and schooling from home. The pandemic highlighted the need to access new sources of data and statistics on ICT to better understand how the widening digital divide is harming vulnerable groups and the need to build back better in the aftermath of COVID-19. In response, the Economic and Social Commission for Asia and the Pacific examined regional trends relating to the digital divide and areas of low broadband access (fixed and mobile), using data sources such as International Telecommunication Union (ITU) statistics² and new data sources based on geospatial data on broadband speed and quality (latency) made available by the company Ookla.³

6. As a result, there is a better understanding of the digital connectivity trends in the Asia-Pacific region that forms a good basis for regional policy dialogues and regional cooperative actions. The analysis by the Economic and Social Commission for Asia and the Pacific indicates that, in the midst of the pandemic, the region was digitally advanced but also the most digitally divided. According to Ookla data, the speed of fixed broadband differed significantly between countries in the region during the pandemic. The fixed broadband download speeds in Thailand (109 Mb/s) and the Republic of Korea (103 Mb/s) were four times higher than the regional average. In addition, some economies in the region, including Hong Kong, China, together with the Republic of Korea, Japan, Thailand, Viet Nam and, to some extent, the Lao People’s Democratic Republic, show almost uniform mobile broadband download speeds countrywide.

7. However, there are significant disparities in broadband speed, both fixed and mobile, between the urban and rural areas of some countries in South and South-West Asia, North and Central Asia and the Asia-Pacific landlocked countries. According to ITU broadband access statistics, the subregions with the lowest average shares of fixed-broadband subscriptions were South-East Asia (6 per cent of the population), South and South-West Asia (3 per cent) and the Pacific island developing countries (1 per cent). For mobile broadband, access statistics were lowest in South and South-West Asia, with only 40 per cent of the population having access.

8. These statistics provided the context for cooperation between Economic and Social Commission for Asia and the Pacific and its member States to develop the Asia-Pacific information superhighway action plan (2022–2026), under which a

² See [ESCAP/76/21](#).

³ See Siopé Vakataki ‘Ofa and Cristina Bernal Aparicio, “Visualizing broadband speeds in Asia and the Pacific”, Asia-Pacific Information Superhighway Working Paper, No. 02/2021 (Bangkok, Economic and Social Commission for Asia and the Pacific, 2021).

multistakeholder platform will be created for the coordination of digital connectivity, digital technology applications and digital data.

(c) Europe

9. In Europe, the members of the European Statistical System received requests for data to support further policymaking during a time of remote schooling, education and work in connection with the pandemic. In particular, there was an interest in families with children or students in the household, to look at different variables related to, for example, their Internet connection, household income quartile and level of education. Moreover, there was an interest in data on a digital skills indicator at the regional level in conjunction with certain variables on Internet connectivity, access to the Internet outside the home and household income. The European Statistical System noted a great interest in data on the impact of the pandemic on the way in which companies function. Subsequently, a special module was added to the 2021 survey on ICT usage and e-commerce in enterprises that included questions on remote access to company resources, remote meetings and greater efforts to sell online. Furthermore, new questions on remote meetings and remote access to company resources were added to the 2022 survey on ICT usage and e-commerce in enterprises.

10. Eurostat also noted that the pandemic hampered the collection of data in the States members of the European Union in many ways. With regard to the survey on ICT usage in households and by individuals, access to respondents was limited (face-to-face interviews were particularly affected), as was the response rate for the ICT enterprises survey, given that many businesses had suspended or shut down their activities. However, the national statistical offices made enormous additional efforts to adapt their data collection methods (e.g. by shifting from face-to-face interviews to telephone or online interviews) or extended their data collection periods, which resulted in successful data collection and the dissemination of reliable data for the pandemic period.

(d) Western Asia

11. In Western Asia, the pandemic had a disruptive effect on Arab national statistical systems and particularly affected the collection of official statistics. In a survey carried out by Economic and Social Commission for Western Asia in the first quarter of 2020, 84.6 per cent of the respondent countries indicated that their statistical work, mostly data collection, had been affected. Four Arab countries postponed their national census from 2020 to 2021. Lockdowns and the inability to conduct in-person surveys were given as the main causes.

