8th World Telecommunication/ICT Indicators Meeting (WTIM-10)

Geneva, Switzerland, 24 - 26 November 2010

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Final Report

1. The 8th World Telecommunication/ICT Indicators Meeting (WTIM), organized by the International Telecommunication Union (ITU), took place in Geneva from 24 to 26 November 2010.

2. The Meeting attracted 237 participants from 78 Member States, 14 public and private companies and 17 regional and international organizations.

3. The work of WTIM was conducted under the chairmanship of H.E. Lamia Chaffai Sghaier, Secretary of State for information technology, Internet and free and open source software, Ministry of Communication Technologies, Tunisia. The sessions were moderated by selected experts from international organizations, governments and academia.

4. The meeting focused on the measurement aspects of seven main topics: impacts of ICT; household ICT access and individual ICT use; ICT infrastructure and access, in particular broadband; e-government; the WSIS targets; child online safety; and ICTs and climate change.

5. This report summarizes the presentations and discussions of each session and presents the main conclusions and recommendations of the meeting. Further information, such as the agenda, the presentation slides, and the list of participants is available on http://www.itu.int/ITU-D/ict/wict10/index.html.

Opening session

6. The 8th WTIM was opened by Mr Mario Maniewicz, Chief of the ITU/BDT Policy and Strategies Department, who highlighted the importance of ICT measurement, in particular the impact of ICTs, which is essential to inform and guide policy makers. He stressed that the WTIM was an important forum to bring together policy makers, statisticians, analysts as well as the private sector to address technological changes in ICTs and to adapt data collection efforts, accordingly.

7. Mr Maniewicz introduced the chair of the WTIM, Ms Lamia Chaffai Sghaier, Secretary of State for information technology, Internet and free and open source software of the Ministry of Communication Technologies of Tunisia. Ms Chaffai, in her opening statement, highlighted the importance for countries to track the progress they are making in becoming information societies. ICTs have a great potential to drive economic development but countries must ensure that they have the appropriate ICT infrastructure and must recognize the strategic value of ICTs. Cooperation in the areas of ICT development and measurement is vital and Tunisa has made great efforts to bring together all ICT stakeholders (policy makers, statisticians, users of ICT statistics) to track ICT progress. Ms Chaffai also pointed to the importance of the Partnership on Measuring ICT for Development for developing statistical standards and allowing countries to produce internationally comparable ICT statistics.

8. In his opening remarks, Mr Sami Al Basheer Al Morshid, Director of the BDT, highlighted the importance of ITU in guiding countries in their ICT measurement efforts and providing reliable and comparable data to analyze and overcome the digital divide. ITU, in cooperation with other international and regional organizations and through the Partnership on Measuring ICT for Development, has made great progress in tracking information society developments. Its work provides the basis for international benchmarking and analyses and allows policy makers to identify priorities and to address such issues as innovation, investment and affordable access. The Director also pointed to the important role ITU has in adapting to a constantly evolving ICT environment, for example by measuring the uptake of broadband but also to address emerging areas, such as child online protection and ICTs and climate change.

9. The keynote speech by Ms Jirawan Boonperm, Permanent Secretary of MICT Thailand, was delivered by Ms Sureerat Santipaporn, Chief of ICT Statistics of Thailand's National Statistical Office. She focused on the importance of ICT indicators for policy making and how ICT statistics allow governments to identify bottlenecks, measure progress in terms of innovation and assess the impact of policies. Since ICTs are of cross-cutting nature, governments need to ensure national cooperation in ICT measurement, ideally through an ICT cooperation body. In the case of Thailand, this role has been assigned to the National Statistical Office. The country has made concrete efforts, and set clear objectives towards becoming an information economy so as to reap the benefits of ICTs for businesses, people and the society as a whole. This includes its *ICT 2020 policy plan*, which foresees universal broadband access, among other policy targets.

10. Mr Raul Katz, from the Columbia Business School, in his keynote speech, presented the perspective of an ICT data user who is aware of the data gaps. He highlighted that it is essential to have adequate ICT statistics to measure the true effect of technology on countries' economic performance. Impact analysis at the country level is important to avoid implementation of policies that may be based on countries where the situation is very different. He mentioned the importance of measuring the broadband demand gap (referring to households that could buy broadband access given its availability but don't do so) so that the right policies can be implemented. Data are at the core of cost/benefit analyses, the essence of policy. Dr Katz highlighted a number of data gaps, for example, concerning broadband speed and bandwidth needs, limiting the ability to set effective targets and make the right investments. The lack of data can lead to 'herd behavior' or imitation of policies, which can result in wrong policies. Most importantly, the cost of producing data is lower than the cost of implementing wrong policies. He highlighted the multiple impacts of broadband, including job creation, creation of externalities, as well as new services and products for consumers. Broadband can also positively impact consumer surplus linked to the price declines for broadband services in a competitive market environment. Mr Katz stressed the importance of collecting disaggregated data, by regions (within a country), as well as quarterly data to increase the number of observations. These types of impact analyses are important because they will help policy makers take important decisions.

