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**Information and communication technologies
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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 the request by the Economic and Social Council, in its resolution 2006/46, for the United Nations Secretary-General to inform the Commission on Science and Technology for Development (CSTD) concerning the implementation of the outcomes of the World Summit on the Information Society (WSIS). It highlights major activities undertaken by stakeholders in 2016 to implement WSIS outcomes. It has been prepared by the United Nations Conference on Trade and Development (UNCTAD) secretariat based on information provided by entities in the United Nations system and other international organizations and stakeholders.

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* A/72/50.
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Introduction

1.   This report has been prepared in response to Economic and Social Council resolution 2006/46. It includes information provided by 28 United Nations entities and other international organizations and stakeholders, [1] responding to a letter from the Secretary-General of UNCTAD that invited contributions on trends, achievements and obstacles in the implementation of WSIS outcomes. The report summarizes major developments and activities in 2016. Further information on the implementation of WSIS outcomes in 2016 is available in document E/CN.16/2017/CRP.2.

I.   Key trends

A.   Substantial but uneven growth in information and communications technology access and use

2.   In 2016, there was substantial continued growth in access to information and communications technology (ICT) services. The International Telecommunication Union (ITU) estimates that the number of mobile cellular subscriptions worldwide reached 7.37 billion, just under half of which are broadband subscriptions, with over 60 per cent of the world's population estimated to have at least one mobile cellular subscription. ITU estimates that 47 per cent of the world's inhabitants made use of the Internet at least once within a three-month period in 2016, and that 52 per cent of households worldwide had Internet access at home. [2]

3.   However, these global figures mask substantial continued digital divides in ICT access and use. ITU estimates for 2016 show that there were 90 mobile broadband subscriptions per 100 people in developed countries, compared with 41 in developing countries and less than 20 in the least developed countries (LDCs). The proportion of households with Internet access at home is estimated at 84 per cent in Europe, but only 15 per cent in sub-Saharan Africa. In addition, broadband speeds are much higher in developed countries than in developing countries, while the cost of access is generally lower in relation to average household income. [3]

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[1] 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 Africa; Economic Commission for Europe (ECE); Economic Commission for Latin America and the Caribbean (ECLAC); European Commission; End Child Prostitution, Child Pornography and Trafficking of Children for Sexual Purposes International; Food and Agriculture Organization (FAO); International Labour Organization; International Trade Centre; Internet Corporation for Assigned Names and Numbers (ICANN); Internet Governance Forum (IGF); Internet Society (ISOC); ITU; Organization for Economic Cooperation and Development (OECD); UNCTAD; United Nations Department of Economic and Social Affairs (DESA); United Nations Economic, Scientific and Cultural Organization (UNESCO); United Nations Environment Programme; United Nations Industrial Development Organization; Universal Postal Union; World Bank; World Food Programme; World Health Organization; World Intellectual Property Organization; World Meteorological Organization (for these contributions, see http://unctad.org/en/Pages/CSTD.aspx).

[2] http://www.gsmaintelligence.com/research/?file=97928efe09cdba2864cdcf1ad1a2f58c&download; http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx; http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx.

[3] ibid.; ITU world telecommunication/ICT indicators database; ITU, 2016, *Measuring the Information Society Report 2016* (Geneva, United Nations publication), available at http://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2016/MISR2016-w4.pdf.

4.   Much attention has been paid to the significant gender digital divide identified in the 10-year review of the implementation of WSIS outcomes by the General Assembly in December 2015.[4] ITU estimates for 2016 show that women worldwide are 12 per cent less likely to be online than men, with the difference reaching 31 per cent in LDCs.[5]

5.   The ITU annual *Measuring the Information Society Report* presents findings for 11 indicators of ICT access, usage and skills that are included in an ICT development index. Almost all countries improved their index ratings in 2016, with particularly strong increases in mobile broadband. The majority of least connected countries in the index were LDCs, while the strongest improvements in ratings were experienced in middle-income countries.[6]

B.   Information and communications technology and sustainable development

6.   In September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development, including 17 Sustainable Development Goals and 129 targets.[7] Goal 9, which deals with infrastructure and innovation, includes a target to significantly increase access to ICTs and strive to provide universal and affordable access to the Internet in LDCs by 2020. ICTs are recognized as important catalysts for achieving other Goals and targets, whose importance will grow as they become more pervasive and capable in the period to 2030.

7.   The General Assembly, in its resolution 70/125, called for a close alignment between the WSIS process and the 2030 Agenda.[8] The WSIS Forum in 2016 focused on links between the Sustainable Development Goals and WSIS, including the publication of a forward-looking WSIS action lines and Sustainable Development Goals matrix intended to facilitate coordination.[9] In March, the United Nations Statistical Commission drew up a list of 231 indicators to measure progress towards the Goals.[10] Six ICT indicators were selected to support monitoring of the Goals concerned with infrastructure, education, women's empowerment and science, technology and innovation.[11]

8.   The World Bank, in its *World Development Report 2016: Digital Dividends*, included a comprehensive review of experience in ICTs for development.[12] This review recognized that digital technologies have spread rapidly in much of the world, in many cases boosting growth, expanding opportunities and improving service delivery, but that their aggregate impact on development has fallen short of expectations and been unevenly distributed.
As a result, the World Bank suggests that in some countries, ICTs might have, to date, increased inequalities. As well as addressing the digital divide, the report recommends that Governments address the enabling environment of analogue complements to digitalization by strengthening regulations that ensure competition among businesses, developing workforce skills to meet the demands of the new economy and ensuring that governance institutions are accountable to stakeholders.

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[4] A/RES/70/125.

[5] http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx.

[6] ITU, 2016.

[7] A/RES/70/1.

[8] A/RES/70/125.

[9] http://www.itu.int/net4/wsis/sdg/.

[10] E/CN.3/2016/2/Rev.1.

[11] ITU, 2016, chapter 3.

[12] http://www.worldbank.org/en/publication/wdr2016.

C. The growing importance of electronic business and commerce

9.   There has been continued strong growth in interest and participation in electronic commerce (e-commerce), as Governments and businesses in developing countries have become increasingly aware of the relationship between high-quality connectivity and competitiveness. Online trading is vital for large and small firms, enabling production and distribution through global supply chains. For small and medium-sized enterprises (SMEs), e-commerce can enable better integration with world markets. UNCTAD estimates that the global value of e-commerce grew by 38 per cent, from US$16.4 trillion in 2013 to US$22.1 trillion in 2015, most of which occurred in emerging economies.[13] The bulk of global e-commerce comprises business-to-business transactions.

