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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

Executive summary

This report has been prepared in response to the request by the Economic and Social Council, in its resolution 2006/46, to the United Nations Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the World Summit on the Information Society (WSIS) as part of his annual reporting to the Commission. It reviews progress made in the implementation of the outcomes of WSIS at the international and regional levels, and identifies obstacles and constraints encountered. The report has been prepared by the UNCTAD secretariat based on information provided by entities in the United Nations system and elsewhere on their efforts in 2010 to implement the outcomes of WSIS, with a view to sharing best and effective practices and lessons learned.

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** E/2011/1.

Introduction

1. This report has been prepared in response to Economic and Social Council (ECOSOC) resolution 2006/46, which requests the United Nations Secretary-General to inform the Commission on Science and Technology for Development (CSTD) on the implementation of outcomes of the World Summit on the Information Society (WSIS), based on inputs from relevant United Nations and other entities.

2. The present report incorporates analysis of responses provided by 19 United Nations and other international organizations, as well as other stakeholders, to a letter from the Secretary-General of UNCTAD, inviting inputs on trends, achievements and obstacles in the implementation of WSIS outcomes.¹ The report does not claim to provide a comprehensive account of all efforts at WSIS implementation but focuses on major initiatives undertaken since February 2010, as reported by relevant organizations.²

I. Key trends

A. Continued growth and change in mobile connectivity

3. The growth of mobile telephony has greatly exceeded the expectations at the time of WSIS. Mobile telephone networks are now accessible to 90 per cent of the world's population, including 75 per cent of those living in rural areas,³ suggesting that the WSIS target of ensuring that more than half the world's population should have ICTs "within their reach" by 2015 has in practice been achieved. The International Telecommunication Union (ITU) estimates that the number of mobile subscriptions worldwide was close to 5.3 billion by the end of 2010, more than one subscription for every adult on the planet,⁴ though these numbers are inflated by the significant number of subscribers that use more than one network or have multiple or inactive subscriptions. Almost three quarters of mobile phone subscriptions are in developing countries. The cost of basic mobile handsets continues to fall, while most countries are also experiencing decreasing usage tariffs.

4. The nature of mobile telephony is changing too. Mobile phones are becoming multipurpose devices that have non-telephony features (such as cameras) integrated with telecommunications to give users a richer range of communications opportunities. The rapid growth in the sales of smartphones, with their potential for mobile broadband, further increases the versatility of mobile handsets. Smartphones and higher-specification feature phones are increasingly used for access to the Internet, offering easier Internet access and more rapid growth in Internet use in developing-country markets. Just under 99 per cent of the 3.25 million Internet subscribers in Kenya in September 2010 had mobile Internet subscriptions.⁵

¹ COE, ECA, ECLAC, ESCAP, ESCWA, FAO, ICC-BASIS, IGF, ISOC, ITU, UNCTAD, UNDESA, UNECE, UNEP, UNESCO, UNIDO, WHO, WIPO, WMO.

² The complete submissions from each organization can be accessed on the CSTD website at <http://www.unctad.org/cstd>.

³ See ITU (2010). World Telecommunication/ICT Development Report. *Monitoring the WSIS Targets*.

⁴ http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html

⁵ Communications Commission of Kenya. *Quarterly Sector Statistics Report*. Sector Statistics Report Q1 2010/11. <http://www.cck.go.ke/resc/stats.html>

5. These changes have led policymakers and businesses to rethink the relationship between fixed and wireless communications, and the infrastructure requirements for both national backbones and local access networks. However, important challenges remain. Mobile networks are not nearly as pervasive in rural Africa as they are elsewhere, with subscription rates as low as 4 per cent in rural parts of the Democratic Republic of the Congo.⁶ The cost of access still varies considerably between countries, and is beyond the reach of the poorest social groups. The growth of mobile traffic poses new challenges for regulators in areas such as convergence and spectrum management. With the right policy approach, however, dynamic mobile markets could bring near-ubiquitous telephony within reach within the next five years.

B. Broadband networks grow, and address the development agenda

6. Increased attention was paid during 2010 to the need for broadband networks, which offer access to higher-quality Internet speed and services, as an essential element in national development strategies and in enabling individuals and communities to gain maximum advantage from information and communications. The Broadband Commission for Digital Development, initiated by ITU and UNESCO, suggested in 2010 that “the social and economic development of every country on earth will depend on accessible and affordable access to broadband networks.”⁷ The potential impact of broadband on economic development has been emphasized in reports by the World Bank, which suggests that there is a strong association between broadband and economic growth.⁸ Governments in developed countries have included broadband infrastructure investment in economic stimulus programmes, while governments in developing countries have begun to integrate broadband in their strategies for national economic growth.⁹

7. However, broadband access has been growing faster in developed countries than in developing countries, raising concerns of a new digital divide based on the quality of available access. At the end of 2010, it was estimated that there were 24.6 fixed and 51.1 mobile broadband connections for every 100 people in developed countries, but just 4.4 fixed and 5.4 mobile broadband connections for every 100 people in developing countries. Unless this changes, there is a risk that the digital divide in the availability of access, which has been reduced by the growth in mobile telephony, will be replaced by a new digital divide based on the quality of access and what it can offer users.

8. The challenge of addressing this broadband divide, and the opportunity of increasing communications revenue, is driving investment in regional and national backbone networks in developing countries by communications businesses, national governments and public-private partnerships. The challenge of enabling local access to broadband networks, especially in the rural areas of developing countries, is leading to new thinking about universal access strategies, community access facilities, and the potential of mobile networks and handsets to provide broadband access platforms.

⁶ ITU, op. cit., p. 14.

⁷ Broadband Commission. *A 2010 Leadership Imperative: The Future Built on Broadband*. Available at: <http://www.broadbandcommission.org/report1/report1.pdf>

⁸ World Bank (2009). Information and Communications for Development. *Extending Reach and Increasing Impact* (especially chapter 3). Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/EXTIC4D/0,,menuPK:5870641~pagePK:64168427~piPK:64168435~theSitePK:5870636,00.html>

⁹ <http://blogs.timeslive.co.za/vault/2010/07/14/south-africas-new-broadband-policy/>

C. Online and mobile transactions

9. Much attention is being paid in the development community to the spread of new mobile applications, particularly in two sectors: m-health and m-transactions. As mobile telephony extends its reach throughout developing countries, these may offer substantial added value to end-users.

10. Mobile health services illustrate the range of uses through which ICTs can enhance service delivery and social welfare, for example by providing support to clinicians in the field (including remote diagnosis), facilitating public health campaigns, and reminding patients to take medication. M-health initiatives have been strongly encouraged by the World Health Organization (WHO), which reports that 83 per cent of countries had at least one m-health initiative under way during 2009, three quarters of which had four or more in progress.¹⁰ Development agencies are keen to monitor the cost-effectiveness of m-health initiatives and their impact on health outcomes, particularly in rural areas.

11. Mobile transactions have received attention and enthusiasm following the success of services in countries including Kenya and the Philippines. These services, which use mobile phone networks to compensate for the lack of extensive banking networks in developing countries, make it easier for people to manage their savings, obtain access to capital, transmit remittances, and conduct digital micro-transactions. In Kenya, it has been estimated that the value of transactions conducted through m-payment services is at least 11 per cent of national GDP.¹¹ Different models of financial transactions have been developed in different countries, with varying success, and both businesses and development agencies are keen to identify the drivers and barriers that determine success and offer the greatest value. The commercial opening for m-transaction services depends not just on the communications sector but also on changes in the way that financial services are provided and regulated. A dynamic m-transactions market could have a major impact on the cost and flow of international remittances, which contribute significantly to the income of poorer families in many countries.

D. The changing Internet: “Web 2.0” and social networking

12. The Internet continues to evolve extremely rapidly. The number of Internet users worldwide is believed to have grown by a further 12 per cent during 2010, and to stand now at around 2 billion – twice the number in 2005 and approaching one third of the world’s population. More than half of these users are in developing countries, though there is still a marked difference between Europe, where 65.0 per cent of the population was estimated to be online by the end of 2010, and sub-Saharan Africa, where the estimate was just 9.6 per cent.¹² The Government of Finland has recognized the growing ubiquity and significance of the Internet by making broadband Internet access a legal right.¹³

13. A dramatic development in the Internet since WSIS has been the growth of user-generated content in what is often called “Web 2.0”. For many people, use of the Internet now focuses as much on interactive participation in online communities, and on the sharing of personal content through these social networks, as it does on accessing information that is provided through conventional websites. The most prominent social networking website, Facebook, which first appeared around the time of WSIS, now has more than 500 million

¹⁰ <http://www.unctad.info/upload/WSIS5/Contributions/UNGIS/WHO.pdf>

¹¹ <http://www.economist.com/node/16319635>

¹² http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html

¹³ http://www.businessweek.com/the_thread/techbeat/archives/2009/10/finland_broadband_is_a_legal_right.html

users, around 25 per cent of all Internet users, and is the second most accessed site online after the search engine Google.¹⁴ The microblogging website Twitter, which was launched in 2006, claimed 175 million registered users in early 2011 and is also one of the 20 most accessed Web sites.¹⁵

14. The implications of social networking and the growth of user-generated content on the Internet are likely to be profound. They have shifted the balance between publishers and consumers of content, enabling many more people to express their views online. They are believed to have been major sources of information exchange which had significant impact on the recent political changes in both Tunisia and Egypt, and in changing the dynamics of relationships between home and diaspora communities. They offer businesses and creative artists new ways of marketing goods and services, and provide a potential vehicle for crowdsourcing information and for disseminating local and developmental content, as well as engaging grassroots efforts in development. They are likely to have increasing impact over the next five years.

