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**Economic and environmental questions:**  
**Science and technology for development**

**Progress made in the implementation of and follow-up to the  
outcomes of the World Summit on the Information Society at  
the regional and international levels**

**Report of the Secretary-General**

*Summary*

This report has been prepared in response to Economic and Social Council resolution 2006/46, which requested the Secretary-General of the United Nations to inform the Commission on Science and Technology for Development about the implementation of World Summit on the Information Society outcomes. The report highlights major developments and activities by stakeholders in 2020. It was prepared by the secretariat of the United Nations Conference on Trade and Development, based on information provided by entities in the United Nations system, international organizations and other stakeholders.

\* E/2021/1.



## Introduction

1. This report has been prepared in response to Economic and Social Council resolution 2006/46. It includes information provided by 29 entities in the United Nations system, international organizations and other stakeholders in response to a letter from the Secretary-General of the United Nations Conference on Trade and Development (UNCTAD) requesting contributions on trends, achievements and obstacles in the implementation of World Summit on the Information Society (WSIS) outcomes.<sup>1</sup> The report summarizes developments and activities in 2020.

### I. Key trends

#### A. The pandemic

2. The year 2020 was a testing ground for progress towards the people-centred, inclusive and development-oriented information society envisaged at WSIS. Efforts to address the health-related and economic impacts of the coronavirus disease of 2019 (COVID-19) pandemic were the focus of the United Nations, international organizations, Governments and other stakeholders throughout the year, as shown by the many programmes, initiatives and publications cited in this report.

3. Digital technologies have played a crucial role in addressing the pandemic and enabling resilience. The use of big data and artificial intelligence has contributed to public health interventions and vaccine development. Governments and health authorities have used new media to spread information and digital services to expedite infection monitoring and testing. Restrictions on movement, introduced to curb the spread of infection, have required millions of businesses and employees to work remotely, using the Internet and videoconference platforms. Schools and colleges have closed their campuses and many young people have been receiving education online. The trend towards electronic commerce (e-commerce) has accelerated, in both international and domestic markets.<sup>2</sup> The use of online entertainment platforms has also expanded. These developments seem likely to continue after the pandemic, accelerating changes arising from digitalization that were already apparent in economic, social and cultural areas.

4. Information and communications technologies (ICTs) have helped to mitigate the impacts of the pandemic, yet the economic impact has nevertheless been severe and the extent of mitigation unequal. The world economy is estimated to have shrunk by more than 4 per cent in 2020,<sup>3</sup> exacerbating inequalities and adding to the challenge of achieving the

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<sup>1</sup> African Union Commission; Association for Progressive Communications (APC); Council of Europe; Economic and Social Commission for Asia and the Pacific (ESCAP); Economic and Social Commission for Western Asia (ESCWA); Economic Commission for Europe (ECE); Economic Commission for Latin America and the Caribbean (ECLAC); Food and Agriculture Organization of the United Nations (FAO); International Federation of Library Associations and Institutions (IFLA); Internet Governance Forum (IGF) secretariat; Internet Society (ISOC); International Telecommunication Union (ITU); International Trade Centre (ITC); Organization for Economic Cooperation and Development (OECD); UNCTAD; United Nations Children's Fund (UNICEF); United Nations Development Programme (UNDP); United Nations Department of Economic and Social Affairs (DESA); United Nations Educational, Scientific and Cultural Organization (UNESCO); United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women); United Nations Environment Programme; United Nations Group on the Information Society; United Nations Industrial Development Organization; United Nations Office on Drugs and Crime; World Bank; World Health Organization (WHO); World Intellectual Property Organization (WIPO); World Meteorological Organization (WMO); World Trade Organization (WTO). See [https://unctad.org/publications-search?f\[0\]=product%3A667](https://unctad.org/publications-search?f[0]=product%3A667).

*Note:* All websites referred to in footnotes were accessed 24 February 2021.

<sup>2</sup> See [https://unctad.org/system/files/official-document/dtlstictinf2020d1\\_en.pdf](https://unctad.org/system/files/official-document/dtlstictinf2020d1_en.pdf).

<sup>3</sup> <https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020>.

Sustainable Development Goals. Those who lack affordable connectivity have been disadvantaged in comparison with those that have such connectivity; manual and casual workers have been less able to work online than others; and children without access to computers and connectivity have been disadvantaged with regard to receiving education. Families without connectivity have been unable to shop online. The pandemic has thereby emphasized the crucial value of affordable access to digital resources for full participation in society.

5. Other challenges have also emerged. Increased demand has put greater pressure on communications infrastructure, although networks have proven more resilient than expected. Alongside reliable information about the pandemic, there has been widespread misinformation and disinformation, amounting to what WHO has called an infodemic.<sup>4</sup> The role of health-related and other data in disease control has raised new issues related to privacy and data protection. The growing use of ICTs across all sectors has raised new threats to cybersecurity.

6. The COVID-19 pandemic has thus posed challenges for all stakeholders concerned with WSIS outcomes and the Sustainable Development Goals. The accelerated use of ICTs provides an opportunity to learn lessons from experiences that can help optimize opportunities, mitigate risks and enable stakeholders and societies to rebuild better as the crisis recedes.

## **B. Connectivity, access and usage**

7. Access to the Internet and broadband networks has continued to increase worldwide, but significant challenges remain in fulfilling the target under the Goals of universal connectivity. In developed countries, nearly the entire population can now access fourth generation networks, yet less than half of those in the least developed countries have such coverage.

8. Worldwide, the level of domestic Internet access is twice as high in urban areas as in rural areas and there is a significant gender gap in access to and use of the Internet; 55 per cent of men and 48 per cent of women are estimated to use the Internet, yet the gap is much greater in the least developed countries, in which only 15 per cent of women are estimated to be online. Connectivity alone is insufficient for inclusion in the information society. Limited digital skills prohibit the effective use of Internet-based resources. The quality, speed, reliability and affordability of connectivity are also crucial. Data remains expensive in over half the world's economies, compared with the target of the Broadband Commission for Sustainable Development that entry-level broadband services should cost less than 2 per cent of monthly gross national income per capita.<sup>5</sup>

9. The issue of affordability is manifold. Investment in and roll-out of infrastructure, including electricity; spectrum pricing set by Governments and regulators; insufficient competition among telecommunications operators; and taxation on ICT-related services all affect the price of connectivity.<sup>6</sup> Low revenue potential due to low demand, particularly in rural, sparsely populated areas, can drive up the price.<sup>7</sup> In addition, low levels of disposable income raise costs in relative terms. Governments therefore have a critical role to play in connecting the unconnected.

10. Advances in technology tend to become available first in countries and among individuals that already benefit and can readily afford digital resources. The pandemic has reinforced the concern that the lack of digital equality may increase inequalities in social and economic opportunities and outcomes. More sophisticated monitoring of digitalization and its impact is essential in achieving the goals of WSIS and the Sustainable Development

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<sup>4</sup> <https://www.who.int/news/item/11-12-2020-call-for-action-managing-the-infodemic>.

<sup>5</sup> <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>.

<sup>6</sup> <https://www.itu.int/en/myitu/Publications/2020/09/18/07/52/The-State-of-Broadband-2020>;  
<https://www.gsma.com/spectrum/resources/effective-spectrum-pricing/>;  
<https://www.itu.int/en/mediacentre/backgrounders/Pages/affordability.aspx>.

<sup>7</sup> <https://unctad.org/webflyer/internet-broadband-inclusive-digital-society>.

Goals. This will require greater cooperation for digital inclusion, with the aim of enabling full participation in the information society by all individuals and communities worldwide.

### **C. Digital cooperation**

11. A new approach to digital cooperation was set out in the *Report of the Secretary-General: Road Map for Digital Cooperation*, which built on work by the High-Level Panel on Digital Cooperation and broad consultations.<sup>8</sup> The Road Map responds to complex changes and rapid developments in digital technology and their impacts on economies and societies. The emergence of new and frontier technologies has intensified debate about their contributions in the future. There is great interest in potentially transformative impacts on developmental challenges, but also concern about ethical issues, including with regard to human rights, therefore increasing the need for digital cooperation. The Road Map outlines the convening role of the United Nations and outlines priorities for global connectivity, digital public goods, inclusion, capacity-building, human rights, trust and security and emerging new technologies. It suggests reforms to IGF to increase its responsiveness to digital issues and proposes establishing a multi-stakeholder advisory body on artificial intelligence.

### **D. New challenges in digital governance**

12. New governance challenges continually emerge as technology advances. Critical issues, including complex questions of sovereignty and accountability, arise from the growing reliance of administrations on data sets and algorithms and from the concentration of digital resources in global digital platforms, data management and infrastructure businesses. Three issues of governance became increasingly important in 2020.