10.   E-commerce is increasingly transformative, creating both opportunities and challenges. Its rapid growth can facilitate more inclusive trade and contribute to international flows of goods and services. However, some countries are better equipped than others to take advantage of this trend. The UNCTAD business-to-consumer e-commerce readiness index shows that readiness is least developed in Africa, where there is a particular need for investment in both connectivity and in the underlying transactions and logistics infrastructures that enable cost-effective trade.[14]

11.   Connectivity and e-commerce capabilities are especially challenging in LDCs. ESCAP has demonstrated that e-commerce strongly correlates with fixed broadband connectivity in the Asia and Pacific region, emphasizing the critical importance of infrastructure.[15] Alongside this, however, countries must develop relevant skills, establish appropriate legal and regulatory frameworks and raise awareness among all stakeholders. Businesses in LDCs are less likely to have websites or offer online transactions, which reduces their ability to engage in e-commerce and to participate in global value chains. Cybersecurity is also critical. These challenges require increased capacity-building efforts. A growing number of countries are designing national policies and strategies incorporating these in order to harness the potential of e-commerce for economic development.

D. Developments related to the Internet and Internet governance

12.   The Internet continued to evolve in 2016 as a result of technological advances and services innovation. It has become the most significant platform for communications and the sharing of information in business, and is increasingly important to the performance of Governments and central to the lives of a high proportion of the world's population.

13.   Three examples illustrate the Internet's growing importance in all economies and societies. The increasing pervasiveness of data management through cloud services, whereby individual and business data and applications are held in data centres rather than on owned devices, has led to new challenges related to data privacy, security and jurisdiction. New platform businesses, such as Airbnb and Uber, have disrupted traditional business models in areas such as local transport and accommodation, raising issues related to the future of service businesses and employment relationships. Social media are displacing traditional media as the most important sources of news and opinion for many users, leading to debate on their impact on social norms and the diversity of political discourse.

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[13] April 2016 estimates; e-commerce includes both business-to-business and business-to-consumer (http://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1281).

[14] http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d07_en.pdf.

[15] http://www.unescap.org/resources/state-ict-asia-and-pacific-2016-uncovering-widening-broadband-divide.

14.   The rapid evolution of the Internet is increasingly considered within a wider range of changes in the information society, including the emerging Internet of things, automation and the development of autonomous devices such as driverless vehicles, as well as big data analysis, algorithmic decision-making and artificial intelligence. These developments offer many opportunities for development but have also raised significant public policy concerns, including with regard to the cybersecurity of Internet of things devices, data protection and the risks of cyberconflict. Their long-term impact is expected to be profound but is difficult to predict.

15.   In 2016, a significant development in Internet governance concerned the functions of the Internet Assigned Numbers Authority, which manages Internet protocol assignments, number resources and root-zone management. The contract between the Government of the United States of America and ICANN to perform these functions expired on 30 September. It was replaced by new stewardship arrangements, endorsed at the fifty-fifth meeting of ICANN in March following extensive multi-stakeholder negotiations, which transferred stewardship of the functions of the Internet Assigned Numbers Authority to the global stakeholder community, operating through a wholly owned subsidiary of ICANN that is subject to oversight and monitoring from representatives of the ICANN community. The arrangements also introduced enhanced accountability measures for the governance of ICANN, including measures related to its budget and strategic plan, the composition of its board and the role of its Governmental Advisory Committee, which has 171 member Governments.[16]

16.   The Global Commission on Internet Governance published a report entitled "One Internet", together with a range of research reports, which examined different possible scenarios for the evolution of the Internet and recommended the development of a multi-stakeholder social compact to sustain an open, secure, trustworthy and inclusive Internet.[17]

17.   UNESCO initiated a project to develop Internet indicators to facilitate comparisons between countries over time of the Internet's contribution to sustainable development. UNESCO is also working with ICANN and ISOC to assess and make recommendations concerning modalities for multi-stakeholder participation in decision-making.

II. Implementation and follow-up at the regional level

A. Africa

18.   The Economic Commission for Africa held a review meeting on WSIS outcomes in November, providing an opportunity to share experiences and address the challenges that this region faces in implementing WSIS outcomes.[18] While there has been great progress in the adoption and use of ICTs in Africa, it remains the least connected region, and more action is needed in many countries, particularly LDCs, to ensure that the continent benefits fully from the information society. This challenge is multifaceted, requiring investment in infrastructure, services, skills development and content.

19.   Infrastructure investment on the continent is supported by multilateral agencies, including the Programme for Infrastructure Development in Africa led by the African

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[16] http://gacweb.icann.org/display/gacweb/About+The+GAC.
[17] http://www.ourinternet.org/report.
[18] http://www.uneca.org/sites/default/files/images/wsis_meeting_report_draft_dec_2016_0.pdf.

Development Bank, as well as by the private sector.[19] The African Internet Exchange System project supports the establishment of national and regional Internet exchange points.[20] Network operators and research institutes are identifying ways to improve broadband connectivity and reduce access barriers, particularly for women.

20. In September, the African Union Commission and Economic Commission for Africa organized the African Internet Governance Forum, preceded by the African School on Internet Governance co-organized by APC and the New Partnership for Africa's Development.[21]

B. Asia and the Pacific

21. This region includes countries with diverse economic and communications contexts. In August, ESCAP published a study, *State of ICT in Asia and the Pacific 2016*, which alerts regional governments to a widening divide in broadband access and use between the region's more and less prosperous countries, partly due to the fact that private investment prioritizes more profitable markets. ESCAP also emphasizes the need for improved data-gathering and greater integration of ICTs in socioeconomic development.[22]

22. ESCAP works with regional partners, including the Asian Development Bank and Asia-Pacific Telecommunity, to stimulate regional infrastructure development and address intraregional digital divides. In October, member States endorsed the master plan and regional cooperation framework document for the Asia-Pacific information superhighway, a regional broadband initiative that aims to improve the connectivity of landlocked developing countries through links to submarine cables and the deployment of Internet exchange points.[23]

23. ESCAP states that private investment in infrastructure is hampered by poor regulation, and is encouraging member States to improve the environment for public-private partnerships and mainstream ICTs into strategic development plans. Its Asian and Pacific Training Centre for ICT for Development supports member States in strengthening human and institutional capacities, notably through its flagship academy of ICT essentials for government leaders, which is also delivered in other United Nations regions.[24]

C. Western Asia

24. ESCWA promotes awareness and policy development on the information society within this region, building on evidence of developments since WSIS in its *Regional Profile of the Information Society in the Arab Region*.[25] This report draws on the information society portal for the region,[26] which gathers and analyses data on regional trends in order to provide information and resources to policymakers and other stakeholders.

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[19] http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/programme-for-infrastructure-development-in-africa-pida/; http://allafrica.com/download/resource/main/main/idatcs/00101051: fdc3120bff2c2c3215a2179645733ecf.pdf.

[20] http://www.au.int/en/african-internet-exchange-system-axis-project-overview.

[21] http://afigf.org/TheAfIGF; http://afrisig.org/afrisig-2016/about-afrisig-2016/.