E. Data privacy and security

15. Concerns over data privacy and security continue to grow, alongside growth in the number of people online and the volume of data held in computer systems and data centres. Governments and businesses are concerned about risks to national security, commercial confidentiality, and industrial espionage. Citizens and civil society organizations are concerned about the exploitation of personal data by government agencies and businesses, and about the risk of identity theft and other fraudulent abuse. The power and capacity of the Internet to disrupt historic assumptions about the confidentiality of data and the diffusion of information were illustrated during 2010 by the publication of confidential documents on some websites, and by the speed of “viral” campaigns on social networking platforms.

16. Another innovation which may have implications for privacy and security is cloud computing. This alternative ICT architecture moves tasks which have hitherto been undertaken on users’ own hardware and software to applications, hardware and software which reside in cyberspace. Projected benefits to end-users include cost savings, improved productivity, and efficiencies in business practice and the use of ICT resources.

17. Cloud computing is expected to have extensive impact in sectors beyond information technology, including production sectors such as manufacturing, the media, and the delivery of health, education and other government services. Its success may depend partly on the ability of cloud computing businesses, and of governments and those businesses that maintain large databases, to allay anxieties about the privacy and security implications for confidential data in data centres and to rethink the security requirements of data management for this new digital environment.

¹⁴ <http://www.facebook.com/press/info.php?statistics>; <http://www.alexa.com>

¹⁵ <http://business.twitter.com/about>

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

A. Implementation and follow-up at the regional level

18. United Nations regional commissions continue to support WSIS implementation through regional action plans.¹⁶ Extensive activities have been reported at the regional level, including regional conferences and workshops, facilitation of the sharing of best practice experiences, support to national governments in policy development, capacity-building, the deployment of ICT-enabled services, and cooperation in regional programmes and projects.

1. Africa

19. There have been continued positive developments in infrastructure in Africa. The entire coastline is now connected to international submarine fibre cables, and governments and businesses in many countries are upgrading national backbone networks and/or inter-country connectivity. Wholesale tariffs have been falling, promising further benefits in the future. There has been continued strong growth in mobile telephone subscriptions, as well as innovation in mobile banking and e-services.

20. The African Committee on WSIS Follow-Up meets every two years to assess and discuss WSIS outcomes. It assessed three years' experience following the Tunis Summit in a publication entitled *Implementing the WSIS Action Lines in Africa: Analysis of Country Reports*, and has launched a survey of progress during the five years since the Summit, which is to be discussed in May 2011.

21. The Economic Commission for Africa (ECA) has continued to promote fulfilment of WSIS objectives within the framework of the Africa Information Society Initiative. Forty-three African countries have national ICT policies, with four more in the process of development. This leaves only six countries on the continent that have not initiated an ICT policy process. The top priorities of ICT for Development strategies include infrastructure, education, e-government, and human resource development. Supporting e-strategy development has been one of ECA's priorities, with the support of the Government of Finland. During 2010, it provided support for general or sectoral e-strategies in 10 countries.

22. A variety of continental and regional programmes have been undertaken by ECA. These include development and implementation of geographic information systems to promote development outcomes. Several countries are developing sectoral strategies to mainstream these in development processes. ECA has also supported African implementation of the "Knowledge Networks through ICT Access Points for Disadvantaged Communities" project, including the establishment of the Knowledge Network of African Community Telecentres which includes 18 community telecentres and eight national telecentre networks. It has published a study of the impact and potential of mobile banking and has commissioned research on the use of mobile technology to collect and disseminate health data, and it has supported work by the Academia Research Network to develop socio-economic impact indicators for ICTs in development, based around experience in the United Republic of Tanzania.

¹⁶ For details, see the "Report of the Secretary-General on promoting the building of a people-centred, development-oriented and inclusive Information Society" (E/CN.16/2007/2).

23. The Information Technology Centre for Africa has launched APCICT's Academy of ICT Essentials for Government Leaders programme on the continent, including training for diplomats and parliamentarians. ECA's SCAN-ICT initiative has continued to build the capacity of national statistical offices to collect and analyse ICT statistics.

24. The African Union summit in February 2010 explored the theme "Information and communication technologies in Africa: Challenges and prospects for development", and adopted a declaration on the future of ICTs in Africa. Work has been undertaken on a draft African Convention on Cybersecurity and e-Transactions. Initiatives led by regional economic communities include the development of supplementary acts on data protection and electronic transactions and a draft directive on cybercrime in the Economic Community of West African States (ECOWAS) region, a workshop on cybersecurity in the Maghreb region, and technical assistance for a strategy to harness ICTs for development and regional integration in the Southern African Development Community (SADC) region.

25. In collaboration with ITU, UNCTAD, and other international agencies, the Government of Tunisia held the fifth ICT4All Forum in Tunis in November 2010. This forum focused on the participation of young people in the Information Society.

2. Asia and the Pacific

26. There are considerable differences in the economic and ICT development status of different countries within the Asia-Pacific region. In 2010, the Economic and Social Commission for Asia and the Pacific (ESCAP) published a review¹⁷ of progress made in implementing WSIS outcomes, which analysed the state of ICT development and made recommendations for the future. Although the WSIS target for ICT access has been statistically achieved within the region, this does not mean that the use of ICTs has reached deeply into society. ESCAP is concerned that lack of relevant content and applications is constraining development of the ICT sector and limiting its contribution towards achievement of the Millennium Development Goals. ESCAP believes that mobile networks provide a crucial opportunity to extend access to information, especially in rural areas, and is seeking to promote development of mobile applications relevant to the needs of the poor, such as mobile banking and mobile health.

27. ESCAP's Committee on Information and Communications Technology addresses the integration of ICTs in national and regional development programmes, the transfer and application of ICTs, the development of human and institutional capacity in their use, and the application of ICTs in disaster risk reduction. Its second session, which was held in November 2010, emphasized the importance of regional economic cooperation and connectivity, not least in bringing the island nations of the Pacific into closer cooperation with the remainder of the region. The Committee highlighted the importance of regional cooperation for broadband development, including issues of availability, affordability and reliability.¹⁸

28. The Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT) undertakes activities under three pillars: training, research and knowledge management. Its flagship Academy of ICT Essentials for Government Leaders programme¹⁹ has been initiated in 18 countries in the region, has been introduced in Africa by ECA, and is expected to be used by the Economic Commission for Latin America and the Caribbean (ECLAC) and the Economic and Social Commission for

¹⁷ http://www.unescap.org/idd/events/cict-2010/CUCT2_2E.pdf

¹⁸ <http://www.unescap.org/idd/events/cict-2010/index.asp>

¹⁹ <http://www.unapcict.org/academy>

Western Asia (ESCWA). Its eight modules are now available in five languages, and have reached over 7,000 participants since 2006. Two new modules are in preparation, concerned with disaster risk reduction and climate change mitigation and adaptation. The APCICT Virtual Academy now provides a distance learning platform for the Academy.

29. Another ESCAP project concerns strengthening ICT policies and applications to achieve MDG and WSIS goals in Asia and the Pacific. This seeks to raise policymakers' and stakeholders' awareness of the potential of emerging technologies and ways in which they can enhance social and economic development. It has targeted Least Developed Countries and Small Island Developing States, while encouraging countries in the region that have extensive ICT experience (including China, India and the Republic of Korea) to share lessons they have learnt with other countries.

3. Western Asia

30. The Economic and Social Commission for Western Asia (ESCWA) continued its work to implement ICT objectives within the framework of the Regional Plan of Action agreed in Damascus in 2009. Its Information Society Portal and its publication *Regional Profile of the Information Society in Western Asia* provide information on ICTs within the region.

31. During 2010, ESCWA continued to promote "Knowledge Networks through ICT Access Points for Disadvantaged Communities" (KN4DC). This programme stimulates telecentres and other community access points in rural areas. Activities have included workshops on management and sustainability of knowledge hubs and networks in Egypt and the Syrian Arab Republic, and an evaluation which has recommended the establishment of a successor programme to KN4DC.

32. ESCWA has continued to play a full part in many WSIS action lines. Activities have included workshops on the delivery of e-services in civil society, the measurement of ICT statistics, and data collection. It has built on work on the harmonization of cyber-legislation, initiated in 2009, by researching and compiling reports on the status of legislation in 18 Arab countries. It has continued to work with ITU, the League of Arab States, and regional and international organizations to promote linguistic and cultural diversity in the Information Society, including wider use of the Arabic language.

33. Another important issue for ESCWA has been confidence and security in the use of ICTs. Following the publication in 2009 of a study entitled *Building Trust in E-Services in the ESCWA Region*, ESCWA organized a workshop entitled "Building trust and confidence in Arabic e-services." Recommendations from this workshop included the formulation of national strategies for trust-building, the training of judges and lawyers in cyber-law, and the development of regional awareness on the ethical dimension of the Internet.