11. In his keynote address, Mr Ilkka Lakaniemi, from Nokia Corporation, highlighted the importance of data for businesses to make the right decisions in terms of investments and strategies. It is particularly difficult for businesses to stay on top of events since the ICT sector is changing so rapidly. Data are needed by the private sector to assess the impact of new technologies and the potential of countries. In terms of the data and indicators that are needed, Mr Lakaniemi highlighted the importance of quarterly data, data on regulation, input/output tables, as well as survey data, including on ICT skills in businesses. The private sector needs harmonized data so as to compare countries. More information on converged networks and services is needed, as well as information on trust and security, which is important for businesses. Cross-sectoral information is also important for the industry, as well as data on the uptake and use of mobile broadband, which is completely changing the telecommunication/ICT environment.

12. The opening speeches were followed by a presentation delivered by Ms Susan Teltscher, Head of the ITU/BDT Market Information and Statistics Division, who informed the participants about the work accomplished by ITU since the WTIM that was held in Cairo, Egypt in March 2009 and who introduced this year's WTIM agenda.

Session 1: Measuring the impact of ICTs

13. Sessions 1 and 2 were jointly organized by the ITU, the OECD and the European Commission. They focused on the topic of measuring the impact of ICTs. While the first session was

moderated by Ms Susan Teltscher of ITU, the second session was moderated by Mr Raul Katz from the Columbia Business School.

14. The first presentation, by Mr Vincenzo Spiezia, Senior Economist at the OECD, provided an overview of different methodological approaches that have been taken towards measuring the economic impact of ICTs. He highlighted the various positive impacts that have been found by researchers during the past ten years showing how ICT infrastructure, investment, and use can impact economic variables. Research findings point to higher productivity, both at the macro and micro level. ICTs contribute to multi factor productivity growth and GDP growth, and they also increase firm productivity. ICTs also have so-called multiplier effects by creating new demand for products in other industries. When coupled with so-called intangible investments (such as software, R&D and training), ICTs have been found to have a particular high positive impact. OECD research has also found that ICT use in firms increases the probability to innovate through the introduction of new applications and services. Micro data linking ICT use and education has shown that computer use can increase students' performance. OECD is leading the Partnership on Measuring ICT for Development Task Group on Measuring Impact which is currently developing a "User Guide" that should help countries interested in measuring ICT impact.

15. Ms Lucilla Siolo, Head of Unit of the European Commission's DG Information Society and Media, discussed the impact of ICT on growth and competitiveness in Europe. Research results based on growth accounting methods illustrate the changing impact of ICT on productivity in both the European Union (EU) and the United States (US) over the past 15 years. A recent study carried out by Bart van Ark for the EU showed that the productivity gap was biggest in ICT production and market services (for the latter, the gap was 0.5% in EU compared to 1.8% in the US). While market services also include financial services, retail and whole sale trade also posted very high productivity growth throughout this period. Data also show differences within the EU: the United Kingdom (UK) for example had a similarly large growth rate in market services (1.6%) to the US – in line with economic similarities such as product and labour market regulation. Ms Siolo also pointed to the economic impact of the ICT sector itself in the EU: while the size in GDP was only 5%, the ICT sector contributed 20% to labour productivity growth between 2000 and 2005, and 26% to research and development (R&D).

16. The presentation by Professor Jonathan Haskel of the Imperial College Business School focused on the economic impact of ICT and intangibles. In the growth accounting literature, much research has focused on measuring the impact of tangible ICT capital (e.g. computers). This should be broadened to also include the contribution of non-tangible assets or capital investments, such as R&D, software, design, branding, training and business processes. Research based on data for a number of OECD countries suggests that intangible investment is becoming more important and that innovation, for example, accounts for a large share of labour productivity growth. In this context, the contribution of the Internet could be substantial, for example by lowering the price of communication equipment and R&D and facilitating new

business organization. Better data are needed on ICT investments and co-investments (such as intangible assets).

17. The subsequent discussion clarified some of the differences between Europe and the US in terms of ICT impact, for example, the difference in the ability to use ICTs. Delegates also mentioned that in addition to measuring the positive impact on ICTs we also need to look at the negative externalities and effects of ICTs and which methodologies could be used to capture, for example, health hazards through mobile phones, side effects on education and children, and environmental impacts. The need for more research on the economic impact of ICTs in developing countries was also stressed.