13. Each step towards the information society increases the importance of cybersecurity. Digital engagement requires trust in the integrity of systems, from the security of network infrastructure to the need for fraud prevention and the protection of personal data. Each innovation in technology holds the potential for new types of cyberthreats. The proliferation of devices and services creates opportunities for everyday users but also for criminals. In addition, increased dependence on digital resources during the pandemic has exacerbated risks. Governments, businesses and other stakeholders have worked together in diverse forums to address new threats and build responsive governance modalities.

14. Economic relationships and structures are changing rapidly as digitalization increases. The rapidly evolving roles of platforms, global data management and business models built around economies of scale in leveraging data have been particularly notable. Governments in many countries are exploring frameworks for the regulation and accountability of platforms, including their relationships with local businesses, issues of competition policy and the extent to which global businesses should contribute, through taxation, to national development priorities.

15. Environmental aspects of digitalization have become increasingly important. Growing volumes of digital devices, applications, data traffic and digitalization have increased energy consumption, which contributes to climate change. Digital optimization through smart systems for managing utilities and services, however, has the potential to facilitate reductions in energy consumption in other sectors. In addition, large volumes of electronic waste are generated through rapid technological improvements. Governments and businesses are seeking ways to maximize environmental gains from digitalization while minimizing and mitigating environmental costs.

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<sup>8</sup> <https://www.un.org/en/content/digital-cooperation-roadmap/>; <https://digitalcooperation.org/>.

## II. Implementation and follow-up at the regional level

### A. Africa

16. The African Union adopted the Digital Transformation Strategy for Africa 2020–2030 to spur innovative, inclusive and sustainable growth.<sup>9</sup> The African Union Commission is developing its implementation and evaluation architecture with support from the World Bank.

17. The Economic Commission for Europe *Economic Report on Africa 2020: Innovative Finance for Private Sector Development in Africa* focused on leveraging financial technology innovation to support progress towards sustainable development.

18. The World Bank published a report on the growing digital economy in Africa and completed two diagnostic studies under its digital economy for Africa initiative.<sup>10</sup>

19. ISOC and the African Network Information Centre, the regional Internet registry, launched a project to measure the resilience of the Internet environment in Africa.<sup>11</sup> IGF in Africa was held online in November 2020 and work continued on developing national and regional IGFs and national Internet governance schools.

### B. Asia and the Pacific

20. ESCAP and ITU co-hosted a regional review session on the Asia-Pacific information superhighway, which aims to improve the connectivity of landlocked developing countries, promote universal broadband and improve disaster preparedness.<sup>12</sup> ESCAP worked to improve connectivity and overcome regulatory barriers in subregions through studies of infrastructure co-deployment in South Asia and Internet traffic management in South-East Asia; and worked with ISOC on an operational model to improve Internet exchange points in the Pacific.<sup>13</sup>

### C. Western Asia

21. ESCWA promoted development in online services and infrastructure in the Arab region, to overcome barriers arising from the pandemic, ongoing conflicts, poor infrastructure and cybersecurity challenges. *Arab Digital Development Report 2019: Towards Empowering People and Ensuring Inclusiveness* focused on efforts to facilitate inclusion and empowerment. ESCWA supported Governments in developing national digitalization strategies, compiling national digital development reports and publishing readiness guides on big data. In addition, ESCWA worked with the League of Arab States to develop an Arab ICT strategy, including a proposed Arab digital agenda, and is preparing a study on open government in partnership with OECD.

### D. Europe

22. The European Commission issued “Shaping Europe’s digital future”, a digital strategy document aimed at supporting technology in a competitive digital economy and an

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<sup>9</sup> <https://au.int/en/documents/20200518/digital-transformation-strategy-africa-2020-2030>.

<sup>10</sup> [https://www.ifc.org/wps/wcm/connect/publications\\_ext\\_content/ifc\\_external\\_publication\\_site/publications\\_listing\\_page/google-e-economy](https://www.ifc.org/wps/wcm/connect/publications_ext_content/ifc_external_publication_site/publications_listing_page/google-e-economy); <https://www.worldbank.org/en/programs/all-africa-digital-transformation>.

<sup>11</sup> <https://www.internetsociety.org/blog/2020/11/measuring-internet-resilience-in-africa/>.

<sup>12</sup> <https://www.unescap.org/events/fourth-session-asia-pacific-information-superhighway-ap-steering-committee-and-wsis-regional>.

<sup>13</sup> <https://www.unescap.org/resources/study-costing-operational-principles-and-modalities-proposed-south-pacific-internet>.

open, democratic and sustainable society; and prepared new legislative frameworks for digital markets and services.<sup>14</sup>

23. ECE coordinates the United Nations Centre for Trade Facilitation and Electronic Business, which develops trade facilitation recommendations and electronic standards for commercial and government business. The subregional innovation policy outlook supported innovation policy in Eastern Europe, as well as Armenia, Azerbaijan and Georgia. ECE worked with ESCAP to promote sustainable innovation in Central Asia.

24. The Council of Europe prioritized work on freedom of expression, the impact of misinformation and disinformation and the implications of artificial intelligence for human rights.

25. The European Dialogue on Internet Governance was held online, focused on the sustainable development of the Internet, and issued a review of virtual implementation along with messages arising from the discussions.<sup>15</sup>

## **E. Latin America and the Caribbean**

26. ECLAC serves as the technical secretariat for the digital agenda for Latin America and the Caribbean agreed by regional ministers in 2020, which has eight focus areas, namely, infrastructure, the digital economy, digital government, inclusion and digital skills, emerging technologies, trust and digital security, the regional digital market and digital regional cooperation.<sup>16</sup> ECLAC prepared reports on digitalization in response to the pandemic, the pandemic's impact on e-commerce and the importance of universalizing digital access, as well as a report on tracking the digital footprint in Latin America and the Caribbean that identified lessons from using big data to assess the digital economy.<sup>17</sup> ECLAC maintains a regional broadband observatory<sup>18</sup> and is planning a digital economic observatory supporting ICT measurement.

27. OECD published *Latin American Economic Outlook 2020: Digital Transformation for Building Back Better*.

## **III. Implementation and follow-up at the international level**

### **A. United Nations Group on the Information Society**

28. The United Nations Group on the Information Society coordinates the inter-agency implementation of WSIS outcomes across the United Nations system.<sup>19</sup> The Group launched a dialogue on the role of digitalization in the decade of action to implement the Sustainable Development Goals, with contributions from the heads of United Nations agencies, and held an event on this theme during the High-Level Political Forum on Sustainable Development.<sup>20</sup> The Group also launched a digital transformation repository as a reference guide to ICTs and the Goals.

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<sup>14</sup> [https://ec.europa.eu/info/publications/communication-shaping-europes-digital-future\\_en](https://ec.europa.eu/info/publications/communication-shaping-europes-digital-future_en);  
<https://ec.europa.eu/digital-single-market/en/digital-services-act-package>.

<sup>15</sup> <https://www.eurodig.org/messages-2020/programme-2020/>.

<sup>16</sup> <https://conferenciaelac.cepal.org/7/en/documents>.

<sup>17</sup> <https://www.cepal.org/en/publications/45939-universalizing-access-digital-technologies-address-consequences-covid-19>; <https://www.cepal.org/en/publications/45484-tracking-digital-footprint-latin-america-and-caribbean-lessons-learned-using-big>.

<sup>18</sup> <https://www.cepal.org/es/observatorio-regional-de-banda-ancha>.

<sup>19</sup> <https://www.itu.int/net4/wsis/ungis/About>.

<sup>20</sup> <https://unctad.org/topic/ecommerce-and-digital-economy/ungis-dialogue>.