34. ESCWA believes the benefits of regional integration can be promoted by highlighting the advantages of common initiatives such as the development of high-speed regional backbone networks, harmonization of cyber-legislation and adoption of an Arabic domain name system. It believes there is a need for awareness-raising and skill-acquisition within the general population to enable more effective use to be made of the opportunities presented by ICTs. It recommends that ICT and information strategies should be adapted to the changing realities of communications technology and networks.

4. Latin America and the Caribbean

35. The Economic Commission for Latin America and the Caribbean (ECLAC) has continued to implement the regional Strategy for the Information Society, eLAC2010,

which it agreed in 2008. Preliminary monitoring of eLAC goals, an extensive public consultation held between December 2009 and July 2010, and the participation of almost 900 regional experts led to the development of a new Regional Action Plan, eLAC2015, which was adopted at the Third Ministerial Conference of eLAC in Lima, Peru, during November 2010. The new Plan sets out priorities for fostering the development of information societies in the region, establishing 10 strategic guidelines and 26 goals, and highlighting the objective of universal access to broadband.²⁰ ECLAC will continue to provide the technical secretariat of the eLAC process.

36. ECLAC has continued to support the work of the Observatory for the Information Society in Latin America and the Caribbean (OSILAC). One important result of OSILAC's work has been implementation of the online Statistical Information System on ICT, which gathers information from almost 100 household surveys in the region, allowing calculation and analysis of ICT indicators over time. The Sixth Workshop on Information Society Measurement in Latin America and the Caribbean, held in Montevideo, Uruguay, in September 2010, enabled regional experts to discuss progress concerning regional indicators and to share experiences on ways to improve statistical processes and understanding.

37. OSILAC data and eLAC monitoring²¹ have underpinned ECLAC's assessment that there has been continued significant progress in ICT policy formulation and implementation in the region, but that important economic and social gaps persist, including limited use of ICTs by SMEs, insufficient investment in ICT infrastructure, limited ICT innovation and production, and a persistent digital divide across income levels and regional areas. ECLAC believes there is an urgent need for countries in the region to reduce the digital divide in access and quality of service, and for them to facilitate the use of more sophisticated ICTs. It emphasizes the importance of public development policies – including a regulatory framework appropriate to convergence, diffusion of ICT in the productive sector, and development of local enterprises producing digital goods and services.

38. ECLAC regards the development of broadband as a civil right, and as a priority for regional development. In June 2010, in conjunction with the Government of Chile, it proposed a regional forum for exchange of experience in broadband policy. Two meetings of the resulting Broadband Regional Dialogue were held before the end of 2010. In partnership with the International Development Research Centre of Canada and a network of regional ICT researchers, ECLAC published a study entitled *Accelerating the Digital Revolution: Broadband for Latin America and the Caribbean*.²² It also published a report entitled *ICT for Growth and Equality: Renewing the Strategies of the Information Society*.

39. Eight country studies have been commissioned by ECLAC on the development of policies to stimulate the uptake of ICTs by enterprises. Support was given to the Mesoamerican Information Highway project, which is concerned with designing a management model for the use of fibre optic capacity in Central America. Conferences and workshops focused on e-education and e-health, e-government and e-business, and a platform for the use of information through national accounts. Finally, ECLAC continued to work jointly on Information Society issues with countries in Europe through the European Union's @LIS2 programme.

²⁰ The plan is available at http://www.cepal.org/socinfo/noticias/documentosdetrabajo/5/41775/2010-820-eLAC-Plan_of_Action.pdf.

²¹ See the eLAC Monitoring Plan, available at <http://www.cepal.org/ddpe/publicaciones/xml/2/41802/LCR2165.pdf>.

²² <http://www.cepal.org/publicaciones/xml/7/41727/LCR.2167.pdf>

5. Europe

40. The Economic Commission for Europe (ECE) believes that the digital divide in its region has become the largest and fastest-growing in the world, and that initiatives by multilateral agencies are needed to help transition economies to make long-term ICT development plans, especially for broadband networks. Although transition economies are catching up with the region's developed countries in mobile and fixed line telephony, they lag behind in broadband Internet access. ECE supports transition economies through cooperation with ESCAP in the Special Programme for the Economies of Central Asia, and in efforts to promote Knowledge Hubs for Disadvantaged Communities. It believes that multilateral initiatives are particularly valuable in addressing mobile broadband technology, frequency spectrum management and competition policy.

41. The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) has continued to work with ECE's Committee on Trade on ICT-related enhancements to business tools and standards. In 2010, it issued recommendations on data simplification and standardization for international trade and on interoperability of signed digital evidence. Several activities, including training, have been undertaken within the United Nations Network of Experts for Paperless Trade in Asia-Pacific (UNNExT). In September 2010, a working group adopted a proposal on use of telematics in the transport of dangerous goods, and work is under way towards the Road Map on an Intelligent Transport Strategy, to be published during 2011.

42. ECE has worked with the Council of Europe and the Association for Progressive Communications (APC) to develop a code of good practice on information and participation in Internet governance, which has been discussed within the framework of the Internet Governance Forum. The Council of Europe has also prepared a proposal for a draft treaty to give legal definition to Internet principles for open standards, net neutrality and freedom of expression.

B. Implementation and follow-up at the international level

1. General Assembly

43. On 20 December 2010, the General Assembly adopted, by consensus, resolution A/RES/65/141 on information and communication technologies for development.²³ In that resolution, the Assembly welcomes the potential of ICTs to provide new solutions to development challenges, but expresses its concern at the continuing digital divide and urges continuing cooperation between all stakeholders to ensure the effective implementation of WSIS outcomes.

44. In adopting resolution A/RES/65/141, the Assembly resolved to extend the mandate of the Internet Governance Forum (IGF) for a further five years, and welcomed the decision of ECOSOC to invite the Chair of the CSTD to establish a working group on improvements to the Forum. It decided to consider the desirability of further continuing the IGF in 2015, in the context of a ten-year review of the implementation of WSIS outcomes. It welcomed the decision of the Economic and Social Council (ECOSOC) to consult Member States and other stakeholders on assisting the process towards enhanced cooperation in order to enable Governments on an equal footing to carry out their roles and responsibilities in respect of international public policy issues pertaining to the Internet but not in respect of the day-to-day technical and operational matters that do not impact upon those issues. The Assembly

²³ <http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/RES/65/141&Lang=E>

requested that a report on the outcome of these consultations be provided to the Assembly at its sixty-sixth session in 2011.

2. Economic and Social Council (ECOSOC)

45. On 19 July 2010, ECOSOC adopted resolution 2010/2 on assessment of progress made in implementation and follow-up to the outcomes of the WSIS. It welcomed the progress that had been made to date, and the work of United Nations agencies and other stakeholders, but noted that while the digital divide may be shrinking in some areas, many challenges remain unaddressed, and that for the majority of the poor, the developmental promise of science and technology – including ICTs – remains unfulfilled. It expressed particular concern about the widening gap in broadband connectivity between countries at different levels of development. It therefore urged all stakeholders to prioritize the development of innovative approaches that would stimulate provision of universal access to broadband infrastructure for developing countries and the use of broadband services in the interests of development.

46. ECOSOC noted that topics that were not central to discussions at WSIS continue to emerge and require attention, such as the potential of ICTs to combat climate change, the protection of online privacy, and the empowerment and protection of vulnerable groups including children and young people. It reaffirmed the principles enunciated at WSIS that the international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society, and international organizations, and should ensure an equitable distribution of resources, facilitate access for all, and ensure stable and secure functioning of the Internet, taking into account multilingualism. ECOSOC invited the Secretary-General to convene open and inclusive consultations involving all Member States and all other stakeholders with a view to assisting the process towards enhanced cooperation, and requested that the consultations be held before the end of 2010 and that their outcome be reported to the General Assembly for consideration at its sixty-sixth session, through the Council. It invited the Chair of the CSTD to establish a working group concerned with improvements to the IGF, in line with the mandate set out in the Tunis Agenda, and would make recommendations, as appropriate, to the Commission at its fourteenth session in 2011, in a report that would constitute an input from the Commission to the General Assembly, through ECOSOC.

47. The resolution requests the Secretary-General to submit to the CSTD, on a yearly basis, a report on the implementation of ECOSOC resolutions on the assessment of progress made in the implementation of and follow-up to the WSIS outcomes.

3. United Nations Group on the Information Society (UNGIS)

48. Under the chairmanship of the United Nations Educational, Scientific and Cultural Organization (UNESCO), during 2010/2011, and in cooperation with the UNGIS co-Chairs (ITU, UNDP, UNCTAD and ECA), UNGIS's 29 member organizations agreed on a new work plan to enhance synergies and to increase the visibility of WSIS within the United Nations system.

49. UNGIS organized an interactive session titled "Financing mechanisms for ICT for development" during the 2010 WSIS Forum. It plans to undertake a special event on ICTs during the Fourth United Nations Conference on the Least Developed Countries to be held in Istanbul, Turkey, in May 2011. UNGIS's other priorities for 2010–2011 include strengthening links between the WSIS process, the United Nations Development Assistance Framework and the United Nations Development Group; reporting on ICT-related activities

through the WSIS Stocktaking Database; and cooperation through the online WSIS Platform of Communities.²⁴

50. UNGIS facilitated three joint initiatives in 2010. These were concerned with child online protection; open access to scientific knowledge; and review of science, technology and innovation policies.