Session 2: Measuring ICT impact (continued)

18. The second part of measuring ICT impact first looked at the impact of broadband on employment. Jonathan Liebenau from the London School of Economics, in his presentation, highlighted employment effects of broadband stimulus investment packages based on an analysis for the UK. The results show that accelerated investment in ICT/broadband infrastructure has many benefits, including meeting goals that have been generally agreed on both at the EU level and within many Government Ministries. Looking at the investment impact on different economic sectors shows that while some sectors, such as basic construction, respond faster to investment by boosting employment, the larger benefits of such spending are short-lived. This is because spending on sectors that are well-developed offer fewer opportunities for growth than those, such as the digital infrastructure, that are growing rapidly. Apart from broadband networks, the latter include intelligent transport systems (e.g. road pricing schemes, smart solutions to congestions) and smart power grids (e.g. smart meters). Positive effects are not only employment creation, but also impacts on productivity, quality of life and energy savings. Data needs to carry out these types of analyses include, in addition to the data on ICT infrastructure, employment data, trade data, and firm-level data for different industrial sectors.

19. The following two presentations focused specifically on the economic impacts of mobile phones. Mr Kalyan Dasgupta from the Berkeley Research Group argued that mobile networks are expected to lead to lower transaction costs, market formation, the elimination of physical constraints to information flow, a massive consumer surplus from new services and the development of content and applications industries. While there is less quantitative research on the impact of mobile phones available, some studies point to an increase in GDP, consumer surplus, and market formation. More survey-based research is necessary to capture the impact. On the data side, there is a need for statistics on mobile phone usage (rather than subscriptions) in order to measure impact properly. Currently, there is a significant mismatch between the two indicators, with the number of unique users being much lower than subscriptions in countries where such data are available. Similarly, data on mobile broadband users (not 3G subscriptions)

are necessary to do meaningful impact analysis and capture the real market. Survey-based data revealing mobile usage are particularly necessary in developing countries. Data on ICT skills are equally important to assess whether people/countries have the skills to make effective economic use of the ICTs. As an example of a benchmarking effort that looked at "useful" connectivity, Mr Dasgupta presented the Connectivity Scorecard and its latest results.

20. The final presentation on the topic of ICT impact was given by Isaac Mbiti of the MIT/Southern Methodist University, focusing on the economic impact of mobile phones in Africa. He highlighted some of the methodological challenges in modeling the impact both at the macro and micro levels, as well as the severe data problems. Channels of impact include the reduction in information search costs, increased information and improved market efficiency/welfare gains. Improved communication can also lead to improved supply chain management and increased productivity. The well-known 2007 study by Jensen on Indian Fishermen has shown that mobile phone use can lower prices by reducing price dispersions in the market and increase profits. Mr Mbiti's study on Kenya and the M-Pesa phenomenon has shown that M-Pesa accounts for about 60% of the drop in transfer prices. There is plenty of anecdotal evidence on how mobile phone-based services have benefited development projects in a number of African countries. Concerning the data needs, he stressed the importance of having accurate statistics on mobile phone usage, and the need to carry our nationally representative surveys over time.

21. During the discussion that followed, delegates mentioned that improved traffic indicators on mobile phone usage would also be helpful for measuring impact. The question on how to measure the impact of ICT on productivity in government services was an area that would also be of interest, but is more challenging to measure given that there are no financial outputs. In terms of measuring broadband impact on employment, it includes both positive and negative impacts, although current research suggests that the overall balance is positive.

Session 3. Measuring household ICT access and individual ICT use

22. This session presented an overview of data collection on household ICT access and individual ICT use from both developed and developing nations; it also discussed the availability of internationally comparable household ICT statistics, best practice examples from countries at different levels of development and methodological issues related to the collection and harmonization of data based on international frameworks set by members of the Partnership.

23. Mr Alexandre Barbosa from the Brazilian Network Information Center moderated the session. He stressed that the Partnership on Measuring ICT for Development has created a set of ICT indicators and provided a proper methodological framework enabling data collection and ICT measurement in countries. Since 2004, the Partnership has been promoting statistical capacity-building and raising awareness by providing assistance and statistical support to developing economies. The development of ICT indicators is a continuing process and the Partnership has

been encouraging countries to implement ICT surveys to produce high quality and internationally comparable data on the access and use of ICTs in households and by individuals. Despite the efforts being made by many countries, we still have a long way to go to effectively help policy makers to use accurate ICT statistics in the public policy process.