## **B. General Assembly and Economic and Social Council**

29. The General Assembly adopted a resolution on ICTs for sustainable development.<sup>21</sup> The Economic and Social Council adopted a resolution on assessment of the progress made in the implementation of and follow-up to the outcomes of WSIS.<sup>22</sup>

## **C. Commission on Science and Technology for Development**

30. The twenty-third session of the Commission focused on harnessing rapid technological change for inclusive sustainable development and on evolving space technologies. It also reviewed progress on WSIS implementation.<sup>23</sup>

## **D. Facilitation and coordination of multi-stakeholder implementation**

31. WSIS Forum 2020, marking 15 years since WSIS, was held through a series of weekly programmes in June–September, with the theme of “Fostering digital transformation and global partnerships: WSIS action lines for achieving the Sustainable Development Goals”. Participants from some 150 countries took part in about 160 online sessions covering a wide range of subjects. The ministerial-level round table focused on bridging the digital divide and lessons learned from the pandemic and high-level policy sessions considered cybersecurity, climate change, the digital economy and ethical dimensions of information and knowledge societies. Special discussions addressed gender mainstreaming, disabilities and the interests of youth and the elderly. The WSIS stocktaking platform, maintained by ITU, provides information on more than 12,000 ICT-related and development activities undertaken by diverse stakeholders across the different WSIS action lines. ITU published a global report and six regional reports on stocktaking, as well as a compendium of success stories and a report summarizing the submissions made to a repository of responses to the pandemic.<sup>24</sup>

32. The Broadband Commission reviewed its decade of work and reaffirmed commitment to broadband deployment and connectivity within the framework of the *Report of the Secretary-General: Road Map for Digital Cooperation*. The Commission published *The State of Broadband: Tackling Digital Inequalities – A Decade for Action*, as well as reports on school connectivity, artificial intelligence in health care and disinformation in relation to freedom of expression; and launched working groups on financing models for broadband, epidemic management and digital learning. It adopted an agenda for action on the pandemic, centred on resilient connectivity, affordable access and safe use and addressing both immediate challenges and post-crisis recovery.<sup>25</sup>

## **E. Civil society, business and multi-stakeholder partnerships**

33. Many activities that support WSIS objectives are implemented by businesses, civil society, academic and technical communities and multi-stakeholder partnerships.

34. The International Chamber of Commerce coordinates WSIS-related activities through its business action to support the information society initiative and contributes to international discussions, including at IGF and the WSIS Forum.<sup>26</sup>

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<sup>21</sup> A/RES/75/202.

<sup>22</sup> E/RES/2020/12.

<sup>23</sup> E/2020/31-E/CN.16/2020/4.

<sup>24</sup> <https://www.itu.int/net4/wsis/forum/2020/Home/Outcomes>.

<sup>25</sup> <https://www.broadbandcommission.org/COVID19/Pages/default.aspx>.

<sup>26</sup> <https://iccwbo.org/global-issues-trends/digital-growth/internet-governance/business-action-to-support-the-information-society-basis/>.

35. The Global System for Mobile Communications Association (GSMA) represents mobile communications businesses. It published its annual report on the mobile economy, *The Mobile Economy 2020*, including seven regional reports, as well as *The State of Mobile Internet Connectivity 2020* and *State of the Industry Report on Mobile Money 2019*.<sup>27</sup>

36. IFLA supports access to the Internet through libraries and public facilities, many of which moved their services online during the pandemic. The Partnership for Public Access, including the Alliance for Affordable Internet, IFLA and ISOC, issued a declaration on the role of libraries.<sup>28</sup>

37. ISOC provides a forum for the technical and professional Internet community and others concerned with Internet development and management. Its technical focus includes support for community networks, Internet exchange points, local network operator groups and national education and research networks. ISOC issued an Internet impact assessment toolkit to help stakeholders assess the impacts of policies, technologies and trends on Internet functionality.<sup>29</sup>

38. The World Wide Web Consortium develops standards for the web. The World Wide Web Foundation promotes principles for improving the impact of the web and hosts the Alliance for Affordable Internet.

39. APC, an international network of civil society organizations concerned with development, rights and gender, focused on rights issues associated with the pandemic and the promotion of community networks.<sup>30</sup> Its global information society watch project is addressing the environmental impact of ICTs.

## **F. Facilitation of action lines and selected implementation of activities by United Nations entities**

### **1. Implementation of action lines**

40. Implementation of WSIS outcomes is aligned with implementation of the 2030 Agenda for Sustainable Development through General Assembly resolutions 70/1 and 70/125. In 2005, 11 action lines were agreed for multi-stakeholder implementation of the outcomes. Action line facilitators review implementation annually using an agreed matrix of the action lines and the Goals.<sup>31</sup> An online meeting of facilitators was held during the WSIS Forum, as well as meetings on individual action lines, focusing on pandemic-related outcomes and issuing an assessment of 15 years of action line implementation.<sup>32</sup>

#### *(a) The role of public governance authorities and all stakeholders in the promotion of information and communications technologies for development (C1)*

41. The value of multilateral, multi-stakeholder and multidisciplinary engagement has been central to the implementation of WSIS outcomes and reiterated in the *Report of the Secretary-General: Road Map for Digital Cooperation*.

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<sup>27</sup> <https://www.gsma.com/mobileeconomy/>; <https://www.gsma.com/r/somic/>;  
<https://www.gsma.com/sotir/>.

<sup>28</sup> <https://p4pa.net/2020-declaration/>.

<sup>29</sup> <https://www.internetsociety.org/issues/internet-way-of-networking/internet-impact-assessment-toolkit/>.

<sup>30</sup> <https://www.apc.org/en/apcs-2020-2023-strategic-plan>.

<sup>31</sup> [https://www.itu.int/net4/wsis/forum/2018/Files/documents/outcomes/WSISForum2018\\_WSIS-SDGSMatrix.pdf](https://www.itu.int/net4/wsis/forum/2018/Files/documents/outcomes/WSISForum2018_WSIS-SDGSMatrix.pdf).

<sup>32</sup> <https://www.itu.int/net4/wsis/forum/2020/Agenda/Session/374>;  
[https://www.itu.int/net4/wsis/forum/2020/Files/outcomes/draft/WSISForum2020\\_OutcomeDocument\\_DRAFT-20201204.pdf](https://www.itu.int/net4/wsis/forum/2020/Files/outcomes/draft/WSISForum2020_OutcomeDocument_DRAFT-20201204.pdf);  
[https://www.itu.int/net4/wsis/forum/2020/Files/outcomes/draft/WSISForum2020\\_WSISActionLinesContributingTowardsAcceleratedAction\\_DRAFT.pdf](https://www.itu.int/net4/wsis/forum/2020/Files/outcomes/draft/WSISForum2020_WSISActionLinesContributingTowardsAcceleratedAction_DRAFT.pdf).



42. DESA organized an expert group meeting and prepared a report on the role of digital technologies in a socially just transition towards sustainable development, in preparation for the fifty-ninth session of the Commission for Social Development.<sup>33</sup>

43. ITU activities are detailed in the annual report on the implementation of the strategic plan and activities.<sup>34</sup> ITU presented the AI[Artificial Intelligence] for Good Global Summit as an all-year digital event, showcasing the potential applications of new technology, and the virtual digital world forum and exhibition highlighted responses to the pandemic and developments in the digital economy.<sup>35</sup> ITU launched a series of “road to Addis” events in preparation for the 2021 World Telecommunication Development Conference.<sup>36</sup>

44. The World Economic Forum (WEF) continued to review developments in ICTs and new technology. *State of the Connected World 2020* and *Global Technology Governance Report 2021: Harnessing Fourth Industrial Revolution Technologies in a COVID-19 World* focused on the impacts of the pandemic. The Rights Conference held online in July 2020 focused on human rights.<sup>37</sup>

(b) *Information and communications infrastructure (C2)*

45. The COVID-19 pandemic has reinforced demand for ICT infrastructure to facilitate economic activity and maintain social interaction.

46. The Universal Postal Union supported the modernization of postal infrastructure. ITU worked with Governments and businesses to support infrastructure deployment, the development of national broadband strategies, communications regulation and the management of radio spectrums; mapped the broadband connectivity of over 500 operator networks; and agreed on new technical recommendations.<sup>38</sup>

47. Increased attention is being paid to alternative network infrastructures. ITU published *The Last-mile Internet Connectivity Solutions Guide: Sustainable Connectivity Options for Unconnected Sites*. The Broadband Commission promoted its strategy for connecting Africa through broadband, which aims for universal access by 2030, and *The State of Broadband 2020* proposed policy recommendations to address digital inequalities during the decade of action.<sup>39</sup> APC published policy and regulatory guidelines to enable local operators within a more diverse infrastructure ecosystem.<sup>40</sup>

48. The OECD *Digital Economy Outlook 2020* emphasized the increased demand for high-quality connectivity and the barriers posed by digital divides and, in this context, is reviewing its recommendation on broadband development.

49. GSMA, ITU, WEF and the World Bank issued a digital development joint action plan and call for action, to develop infrastructure and usage in response to the pandemic.<sup>41</sup> The GSMA *State of Mobile Internet Connectivity Report 2020* noted that almost half the global population used mobile Internet and that fourth generation technology accounted for more than half of mobile connections, yet there were substantial differences in coverage between urban and rural areas and barriers to usage, including the high cost of handsets.