12. Although field data collection may have been reduced or have come to a complete standstill in most Arab countries, around 77 per cent of the respondent countries indicated that the pandemic had ushered a new era in data collection by non-traditional methods, such as phone calls, emails, social media, call detail records and web scraping. The need to provide daily COVID-19 case reports and vaccination tracking platforms, owned and operated by different national agencies and the private sector, forced a collaboration that would not have been possible before. Overall, although COVID-19 disrupted data collection, it triggered a transformation in the field of statistics in the region and created an unprecedented momentum towards the use of ICT in statistics, the integration of new data sources (deeply entrenched in digital data) and digital data collection that could become the new normal.

13. In July 2020, the survey results published by the Department of Economic and Social Affairs in *E-Government Survey 2020* showed that, despite the persistent digital divide, COVID-19 had pushed more government activities online. There was

progress overall, since 22 per cent of countries rose to higher levels of e-government development. Governments continued to deliver digital services. In addition, the pandemic forced them to deploy new tools and services such as dedicated COVID-19 information portals, e-services for the supply of medical goods, virtual medical appointments, teleworking, distance learning, and applications for vaccination certificates, contact tracing and self-diagnosis. The consultations in preparation for *E-Government Survey 2022* were concluded in June 2021.⁴

2. Big data for indicators on information and communications technology

14. Traditionally available statistics do not provide the information necessary to identify such changes in digitalization in a timely manner. The pandemic has shown that there is a need to promote data innovation as a complement to traditional ICT indicators. The Economic Commission for Latin America and the Caribbean appealed to the use of big data techniques to measure different aspects of the digital economy.

15. Big data analysis by the Economic Commission for Latin America and the Caribbean showed that at the beginning of the pandemic, businesses had taken advantage of their online presence to reach consumers, as proved by the significant year-on-year increase in the number of business websites in Brazil, Chile, Colombia and Mexico in March, April and May 2020 (there was an 800 per cent increase in Colombia and Mexico, and a rise of about 360 per cent in Brazil and Chile). The numbers of transactional (active-presence) business websites and e-commerce platforms saw the largest increases. In Brazil and Mexico, the number of new e-commerce sites increased by more than 450 per cent in April 2020 compared with the same month in 2019. Meanwhile, the number of active-presence websites in Colombia and Mexico increased by nearly 500 per cent in the same period. Data on new vendors in regional marketplaces also show the significant boost in e-commerce in 2020, and its relevance for small and medium-sized enterprises to reach their customers.

16. By capturing prices on websites, an estimate could be made of the annual cost of a basic basket of technological products comprising a laptop, a smartphone and a tablet. On the basis of the cost of such devices and the monthly payment for a fixed connection and a mobile subscription, the Economic Commission for Latin America and the Caribbean estimated that, in many countries in the region, a basic ICT basket could be provided to households that did not have any at an annual cost of less than 1 per cent of the gross domestic product.

17. ITU is looking into innovative ways to use big data as a new data source and to overcome significant data gaps. Discussions were held at several meetings of the World Telecommunication/ICT Indicators Symposium in the period from 2013 to 2020, and in the work of the Expert Group on ICT Household Indicators (EGH) and the Expert Group on Telecommunication Indicators/ICT Indicators (EGTI). In addition, ITU plays an active role in the Committee of Experts on Big Data and Data Science for Official Statistics through its task teams on skills and capacity-building, big data and the Sustainable Development Goals, and currently leads the task team on mobile phone data.

18. As a key contribution of ITU to the exploration of new data sources for official statistics, ITU launched, in June 2016, a pilot project on the use of big data for measuring the information society. The project was implemented in six countries (Colombia, Georgia, Kenya, the Philippines, Sweden and the United Arab Emirates), and, in 2020, in two more (Brazil and Indonesia), to explore how big data from mobile operators could complement existing indicators to measure the information society.

⁴ See <https://publicadministration.un.org/en/Research/UN-e-Government-Surveys>.

In the Brazil and Indonesia pilot projects, methodologies related to Sustainable Development Goal indicators 9.c.1 and 17.8.1 were tested. A handbook on using mobile phone data to measure the ICT indicators for the Sustainable Development Goals will be published in 2022 as one of the six handbooks of the Committee of Experts task team on mobile phone data. ITU will also publish its first handbook on the use of mobile phone data for measuring the information society in January 2022. The handbook will include methodologies and recommendations for a larger set of indicators and will be complemented by an online training course on the use of mobile phone data.