[22] http://www.unescap.org/resources/state-ict-asia-and-pacific-2016-uncovering-widening-broadband-divide.

[23] E/ESCAP/CICTSTI(1)/2.

[24] http://www.unapcict.org/.

[25] http://www.unescwa.org/publications/profile-information-society-arab-region-2015.

[26] http://isper.escwa.un.org/.

25.   ESCWA reports significant progress in the formulation and modernization of national ICT strategies, infrastructure and enabling environments, but also expresses concern about the lack of integration between sustainable development and ICTs, and between technology and administration. In 2016, ESCWA worked to develop regional approaches to innovation and inclusive sustainable development, including national technology transfer.

26.   In November, ESCWA published a report on innovation policy for inclusive sustainable development in the Arab region.[27] In December, ESCWA and the League of Arab States launched the Arab Internet Governance Forum 2020 initiative, to develop the Forum during its renewed mandate.[28]

D.   Europe

27.   ECE plays a central role in e-commerce development through the United Nations Centre for Trade Facilitation and Electronic Business, and through work to develop electronic data interchanges, single-window data-sharing arrangements and intelligent transport systems. ECE uses electronic tools to monitor environmental developments through its Protocol on Pollutant Release and Transfer Registers and its Shared Environmental Information System. In 2016, it paid extensive attention to the future environment for automated vehicles.

28.   In March, the Council of Europe adopted a new strategy on Internet governance for 2016 to 2019,[29] as well as recommendations on Internet freedom and on the Internet of citizens. Cybersecurity and the development of a strategy to counter extremism and radicalization on the Internet are priorities for the Council, alongside efforts to address hate speech and the sexual exploitation of children online.

29.   In June, the annual European Dialogue on Internet Governance was held in conjunction with the European Commission, on the theme of "Embracing the digital (r)evolution".[30] The Commission has continued work to establish a Global Internet Policy Observatory.[31]

E.   Latin America and the Caribbean

30.   ECLAC implements WSIS outcomes through the Digital Agenda for Latin America and the Caribbean, a regional ICT action plan that was approved by member States in 2015. Its priorities include access and infrastructure, digital economy, e-government, sustainable development and inclusion and governance. A working group has been established to consider the process for establishing a single digital market in the region.

31.   ECLAC prepared a report on the state of broadband in the region, which shows that the percentage of inhabitants using the Internet grew from 35.7 to 54.4 per cent between 2010 and 2015.[32] The Regional Broadband Observatory reports that the affordability of broadband has improved dramatically since 2010, but that the region still lags behind in quality of service.

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[27] http://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf.

[28] http://www.unescwa.org/ArabDIG.

[29] http://search.coe.int/cm/pages/result_details.aspx?objectid=090000168061fda9.

[30] http://www.eurodig.org/fileadmin/user_upload/eurodig_Brussels/Messages_from_Brussels.pdf.

[31] http://giponet.org/en.

[32] http://www.cepal.org/es/publicaciones/estado-la-banda-ancha-america-latina-caribe-2016.

32.   OECD and the Inter-American Development Bank published a toolkit on broadband policies for the region.[33]

33.   The ECLAC Conference on Science, Innovation and ICTs, held in September, adopted objectives focused on capacity-building, the exchange of information and coordination on issues, including ICTs.[34]

III.   Implementation and follow-up at the international level

A.   United Nations Group on the Information Society

34.   The United Nations Group on the Information Society was established by the United Nations System Chief Executives Board for Coordination in 2006 as an inter-agency mechanism to coordinate the implementation of WSIS outcomes throughout the United Nations system.[35] Its role was reaffirmed by the General Assembly in 2015.[36] It meets annually during the WSIS Forum.

B.   Economic and Social Council and Commission on Science and Technology for Development

35.   The 10-year review of the implementation of WSIS outcomes by the General Assembly concluded in 2015.[37] In May, at its nineteenth session, CSTD discussed priority themes of foresight for digital development and smart cities and infrastructure. The session prepared a draft proposal on the implementation of WSIS outcomes for consideration by the Economic and Social Council, and took note of the proposal by the Chair on the composition of the Working Group on Enhanced Cooperation.[38] In July, the Economic and Social Council adopted resolution 2016/22 on assessment of the progress made in the implementation of and follow-up to WSIS outcomes.[39]

C.   General Assembly

36.   In December, the General Assembly adopted resolution 71/212 on ICTs for development, which recalled the outcomes of the review of the implementation of WSIS outcomes by the General Assembly, and reaffirmed the important relationship between the 2030 Agenda for Sustainable Development and ICTs.[40]

D.   Facilitation and coordination of multi-stakeholder implementation

37.   In May, the WSIS Forum took place in Geneva, Switzerland, with the theme of "WSIS action lines: Supporting the implementation of the Sustainable Development Goals".
It attracted 1,800 participants from more than 140 countries, who participated in more than 150 sessions, including the annual review of WSIS action lines. A high-level track

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[33] http://www.oecd.org/internet/broadband-policies-for-latin-america-and-the-caribbean-9789264251823-en.htm.
[34] http://innovalac.cepal.org/2/en.
[35] http://www.ungis.org/Home.aspx.
[36] A/RES/70/125.
[37] http://publicadministration.un.org/wsis10/.
[38] E/2016/31-E/CN.16/2016/4.
[39] E/RES/2016/22.
[40] A/RES/71/212.

addressed 14 key themes that emerged from the 10-year review of the implementation of WSIS outcomes by the General Assembly.[41]

38. In addition in May, UNESCO, in conjunction with the United Nations University, published a *Knowledge Societies Policy Handbook*, to provide a resource for Governments and others seeking to develop policies facilitating knowledge-based economic and social development.[42] This is associated with a variety of online tools, including the WSIS knowledge communities platform that UNESCO maintains on behalf of United Nations agencies.[43]

39. ITU maintains the WSIS stocktaking process and database, which describes almost 8,000 ICT and development activities.[44] Project prizes are awarded annually at the WSIS Forum to recognize excellence in the implementation of projects and initiatives that further WSIS goals.[45]

40. The Broadband Commission for Sustainable Development, jointly convened by ITU and UNESCO, promotes research and advocates policies concerned with broadband development. Its 2016 report, *The State of Broadband*, focused on broadband catalysing sustainable development.[46] The Broadband Commission also published reports on universal and affordable access, and on stimulating demand for broadband.[47]

E. Civil society, business and multi-stakeholder partnerships

41. Many activities that support WSIS objectives are implemented by the private sector, civil society, academic and technical communities and multi-stakeholder partnerships.