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<sup>33</sup> E/CN.5/2021/3; <https://www.un.org/development/desa/dspd/united-nations-commission-for-social-development-csod-social-policy-and-development-division/csod59.html>.

<sup>34</sup> <https://www.itu.int/en/council/planning/Documents/Annual-report-2019-E.pdf>.

<sup>35</sup> <https://aiforgood.itu.int/programme/>; <https://digital-world.itu.int/events/itu-virtual-digital-world-2020/daily-highlights/>.

<sup>36</sup> <https://www.itu.int/en/mediacentre/Pages/pr25-2020-2021-World-Telecommunication-Development-Conference-Road-to-Addis.aspx>.

<sup>37</sup> <https://gfmd.info/event/rightscon-online-2020/>.

<sup>38</sup> <https://www.itu.int/en/ITU-D/Technology/Pages/InteractiveTransmissionMaps.aspx>;  
<https://www.itu.int/en/itu-wsis/Pages/Contribution.aspx>.

<sup>39</sup> <https://www.worldbank.org/en/topic/digitaldevelopment/publication/connecting-africa-to-broadband-a-roadmap-for-inclusive-growth>.

<sup>40</sup> <https://www.apc.org/en/pubs/expanding-telecommunications-operators-ecosystem-policy-and-regulatory-guidelines-enable-local>.

<sup>41</sup> <http://pubdocs.worldbank.org/en/788991588006445890/Speedboat-Partners-COVID-19-Digital-Development-Joint-Action-Plan.pdf>.

(c) *Access to information and knowledge (C3)*

50. Access to connectivity, information and knowledge has become increasingly important during the pandemic, including concerns that a lack of digital equality may exacerbate existing social and economic inequalities.

51. ITU reported on telecommunications and Internet connectivity and access to data, online and in its facts and figures report.<sup>42</sup>

52. UNESCO published *From Promise to Practice*, monitoring and reporting on access to information for sustainable development.

53. UNICEF and ITU noted the significant differences in access to the Internet among children in high-income and low-income countries.<sup>43</sup>

54. The GSMA *Mobile Gender Gap Report 2020* stated that women are 20 per cent less likely than men to use mobile Internet, with gaps of more than 35 per cent in South Asia and sub-Saharan Africa, and a substantial gender-related difference in access to higher quality Internet and devices such as smartphones.<sup>44</sup> GSMA also published *Reaching 50 Million Women with Mobile: A Practical Guide*.

55. The World Wide Web Foundation and the Alliance for Affordable Internet published a report on the affordability of Internet access, including affordable devices.<sup>45</sup>

56. With regard to disabilities, ESCWA developed a template for a national policy of e-accessibility for the Arab region, to support enabling persons with disabilities to access ICT and public services; WIPO considered accessibility by users with visual impairments; and GSMA assessed accessibility.<sup>46</sup>

(d) *Capacity-building (C4)*

57. Lack of ICT skills inhibits the take-up and effective use of new technology.

58. DESA launched the online technology platform 2030 Connect to support the exchange of ideas and technology between entrepreneurs, innovators and students with regard to the Goals.<sup>47</sup>

59. The ITU Academy published a digital skills toolkit to help policymakers undertaking national digital skills assessments and, under the Academy, ITU Centres of Excellence support professional development, research and knowledge-sharing.<sup>48</sup> A series of talks on WSIS was disseminated by ITU to broaden understanding of ICT issues.<sup>49</sup>

60. The Equals Global Partnership published *Perceptions of Power: Championing Female Leadership in Technology*, following an assessment of gender equality in digital skills development.<sup>50</sup>

(e) *Building confidence and security in the use of information and communications technologies (C5)*

61. The pandemic has reinforced the importance of trust in online activity and transactions. Increased reliance on telecommuting and online activity has created a “fertile environment for cybercriminals”.<sup>51</sup>

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<sup>42</sup> <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>; <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>.

<sup>43</sup> [https://www.itu.int/en/ITU-D/Statistics/Pages/youth\\_home\\_internet\\_access.aspx](https://www.itu.int/en/ITU-D/Statistics/Pages/youth_home_internet_access.aspx).

<sup>44</sup> <https://www.gsma.com/r/gender-gap/>.

<sup>45</sup> <https://a4ai.org/research/from-luxury-to-lifeline-reducing-the-cost-of-mobile-devices-to-reach-universal-internet-access/>.

<sup>46</sup> <https://www.gsma.com/mobilefordevelopment/blog/the-mobile-disability-gap-report-2020/>.

<sup>47</sup> <https://tfm2030connect.un.org/>.

<sup>48</sup> <https://academy.itu.int/digital-skills-assessment-guidebook>; <https://academy.itu.int/index.php/centres-excellence/coe-overview>.

<sup>49</sup> <https://wsistalkx.buzzsprout.com/>.

<sup>50</sup> <https://www.equals.org/publications>; <https://www.equals.org/taking-stock>.

62. The African Union published new data protection guidelines. The European Commission adopted a cybersecurity strategy for the digital decade within the context of its digital strategy.<sup>52</sup> ITU and other agencies have undertaken cybersecurity capacity reviews in conjunction with the Global Cyber Security Capacity Centre at the University of Oxford. The United Nations Office on Drugs and Crime provides resources and undertakes capacity-building in response to cybercrime and supports the use of ICTs in judicial systems, with United Nations partners, under the Global Judicial Integrity Network. WEF published reports on partnership against cybercrime, systemic risks arising from cybersecurity and emerging technology and building collective security by sharing cyberinformation.<sup>53</sup> National computer security incident response teams have been established in many countries, supported by the Forum of Incident Response and Security Teams.

63. ITU published new guidelines on the online protection of children for parents, educators, policymakers and industry.<sup>54</sup> The UNICEF East Asia and Pacific regional office published a review of strategies to prevent online child abuse and exploitation.<sup>55</sup>

64. Management of health data has been vital during the pandemic. The Council of Europe *2020 Data Protection Report* focused on digital solutions adopted to address the pandemic and issued statements on data protection and digital contact tracing.<sup>56</sup>

(f) *The enabling environment (C6)*

65. Increased attention was paid to market dominance in Internet services and platform architecture, including legislative and regulatory proposals by the European Commission.<sup>57</sup>

66. The twentieth edition of the Global Symposium for Regulators, on the theme “The regulatory wheel of change: Regulation for digital transformation”, addressed post-pandemic regulation, regulatory collaboration, competition in the digital era, spectrum allocation, digital security and accessibility, and participating regulators endorsed best practice guidelines.<sup>58</sup>

67. The ITU Telecommunication Development Sector and the World Bank published the *Digital Regulation Handbook* on technical regulation, associated with an online platform.<sup>59</sup> ITU also hosts information portals and resources on regulatory issues. The *Global ICT Regulatory Outlook 2020* focused on fifth generation collaborative regulation, establishing a new benchmark for regulatory practice and identifying “golden rules” for mobile and fixed broadband adoption strategies. ITU published a compendium of industry responses to the pandemic in the Internet age.<sup>60</sup>

68. OECD identified and advocated regulatory opportunities to maintain Internet connectivity during the pandemic.<sup>61</sup>

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<sup>51</sup> <https://www.oecd.org/digital/oecd-digital-economy-outlook-2020-bb167041-en.htm>.

<sup>52</sup> <https://ec.europa.eu/digital-single-market/en/news/eus-cybersecurity-strategy-digital-decade>.

<sup>53</sup> <https://www.weforum.org/reports/partnership-against-cybercrime>;  
<https://www.weforum.org/reports/future-series-cybersecurity-emerging-technology-and-systemic-risk>;  
<https://www.weforum.org/reports/cyber-information-sharing-building-collective-security>.

<sup>54</sup> <https://www.itu-cop-guidelines.com/>.

<sup>55</sup> <https://www.unicef.org/eap/reports/what-works-prevent-online-and-offline-child-sexual-exploitation-and-abuse>.

<sup>56</sup> <https://www.coe.int/en/web/data-protection/-/digital-solutions-to-fight-covid-19-council-of-europe-report-on-data-protection-2020>; <https://www.coe.int/en/web/data-protection/covid-19-data-protection>;  
<https://www.coe.int/en/web/data-protection/contact-tracing-apps>.

<sup>57</sup> <https://ec.europa.eu/digital-single-market/en/digital-services-act-package>.

<sup>58</sup> <https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Pages/default.aspx>.

<sup>59</sup> <https://www.itu.int/en/myitu/Publications/2020/08/31/09/09/Digital-Regulation-Handbook;digitalregulation.org/>.