19. In addition, at its second meeting, in May 2020, the United Nations Conference on Trade and Development (UNCTAD) Working Group on Measuring e-Commerce and the Digital Economy discussed the use of non-survey sources of data to supplement the traditional measurement of e-commerce and the digital economy. It concluded that the COVID-19 crisis had put pressure on national statistical offices to produce more high-quality, timely, reliable, and disaggregated data on digitalization. Data innovation not only provides new insights that may have been overlooked by traditional approaches, but it also appears inevitable. Big data will play a central role in transforming statistics production by offering relevant input and by requiring a reassessment of data governance. Developing countries will need support in building the capacity of their national statistical systems to exploit alternative data sources (through methodology or software), establish trust between data providers and producers, and translate data into robust indicators that are of public value.

B. Core list of information and communications technology indicators, definitions and statistical standards

20. The Commission endorsed the Partnership core list of ICT indicators at its thirty-eighth session, in 2007. Revisions to the list have been presented in 2007, 2012, 2014, and 2016. The present report contains a revised core list for 2021 with the proposal that the Commission endorse it as well.⁵

21. The core list covers the following areas: ICT infrastructure and access; access to and use of ICT by households and individuals, use of ICT by businesses, the ICT sector, trade in ICT goods and services, ICT in education, and e-government. The main purpose of the list is to help countries that collect or are planning to collect ICT statistics to produce high-quality and internationally comparable indicators. To that end, the indicators have statistical standards and metadata associated with them. The 2021 version includes changes in household indicators and the definitions related to business indicators. In addition to the core list, e-waste indicators were added to the Partnership thematic list on ICT indicators for the Sustainable Development Goals submitted to the Commission in 2020.⁶ New methodological guidance for the production of ICT statistics in several areas has also become available.

1. Household and infrastructure indicators on information and communications technology

22. Within the Partnership, ITU is responsible for collecting, harmonizing and disseminating the core ICT access and ICT household indicators and regularly reviews the definition of the indicators to ensure that they remain relevant in the light of the fast-changing evolution of ICT. EGTI, which includes more than 1,100 members, and EGH, which includes more than 800 members, work through online

⁵ See www.itu.int/en/ITU-D/Statistics/Pages/coreindicators/default.aspx.

⁶ See www.itu.int/en/ITU-D/Statistics/Documents/intlcoop/partnership/Thematic_ICT_indicators_for_the_SDGs.pdf.

discussion forums and report the outcome of their work to the World Telecommunication/ICT Indicators Symposium. The most recent outcomes of the work of the EGTI and EGH were presented at the seventeenth Symposium, held in Geneva in December 2020.

23. Both expert groups (EGTI and EGH) met in September 2021 and discussed the indicators related to fifth-generation mobile networks (with a focus on adoption and subscribers), over-the-top applications and mobile money services (jointly with EGT). Similarly, at the EGH meeting held in 2021, there was a discussion on e-waste indicators in household surveys, child online protection and measuring mobile money (jointly with EGTI). The next EGTI and EGH meetings are planned for September 2022.

24. Since the fifty-first session of the Statistical Commission, which was held in 2020, ITU has published its revised and updated versions of the *Handbook for the Collection of Administrative Data on Telecommunication/ICT* and the *Manual for Measuring ICT Access and Use by Households and Individuals*. ITU uses both methodological publications to assist Governments of developing countries in their efforts to collect and disseminate ICT data. The *Handbook* is also available as an online training course in the ITU Academy.⁷

2. Business indicators on information and communications technology, trade in information and communications technology goods and services

25. Within the Partnership, UNCTAD is responsible for collecting and disseminating the core indicators on ICT use by businesses, on the ICT sector, and on international trade in ICT goods, ICT services, and digitally delivered services. The UNCTAD Working Group on Measuring e-Commerce and the Digital Economy met in May 2021 to discuss progress in the work of international organizations, capacity-building and non-survey sources of data to measure e-commerce and the digital economy. The next meeting of the Working Group is planned for autumn of 2022.