42. The Business Action to Support the Information Society initiative of the International Chamber of Commerce works with businesses to support WSIS outcomes, including the WSIS Forum and IGF.[48]

43. In 2016, the Global System for Mobile Communications Association, which represents mobile communications businesses, published an overview, *The Mobile Economy 2016*,[49] together with a number of regional and country reviews, as well as reports on future competitive frameworks for communications and on mobile approaches to disaster management.[50] It launched an innovation fund, supported by the Department for International Development of the United Kingdom of Great Britain and Northern Ireland, to promote innovative partnerships and start-up businesses, focusing on mobile services for SMEs.[51]

44. Civil society organizations play a prominent part in the WSIS Forum, IGF and other information society forums. APC focuses on issues concerned with development, rights and governance. The 2016 edition of the annual *Global Information Society Watch*, published

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[41] http://www.itu.int/net4/wsis/forum/2016/.
[42] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/ifap/knowledge _socities_policy_handbook.pdf.
[43] http://www.wsis-community.org/.
[44] http://www.itu.int/pub/S-POL-WSIS.REP-2016.
[45] http://groups.itu.int/stocktaking/WSISPrizes/WSISPrizes2016.aspx#home.
[46] http://www.itu.int/pub/S-POL-BROADBAND.17-2016.
[47] http://www.broadbandcommission.org/Documents/publications/davos-discussion-paper-jan2016.pdf; http://www.broadbandcommission.org/Documents/publications/WorkingGrouponDemand-2016.pdf.
[48] http://files-eu.clickdimensions.com/iccwboorg-a29q0/files/iccbasis_igfmessages_231116.pdf.
[49] http://www.gsma.com/mobileeconomy/.
[50] http://www.gsma.com/publicpolicy/resetting-competition-policy-frameworks-for-the-digital-ecosystem; http://www.gsmaintelligence.com/research/2016/.
[51] http://www.gsma.com/mobilefordevelopment/innovationfund.

by APC and the International Development Research Centre, discussed economic, social and cultural rights and the Internet.[52]

45.   ISOC provides a forum for the Internet technical and professional community and others concerned with the development and maintenance of an open Internet. As well as developing policy guidelines and briefing papers, it aims to build the capacity of Internet professionals and policymakers, ensuring trust and encouraging user participation in Internet development. In December, ISOC published preliminary findings from a large-scale study of scenarios for the future of the Internet.[53]

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

1.   Implementation of action lines

(a)   The role of public governance authorities and all stakeholders in the promotion of ICTs for development (C1)

46.   The contribution of ICTs to development features in the work of United Nations specialized agencies, multilateral organizations, international financial institutions and other stakeholders. The commitment of the General Assembly to the value and principles of multi-stakeholder cooperation and engagement in the implementation of WSIS outcomes was reaffirmed in its resolution 70/125.

47.   In 2016, the relationship between the Sustainable Development Goals and WSIS outcomes was a major focus of work by intergovernmental agencies and other stakeholders (see chapter I B). In May, at their annual meeting, the Group of Seven countries issued a statement of principles and actions on cyber, which focused on promoting security and stability in cyberspace and promoting the digital economy.[54] In June, OECD held a ministerial meeting on the theme of "The digital economy: Innovation, growth and social prosperity".[55] In November, ITU organized its annual Telecom World in Bangkok, which was attended by more than 8,000 participants.[56]

(b)   Information and communication infrastructure (C2)

48.   Private sector businesses play the leading role in infrastructure design and deployment. The rapid pace of technological change leads to continual upgrading of infrastructure, increasing the bandwidth available to users and enabling a wider range of services.

49.   ITU undertakes many activities to promote infrastructure deployment, including support for the development of national ICT strategies, policy and regulatory harmonization and the establishment of international standards in areas including radio spectrum.[57] The Broadband Commission works to promote policy commitments to broadband development. A special session of the Commission at the World Economic Forum focused on collaboration to "connect the next 1.5 billion by 2020".[58]

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[52] http://giswatch.org/2016-economic-social-and-cultural-rights-escrs-and-internet.
[53] http://www.internetsociety.org/sites/default/files/2016%20Scenario%20Project%20Board%20Update-Compressed.pdf.
[54] http://www.mofa.go.jp/files/000160279.pdf.
[55] http://www.oecd.org/internet/ministerial/.
[56] http://www.itu.int/en/mediacentre/Pages/2016-PR51.aspx.
[57] http://www.itu.int/pub/S-POL-WSIS.OD_IMPL.
[58] http://www.itu.int/pub/S-POL-BROADBAND.16-2016.

50. The World Bank and other international financial institutions provide financial support for large-scale infrastructure projects in developing regions. The European Union's proposed consensus on development is intended to support the Sustainable Development Goals, and includes a digital for development component focused on broadband connectivity, digital literacy and skills, digital entrepreneurship and job creation.[59]

51. The World Food Programme is working with other agencies and mobile network operators through the Emergency Telecommunications Cluster to provide connectivity in refugee camps and emergencies.[60]

(c) Access to information and knowledge (C3)

52. In 2016, UNESCO undertook a thorough review of the global status of access to information and knowledge. This reaffirmed its conviction that further strengthening of knowledge-sharing is required in order to build an inclusive knowledge society.

53. A number of initiatives have been undertaken in response to the gender digital divide emphasized in the 10-year review of the implementation of WSIS outcomes by the General Assembly. In September, ITU and the United Nations Entity for Gender Equality and the Empowerment of Women launched "Equals: the Global Partnership for Gender Equality in the Digital Age".[61] The Global System for Mobile Communications Association launched the Connected Women Commitment initiative, through which 24 mobile network operators made commitments to action in order to reduce the gender gap in mobile Internet and mobile money services.[62] The United Nations Human Rights Council requested the United Nations High Commissioner for Human Rights to prepare a report on ways to bridge the gender digital divide from a human rights perspective.[63]

54. Public-access facilities play an important role in access to information and services. The Council of Europe issued a recommendation on the Internet of citizens, focused on the modernization of cultural institutions, improving Internet access for local populations and providing infrastructure and equipment.[64] The Universal Postal Union and the International Federation of Library Associations and Institutions worked with other stakeholders to promote Internet access through post offices, libraries and other public services.[65] UNESCO published the *Model Policy for Inclusive ICTs in Education for Persons with Disabilities*,[66] and guidelines on open and distance learning for persons with disabilities. In April, the ITU Focus Group on Digital Financial Services endorsed a series of reports on regulatory, commercial and consumer aspects of digital financial services.[67]

(d) Capacity-building (C4)

55. Education and capacity-building are crucial to enabling developing countries to derive social and economic gains from technological innovation. In this regard, in 2016,

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[59] http://ec.europa.eu/europeaid/sites/devco/files/communication-proposal-new-consensus-development-20161122_en.pdf.

[60] http://www.etcluster.org/about-etc/etc-2020.

[61] http://www.unwomen.org/en/news/stories/2016/9/press-release-itu-and-un-women-announce-global-partnership-for-gender-equality-in-the-digital-age.

[62] http://www.gsma.com/mobilefordevelopment/programmes/connected-women/the-commitment.

[63] A/HRC/RES/32/13.