<sup>60</sup> [https://reg4covid.itu.int/wp-content/uploads/2020/06/ITU\\_COVID-19\\_and\\_Telecom-ICT.pdf](https://reg4covid.itu.int/wp-content/uploads/2020/06/ITU_COVID-19_and_Telecom-ICT.pdf).

<sup>61</sup> <https://www.oecd.org/coronavirus/policy-responses/keeping-the-internet-up-and-running-in-times-of-crisis-4017c4c9/>.

(g) *Information and communications technology applications (C7)*

E-government

69. The United Nations e-government survey illustrated continued growth in national and local e-government but continued variations in experiences across regions.<sup>62</sup> The role of ICT-enabled data in monitoring progress towards achieving the Goals was demonstrated in *The Sustainable Development Goals Report 2020*. In 2021, the UNCTAD Digital Economy Report will focus on cross-border data flows and their impact on development and the World Bank world development report will focus on data for better lives.<sup>63</sup>

70. Data from diverse sources have proven vital in monitoring the pandemic and identifying effective responses. The DESA *Compendium of Digital Government Initiatives in Response to the COVID-19 Pandemic* identifies initiatives to provide information resources in support of public health and economic activity during the crisis.<sup>64</sup> The World Data Forum highlighted the need for stronger cooperation in data management by the public and private sectors with regard to both the pandemic and longer-term requirements to achieve the Goals.<sup>65</sup>

71. The UNCTAD cyberlaw tracker monitors the implementation of legal frameworks for e-commerce.<sup>66</sup> The Internet and Jurisdiction Policy Network maintains a database of digital governance interventions worldwide.<sup>67</sup>

E-business

72. The pandemic has had dramatic impacts on national and international trade, including reductions in overall economic activity alongside accelerated growth in e-commerce, particularly in domestic markets. UNCTAD coordinated a global research report on the impacts on e-commerce, with contributions from the United Nations regional commissions, and published *Impact of the COVID-19 Pandemic on Trade and Development*.<sup>68</sup> UNCTAD and ITC surveyed e-business and consumer behaviour.<sup>69</sup>

73. UNCTAD continued to promote e-commerce policies and resources through the eTrade for all partnership of United Nations and international agencies, focused on national strategies, infrastructure, legal and regulatory frameworks, logistics, payment systems, skills and financing and the role of women digital entrepreneurs. Its online e-commerce week had more than 2,000 participants from 134 countries.<sup>70</sup> The fourth session of the Intergovernmental Group of Experts on E-commerce and the Digital Economy addressed digital platforms and value creation in developing countries; and measuring e-commerce and the digital economy.<sup>71</sup> A further seven e-trade readiness assessments were completed by UNCTAD and eTrade for all and a fast-tracking implementation report evaluated the impact of previous assessments.<sup>72</sup> ITC, UNCTAD and WTO initiated a revised global trade help desk to support microenterprises and small and medium-sized enterprises.

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<sup>62</sup> <https://www.un.org/development/desa/publications/publication/2020-united-nations-e-government-survey>.

<sup>63</sup> <https://consultations.worldbank.org/consultation/wdr2021>.

<sup>64</sup> <https://www.un.org/en/desa/countries-step-innovation-efforts-using-over-500-digital-apps-fight-covid-19>.

<sup>65</sup> <https://unstats.un.org/sdgs/hlg/Global-data-communitys-response-to-COVID-19/>.

<sup>66</sup> <https://unctad.org/topic/ecommerce-and-digital-economy/ecommerce-law-reform/summary-adoption-e-commerce-legislation-worldwide>.

<sup>67</sup> <https://www.internetjurisdiction.net/publications/retrospect#eyJ0byI6IjIwMjAtMTEifQ==>.

<sup>68</sup> <https://unctad.org/webflyer/impact-covid-19-pandemic-trade-and-development-transitioning-new-normal>.

<sup>69</sup> [https://unctad.org/system/files/official-document/dtlstictinf2020d1\\_en.pdf](https://unctad.org/system/files/official-document/dtlstictinf2020d1_en.pdf).

<sup>70</sup> <https://unctad.org/meeting/eweek-online-events-dialogues-webinars-and-meetings>.

<sup>71</sup> <https://unctad.org/meeting/intergovernmental-group-experts-e-commerce-and-digital-economy-fourth-session>.

<sup>72</sup> <https://unctad.org/webflyer/fast-tracking-implementation-etrade-readiness-assessments>.

74. ECE continued to develop trade standards, including on single windows, blockchain and measures to implement the Agreement on Trade Facilitation of WTO; expanded its trade facilitation guide; and launched new online tools and databases.

75. The digital currency global initiative was launched by ITU and Stanford University, complementing the financial inclusion global initiative led by ITU, the World Bank and the Bill and Melinda Gates Foundation.<sup>73</sup>

76. The United Nations Industrial Development Organization *Industrial Development Report 2020: Industrializing in the Digital Age* focused on industrializing in the digital age, and the Organization has supported efforts to sustain manufacturing and digital innovation during the pandemic.

77. The WTO published *World Trade Report 2020: Government Policies to Promote Innovation in the Digital Age*. Discussions on e-commerce continued at the Council for Trade in Services and Information Technology Agreement participants discussed improved implementation.

78. The International Monetary Fund published a working paper on taxation in the digital economy.<sup>74</sup> The World Bank published *World Development Report 2020: Trading for Development in the Age of Global Value Chains*.

79. WEF published *Mapping Trade Tech: Trade in the Fourth Industrial Revolution and Advancing Digital Trade in Asia* and made policy recommendations on cross-border payments.<sup>75</sup>

80. GSMA published *State of the Industry Report on Mobile Money 2019* and a mobile money regulatory index.<sup>76</sup>

#### E-learning

81. The closure of schools in many countries during the pandemic has raised awareness of the potentials and challenges of distance learning.

82. UNESCO brought together international organizations, Governments and private sector partners in a global education coalition, to maintain educational standards and equality in times of crisis, supported by a global skills academy that seeks to build skills for employability and resilience during a crisis.<sup>77</sup> A mobile learning week event focused on distance learning responses to the pandemic. In addition, UNESCO launched a dynamic coalition on open educational resources.<sup>78</sup>

83. UNICEF and ITU developed the Giga initiative, which seeks to connect every school to the Internet, beginning in 11 countries. The Broadband Commission working group on school connectivity published *The Digital Transformation of Education: Connecting Schools, Empowering Learners*.

#### E-health

84. The pandemic has been the principal concern of health agencies, led by WHO. As well as addressing public health and medical concerns, WHO issued guidance on contact tracing, including ethical considerations, and on risk communications and community engagement.<sup>79</sup> WHO and other agencies noted that disinformation could

<sup>73</sup> <https://www.itu.int/en/ITU-T/extcoop/dcgi/Pages/default.aspx>.

<sup>74</sup> <https://www.imf.org/en/Publications/WP/Issues/2020/05/29/Tec-h-tonic-Shifts-Taxing-the-Digital-Economy-49363>.

<sup>75</sup> <https://www.weforum.org/reports/connecting-digital-economies-policy-recommendations-for-cross-border-payments>.

<sup>76</sup> <https://www.gsma.com/mobilefordevelopment/the-mobile-money-regulatory-index/>.

<sup>77</sup> <https://gloaleducationcoalition.unesco.org/global-skills-academy>.

<sup>78</sup> <https://en.unesco.org/themes/building-knowledge-societies/oer/dynamic-coalition>.

<sup>79</sup> <https://apps.who.int/iris/handle/10665/332265>; <https://apps.who.int/iris/handle/10665/332049>; [https://www.who.int/publications/i/item/WHO-2019-nCoV-Ethics>Contact\\_tracing\\_apps-2020.1](https://www.who.int/publications/i/item/WHO-2019-nCoV-Ethics>Contact_tracing_apps-2020.1); [https://www.who.int/publications/i/item/risk-communication-and-community-engagement-\(rcce\)-action-plan-guidance](https://www.who.int/publications/i/item/risk-communication-and-community-engagement-(rcce)-action-plan-guidance).

adversely affect public health during the pandemic.<sup>80</sup> WHO held a conference on infodemiology; is building a digital health network of networks to identify opportunities and coordinate multi-stakeholder partnerships; and is implementing the Global Strategy on Digital Health 2020–2025, which prioritizes global collaboration and knowledge transfer, the implementation of national digital health strategies, improved governance and people-centred health systems.<sup>81</sup> WHO and ITU published *Digital Health Platform Handbook: Building a Digital Information Infrastructure (Infostructure) for Health*. WHO, WIPO and WTO issued an integrated approach to pandemic response including on issues related to health, trade and intellectual property.<sup>82</sup>