4. Facilitation and coordination of multi-stakeholder implementation of the Geneva Plan of Action

51. The 2010 WSIS Forum was hosted by ITU in Geneva from 10 to 14 May, and attracted more than 600 participants.²⁵ It featured high-level sessions on WSIS and the MDGs, broadband implementation and applications, social networking, ICTs for disaster management, and cybersecurity.

52. As an integral part of the WSIS Forum, the annual meeting of action line facilitators was held on 14 May 2010, with two main goals: (a) to assess general progress made in implementing WSIS action lines; and (b) to consider measures that would strengthen the overall action line process.

53. An online open consultation was held on the WSIS Platform of Communities²⁶ concerning the venue for the 2011 WSIS Forum, which is to be hosted by ITU in Geneva from 16 to 20 May. A further open consultation concerning themes and formats for the 2011 Forum was undertaken in late 2010 and early 2011.²⁷

54. In accordance with paragraph 120 of the *Tunis Agenda for the Information Society*, which encourages stakeholders to share information related to the implementation of WSIS outcomes, ITU has continued to maintain the WSIS Stocktaking Database,²⁸ and published the third *WSIS Stocktaking Report* during 2010.²⁹ By January 2011, the database included more than 5,000 entries describing initiatives that have been undertaken by some 1,600 stakeholders in over 140 countries. In February 2010, ITU launched the WSIS Stocktaking Platform³⁰ to complement the Stocktaking Database. This offers access to Web 2.0-enabled interactive facilities, a global event calendar, a repository of WSIS-related documents and publications, thematic discussions, news and other resources. By February 2011, it had roughly 2,050 registered users. WSIS implementation case study material will be added to the Platform during 2011.

55. The WSIS Platform of Communities (<http://www.wsis-community.org>) has been further developed by UNESCO as an online collaborative forum for enhancing interactions between stakeholders in order to stimulate the action line implementation process, and now has close to 1,600 registered participants. UNESCO plans to initiate a series of moderated discussions on this site during 2011.

²⁴ <http://www.wsis-community.org>

²⁵ <http://www.itu.int/wsis/implementation/2010/forum/geneva>

²⁶ <http://www.wsis-community.org>

²⁷ <http://groups.itu.int/wsis-forum2011/Home.aspx>

²⁸ <http://www.wsis.org/stocktaking>

²⁹ *Report on the World Summit on the Information Society Stocktaking 2010: Tracking Progress*

<http://groups.itu.int/LinkClick.aspx?fileticket=ecY3JFUoRoA%3d&tabid=740>

³⁰ <http://www.wsis.org/stocktaking>

5. Civil society, business and multi-stakeholder partnerships

56. Many activities in pursuit of WSIS objectives are implemented by private sector and civil society organizations and by multi-stakeholder partnerships.

57. Business Action to Support the Information Society (BASIS), an initiative of the International Chamber of Commerce (ICC), believes that countries which have addressed the policy, legal and regulatory challenges and opportunities concerning ICTs are seeing progress towards the WSIS outcomes, but that the role of ICTs in development could be more effectively promoted. It emphasizes the importance of infrastructure, including broadband infrastructure, research and development, and measuring the impact of ICTs.

58. The Association for Progressive Communications (APC) and the Humanist Institute for Cooperation with Developing Countries (Hivos) launched the fourth edition of *Global Information Society Watch* in 2010. This report reviews progress towards the Information Society from the perspectives of civil society organizations around the world. The 2010 edition focused on the environmental impact of ICTs.

59. The Internet Society (ISOC) is a leading forum for discussion of Internet issues, and is the organizational home for the Internet Engineering Task Force and other Internet standards bodies. Its Next Generation Leaders programme helps young professionals from many countries to prepare for leadership roles in Internet technology, policy and business.

60. The Global Alliance for ICT and Development (GAID) continues to provide a global platform for policy dialogue, partnership-building, and mainstreaming ICTs into the broad development agenda. Its fifth annual global forum, titled “Information and Communication Technologies for achieving the Millennium Development Goals”, was held in Abu Dhabi in December 2010. Its website now has an online community of over 1,900 members who can take part in discussions on ICT and development issues.

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

61. A wide range of activities has been reported by United Nations entities facilitating WSIS action lines and WSIS implementation. In these activities, United Nations entities have worked closely with national governments, regional commissions, and other stakeholders including non-governmental organizations (NGOs) and the private sector.

(a) Implementation of action lines

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

62. The fifth facilitation meeting of action line C1 was held within the WSIS Forum 2010, as a joint meeting with action lines C7 on e-government and C11 on international and regional cooperation.

63. ITU and United Nations regional commissions published a comprehensive report in 2010 entitled *National e-Strategies for Development: Global Status and Perspectives*.³¹ The review identified at least 161 countries that have met the WSIS goal of a national ICT strategy in place by 2010, while another 14 countries have e-strategies in preparation. The

³¹ <http://www.itu.int/ITU-D/cyb/estrat/estrat2010.html>

report indicates areas where national e-strategies could be improved, including their strategic orientation and integration into national development plans and poverty-reduction strategies. It emphasizes the need for more comprehensive sectoral e-strategies that take advantage of the potential of ICTs to fulfil the goals of other action lines.

64. The 2010 edition of the *United Nations E-Government Survey* produced by the United Nations Department of Economic and Social Affairs (DESA) focused on “Leveraging e-government at a time of financial and economic crisis.”³² This publication provides comprehensive analysis of e-government developments worldwide and explores their relationship with aspects of government expenditure such as stimulus funding, integrity and efficiency in financial monitoring, and public service delivery.

65. DESA’s Global Knowledge Repository on Electronic and Mobile Government facilitates knowledge-sharing in many different areas of government ICT activity. DESA has also continued work with the Inter-Parliamentary Union to promote parliamentarians’ understanding of and engagement with ICTs through the Global Center for ICT in Parliament.

66. The United Nations regional commissions have worked with national governments to improve the quality of e-government. ECLAC, for example, undertook a workshop in its region on electronic government as a tool for transparency, based around experience in Europe and Latin America.

67. ITU’s quadrennial World Telecommunication Development Conference was held in Hyderabad, India, in May–June 2010, setting the agenda for ITU’s development-related work for the next four years.

(ii) Information and communication infrastructure (C2)

68. The C2 facilitation meeting at the WSIS Forum in 2010 focused on identifying challenges in infrastructure development up to 2015. ITU published a road map for the action line and opened a new gateway facility for reporting on the action line during 2010.

69. ITU continues to address many different aspects of infrastructure development, deployment and regulation. Critical issues were discussed at its World Telecommunication Development Conference, Global Symposium for Regulators, and Global Industry Leaders Forum. The theme for this forum, which was held in Dakar, Senegal, in November 2010, was “Enabling tomorrow’s digital world”. It included a special focus on wireless communications.

70. ITU’s Telecommunication Standardization Bureau continues to play a leading role in developing global standards for telecommunications. Important areas of standardization activity include accounting and technical standards related to Next Generation Networks. A series of events during 2010 addressed Internet Protocol TV (IPTV) standards and interoperability. ITU’s Radiocommunication Bureau has led international work on wireless internet access, emergency radiocommunications, remote sensing systems and digital broadcasting. ITU has also worked with other agencies in the Joint Coordination Activity on Accessibility and Human Factors to promote accessibility for those with disabilities.

71. Together with international partners, ITU is supporting six “Connect the World” flagship initiatives. These include the Wireless Broadband Partnership, which seeks to mobilize financing and deployment of broadband infrastructure; Connecting Villages, which supports basic connectivity in remote and rural areas; and the ITU Mobile Health

³² http://www2.unpan.org/egovkb/documents/2010/E_Gov_2010_Complete.pdf

Initiative, which supports use of infrastructure to deliver health programmes and improve health outcomes. The Connect a School, Connect a Community initiative uses an online tool and platform to improve access to broadband in schools and to enable them to serve as community ICT centres.

72. Disaster management has continued to be a priority for agencies working in telecommunications and humanitarian relief such as UNHCR (the United Nations refugee agency), the International Federation of the Red Cross and Red Crescent, and Télécoms sans Frontières.

73. ITU and UNESCO joined forces in 2010 to coordinate the Broadband Commission for Digital Development.³³ Chaired by the President of Rwanda, H.E. Mr. Paul Kagame, and the CEO of Telmex, Mr. Carlos Slim Helú, the Commission brought together senior figures from the ICT sector and from development agencies to propose an agenda for action to promote broadband investment and applications and so address the Millennium Development Goals and other development objectives. Its report was submitted to the General Assembly in September 2010.

(iii) Access to information and knowledge (C3)

74. Action line C3 has attracted interest from a broad range of organizations. It is notable that more projects notified to the WSIS Stocktaking Database fall within the remit of this than any other action line.

75. At the WSIS Forum 2010, UNESCO organized action line C3 facilitation meetings focused on “ICTs and persons with disabilities” and on “access to scientific information” (the latter in conjunction with action line C7 on e-science), and organized a thematic workshop on ICT and gender in cooperation with other partners.

76. UNESCO continued, during the year, to implement its Memory of the World programme, which preserves and disseminates the documentary heritage of cultures throughout the world. UNESCO focused on mainstreaming ICTs for people with disabilities through an expert meeting held in February 2010, on internal training on web accessibility, and on the development of guidelines for inclusive access to digital office documents. It highlighted the value of free and open source software (FOSS) through assessments of its deployment in primary and secondary schools in India and Spain and an analysis of the gender divide in FOSS.