[64] http://search.coe.int/cm/Pages/result_details.aspx?ObjectId=09000016805c20f4.

[65] http://www.ifla.org/publications/node/10546?og=7409.

[66] http://www.unesco.org/new/en/communication-and-information/resources/publications-and-communication-materials/publications/full-list/model-policy-for-inclusive-icts-in-education-for-persons-with-disabilities/.

[67] http://www.itu.int/en/ITU-T/focusgroups/dfs/Pages/default.aspx.

United Nations agencies and other stakeholders held many conferences, workshops and training sessions, along with publishing guidelines, manuals and other resources aimed at enhancing the capacity of policymakers, ICT professionals and users of ICTs.

56.   In September, ITU held a capacity-building symposium on the theme of "Embracing capacity-building opportunities in the digital era", with sessions focused on Internet governance and the Sustainable Development Goals, new skills requirements and the role of universities.[68] In addition, ITU is restructuring its Centres of Excellence, which offer training to ICT managers in public and private sectors, as a single global network sharing training curriculums, resources and expertise, under the ITU Academy. Following a competitive selection process, 32 Centres were selected for the 2015 to 2018 cycle.[69]

57.   ISOC supports fellowships enabling policymakers and technologists from developing countries to participate in the Internet Engineering Task Force and other Internet forums, and a programme for youth participation in IGF. ISOC hosts a variety of training activities and workshops in developing countries, concerned with technical aspects of the Internet, including the deployment of Internet Protocol version 6 and community-based networks.

(e)   Building confidence and security in the use of ICTs (C5)

58.   Cybersecurity is an increasingly important aspect of information society development. The Global Cybersecurity Agenda, led by ITU, provides a framework for coordinating legal, technical, organizational and training needs worldwide. ITU has continued to issue recommendations on aspects of cybersecurity to meet the challenges posed by rapidly changing technology and emerging threats.[70] National computer security incident response teams have been established in many countries, often with technical support from ITU and the Forum of Incident Response Security Teams.

59.   In November, the Council of Europe hosted the Octopus 2016 conference on cooperation against cybercrime, marking the fifteenth anniversary of the Budapest Convention on Cybercrime.[71]

60.   Through their statement of principles and actions on cyber, the Group of Seven countries pledged to take robust action against malicious use of cyberspace, including terrorism, and to promote a strategic framework for international cyberstability.[72]

61.   The World Bank developed a new programme to support policymakers, law enforcement organizations and civil society in combating cybercrime.

62.   ISOC published "A policy framework for an open and trusted Internet", focused on the governance ecosystem and user confidence, technology and networks. Its *Global Internet Report 2016* examined the economics of building trust and security online.[73]

63.   The impact of the Internet on children continues to raise concerns, which are addressed through the Global Cybersecurity Agenda and initiatives by all stakeholders. In May, ITU and Child Helpline International launched a campaign on partnering to protect

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[68] http://www.itu.int/en/ITU-D/Capacity-Building/Documents/CBS%202016/Final%20Report%20CBS-2016_web.pdf.
[69] http://academy.itu.int/index.php?option=com_content&view=article&id=154&Itemid=588&lang=en.
[70] http://www.itu.int/en/action/cybersecurity/Pages/gca.aspx.
[71] http://www.coe.int/en/web/cybercrime/octopus-interface-2016.
[72] http://www.mofa.go.jp/files/000160279.pdf.
[73] http://www.internetsociety.org/doc/policy-framework-open-and-trusted-internet;
      http://www.internetsociety.org/globalinternetreport/2016/.

children and youth.[74] In September, the tenth international conference on keeping children and young people safe online took place in Warsaw.[75]

(f) The enabling environment (C6)

64.   The World Bank established the Digital Development Partnership as a multi-donor platform through which public and private sector stakeholders can support the development and implementation of digital development strategies in developing countries. Its priority areas of work include data and indicators, the enabling environment for the digital economy, Internet access for all, digital government, the mainstreaming of digital services and platforms and cybercrime.[76]

65.   In May, the annual ITU Global Symposium for Regulators took place in Egypt, focusing on the evolution of ICT regulation in light of changing technologies and infrastructure platforms and on the implications of future technology developments for the global regulatory agenda.[77] Best practices guidelines on digital financial inclusion were adopted by the Symposium, which was preceded by a Global Dialogue on Digital Financial Inclusion, organized with the support of the Bill and Melinda Gates Foundation.[78]

66.   ITU continued its work on developing international standards in telecommunications and ICTs, and supporting the establishment of enabling environments for investment and infrastructure deployment in developing countries. ITU maintains a number of resources to assist policymakers and regulators, including the world telecommunication/ICT indicators database, ICT regulatory tracker, world tariff policies database and Global Regulators Exchange.

(g) ICT applications (C7)

E-government

67.   In 2016, DESA published the latest biennial United Nations E-Government Survey, focused on e-government for sustainable development, including country comparisons using its e-government development index.[79] The survey showed that e-government is now present in all countries, but noted a persistent digital divide in its prevalence and extent, particularly between more developed countries and LDCs. It identified a growing trend towards integrated public services online, and offered suggestions to stimulate the use of new technology in public administration in ways that could support achievement of the Sustainable Development Goals, including coherent policy frameworks and institutional coordination, open government data, e-participation and inclusive and equitable public services.

68.   The potential of new technology to support the efforts of Governments and other stakeholders towards sustainable development has received widespread attention. ITU and Cisco published a report, *Harnessing the Internet of Things for Global Development*.[80] In April, a meeting of the United Nations Committee of Experts on Public Administration

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[74]   http://www.itu.int/en/cop/Pages/consultation-may2016.aspx.

[75]   http://www.saferinternet.pl/en/conferences-and-trainings/10th-international-conference.

[76]   http://www.worldbank.org/en/programs/digital-development-partnership.

[77]   http://www.itu.int/en/ITU-D/Conferences/GSR/Pages/GSR2016/default.aspx.

[78]   http://www.itu.int/en/ITU-D/Conferences/GSR/Documents/GSR2016/Meeting_report_E.pdf.

[79]   http://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016.

[80]   http://www.itu.int/en/action/broadband/Documents/Harnessing-IoT-Global-Development.pdf.

focused on transforming public institutions for integrated and inclusive policymaking and review of the Sustainable Development Goals.[81]

69.   In November, the first multi-stakeholder Global Internet and Jurisdiction Conference explored the relationship between the Internet and national legal frameworks, including data privacy and criminal law.[82]

E-business

70.   In March, the United Nations Statistical Commission adopted new definitions and a methodology developed under the leadership of UNCTAD for measuring international trade in digital services.[83]

71.   In April, UNCTAD held its second E-Commerce Week, which brought together more than 200 experts, during which it published the results for 2016 of the UNCTAD business-to-consumer e-commerce index, which ranks countries on the basis of e-commerce readiness.[84] UNCTAD also published studies of the trade implications of data protection regulations and international data flows, and of data on cross-border e-commerce.[85] In July, the eTrade for All programme was launched at the fourteenth session of the United Nations Conference on Trade and Development, bringing together international organizations and private sector entities to assist developing countries in improving their e-commerce readiness. The programme focuses on e-commerce assessments, ICT infrastructure, payments, trade logistics, legal and regulatory frameworks, skills development and financing for e-commerce.[86]

72.   The Universal Postal Union organized a series of regional conferences aimed at fostering e-commerce services, following the publication in 2015 of its e-commerce guide to postal services.