85. UNESCO published a policy brief contextualizing and exploring responses to disinformation.<sup>83</sup>

86. The Africa Infodemic Response Alliance, comprising 13 international agencies, aimed to address disinformation in Africa.<sup>84</sup>

87. The Broadband Commission published *Reimagining Global Health through Artificial Intelligence: The Road Map to AI[Artificial Intelligence] Maturity*. GSMA reported on experiences in digital health in several developing countries.<sup>85</sup>

88. Ethical aspects of health-related digitalization have become more prominent during the pandemic. The Council of Europe strategic action plan on human rights and technologies in biomedicine considers these issues in the light of rapid technological development.<sup>86</sup>

#### E-employment

89. ILO held a global webinar to share the findings of its future of work in ICT project, on skills shortages, skills development and international migration.<sup>87</sup>

90. A World Bank paper explored the potential for telecommuting in diverse countries.<sup>88</sup>

91. WEF published *Jobs of Tomorrow: Mapping Opportunity in the New Economy* and *The Future of Jobs Report 2020*, which emphasized the continuing impact of new technology on employment; held a jobs reset summit to explore the changing employment environment resulting from health-related and economic changes; launched a reskilling revolution programme to help economies build skills for the digital age; and defined a charter of principles for good platform work.<sup>89</sup>

#### E-environment

92. A coalition of United Nations agencies published an assessment of frontier technologies for protecting the environment and addressing climate change.<sup>90</sup> Environmental issues featured for the first time as a main theme at IGF. ECE continued to

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<sup>80</sup> <https://www.who.int/news/item/23-09-2020-managing-the-covid-19-infodemic-promoting-healthy-behaviours-and-mitigating-the-harm-from-misinformation-and-disinformation>.

<sup>81</sup> <https://www.who.int/teams/risk-communication/infodemic-management/1st-who-infodemiology-conference>; <https://www.who.int/docs/default-source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf>.

<sup>82</sup> <https://www.who.int/publications/i/item/9789240008267>.

<sup>83</sup> [https://en.unesco.org/sites/default/files/disinfodemic\\_deciphering\\_covid19\\_disinformation.pdf](https://en.unesco.org/sites/default/files/disinfodemic_deciphering_covid19_disinformation.pdf).

<sup>84</sup> <https://news.un.org/en/story/2020/12/1079222>.

<sup>85</sup> <https://www.gsma.com/mobilefordevelopment/resources/digital-health-a-health-system-strengthening-tool-for-developing-countries/>.

<sup>86</sup> <https://www.coe.int/en/web/bioethics/strategic-action-plan>.

<sup>87</sup> [https://www.ilo.org/global/docs/WCMS\\_755306/lang--en/index.htm](https://www.ilo.org/global/docs/WCMS_755306/lang--en/index.htm).

<sup>88</sup> <https://openknowledge.worldbank.org/handle/10986/34277>.

<sup>89</sup> <https://www.weforum.org/events/the-jobs-reset-summit-2020/about>; <https://www.weforum.org/press/2020/01/the-reskilling-revolution-better-skills-better-jobs-better-education-for-a-billion-people-by-2030>; <https://www.weforum.org/reports/the-charter-of-principles-for-good-platform-work>.

<sup>90</sup> <https://www.itu.int/en/mediacentre/Pages/pr07-2020-frontier-technologies-are-key-tools-to-combat-climate-change.aspx>.

contribute to the development of the shared environmental information system of the European Environment Agency, which provides environmental information for evidence-based policy.<sup>91</sup> ITU and the United Nations University published a statistical and analytical review of electronic waste.<sup>92</sup> Several organizations, including APC, discussed circular digital economies aimed at more sustainable digital production and consumption.<sup>93</sup>

93. ITU published *Guidelines for National Emergency Telecommunication Plans* and resources to maintain the resilience of communications during crises, including guidance on pandemic response and an analysis of opportunities and constraints experienced by women in emergencies.<sup>94</sup>

94. The United Nations Human Settlements Programme *World Cities Report 2020: The Value of Sustainable Urbanization* explored the contribution of new technologies. The ITU united for smart sustainable cities initiative published *Accelerating City Transformation Using Frontier Technologies*.

95. The WMO Information System makes use of geospatial and other ICTs to support analyses of weather and inform management related to the climate, water and the environment. The Data Conference laid the groundwork for the comprehensive modernization of meteorological data management using new technologies within an overall earth systems approach. A community platform was established to facilitate experience and information-sharing.<sup>95</sup>

#### E-agriculture

96. The pandemic has reduced incomes and intensified pressure on food supply chains, increasing the risks of hunger and malnutrition.

97. The FAO hand-in-hand initiative focuses on steps to eradicate hunger and poverty in the most vulnerable countries and FAO facilitates the e-agriculture community of practice, which enables online knowledge-sharing on agriculture and rural development, and has worked with ITU to support the development of e-agriculture strategies in eight countries.<sup>96</sup> The FAO Council, at its 165th session, adopted a new digitalization agenda and programme of work and supported the International Platform for Digital Food and Agriculture. FAO and ITU published a study of digital agriculture in Europe and Central Asia and hosted a digital agriculture solutions forum for Asia and the Pacific.<sup>97</sup>

98. ECE launched a digital marketplace designed to reduce food loss and waste.<sup>98</sup>

#### E-science

99. The Commission on Science and Technology for Development, at its twenty-third session, considered the role of science, technology and innovation in sustainable development and paid particular attention to space technology.<sup>99</sup>

100. UNDP fostered digital innovation in response to the pandemic.

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<sup>91</sup> <https://www.unece.org/environmental-policy/environmental-monitoring-and-assessment/areas-of-work/shared-environmental-information-system.html>.

<sup>92</sup> <https://www.itu.int/en/ITU-D/Environment/Pages/Spotlight/Global-Ewaste-Monitor-2020.aspx>.

<sup>93</sup> <https://www.apc.org/en/publications/circular-guide#background>.

<sup>94</sup> <https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Publications/2020/Guidelines-for-TTX.aspx>; <https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/telecommunications-ICT-contingency-plan-pandemic-response.aspx>; <https://www.itu.int/en/ITU-D/Emergency-Telecommunications/Pages/Women-ICT-and-Emergency-Telecommunications.aspx>.

<sup>95</sup> <https://public.wmo.int/en/community-platform>.

<sup>96</sup> <http://www.fao.org/hand-in-hand/en/>; [www.fao.org/e-agriculture/](http://www.fao.org/e-agriculture/).

<sup>97</sup> <http://www.fao.org/about/meetings/council/cl165/documents/en/>; <http://www.fao.org/publications/card/en/c/CA9578EN/>; <http://www.fao.org/asiapacific/events/detail-events/en/c/1697/>.

<sup>98</sup> <http://feedup.unece.org/>.

<sup>99</sup> <https://unctad.org/meeting/commission-science-and-technology-development-twenty-third-session-virtual-informal-meeting>.

101. UNESCO organized a dialogue on open science during the pandemic, submitted a draft recommendation on open science for consideration by member States and convened a summit on futures literacy to explore ways of mobilizing intellectual innovation.<sup>100</sup>

102. FAO, ILO, the United Nations Environment Programme, WHO and WIPO collaborate with the International Association of Scientific, Technical and Medical Publishers in the research for life programme, which offers developing countries access to scientific journals, books and databases.

(h) *Cultural diversity and identity, linguistic diversity and local content (C8)*

103. UNESCO launched an online tracker on cultural impacts of the pandemic, together with resources responding to impacts on indigenous communities and heritage and creative industries, and adopted a declaration on indigenous languages, including with regard to digital empowerment, language technology and indigenous media.<sup>101</sup> UNESCO also launched the Tech Cul initiative to foster collaboration between entrepreneurs and relevant institutions in supporting cultural organizations during the pandemic.

104. Issues related to digital identity were widely discussed in 2020. The World Bank created a practitioner's guide to digital identity.<sup>102</sup> GSMA researched new mobile identity systems in sub-Saharan Africa.<sup>103</sup>

(i) *Media (C9)*

105. The role of journalism and risks of misinformation and disinformation have been prominent themes during the pandemic. The Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression submitted a report on disease pandemics and the freedom of opinion and expression.<sup>104</sup>

106. UNESCO published a report on journalistic independence and media capture; continued to address issues related to the safety of journalists, particularly women, including through the launch of a multi-donor global media defence fund; and undertook several studies of national media environments using its media development indicators.<sup>105</sup>

107. The Broadband Commission published *Balancing Act: Countering Digital Disinformation While Respecting Freedom of Expression*.