77. The World Intellectual Property Organization (WIPO) carried out several initiatives, including an African regional seminar on intellectual property, software and e-health, a global meeting on emerging copyright licensing modalities, and initiation of a Stakeholder Dialogue on International Rights Management Challenges. WIPO’s Standing Committee on Copyright and Related Rights monitors developments in copyright law and, where appropriate, seeks to develop new approaches, for example in discussions currently under way concerning the needs of specific user groups such as visually impaired persons.

78. Access to scientific research and information is a priority for many agencies. UNESCO has continued to promote open access to journals, demonstrating the developmental value of this through a regional workshop organized with the Academy of Science of South Africa and EIFL in South Africa in November 2010. WHO’s HINARI programme makes medical resources available on preferential terms in developing countries, and is being replicated by the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO). WIPO’s Access

³³ <http://www.broadbandcommission.org>

to Research and Development Innovation (aRDi) programme provides free or low-cost access for the Least Developed Countries (LDCs) and other developing countries to more than 50 scientific and technical journals. In 2010, WIPO also launched its Access to Specialized Patent Information programme, as well as WIPO Lex – a database that provides free online access to intellectual property legislation and treaties.

79. ITU made materials from its workshops and other events available online, along with resources including portals, toolkits and databases. Its technical cooperation work on accessibility included telecentres and ICT centres targeting marginalized communities. ESCWA and other regional commissions have continued to develop Knowledge Networks through ICT Access Points for Disadvantaged Communities.

(iv) Capacity-building (C4)

80. The fifth facilitation meeting of action line C4, which was organized by ITU in May 2010, focused on “Digital Opportunity”.

81. ITU undertakes many activities through its Human Capacity Building programme, including regional and international training, workshops, e-learning, and sharing of experiences. It conducted more than 120 courses during 2010, including online courses, with an estimated 3,000 participants. The ITU Academy portal was further developed to provide a single access point for ICT training opportunities, delivered face-to-face or through distance learning.

82. The United Nations Public Administration Network (UNPAN), which is sponsored by DESA, maintains an Online Training Centre which provides courses and training materials in public administration and management. More than 2,500 people enrolled in its courses during 2010 – an increase of 7 per cent over 2009.

83. The regional commissions have organized capacity-building workshops in many areas. ESCWA, for example, facilitated workshops concerned with statistics and data collection and with developing science, technology and innovation observatories. The Academy of ICT Essentials for Government Leaders programme, designed by the ESCAP Asian and Pacific Training Centre for ICT for Development, is used in several United Nations regions.

84. The WIPO Academy continued to offer online courses on intellectual property issues. It registered 84,000 course participants in 2009/10 and plans to extend their multilingual capability during 2011.

85. UNCTAD undertook capacity-building work on cyber-legislation and the enabling environment for e-business during 2010. In particular, it facilitated the regional harmonization of cyberlaws in Africa, Asia and Latin America. A distance learning course on e-commerce for Latin American countries, undertaken with the support of the Government of Spain, enabled it to train more than 200 officials from 19 countries in national legal frameworks for ICT and e-commerce.

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

86. A high-level debate on cybersecurity was held during the 2010 WSIS Forum, alongside the C5 action line facilitation meeting, bringing together experts from government, industry, international organizations and civil society. Discussions focused around the five pillars of the Global Cybersecurity Agenda (GCA), namely (a) legal measures; (b) technical and procedural measures; (c) organizational structures; (d) capacity-building; and (e) international cooperation. ITU published a road map for the future direction of the action line.

87. ITU has continued to facilitate international cooperation and dialogue, and to work together with other stakeholders, including United Nations agencies and the ICT industry, to address the challenges posed by cyber threats. To this end, the GCA provides a global framework to strengthen international coordination and harmonization, and is moving to implementation of specific activities through the International Multilateral Partnership Against Cyber Threats (IMPACT) and the Child Online Protection initiative. By January 2011, some 70 Member States of the United Nations were already using the services offered by IMPACT, including the Global Response Centre, an integrated real-time platform for early warning and incident management. More than 20 countries have received support from ITU on the establishment of a Computer Incident Response Team.

88. In November 2010, a new Child Online Protection Global Initiative was launched, to implement guidelines and other resources developed by a multi-stakeholder group of partners.

89. The Council of Europe supports the Global Project on Cybercrime. Together with the European Union, it launched a programme of cooperation against cybercrime in south-eastern Europe, with a campaign in eastern Europe to follow in 2011. The Council continued its work to protect children from sexual exploitation online, and to counteract online threats to women. During 2010, it adopted a convention to combat counterfeit medicines, including those sold over the Internet, and a recommendation concerning data protection and profiling.

90. WIPO's Arbitration and Mediation Centre provides dispute-resolution options for addressing trademark issues arising in connection with the Internet Domain Name System. In 2010, the Centre helped resolve some 2,700 domain-name disputes and implemented streamlined paperless dispute-resolution policies.

(vi) The enabling environment (C6)

91. The 2010 facilitation meeting for action line C6 focused on broadband policy and emphasized the value of multi-stakeholder partnerships (both public/private and private/private). ITU has developed a road map for the action line, setting out objectives and key partners for the period ahead. A website has been proposed which will provide access to information about good practice in the enabling environment, drawing on ITU's extensive resources in this area.

92. Stimulating growth through effective ICT regulation was the focus of the 2009 volume of ITU's *Trends in Telecommunication Reform* series. The annual Global Symposium for Regulators was held in Dakar, Senegal, in November 2010, preceded by a Global Industry Leaders' Forum. ITU has continued to offer guidance to policymakers and regulators through online resources such as the *ICT Regulation Toolkit* (jointly published with *infoDev*), the World Telecommunication Regulatory Database, the ICT Regulatory Decisions Clearinghouse and the Global Regulators' Exchange (G-REX), which provides an online discussion forum for regulators. Other ongoing work, including technical support to governments as well as workshops, concerns issues such as spectrum management, national capacity-building, Internet governance and internationalized domain names, regional Internet connectivity, and the development of cost models for telecommunications.

93. Other agencies – including the World Bank, international financial institutions and United Nations regional commissions – have played an important part in promoting an enabling environment through capacity-building and technical assistance programmes.

(vii) **ICT applications (C7)**

E-government

94. DESA and ITU organized an expert meeting titled “E-Government and New Technologies” during the 2010 WSIS Forum, which focused on citizen engagement to invigorate accountability, transparency and the delivery of services, and on the role of social media networks.

95. The 2010 *E-Government Survey*, conducted by DESA, recognized that e-government can add agility to public service delivery and can help governments respond to increasing demand for public services in a challenging financial environment. DESA also produced a report entitled “Rethinking e-government with broadband” for the Broadband Commission on Digital Development, and worked with members of the Partnership on Measuring ICT for Development in a task group to develop indicators for e-government.

96. ITU and the regional commissions collaborated on a review of the current status of *National e-Strategies for Development*, drawing on the WSIS Stocktaking Database (see action line C1).

97. The Global Centre for ICT in Parliament has continued to develop a global community of parliamentarians with expertise in ICTs. The fourth World e-Parliament Conference, held in Geneva in 2010, was attended by 95 delegations. The 2010 *World e-Parliament Report* used results from a worldwide survey of ICT in parliaments, which was conducted in 2009, to assess the gap between parliaments in different regions and countries with different development experiences. The Centre provides technical assistance, organizes workshops, and publishes recommendations and reference material such as the *Guidelines for Parliamentary Websites* which were issued in 2009.

98. WIPO assisted 51 countries in modernizing intellectual property administration and worked with developing countries to improve the management of copyright.

E-business

99. UNCTAD, the International Trade Centre UNCTAD/WTO, and FAO (lead facilitator of the action line on e-agriculture) organized a joint session during the WSIS Forum 2010 on ICTs and rural enterprise.

100. UNCTAD’s *Information Economy Report 2010* identified new opportunities to use ICTs in poverty alleviation, highlighting the empowerment of micro-entrepreneurs by mobile communications and the use of public-private partnerships in poverty reduction projects.

101. Important steps were taken in the development of statistics on e-business. The Partnership on Measuring ICT for Development has established a framework for inter-agency cooperation in developing indicators and improving data measurement, while member agencies are working to improve the capabilities of national statistical offices. UNCTAD supports member States’ efforts to improve the availability of business statistics, including those on the ICT sector itself. Its *Manual for the Production of Statistics on the Information Economy* provides a basis for regional training courses, often delivered collaboratively by agencies within the Partnership.

102. The first tables of results from core ICT indicators on the information economy were published through UNCTAD's Statistical Portal during 2010.³⁴ These include indicators on the proportion of the workforce engaged in the ICT sector and on the sector's share of goods imports, exports and gross value added. Indicators on ICT use in enterprise will be added in 2011. An UNCTAD session at the ICTD 2010 conference in London helped to generate an exchange of views on ICT for development with the academic community.

103. CSTD discussed the measurement of longer-term developmental impacts during an intersessional panel in December 2010 and will consider this further at its fourteenth session in 2011.

E-learning

104. The facilitation meeting for action line C7, in May 2010, focused on new methods of learning such as online social networks, Web 2.0 technologies, learning through mobile networks and handsets, and Open Educational Resources, i.e. materials made available online for use by teachers and students other than their original user communities.