73.   The International Trade Centre continued to promote e-commerce for SMEs through its SME Trade Academy.

74.   In June, OECD member States signed the Ministerial Declaration on the Digital Economy, focusing on policy options to increase global connectivity, foster development of the Internet of things, improve trust and security and develop jobs and skills for the digital future. [87] OECD also adopted a revised recommendation on consumer protection in e-commerce.[88]

E-learning

75.   In March, ITU and UNESCO held a joint policy forum on mobile learning, including ministers of education and ICT. A policy note was published, and joint mobile learning policy reviews are planned in selected countries to facilitate integration between education and ICT policies for fulfilment of the Sustainable Development Goals.

76.   The ITU Academy is preparing a publication on skills development, lifelong learning and mobile technology.

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[81]   E/2016/44-E/C.16/2016/8.

[82]   http://conference.internetjurisdiction.net/.

[83]   E/2016/24-E/CN.3/2016/34.

[84]   http://unctad.org/meetings/en/Presentation/dtl_eweek2016_TFredriksson2_en.pdf;
       http://unctad.org/en/Pages/MeetingDetails.aspx?meetingid=1068.

[85]   http://unctad.org/en/PublicationsLibrary/dtlstict2016d1_en.pdf;
       http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d06_en.pdf.

[86]   http://unctad.org/en/Pages/DTL/STI_and_ICTs/eTrade-for-All.aspx.

[87]   http://www.oecd.org/internet/oecd-digital-economy-ministerial-declaration.htm.

[88]   http://www.oecd.org/sti/consumer/ECommerce-Recommendation-2016.pdf.

77.   The UNESCO programmes of work on e-learning include teacher training in the use of ICTs through its ICT competency framework for teachers and the mainstreaming of open educational resources that reduce the cost of access to high-quality learning materials for schools in developing countries.

E-health

78.   The World Health Organization plays the leading role in monitoring and facilitating e-health developments within the United Nations system. Its Global Observatory for eHealth published a comprehensive survey, *Global Diffusion of eHealth*, that includes 125 national e-health profiles, and reports impressive progress in many countries, more than 120 of which now have national e-health strategies in place, as well as the growing use of tele-health and mobile health initiatives.[89] However, the World Health Organization emphasizes that progress in e-health is neither systematic nor assured, and has stressed the need for more attention to be given to policy development, improving the legal and regulatory framework for e-health, investment and capacity-building to meet specific needs, particularly in low and middle-income countries. It is working to strengthen information systems through the Health Data Collaborative partnership and its Framework on Integrated People-Centred Health Services.[90]

E-employment

79.   In 2016, there was increased debate on the impact of the information society on employment, including the outsourcing of jobs within and between countries, the casualization of some types of work and the potential long-term impact of automation and artificial intelligence on total employment. In January, a report on the future of jobs was discussed at the World Economic Forum.[91] The World Bank emphasized the need for Governments and businesses to reskill workforces for the digital age.[92]

80.   The International Labour Organization has paid increased attention to these trends, including the growing integration and interdependence of global supply chains and the risk of workforce polarization, and to the need for a reassessment of labour market governance at national, regional and global levels. Technology is an important component of its Future of Work Centenary initiative.[93]

E-environment

81.   Efforts by the international community to address global environmental risks were given new emphasis by the Paris Agreement under the United Nations Framework Convention on Climate Change, which came into effect in 2016.[94] ICTs play a crucial role in data gathering, sharing and analysis, to protect human welfare and the environment, with increasing importance currently given to big data capabilities. Agencies, including the World Meteorological Organization, have focused on data needs in priority areas of the Global Framework for Climate Services (agriculture, water, health and disaster risk analysis) and on the development of standards for effective information-sharing and collaboration.[95] The United Nations Industrial Development Organization has worked with

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[89] http://who.int/goe/publications/global_diffusion/en/.
[90] http://www.healthdatacollaborative.org/; http://www.who.int/servicedeliverysafety/areas/people-centred-care/framework/en/.
[91] http://reports.weforum.org/future-of-jobs-2016/.
[92] http://www.worldbank.org/en/publication/wdr2016.
[93] http://www.ilo.org/global/topics/future-of-work/WCMS_448448/lang--en/index.htm.
[94] http://unfccc.int/paris_agreement/items/9485.php.
[95] http://www.wmo.int/gfcs/.

the Economic Community of West African States to improve information resources on renewable energy and energy efficiency.

82.   In 2016, considerable attention was paid to smart cities. ECE and ITU launched the "United 4 smart sustainable cities" initiative, promoting the role of ICTs in urban development, as well as key performance indicators to measure the implementation of sustainable smart cities.[96] In May, the Rome Declaration on shaping smarter and more sustainable cities was adopted at a forum coordinated by ECE and ITU, followed in September by the Montevideo Declaration at a forum organized by ECLAC and ITU.[97] In July, a World Smart City Forum took place in Singapore. In addition, an expert group meeting on driving smart sustainable cities worldwide was convened in Geneva by ECE, ITU and the third session of the United Nations Conference on Housing and Sustainable Urban Development.[98]

83.   In January, the second Global Forum on Emergency Telecommunications took place in Kuwait. Two global initiatives were launched at this event, the ITU Network of Volunteers for Emergency Telecommunications and the Global Emergency Fund for Rapid Response.[99]

E-agriculture

84.   FAO coordinates the implementation of e-agriculture within the United Nations system. It manages the e-Agriculture Community of Practice, which facilitates online knowledge sharing on agriculture and rural development.[100]

85.   In 2016, FAO focused on the development of national e-agriculture strategies, including support for the implementation of strategies on several continents. In conjunction with ITU, FAO published an *E-Agriculture Strategy Guide* and held an E-agriculture Solutions Forum in August.[101] An expert consultation on e-agriculture strategies for sustainable family farming was organized for Central Asia and Europe.

86.   In June, an "ICT for Ag" conference, held in Washington, D.C., addressed how innovations could empower smallholder farmers.[102] Catholic Relief Services organized an ICT for development conference on the theme "From innovation to impact", focusing on ICT applications. The United States Agency for International Development organized a summit on the use of digital data for resilience.[103] FAO also prepared an online discussion forum on ICTs for resilience.[104]

E-science

87.   The measurement and monitoring of progress towards the Sustainable Development Goals requires a high degree of information sharing, including continuous sharing of scientific research outputs.