108. The Council of Europe has continued its work in support of media freedom and the safety of journalists.

(j) *Ethical dimensions of the information society (C10)*

109. Many international organizations have addressed the challenge of containing the pandemic in ways that respect human rights and development. The United Nations High Commissioner for Human Rights reviewed the impact of new technologies on the promotion and protection of human rights in the context of assemblies, including peaceful

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<sup>100</sup> <https://en.unesco.org/science-sustainable-future/open-science/recommendation>;  
<https://en.unesco.org/news/learning-envision-future-first-world-summit-futures-literacy-unesco>.

<sup>101</sup> <https://en.unesco.org/news/culture-covid-19-impact-and-response-tracker>;  
<https://en.unesco.org/news/pinos-declaration-chapoltepek-lays-foundations-global-planning-international-decade-indigenous>.

<sup>102</sup> <https://id4d.worldbank.org/guide>.

<sup>103</sup> <https://www.gsma.com/mobilefordevelopment/resources/reimagining-identity-ecosystems-in-sub-saharan-africa-with-mobile/>.

<sup>104</sup> A/HRC/44/49.

<sup>105</sup> <https://unesdoc.unesco.org/ark:/48223/pf0000375061>; <https://en.unesco.org/themes/safety-journalists/dgreport>; <https://en.unesco.org/news/special-rapporteur-violence-against-women-publishes-report-safety-women-journalists>; <https://en.unesco.org/global-media-defence-fund>;  
<https://en.unesco.org/programme/ipdc/initiatives/mdis>.



protests.<sup>106</sup> The Council of Europe published a toolkit on democracy, human rights and the rule of law.<sup>107</sup>

110. The crisis has invigorated debate on data protection and privacy. The United Nations and participating agencies issued a joint statement on data protection and privacy in responding to the pandemic.<sup>108</sup> The Special Rapporteur of the Human Rights Council on the right to privacy prepared a report on privacy-related aspects of the pandemic, including with regard to contact tracing.<sup>109</sup> WEF considered redesigning data privacy.<sup>110</sup>

111. UNESCO is developing a recommendation on the ethics of artificial intelligence and promoting a framework for analysing artificial intelligence outcomes based on its principles of rights, openness, access and multi-stakeholder participation.<sup>111</sup>

112. The UNICEF East Asia and Pacific regional office published research findings on the use of social media by children and adolescents.<sup>112</sup> UNICEF prepared policy guidance on children's rights in the context of emerging artificial intelligence, in association with the Generation Artificial Intelligence partnership.<sup>113</sup> In addition, UNICEF developed a manifesto on good governance of children's data and recommendations for the online gaming industry on assessing impacts on children.<sup>114</sup> In conjunction with the European Commission, UNICEF is undertaking a study of children's use of digital technology during the pandemic. The Council of Europe published *Handbook for Policymakers on the Rights of the Child in the Digital Environment* and guidelines on parenting in the digital age, focused on protection from sexual abuse.<sup>115</sup>

113. UN-Women drew attention to online threats of violence and sexual harassment, including the abuse of new technologies, and explored safe digital spaces for women and girls. The World Wide Web Foundation published *Women's Rights Online: Closing the Digital Gender Gap for a More Equal World*.

(k) *International and regional cooperation (C11)*

114. The pandemic has been the primary focus of international and regional cooperation in 2020. UNDP has acted as technical lead agency in the response of the United Nations system to the socioeconomic impacts of the pandemic, emphasizing the role that digitalization can play in both the short term and in rebuilding better.<sup>116</sup>

115. The *Report of the Secretary-General: Road Map for Digital Cooperation* sets a framework for multilateral and multi-stakeholder cooperation to promote digital development, mitigate potential risks from digitalization and promote digital public goods to create a more equitable world; and focuses on connectivity, inclusion, capacity-building, human rights, trust and security and cooperation in the development of artificial intelligence. ITU and other agencies organized webinars and discussion forums to develop multi-stakeholder dialogues on aspects of the Road Map.<sup>117</sup> The Digital Public Goods

<sup>106</sup> A/HRC/44/24.

<sup>107</sup> <https://www.coe.int/en/web/congress/covid-19-toolkits>.

<sup>108</sup> <https://www.un.org/en/coronavirus/joint-statement-data-protection-and-privacy-covid-19-response>.

<sup>109</sup> A/75/147.

<sup>110</sup> <https://www.weforum.org/reports/redesigning-data-privacy-reimagining-notice-consent-for-humantechnology-interaction>.

<sup>111</sup> <https://en.unesco.org/artificial-intelligence/ethics>;  
<https://unesdoc.unesco.org/ark:/48223/pf0000372132>.

<sup>112</sup> <https://www.unicef.org/eap/reports/our-lives-online>.

<sup>113</sup> <https://www.unicef.org/globalinsight/featured-projects/ai-children>.

<sup>114</sup> <https://www.unicef.org/globalinsight/good-governance-childrens-data>;  
<https://www.unicef.org/partnerships/unicef-publishes-recommendations-online-gaming-industry-assessing-impact-children>.

<sup>115</sup> <https://edoc.coe.int/en/children-s-rights/7513-parenting-in-the-digital-age-parental-guidance-for-the-online-protection-of-children-from-sexual-exploitation-and-sexual-abuse.html>.

<sup>116</sup> <https://www.undp.org/content/undp/en/home/coronavirus.html>.

<sup>117</sup> <https://www.itu.int/en/itu-wsis/Pages/Contribution.aspx>.

Alliance developed a standard for assessing digital public goods in the light of the Road Map.<sup>118</sup>

116. The Task Force on Digital Financing of the Sustainable Development Goals issued *People's Money: Harnessing Digitalization to Finance a Sustainable Future*, highlighting the need for the emergence of a citizen-centric financial system that could leverage advances in digital identity and infrastructure, to develop a new generation of digital financing platforms.

117. ITU published a compendium of contributions towards implementing WSIS outcomes and reported on its work in partnership with other agencies at the High-Level Political Forum on Sustainable Development.

## 2. Implementation of themes

### (a) Financing mechanisms

118. The pandemic has highlighted the need for investment in connectivity to prevent digital inequalities that exacerbate social and economic inequalities.

119. ITU published *Connecting Humanity: Assessing Investment Needs of Connecting Humanity to the Internet by 2030*, which assessed the investment required for infrastructure, regulation, skills and content development and ways to mobilize appropriate finance.

120. A Broadband Commission working group is considering financing models for sustainable broadband development.<sup>119</sup>

121. ICT-related businesses are among the largest global corporations, investing in new technologies, including artificial intelligence, and new approaches to enabling connectivity. Development finance makes an important contribution, particularly in areas that may be less attractive to commercial investors. The World Bank has developed regional digital investment programmes in regions of Africa and financed developments in individual countries. It is building instruments for longer-term responses to the COVID-19 crisis, built around increasing bandwidth to maintain connectivity, ensuring business continuity and enabling financial technology and digital business models. Investment in connectivity was an important focus for the World Bank and the Digital Development Partnership coordinated by the World Bank, with programmes focused on data and indicators, the digital economy, cybersecurity, inclusive Internet, digital government and the mainstreaming of digital services, applications and platforms.<sup>120</sup> Digital Development Partnership private investment is the main source of ICT sector support.<sup>121</sup>

### (b) Internet governance

#### Enhanced cooperation

122. The Tunis Agenda for the Information Society recognized the need for enhanced cooperation on international public policy issues pertaining to the Internet. The General Assembly noted the work of the Working Group on Enhanced Cooperation of the Commission on Science and Technology for Development and the need for continued dialogue and work on the implementation of enhanced cooperation as envisaged in the Tunis Agenda.<sup>122</sup>

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<sup>118</sup> <https://digitalpublicgoods.net/standard/>.

<sup>119</sup> <https://broadbandcommission.org/workinggroups/Pages/WG6-2019.aspx>.

<sup>120</sup> <https://www.worldbank.org/en/news/feature/2020/10/26/digital-development-partnership-annual-report-responding-to-the-covid-19-crisis>.

<sup>121</sup> <http://documents1.worldbank.org/curated/en/848061587152231518/pdf/Digital-Development-Partnership-Annual-Review-2019-Making-Sure-That-No-One-Is-Left-Behind-in-the-Digital-Age.pdf>.

<sup>122</sup> A/RES/75/202.