105. During 2010, UNESCO continued to develop an ICT Competency Framework for Teachers, including two model syllabuses prepared in cooperation with the private sector, civil society and academia. Projects on m-learning, m-literacy and the use of mobile phones in teacher development were implemented in cooperation with Nokia. The UNESCO Institute for Statistics has led the work of the Partnership on Measuring ICT for Development within the education sector. An expanded set of ICT indicators in education was published, which provides the basis for capacity-building at national levels. New policy guidelines were produced on ICTs and educational transformation, while an analytical survey was published on the potential of ICTs in early childhood education.

106. In addition to these activities, UNESCO continued work in the area of free and open source software in education and on mainstreaming ICTs to facilitate access to information and learning for those with disabilities. It has worked with *infoDev* to foster online expert discussion about e-learning issues.

E-health

107. The 2010 action line facilitation meeting reviewed progress on e-health over the past five years and current initiatives from various agencies. WHO's Global Observatory for eHealth monitors country-level progress on WSIS outcomes and worldwide e-health trends. Results from its second global survey on e-health – which indicated progress in capacity-building, rates of adoption of e-health applications, and knowledge services for health professionals and students – are being used to compile a series of eight Global Observatory for e-Health publications during 2010–2011. This includes volumes on telemedicine, the management of patient information, m-health, legal frameworks for e-health, e-health foundation actions and e-learning, as well as a systematic review of e-health policies and e-health country profiles.³⁵

108. Progress continues to be made in international coordination of health information and the interoperability of health standards. WHO is working with countries to implement the 2007 International Health Regulations (IHR), which apply agreed rules for preventing and managing risks to public health. More than 80 countries have applied the Health Metrics Network Framework and Standards to assess national health systems and identify

³⁴ Unctadstat.

³⁵ <http://www.who.int/GOe/en>

potential improvements. WHO works with other standards bodies to interpret health informatics standards for developing-country contexts.

109. The importance of ICTs in systems for emergency response was highlighted by the January 2010 earthquake in Haiti. ICTs are crucial in reporting and mapping incidents, information-sharing between agencies and with affected populations, and coordinating interventions. The Emergency Telecommunications Cluster of the Inter-Agency Standing Committee, which coordinates humanitarian assistance, provides common data and security communications services to the humanitarian community in emergencies. The United Nations World Food Programme (WFP), the United Nations Children's Fund (UNICEF), UNHCR, WHO, ITU and other agencies have strengthened capabilities and cooperation in the area of emergency response. ITU carried out several activities to establish ICT-based systems to forecast and monitor the impact of natural and man-made disasters, with particular reference to developing countries, LDCs and small island developing States.

110. WHO is concerned about the need to improve health care information at all levels, including policymakers, professionals and patients. This poses challenges of inclusiveness, while ensuring that information is accurate, up to date, and presented in ways that are relevant to diverse cultures. WHO recognizes that more work is needed to achieve sustainable business models that will enable equitable, affordable access and outreach to underserved populations.

111. ITU and WHO jointly organized the Facilitation Meeting on e-health at the WSIS Forum 2010. The meeting highlighted the main obstacles for e-health uptake and provided recommendations for next steps.

E-employment

112. The United Nations Industrial Development Organization (UNIDO) has continued to support work on ICTs and employment. Its Learning Initiative for Entrepreneurs Programme (HP LIFE), implemented in cooperation with Hewlett-Packard, teaches ICT skills to entrepreneurs and is available both online and offline. Since it began in 2008, it has set up 33 training centres in 11 countries and trained more than 18,000 students. In 2010, it was extended to include Brazil, China and India.

113. UNIDO's Business Information Centres Programme has been successfully launched in rural Uganda, and requests for support have been received from other countries. The Centres provide ICT-based information, training and Internet access to SMEs on a commercial basis. UNIDO has also worked with Microsoft to support local software industry development in Uganda, providing employment opportunities for ICT graduates in information sectors, and plans to establish a software development incubator and centre of excellence in East Africa.

114. A pilot e-employment project has been initiated in Brazzaville by the ECA Sub-Regional Office for Central Africa, and has since been extended to Gabon. A memorandum of understanding has been signed by ECA and the Economic Community of Central African States for implementation on a wider scale in Central Africa during 2011.

E-environment

115. The e-environment action line meeting in 2010 focused on e-waste, seeking to stimulate discussion and develop partnerships to tackle this challenge in developing countries and countries with economies in transition.

116. Several activities were undertaken concerning the relationship between ICTs and climate change, including the development of a set of common methodologies³⁶ to measure the impact of the ICT sector, in terms of its own emissions and savings in other sectors that can be achieved through ICT applications. The *E-Environment Implementation Toolkit* was developed by ITU to provide policymakers with principles and guidelines for the development of applications in this field.

117. UNEP addresses the challenges of e-waste, together with the Secretariat of the Basel Convention and other agencies, in the Partnership for Action on Computing Equipment (PACE) and the Mobile Phone Partnership Initiative (MPPI). These multi-stakeholder partnerships seek to coordinate action on the refurbishment, recycling and disposal of computers and mobile phones. Technical challenges of e-waste management are addressed under the leadership of the Basel Convention, whose regional centres in Nigeria and Senegal are leading the E-waste Africa project which has developed guidelines and manuals for waste management. UNEP believes that more investment is needed in these areas.

118. UNIDO has continued working with Microsoft to refurbish computers for re-use and to manage the safe disposal of PCs at the end of their useful life. UNIDO undertook an e-waste assessment study of the United Republic of Tanzania, which included computers, mobile phones and broadcast devices and which showed the extent to which problems of e-waste are likely to grow in developing countries. It organized a multi-stakeholder workshop in Vienna in November 2010 to elaborate a coordinated strategy on e-waste management in Africa.

119. Significant progress was made during 2010 in development and implementation of the World Meteorological Organization (WMO) Information System, which collects and shares weather, water and climate information. The Global Telecommunication System linking WMO members has undergone modernization and makes increasing use of the Internet and broadcast platforms.

E-agriculture

120. The 2010 facilitation meeting for the action line on e-agriculture was held jointly with the action line on e-business. It focused on ICTs and rural enterprise, including ways in which ICTs can enable rural enterprises to become means of poverty reduction and sustainable rural development.

121. Much WSIS follow-up activity is undertaken through the e-Agriculture Community of Practice, for which FAO acts as secretariat and facilitator. This global initiative was launched in 2007 to enhance sustainable agricultural development and food security through ICTs, enabling members to exchange and use information on e-agriculture. By December 2010, the Community had some 7,000 registered individuals from more than 150 countries, including development practitioners, policymakers, representatives of farmers' organizations, researchers, and ICT specialists in agriculture and rural development.

122. The Community's activities fall into three areas: a web-based forum for knowledge-sharing and collaboration,³⁷ face-to-face events, and in-country interventions. Four virtual forums were conducted through the e-Agriculture Community's online facilities during the year. These were on gender, ICTs and rural livelihoods (conducted with GenARDIS and APC), the role of ICTs in agricultural value chains, learning repositories in agriculture, food and environment, and ICT for rural economic development. Publications during 2010

³⁶ <http://www.itu.int/ITU-T/studygroups/com05/sg5-q18.html>

³⁷ <http://www.e-agriculture.org>

included a special issue of *i4d* magazine devoted to e-agriculture.³⁸ Community members were invited to participate in free online learning opportunities through the Information Management Resource Kit (IMARK) initiative.³⁹ In 2011, the Community plans to implement a new web platform with increased opportunities for online interaction, and to develop a series of case studies, models of action and means for assessment.

123. During 2010, a number of international agencies from diverse stakeholder communities⁴⁰ worked jointly to develop a conceptual framework to enhance the impact of ICTs on rural development. This work will be shared with the wider community in the near future.

124. The e-Agriculture Community of Practice has limited financial resources and relies on commitments by volunteers and community members. FAO is seeking financial support for its ongoing work, including in-country interventions and dissemination of content in languages other than English. There was an improvement in Spanish content during 2010 thanks to partnership with the Inter-American Institute for Cooperation on Agriculture and others. FAO hopes to establish a permanent secretariat, with the aim of supporting country-level interventions and global knowledge-sharing.

E-science

125. UNESCO has sought to strengthen use of technologies for sustainable development and poverty eradication, especially in Africa. A principal challenge in the promotion of science, especially in Africa, has been the shortage of skilled teachers. UNESCO is using ICTs to enhance the capacity of African countries to train teachers of science, engineering and technology through e-learning, enabled by an African Virtual Campus. More than 20 Member States and four Regional Economic Commissions in Africa have sought UNESCO's technical assistance for the development of national and regional virtual campus activity.

126. Within the UNGIS framework, UNESCO has launched a mapping exercise on open access to scientific knowledge, to which seven other organizations have contributed. As indicated earlier, WHO has extended the range of materials available to developing-country researchers through agreement with scientific publishers, and similar arrangements have been developed by UNEP and FAO.

127. ITU increased its dialogue with academic institutions by organizing a series of conferences, "The Kaleidoscope", on innovations in ICTs and related standardization issues. An event entitled "Beyond the Internet? – Innovations for future networks and services" was held in India in December 2010.

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

128. UNESCO organized the C8 action line facilitation meeting for 2010 on the subject of multilingualism. A thematic workshop on indigenous peoples and the Information Society was also held during the WSIS Forum.