26. In support of future capacity-building efforts, UNCTAD has published the revised edition of its *Manual for the Production of Statistics on the Digital Economy 2020*. The *Manual* is also a stand-alone reference for producers of official statistics on the digital economy, in particular those in developing countries. The *Manual* contains the core list of business ICT indicators along with updated definitions, proposals for the development of future indicators, country cases, model questions and model questionnaires. An online training course based on the *Manual* will be piloted in 2022 with national statistical offices in the Pacific, in which the resulting statistics on the digital economy should provide an evidence base and a monitoring tool for a regional policy programme for the digital economy.

27. In 2020, in addition to the work done by UNCTAD, the Organisation for Economic Co-operation and Development co-published the *Handbook on Measuring Digital Trade, Version 1* together with the World Trade Organization and the International Monetary Fund (IMF). The *Handbook* was developed by an expert group consisting of international organizations, national statistical offices and central banks. It is a living online document designed to be updated on a continuous basis as new national and international experiences are gathered. It contains a conceptual framework to define digital trade and a mechanism for sharing existing efforts to measure digital trade, including a reporting template for mapping various data sources. The *Handbook* provides examples of ways to measure transactions on digital intermediation platforms using big data and surveys.

⁷ Available at <https://academy.itu.int/training-courses/full-catalogue/measuring-digital-development-telecommunicationict-indicators>.

3. Information and communications technology in government indicators

28. In the area of indicators on the use of ICT in government (e-government), every two years, the Department of Economic and Social Affairs conducts its survey of digital government offices. On the basis of the methodology used for the questionnaire, the Department will propose that the following indicators be added to the core list:

- Presence of a national e-government strategy or equivalent
- Presence of digital identification or similar forms of authentication required to access online services
- Presence of a public procurement portal.

29. In addition, the Department constructs its e-participation index and its open government development index using features of another index that appears in the *E-Government Survey*, the online service index.

4. E-waste indicators

30. The Global e-Waste Statistics Partnership, which includes ITU and United Nations University, monitors developments related to e-waste and helps countries to produce e-waste statistics. The aim of the initiative is to enhance the understanding and interpretation of global e-waste data and their relation to the Sustainable Development Goals. July 2020 saw the publication of *Global e-Waste Monitor 2020*, which contained an overview of the global challenge posed by e-waste, an analysis by country and region of e-waste quantities, and a call on decision-makers to increase activities to measure and monitor e-waste using an internationally recognized methodological framework.

31. Very few countries currently report e-waste statistics, and those wishing to start may refer to the second edition of *E-Waste Statistics: Guidelines on Classification, Reporting and Indicators*. It contains a universally relevant e-waste measurement framework and a classification of e-waste intended to facilitate the implementation of harmonized concepts to measure the size of a country's e-waste market, its transboundary e-waste movement and the e-waste recycling performance within its borders. It also offers tools, practical guidelines and mathematical methodologies and will help countries to understand how to gather data sources to compile internationally comparable e-waste statistics.

III. Conclusions

32. The COVID-19 pandemic has clearly affected the ability of countries to conduct survey-based data collection and delayed statistical production overall. Consequently the pandemic has affected their ability to improve the availability of ICT statistics as well. At the same time, the enforced digitalization of many aspects of daily life has made it more urgent to produce more and better ICT statistics in support of efforts to monitor recovery policies. The pandemic has highlighted the limitations of traditional sources of data for ICT statistics and stimulated the search for innovative and alternative data sources, such as administrative data, big data and data-sharing schemes with the private sector. Building the capacity of national statistical offices to produce ICT statistics continues to be a priority and will require the support of development partners and international organizations, including through the Partnership on Measuring Information and Communication Technology for Development.

IV. Action to be taken by the Statistical Commission

33. **The Commission is invited:**

- (a) **To endorse the revised core list of indicators;⁸**
 - (b) **To highlight the need to implement the revised guidelines in order to improve the availability and quality of ICT indicators and to better assess the digital readiness to face crises such as the COVID-19 pandemic;**
 - (c) **To support the collection of e-waste indicators;**
 - (d) **To recommend the use of the latest methodological material and related capacity-building resources produced by the Partnership;**
 - (e) **To request national statistical offices to explore the use of big data for measuring the information economy and society.**
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⁸ The core list of ICT indicators and related definitions and descriptions are available at www.itu.int/en/ITU-D/Statistics/Pages/coreindicators/default.aspx.