## Internet Governance Forum

123. At the start of the pandemic, the IGF Multi-stakeholder Advisory Group established a contingency plan for the online delivery of IGF. The fifteenth annual meeting was held online with the overarching theme of “Internet for human resilience and solidarity” and subsidiary themes focused on data, trust, inclusion and the environment, together with the pandemic and the *Report of the Secretary-General: Road Map for Digital Cooperation*. Over 6,000 participants from 173 countries registered, with more than half participating for the first time. More than 250 sessions were streamed live, having been scheduled to allow for maximum possible participation across different time zones. A summary report was issued along with messages addressing the main themes and outputs from the parliamentary round table and youth summit.<sup>123</sup> These outcome documents noted the growing awareness of the relationship between digitalization and sustainable development, the importance of interdisciplinary and intersectoral as well as multi-stakeholder cooperation and the need for greater engagement with other international forums.

124. Intersessional work was undertaken by dynamic coalitions, of which there are now 23, and best practice forums on cybersecurity, local content, gender and access and data and new technologies, with a report on the experience of best practice forums prepared for the consideration of the Multi-stakeholder Advisory Group.<sup>124</sup> Eight new national and regional IGFs were established, bringing the total of national, regional and youth IGFs to 131, and many held meetings online throughout the year.<sup>125</sup> A Multi-stakeholder Advisory Group working group on IGF strengthening and strategy is reviewing the improvements proposed in the Road Map.<sup>126</sup>

(c) *Measuring information and communications technology for development*

125. The Partnership on Measuring ICT for Development brings together 14 United Nations and international agencies concerned with data collection and analysis, assesses trends and proposes indicators to improve measurement with regard to the information society. The United Nations Statistical Commission endorsed the new thematic list of ICT indicators prepared by the Partnership’s Task Group on ICT for the Sustainable Development Goals, which address the availability and use of ICTs for achieving the Goals, business use of ICTs, e-government, e-waste and education.<sup>127</sup>

126. ITU maintains the world telecommunication/ICT indicators database, which includes more than 180 indicators from over 200 economies, and publishes facts and figures derived from the database, along with a review of ICT price trends.<sup>128</sup> ITU published a revised handbook for the collection of administrative data on telecommunications and a revised manual for measuring ICT access and use by households and individuals.<sup>129</sup> The World Telecommunication/ICT Indicators Symposium was held online in December 2020.<sup>130</sup> ITU established a monitoring framework for assessing progress towards its connect 2030 agenda targets for ICT growth, inclusiveness, sustainability, innovation and partnership; such progress was detailed in the annual report on the implementation of the strategic plan and activities.<sup>131</sup>

<sup>123</sup> <https://www.intgovforum.org/multilingual/content/igf-2020-outputs>.

<sup>124</sup> <https://www.intgovforum.org/multilingual/content/dynamic-coalitions;>  
<https://www.intgovforum.org/multilingual/content/bpf-on-bpfs>.

<sup>125</sup> <https://www.intgovforum.org/multilingual/content/igf-regional-and-national-initiatives>.

<sup>126</sup> <https://www.intgovforum.org/multilingual/content/working-group-on-igf-strengthening-and-strategy-wg-strategy>.

<sup>127</sup> E/2020/24-E/CN.3/2020/37; E/CN.3/2020/23.

<sup>128</sup> <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx>; <https://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx>; <https://www.itu.int/en/mediacentre/Pages/pr08-2020-Measuring-Digital-Development-ICT-Price-Trends-2019.aspx>.

<sup>129</sup> [https://www.itu.int/en/publications/ITU-D/pages/publications.aspx?parent=D-IND-ITC\\_IND\\_HBK-2020&media=paper](https://www.itu.int/en/publications/ITU-D/pages/publications.aspx?parent=D-IND-ITC_IND_HBK-2020&media=paper); <https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual.aspx>.

<sup>130</sup> <https://www.itu.int/en/ITU-D/Statistics/Pages/events/wtis2020/default.aspx>.

<sup>131</sup> <https://itu.foleon.com/itu/connect-2030-agenda/home/>.

127. UNCTAD updated its *Manual for the Production of Statistics on the Digital Economy*.<sup>132</sup> UNESCO publishes reports on national Internet environments analysed through Internet universality indicators based on the principles of rights, openness, access and multi-stakeholder participation; 20 assessments are in various stages of preparation.<sup>133</sup> The International Monetary Fund, OECD and WTO published the *Handbook on Measuring Digital Trade*.<sup>134</sup> GSMA quantified mobile developments in *The Mobile Economy 2020* and *The State of Mobile Internet Connectivity 2020* and also published the *Mobile Gender Gap Report 2020*. The GSMA mobile connectivity index measures mobile infrastructure, affordability, consumer readiness, content and services in over 150 countries. The Alliance for Affordable Internet assessed the costs of access and issued recommendations on affordability during the pandemic.<sup>135</sup>

#### **IV. Findings and suggestions: Towards recovery from the pandemic**

128. Fifteen years ago, the adoption of the Tunis Agenda for the Information Society represented the beginning of a new phase of WSIS, namely, the implementation of principles and goals agreed during the Summit as the basis for a people-centred, inclusive and development-oriented information society.<sup>136</sup>

129. A great deal has changed in the last 15 years.<sup>137</sup> Much of what was envisaged at WSIS has been achieved, even exceeded. Many more people now have access to and make use of digital devices. Applications and services that were unknown in 2005 are at the centre of many lives today. Mobile devices have evolved from mostly simple telephones into handheld computers with myriad functions. Social media and cloud computing have become mainstream and highly influential in lives and livelihoods. New waves of innovation are anticipated that could have transformative impacts on progress towards achieving the Sustainable Development Goals.

130. However, access to ICTs remains highly unequal between and within countries, between women and men, between people who live in different areas or who have different life experiences. Developmental aspirations have been supported in some areas but undermined in others by unintended consequences and adverse circumstances. Information technologies have been used for good but have also caused harm.

131. The years since WSIS have demonstrated many things: the power of technology to reshape societies and the challenges faced as societies seek to shape technology for the best advantages; the interplay of opportunity and risk; the importance of addressing and mitigating digital divides; and the growing recognition that a people-centred, inclusive and development-oriented information society depends on building the relationship between human and technological development.

132. The year 2020 was centred on the COVID-19 pandemic. ICTs have played a crucial role in enabling greater resilience to the impacts of pandemic. They have facilitated continuity in health care provision, education, areas of the economy and entertainment. In so doing, they have almost certainly accelerated digitalization and the transition to an information society. Yet the pandemic has also demonstrated the enduring inequalities in digital provision. Those with access to ICTs and those with jobs that rely on their use have been better placed to overcome some of the difficulties caused by the pandemic than those without such access. The lack of equality in digital access, connectivity, affordability and digital literacy and resources has contributed to inequalities in social and economic welfare.

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<sup>132</sup> See <https://unctad.org/meeting/working-group-measuring-e-commerce-and-digital-economy-first-meeting>.

<sup>133</sup> <https://en.unesco.org/internet-universality-indicators>.

<sup>134</sup> <https://www.oecd.org/sdd/its/handbook-on-measuring-digital-trade.htm>.

<sup>135</sup> <https://a4ai.org/affordability-report/report/2020/>; <https://webfoundation.org/research/covid-19-policy-briefings/>.

<sup>136</sup> [https://www.itu.int/net/wsis/outcome/booklet/declaration\\_A.html](https://www.itu.int/net/wsis/outcome/booklet/declaration_A.html).

<sup>137</sup> See <https://unctad.org/webflyer/fifteen-years-world-summit-information-society>.

If the benefits of an information society are to be achieved, the pandemic has demonstrated even more clearly that they must be made available more equally to all.

133. Three further challenges arise from the issues addressed and the initiatives and documents cited in this report and from experiences in dealing with the pandemic. These challenges are part of the framework of the *Report of the Secretary-General: Road Map for Digital Cooperation*.

134. It is clear that maximizing the developmental value of ICTs depends on cooperation among various stakeholders. The COVID-19 crisis has demonstrated how partnerships, for example between technologists and experts in education, health and the environment, are essential if technology is to help meet unmet needs in these areas. The Commission on Science and Technology for Development serves as a vital forum for inclusive consideration of the impacts of technological advances, including digitalization, as well as cooperation and governance questions in this regard.

135. The needs of different countries and communities are diverse. Understanding the impact of new technologies in different contexts is critical to maximizing their value for development. Increased participation by experts and communities from all parts of the world is essential if developing country needs are to be fully represented in the emerging information society.

136. The goal for the world community is to achieve the WSIS outcomes in a way that also helps achieve the Sustainable Development Goals. The goal emerging from the pandemic period is to not return to the previous status quo but to rebuild better, using the potential of current technologies to foster an inclusive and sustainable recovery. When WSIS outcomes are reviewed by the General Assembly in 2025, the success of the information society will be measured by how much it has created opportunities for all, enabled prosperity, protected people from harm and built upon digital cooperation among countries, stakeholders and developmental sectors.

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