129. UNESCO continued to implement a range of standard-setting conventions and recommendations which had been agreed in previous years. The Convention for the

³⁸ <http://www.i4donline.net/jan-masrch-2010/index.asp>

³⁹ <http://www.imarkgroup.org>

⁴⁰ FAO, IICD, CTA, APC, UPOU, Gamos, and International Association of Agricultural Information Specialists.

Protection and Promotion of the Diversity of Cultural Expressions, which entered into force in 2007, has now been ratified by 116 Parties.

130. To facilitate multilingualism within the Information Society, ITU has continued to work on global standards development, and UNESCO has worked to fulfil its role as the United Nations agency responsible for promoting cultural diversity and identity, linguistic diversity and local content. UNESCO activities have included elaboration of a document on indicators of linguistic diversity, a draft report on the implementation of the Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace, and a study of public service broadcasting and languages which will help to develop a toolkit on multilingualism. UNESCO's Atlas of the World's Languages in Danger was published in 2010.

131. In the Solomon Islands, UNESCO has developed a wiki-based online platform to strengthen the transmission of indigenous knowledge on the local environment, allowing students and teachers to upload, share and debate community-based knowledge in the Marovo language. ITU has developed an ICT portal for indigenous peoples, available in English and Spanish, including tailor-made applications on banking, commerce, environment, government, health and learning.

132. UNESCO and the Internet Corporation for Assigned Names and Numbers (ICANN) signed a Letter of Intent concerning use of Cyrillic script on the Internet, building on previous cooperation concerning internationalized domain names (IDNs) and other aspects of multilingualism on the Internet. ESCWA has continued work to increase Arabic-language presence on the Internet following the successful introduction of IDNs in 2009. ITU likewise continued its work on IDNs. WIPO organized the International Congress on Creativity, Cultural Diversity and the Market, focusing on the relationship between cultural heritage and intellectual property in the digital environment.

(ix) Media (C9)

133. The focus of the C9 facilitation in 2010 was "community media for disaster preparedness," exploring ways in which community media can keep citizens informed about disaster response and assist them in obtaining access to support.

134. The development of free, independent and pluralistic media, and associated capacity-building, are key elements of UNESCO's International Programme for the Development of Communication (IPDC). 2010 saw the implementation of 83 projects within this programme in 61 developing countries, including a project to restore media in Haiti following that country's earthquake. UNESCO strengthened working partnerships in the field of community media with the Commonwealth of Learning and the World Association of Community Radio Broadcasters (AMARC). It launched 23 projects concerned with community media and community multimedia centres in Africa, Asia and Latin America during the year.

135. Other UNESCO activities included the adaptation of model curriculums on journalism (for 63 journalism schools in 51 developing countries), and finalization of curriculums for teacher trainers on media and information literacy (MIL). An expert group launched the development of a global framework for MIL indicators. Guidelines for broadcasters on user-generated content and MIL were published and piloted. Support has been provided to twenty African centres of journalism training.

136. Comprehensive multi-stakeholder assessments using UNESCO's Media Development Indicators were completed in six countries and launched in four. UNESCO's annual celebration of World Press Freedom Day in Brisbane, Australia during May 2010 highlighted the importance of freedom of information as an integral part of freedom of

expression, and reflected on its role in empowerment, transparency, accountability and the fight against corruption. UNESCO also published a toolkit titled *Freedom of Connection – Freedom of Expression: The Changing Legal and Regulatory Ecology Shaping the Internet* to stimulate debate about freedom of expression on the Internet. A publication entitled *Freedom of Connection – Freedom of Expression: The Changing Legal and Regulatory Ecology Shaping the Internet* was prepared by the Oxford Internet Institute and published in November 2010.

137. The Council of Europe has continued to work on issues concerning ICTs and the media, including workshops on hate speech and media freedom, the role of Internet intermediaries, and Internet openness and privacy.

138. ITU has undertaken work on technical dimensions of media development including the transition from analogue to digital broadcasting, where it has published guidelines and provided technical assistance to developing countries, and the development of Internet Protocol TV (IPTV).

(x) Ethical dimensions of the Information Society (C10)

139. UNESCO continued to lead international debate on information ethics, following a series of regional conferences which it has organized since WSIS. The principles of info-ethics derive from the Universal Declaration of Human Rights, including rights to freedom of expression, universal access to information, the right to education, the right to privacy and the right to participate in cultural life. In 2010, UNESCO sponsored an international conference on information ethics in Africa, which focused on research and future development of African information ethics curriculums. In the framework of its Information for All programme, UNESCO continues to support the elaboration of a non-binding Code of Ethics for the Information Society.

(xi) International and regional cooperation (C11)⁴¹

140. ITU, UNESCO, UNCTAD, WIPO, the United Nations regional commissions and other United Nations entities foster international and regional cooperation and work with other intergovernmental agencies by means of events, conferences, meetings and joint programmes. Other intergovernmental organizations, international financial institutions, and private-sector and civil society associations play a prominent part in this coordination.

(b) Implementation of themes

(i) Financing mechanisms

141. UNGIS organized an interactive session on financing mechanisms for ICT4D during the 2010 WSIS Forum, following an open consultation on this theme which it organized in October 2009.⁴² CSTD also selected “Improvements and innovations in existing financial mechanisms for ICT” as one of the substantive themes for its 2009–2010 intersessional period. A panel on this theme was organized during CSTD’s intersessional meeting in

⁴¹ For activities carried out in the context of UNGIS, see II.B.3.

⁴² <http://www.ungis.org/LinkClick.aspx?fileticket=yYEEMJ5rCl0%3d&tabid=719>

November 2009, the main findings of which are summarized in the 2010 edition of this report.⁴³

142. The development of innovative financing mechanisms for infrastructure and applications continues to be an important theme of the work of UNGIS agencies, several of which implement capacity-building activities and provide technical assistance. The International Financial Institutions, including the World Bank, play a crucial role both in providing investment and in supporting the establishment of policy and regulatory environments that are attractive to investors. The development of public-private partnerships has been a recurrent theme within this work.

(ii) Internet governance

Enhanced cooperation

143. In its resolution 2010/2 of 19 July 2010, and in consideration of paragraphs 68 to 71 of the Tunis Agenda for the Information Society, ECOSOC invited the Secretary-General to convene open and inclusive consultations involving all Member States and all other stakeholders with a view to assisting the process towards enhanced cooperation, in order to enable governments on an equal footing to carry out their roles and responsibilities in respect of international public policy issues pertaining to the Internet but not in respect of the day-to-day technical and operational matters that do not impact upon those issues. The request emphasized the importance of a balanced representation of all stakeholders, in their respective roles and responsibilities, as set out in paragraph 35 of the Tunis Agenda.

144. DESA held open consultations on the process towards enhanced cooperation on international public policy issues pertaining to the Internet with member States and all other stakeholders, as requested by the Council and the General Assembly, from September to December 2010. Stakeholders were invited to participate in two ways: online and/or by attending a face-to-face meeting in New York in December 2010. The outcome of these consultations will be contained in a report of the Secretary-General for consideration by the General Assembly at its sixty-sixth session, through ECOSOC.

Internet Governance Forum

145. The Internet Governance Forum (IGF) held its fifth annual meeting in Vilnius, Lithuania, from 14 to 17 September 2010, with the overall theme of “Developing the future together”. Over 1,450 participants attended, while enhanced arrangements for remote participation enabled 1,300 more to participate either individually or through 32 remote hubs. Almost 50 per cent of physical and virtual participants were from developing countries. Improvements to the meeting’s format included stronger links between workshops and main sessions, more involvement by young participants and parliamentarians, and further integration of regional and national IGF initiatives into the meeting programme.

146. Discussions at the Vilnius IGF focused around five broad themes, namely managing critical Internet resources; security, openness and privacy; access and diversity; Internet governance for development; and cloud computing as an emerging issue. The inclusion of a separate focus on Internet governance for development, which had previously been seen as a cross-cutting issue, provided an opportunity to explore linkages with the Millennium Development Goals and other internationally agreed development goals. A further main

⁴³ <http://www.unctad.org/Templates/Download.asp?docid=12888&lang=1&intItemID=4972>

session provided an opportunity to take stock of the broader Internet governance landscape and the evolution of Internet governance since the first meeting of the IGF in 2006.

147. The spread of regional and national IGF-type meetings has contributed to an open and inclusive multi-stakeholder approach. Regional meetings continued in Europe, East and West Africa, and Latin America and the Caribbean, while in 2010 they were held for the first time in the Asia-Pacific region and in the Russian Federation. National IGF-style meetings were held in countries in Eastern and Western Europe, East Africa, and the United States of America.

148. The Vilnius meeting was the fifth to be held within the IGF's initial five-year mandate. The United Nations General Assembly agreed in December 2010 to continue the IGF's mandate for a further five years. The sixth meeting of the IGF has been scheduled to take place in Nairobi, Kenya during September 2011.

149. In July 2010, ECOSOC invited the Chair of CSTD to establish a working group to consider improvements to the IGF. The Hon. Sherry Ayittey, Minister of Environment, Science and Technology of Ghana, and current Chair of the CSTD, delegated the task of establishing the CSTD Working Group on IGF to Mr. Frederic Riehl, vice-Chair of the CSTD. UNCTAD facilitated the organization of a number of online and face-to-face consultations on behalf of Mr. Frédéric Riehl to share views and exchange ideas on the composition, modalities and working methods of the Working Group. The intersessional panel of the CSTD decided on the composition of the Working Group on 17 December 2010. The Working Group held its first meeting on 25–26 February 2011.⁴⁴ A report of the Working Group will be presented to the CSTD at its fourteenth session, as an input from the Commission to the General Assembly, through ECOSOC.