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[96]   http://www.itu.int/en/ITU-T/ssc/united/Pages/default.aspx.

[97]   http://www.itu.int/en/ITU-T/Workshops-and-Seminars/Documents/Forum-on-SSC-UNECE-ITU-18-19-May-2016/Rome-Declaration-19May2016.pdf; http://www.itu.int/en/ITU-T/Workshops-and-Seminars/gsw/201609/Pages/default.aspx.

[98]   http://www.worldsmartcity.org/; http://www.unece.org/fileadmin/DAM/hlm/Meetings/2016/2107/Background_document.pdf.

[99]   http://www.itu.int/net/pressoffice/press_releases/2016/05.aspx.

[100] http://www.e-agriculture.org/e-agriculture.

[101] http://www.fao.org/asiapacific/resources/e-agriculture/en/; http://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Annex%201%20E-agriculture%20Solutions%20Forum.pdf.

[102] http://ictforag.org/.

[103] http://sites.google.com/site/dataforresiliencesummit/.

[104] http://www.e-agriculture.org/forums/forum-archive/forum-icts-resilience.

88.   In June, DESA organized the first annual Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals at United Nations Headquarters, attended by representatives of more than 80 Governments. This was one of the three components of the Technology Facilitation Mechanism established at the Third International Conference on Financing for Development in 2015, and explicitly addressed the relationship between the Sustainable Development Goals and science, technology and innovation.[105]

89.   UNESCO is working to foster real-time knowledge transfer and collaborations, including big data and citizen science, and promotes open access to scholarly research and publications in developing countries. FAO, the United Nations Environment Programme, World Health Organization and World Intellectual Property Organization collaborate in the Research4Life programme, which offers preferential access to developing countries for peer-reviewed journals concerned with scientific research, health, agriculture and the environment.[106]

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

90.   UNESCO continues to integrate WSIS outcomes into its work on cultural and linguistic diversity, the protection and promotion of digital heritage and support for creative industries. In October, at the third session of the United Nations Conference on Human Settlements, UNESCO launched a global report, *Culture Urban Future*, including recommendations for the digital city.[107]

91.   In March, in conjunction with the International Federation of Library Associations and Institutions, UNESCO launched guidelines for the protection of digital heritage.[108] UNESCO called on museums to use ICTs to protect and communicate on culture, diversity and heritage, and established a programme using satellite imaging to monitor heritage sites under threat of looting, destruction and damage, in association with the United Nations Institute for Training and Research and its Operational Satellite Applications Programme.[109]

92.   The availability of local content and of content in different languages on the Internet, and the diversity of content on leading websites, remained an issue of concern for many stakeholders.

(i)   Media (C9)

93.   There has been increasing discussion on the changing media environment resulting from the spread of social media, changes in advertising and media business models, the proliferation of news sources operating outside traditional journalistic norms and the impact of new media, including social media, on elections and decision-making processes.

94.   In September, the Council of Europe held a conference on Internet freedom. UNESCO published a policy study on the new boundaries of privacy, free expression and transparency in the digital age.[110] The UNESCO International Programme for the

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[105]   A/RES/69/313, paragraph 123;
http://sustainabledevelopment.un.org/index.php?page=view&type=13&nr=1924&menu=1634.

[106]   http://www.research4life.org/.

[107]   http://www.unesco.org/new/en/culture/themes/culture-and-development/culture-for-sustainable-urban-development/.

[108]   http://www.ifla.org/node/11017.

[109]   http://whc.unesco.org/en/news/1308/.

[110]   http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/all-news/news/privacy_free_expression_and_transparency_unesco_launches_t/.

Development of Communication continued to support the training of journalists, whose safety was a priority for the Organization.

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

95.   In June, the United Nations Human Rights Council adopted a resolution on the promotion, protection and enjoyment of human rights on the Internet.[111] The resolution affirmed the importance of applying a human rights-based approach to Internet access and that the same rights that people have offline must also be protected online, in particular freedom of expression.

96.   In November, the African Commission on Human and Peoples' Rights adopted a resolution on the right to freedom of information and expression on the Internet in Africa.[112]

97.   In December, UNESCO published a report, *Human Rights and Encryption*, addressing privacy and expression issues.[113]

98.   The potential exploitation of the Internet by terrorists was of concern to many Governments. UNESCO held a conference on the Internet and the radicalization of youth.[114]

99.   Increased attention was paid to economic, social and cultural rights in relation to the Internet. IGF included a main session on this theme, which was also the subject of the annual APC publication *Global Information Society Watch*.[115]

(k)   International and regional cooperation (C11)

100.   United Nations and other intergovernmental agencies responded to the 10-year review of the implementation of WSIS outcomes by the General Assembly by reorganizing and revitalizing aspects of their work on development and ICTs and integrating ICT-related work with that concerned with the Sustainable Development Goals. The ITU Council, for example, resolved to use the WSIS framework as the foundation for its work towards achieving the 2030 Agenda for Sustainable Development, and to include monitoring and measurement arrangements for sustainable development alongside its work on monitoring WSIS outcomes.

101.   In January 2017, the World Economic Forum discussed a number of critical issues concerning the information society, which were described as the fourth industrial revolution.[116] *The Global Information Technology Report 2016* of the Forum focused on innovating in the digital economy.[117]

2.   Implementation of themes

(a)   Financing mechanisms

102.   The General Assembly, in its 10-year review of the implementation of WSIS outcomes, recognized the overarching role of the Addis Ababa Action Agenda of the Third International Conference on Financing for Development with respect to investment in ICTs

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[111]   A/HRC/32/L.20.

[112]   http://www.achpr.org/sessions/59th/resolutions/362/.

[113]   http://www.unesco.org/new/en/media-services/single-view/news/human_rights_and_encryption_unesco_launches_the_eighth_titl/.

[114]   http://en.unesco.org/ConfQcUNESCO/home.

[115]   http://giswatch.org/2016-economic-social-and-cultural-rights-escrs-and-internet.

[116]   http://www.weforum.org/agenda/archive/fourth-industrial-revolution/.

[117]   http://www.weforum.org/reports/the-global-information-technology-report-2016.

and other sectors, including the Technology Facilitation Mechanism subsequently reaffirmed in the 2030 Agenda for Sustainable Development.[118]

103. Private investment is the main source of ICT sector finance. Public-private partnerships have added significantly to the range of investment initiatives for infrastructure and services in developing countries. Significant infrastructure investments have also been made by international financial institutions. The World Bank has supported infrastructure projects in developing regions, including the West Africa Regional Communications Infrastructure Programme, to ensure broadband connectivity for coastal and landlocked countries, and international cable connectivity for Pacific island nations.