150. The results of the questionnaire were discussed during a second open face-to-face meeting in Geneva, Switzerland, on 24 November 2010.

(iii) Measuring ICT for development

151. The Partnership on Measuring ICT for Development was formed in 2004, as a collaborative forum for United Nations and other agencies, to address challenges of data collection and analysis concerning ICT4D and WSIS outcomes. The Partnership has 11 member organizations.⁴⁵ It has published 50 core indicators for ICT infrastructure and access, the use of ICTs by households and enterprises, the ICT sector and trade in ICT goods, and ICTs in education. A revised and extended version of the core list was published in 2010. Indicators on e-government are being prepared by a task force led by ECA. A framework and eight core indicators have been developed and will be finalized during 2011.

152. Agencies within the Partnership provide technical assistance to improve the capacity of national statistical offices, making use of resources such as UNCTAD's *Manual for the Production of Statistics on the Information Economy* and ITU's *Manual for Measuring ICT Access and Use by Households and Individuals*. ESCWA is collaborating with ITU on the development of ICT indicators and capacity-building for ICT measurement in the Arab region. ECA, ECLAC and ESCWA have, respectively, provided French, Spanish and Arabic versions of the core ICT indicators and/or UNCTAD's *Manual*.

153. The 2010 edition of the *World Telecommunication/ICT Development Report (WTDR)*, published by ITU, contained a detailed assessment of progress towards

⁴⁴ Further information on the Working Group is available at <http://www.unctad.info/en/CstdWG/>.

⁴⁵ ITU, OECD, UNCTAD, DESA, UIS, the World Bank, ECA, ECLAC, ESCAP, ESCWA and Eurostat.

achievement of the 10 WSIS targets which were included in the *Geneva Plan of Action* in 2003. This report, which drew on research by ITU and other United Nations agencies, established that the core target for connectivity set in the *Geneva Plan* – “to ensure that more than half the world’s inhabitants have access to ICTs within their reach” by 2015 – had been achieved, thanks to the unexpectedly rapid growth of mobile telephony, but it identified challenges in both measuring and achieving other targets. The report recommends a number of specific indicators which could provide a more substantive basis for measuring progress between 2005 and 2015. It also recommends that some existing targets be upgraded to take account of changing circumstances, by measuring use as well as access, the use of ICTs by business, and access to and use of broadband networks and services.

154. Based on the *WTDR*, the Partnership launched a new Task Group on Measuring the WSIS Targets during the WSIS Forum 2010. The Task Group, which is led by ITU, is developing a monitoring framework document that will help countries track the WSIS targets. This document will include a proposed list of indicators, address methodological issues, and include definitions and model questions, and will be released at the WSIS Forum 2011.

III. Findings and recommendations

155. The year 2010 marked the midpoint between the second session of the World Summit on the Information Society and the comprehensive review of WSIS outcomes scheduled for 2015. Several agencies took this opportunity to review the progress to date and the objectives for the next five years.

156. There was continued progress towards achieving universal access to basic ICTs during 2010. The rapid growth in mobile telephony since 2005 means that one of the WSIS targets – “to ensure that more than half the world’s inhabitants have access to ICTs within their reach” – has effectively already been achieved. The value of mobile telephony has been enhanced by new services and applications, including m-health and mobile transactions, and rapid expansion of mobile Internet access is under way. As a result, many people in developing countries now have direct personal access to ICT services – including e-government, e-business and developmental services – which, at the time of WSIS, were expected to be delivered through community access points. This presents new opportunities for development, alongside the need for re-evaluation of existing national and regional ICT strategies.

157. The growth of mobile communications does not imply an end to concern about the digital divide, but raises new challenges about the changing nature of that divide. In its resolution A/RES/65/141 of 20 December 2010, the General Assembly drew attention to the special challenges faced in the area of broadband connectivity by developing countries, and stressed that, for the majority of the poor, the development promise of science and technology, including ICTs, remains unfulfilled. Other agencies have noted that, while the digital divide in voice telephony is diminishing, there is a growing gap in broadband provision between developed and developing countries, with the risk that the latter will be further disadvantaged.

158. The potential of broadband has been explored in reports from the World Bank and the Broadband Commission for Digital Development. Its translation into reality will be a major challenge for United Nations agencies and other stakeholders in the period to 2015. The need for investment in infrastructure and innovative services that make use of broadband is emphasized by a number of agencies, including ECLAC, which is concerned

about the limited use of ICTs by SMEs and the persistent digital divide across income levels and between different parts of its region.

159. A number of other challenges have been raised by different agencies. DESA emphasizes the importance of e-government in realizing a global Information Society. It stresses the importance of “citizen-centric practice” in e-government, the need to adjust strategies to technological change (especially the growth of mobile cellular subscriptions and broadband access), and the potential of social networking platforms. It sees a need for continued research, analysis and sharing of best practice in e-government and citizen engagement.

160. Several agencies draw attention to the continued challenge of human capacity-building, from building awareness and understanding of the potential of ICTs among parliamentarians, through developing the skills of policymakers, civil servants and industry professionals, to addressing the needs of citizens and micro-enterprises. ESCWA stresses the need to build a knowledge-based culture by instilling awareness of the developmental role of both new and traditional knowledge, training communities in the most effective ways of using this, and persuading reluctant users to trust e-services. It also notes the importance of partnerships between different stakeholder groups in achieving WSIS outcomes.

161. UNIDO emphasizes the importance of engaging the private sector to form effective linkages and broader partnerships for development. It is working in partnership with transnational corporations and public-sector agencies to overcome the “digital divide” and to make the productive use of ICT by SMEs in the developing world a reality, and believes that this aspect of multi-stakeholder participation has a crucial part to play in WSIS implementation.

162. ESCAP is particularly concerned that a lack of relevant content and applications may inhibit development of the ICT sector and limit its contribution to development. It believes that mobile networks provide a great opportunity to advance development objectives, particularly through mobile health and mobile banking applications.

163. The WSIS Forum is widely regarded as a major improvement in the facilitation of WSIS action lines. UNESCO, ITU and UNCTAD believe that the Forum’s inclusiveness and openness and its new thematic focus have strengthened responsiveness to stakeholders and contributed to increased physical and remote participation in the meeting. Further improvements to the Forum have been suggested by several agencies. UNCTAD and DESA are concerned about the lack of dedicated resources for the facilitation of action lines and would like to see more collaboration between annual meetings, fostering the cross-cutting value of ICTs in different domains. ITU has initiated a series of road maps for some action lines that it facilitates, and believes that this may serve as a template for others. UNESCO raises the challenge that WSIS remains little recognized as a development summit and unknown in parts of the development communities. An important challenge that it identifies is the need to integrate ICTs in development programmes and strategies, so that they become effective tools for the free flow of information and knowledge and contribute to wider human development. Further innovations in the Forum are planned for 2011, which will help to address these challenges and facilitate implementation of all action lines and WSIS outcomes.

164. DESA notes that the IGF has become a useful and valued mechanism for engaging in dialogue with Internet stakeholders, promoting capacity-building and acting as an incubator for ideas that help to shape policy decisions taken by other institutions. Its format has allowed participants to interact as equals while promoting dialogue, fostering partnerships and enhancing information-sharing. The multi-stakeholder approach to public policy dialogue is strongly commended by all stakeholder groups.

165. The ITU and other agencies within the Partnership on Measuring ICT for Development reviewed progress towards achieving the WSIS targets in the 2010 *World Telecommunication/ICT Development Report*.⁴⁶ That report recognized significant weaknesses in the WSIS targets which were agreed in the Geneva Plan of Action in 2003, in particular in the vagueness of their terminology and the absence of indicators against which progress could be measured, especially for usage. UNCTAD has also described the lack of well-defined targets as an obstacle to achievement of WSIS outcomes, and has drawn attention to the lack of targets for measuring ICTs' contribution to enterprise.

166. New indicators have been proposed in the 2010 *World Telecommunication/ICT Development Report*, which also suggests updating objectives in the light of the growth in mobile telephony. This report, and the systematic approach to indicators which has emerged from the work of the Partnership on Measuring ICT for Development, provide an opportunity for more effective tracking of progress towards achieving WSIS outcomes which should enhance understanding of developments and improve strategic planning for ICTs at national and regional levels.

167. Several agencies have stressed the importance of new aspects of the Information Society that have emerged since WSIS, which have changed the communications landscape and require a rethinking of strategies for ICTs and ICT4D. Some of these are noted in section I of this report, including the development of mobile transactions, social networking and cloud computing. Others, which were noted in last year's report (A/65/64-E/2010/12),⁴⁷ include the growing challenges of cybersecurity and the positive and negative impacts of ICTs on climate change and the environment. It is important to ensure that these post-WSIS developments of the communications landscape are included in efforts to implement the WSIS outcomes, and that policies and strategies at all levels are adapted to meet with changing circumstances.

⁴⁶ http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-WTDR-2010-PDF-E.pdf

⁴⁷ <http://www.unctad.org/Templates/Download.asp?docid=12888&lang=1&intItemID=4972>