(b) **Internet governance**

Enhanced cooperation

104. The Tunis Agenda for the Information Society called for enhanced cooperation to enable Governments to carry out on an equal footing their roles and responsibilities in international public policy issues pertaining to the Internet, but not in the day-to-day technical and operational matters that do not impact on international public policy issues.[119]

105. The General Assembly, in its resolution 70/125, requested the Chair of CSTD, through the Economic and Social Council, to establish a working group to develop recommendations on how to further implement enhanced cooperation as envisioned in the Tunis Agenda, with the full involvement of all relevant stakeholders. At its nineteenth session, CSTD noted the proposal by the Chair on the structure and composition of the working group. At its first meeting in September, the Working Group decided on its methods of work and invited contributions from stakeholders.[120] The Working Group will submit a report to CSTD at its twenty-first session in 2018.

Internet Governance Forum

106. The eleventh annual IGF took place in December 2016 in Guadalajara, Mexico, with the theme of "Enabling inclusive and sustainable growth". More than 2,000 people from 123 countries attended the Forum, which included more than 200 workshops and thematic sessions, while thousands more stakeholders engaged online. Plenary sessions focused on human rights, sustainable development, inclusive growth, trade agreements and the future of Internet governance.[121]

107. The General Assembly, in its resolution 70/125, extending for another 10 years the existing mandate of IGF, recognized that "the Forum should continue to show progress on working modalities and the participation of relevant stakeholders from developing countries". In July, DESA organized a three-day retreat at which experts from all stakeholder groups reviewed experiences and explored ways of enhancing the effectiveness of IGF and further expanding participation.[122]

108. The IGF Multi-stakeholder Advisory Group and secretariat also developed and implemented initiatives to improve IGF, including open forum sessions to explore activities of particular Governments and organizations, intersessional work on policy options for connecting and enabling the next billion(s), best practice forums, new modalities for

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[118] A/RES/69/313; A/RES/70/125.

[119] http://www.itu.int/net/wsis/docs2/tunis/off/6rev1.html.

[120] http://unctad.org/en/Pages/CSTD/WGEC-2016-to-2018.aspx.

[121] http://www.intgovforum.org/multilingual/index.php?q=filedepot_download/12/411.

[122] http://www.intgovforum.org/cms/documents/igf-meeting/igf-2016/812-igf-retreat-proceedings-22july/file.

multi-stakeholder dynamic coalitions and new session formats. A newcomers track was introduced into the work of IGF to facilitate engagement by new participants.

109.   The number of national, regional and youth IGFs rose from 37 in 2015 to 72 in 2016. These have established an effective network for sharing information and experience, as well as stronger links with the global IGF.

Measuring ICT for development

110.   The Partnership on Measuring ICT for Development is a collaborative forum of 14 United Nations and other agencies, concerned with data collection and analysis on ICT for development and WSIS outcomes. In March, the Partnership presented a report on ICT statistics to the United Nations Statistical Commission. Six ICT indicators were included in the final list of indicators for monitoring and measuring progress towards the Sustainable Development Goals adopted by the Commission. The United Nations Statistical Commission recommended that efforts be made to strengthen the capacity of national statistical systems in producing ICT statistics, and requested the Partnership to report back in 2018 with a review of the status of official ICT statistics and their integration into the monitoring framework for the 2030 Agenda for Sustainable Development.

111.   ITU maintains the world telecommunication/ICT indicators database, which includes more than 100 indicators from over 200 countries. The latest data were summarized in its annual "ICT facts and figures", issued in July.[123] The annual ITU World Telecommunication/ICT Indicators Symposium, held in November in Botswana, discussed the use of big data for monitoring the information society, ICT indicators for disaster risk reduction and smart data for smart sustainable cities.[124]

112.   The ITU annual *Measuring the Information Society Report* presents findings for 11 indicators of ICT access, usage and skills that are included in an ICT development index, a comprehensive measure enabling international comparisons of progress towards the information society over time (see chapter I A). The report assesses movements in ICT access prices between 2008 and 2015, measurements of mobile and Internet uptake and the use of ICT statistics to monitor progress towards the Sustainable Development Goals.[125]

IV.   Findings and suggestions

113.   The year 2016 was the first following the adoption by the General Assembly of the 2030 Agenda for Sustainable Development and its 10-year review of the implementation of WSIS outcomes. These two resolutions established a new framework for the relationship between the information society and sustainable development for the next decade.

114.   The evidence set out in the 10-year review and in this report shows that ICTs are becoming ever more central to the development of economies and societies, and will play a cross-cutting role in achieving the goals of the 2030 Agenda. The pace of development of new technologies and services is exceptional, and further innovations, including the Internet of things and big data analysis, will have profound impacts on businesses, public services and the ways in which people live their lives in the next few years. This presents great opportunities, but also great challenges to Governments, businesses and citizens. E-commerce, for example, offers great potential for developing countries, but requires policy commitment and investment in trade facilitation if that potential is to be fulfilled.

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[123] http://www.itu.int/en/ITU-D/Statistics/Pages/facts/default.aspx.

[124] http://www.itu.int/en/ITU-D/Statistics/Documents/events/wtis2016/WTIS16-Final-report.pdf.

[125] ITU, 2016.

115.   One of the most important challenges is the continued digital divide between the regions, countries and people with more resources and those with less. ICTs are more easily available, of better quality and more widely used in developed countries than in developing countries, and there is a risk that LDCs, in particular, may be left behind on the path to the information society. Similarly, within countries, there is a risk that those with the least income, education and resources will benefit less than those with more income, education and resources. All stakeholders need to work together in order to achieve a people-centred, inclusive and development-oriented information society, as committed to in the Tunis Agenda and, as such an information society evolves, to ensure that, as pledged in the 2030 Agenda for Sustainable Development, "no one will be left behind".

116.   A second challenge that requires action by all stakeholders is the need to build a more comprehensive evidence base concerning the development of the information society and its impact on sustainable development. More comprehensive, reliable and timely data are urgently needed to identify successful initiatives and programmes using ICTs for development, the contextual factors that influence success and the priorities that will enable Governments and other stakeholders to leverage the value of ICTs most effectively.

117.   A third challenge concerns the very rapid pace of change currently taking place in ICTs and the impact this will have on global economic and social development. Advances in areas such as automation and artificial intelligence are likely to have further transformative impacts on global trade, patterns of economic production, employment, social norms and cultural engagement. How these global developments will play out in different local contexts is uncertain. The speed of the pace of change also presents an important challenge to established institutions of governance, both national and international. If these are to contribute towards shaping the people-centred, inclusive and development-oriented information society committed to at WSIS, they will need to develop decision-making processes that can interact dynamically with the development of technology and services.

118.   ICTs will play a crucial, and growing, part in efforts to achieve the Sustainable Development Goals between the present and 2030. This role needs to be integral to strategic planning within the United Nations system and in government and business. Civil society and the technical community must also contribute fully to ensure that the value of the information society is achieved, with no one left behind.