24. Ms Doris Olaya from ITU presented the progress made by countries in collecting statistics on household ICT access and individual ICT use. First she mentioned the status of the collection process by ITU and some remaining challenges in completing the ITU household questionnaire. She highlighted the importance of reporting absolute numbers rather than proportions in order for ITU to be able to do harmonized calculations and better analysis on ICT development; in particular, she stressed the importance of using a suitable in-scope population in order to calculate the total number of Internet users in each country. Regarding the progress made by countries in measuring ICT, more and more developing countries are starting to measure indicators such us Internet access by households and Internet use by individuals, but still there are 107 developing economies which have not yet measured Internet use and 78 which have not yet measured Internet access by households. She also highlighted the need to measure Internet access via wireless services, which has started to grow in recent years.

25. Mr Albrecht Wirthmann from Eurostat presented the latest developments in measuring individual ICT use, in particular new questions on online activities and a module on Internet security that were added to the 2010 Eurostat ICT use survey. These new indicators aim at fulfilling the needs of the new Digital Agenda for Europe. New indicators on online activities take into account, among others, a more frequent use of Internet, participation in social networking sites (facebook, twitter, etc.), civic and political participation and use of e-health services. The module on security addresses the awareness, experience and behavior of users concerning security. He shared preliminary results of the 2010 survey showing that this is a difficult topic as respondents might not be aware of security incidents. Other results showed for example that half of all Europeans do not engage in certain online activities (such as those involving online payments) due to security concerns and that a large majority of people use security software. Security is considered as a vital issue for the further development of the Internet in the framework of the European Commission.

26. Mr Gerardo Lopez from the Mexican National Institute of Statistics and Geography (INEGI), presented the experience of Mexico in measuring Internet broadband access by households, while emphasizing the benefits of broadband. He presented some methodological aspects of the household survey in which they integrate a module with all core ICT indicators proposed by the Partnership. It is part of the labour force survey, which allows INEGI to measure all socio-demographic and economic characteristics of households and individuals, in addition to the ICT characteristics. Results showed that less than 14% of the Mexican households had access to broadband, mainly via DSL and cable. It showed also that broadband wireless technologies are emerging, such as WiMax, mobile networks and satellite.

27. During the subsequent discussion, delegates commented on various methodological issues related to collecting ICT indicators. One of them refers to the reference period for ICT usage questions, as not all countries are collecting information for the recommended period of the last 12 months. To better assess the situation, it was recommended to enquire also about the frequency of use and to present the reference period in a footnote when publishing data for various countries, so that users can take it into account when analysing the information. Other issues that were raised include countries with highly dynamic populations, which can affect negatively the tendency (decreasing proportion) of ICT usage in those countries. This issue, however, is not specific to ICT statistics and needs to be addressed in the context of population and demographic statistics.

Session 4: ICT infrastructure and access indicators

28. The session on infrastructure and access indicators was moderated by Ms Michelle Park from the Korea Association of ICT Promotion (KAIT). During the first part of the session, the work of the ITU Expert Group on Telecommunication/ICT indicators (EGTI), and the ITU Handbook for the collection of administrative data on telecommunication/ICT services were presented.

29. Mr Christian Madsen of the Danish National IT and Telecom Agency and Chair of EGTI, presented the work carried out by the EGTI on revising the telecom/ICT indicators and harmonizing definitions to reflect changes related to telecommunication/ICT technologies and services. The EGTI was formed following a recommendation of the 7th WTIM held in Cairo in 2009. The group worked between May 2009 and February 2010 through an online discussion forum that included more than 150 members and focused on 13 telecom/ICT indicator groups (168 indicators in total). In March 2010, a face-to-face meeting among 26 EGTI members was held where the indicators and their definitions where finalized, including whether the indicators should be collected or not by the ITU.

30. The presentation by the EGTI Chair provided a detailed overview of the revisions made and the new indicators added, particularly on wired and wireless broadband. Furthermore, he presented the indicators that are for future discussions, and encouraged participants to participate in the EGTI online forum. The presentation further highlighted the positive experiences from the EGTI meeting held in March 2010, which included the diversity in the profile of the participants, the importance of the background materials for the discussions, and the usefulness of grouping the indicators. The presentation emphasized the importance of continuing the mandate of the EGTI and develop indicators related to tariffs, bundled services, quality of service, wireless broadband, and convergence. Further, Mr Madsen highlighted the need for developing the ITU handbook that features the indicators, their definitions, and some examples that can be used by countries when collecting the data. He mentioned that since the national regulatory agencies and sector ministries collect telecommunication/ICT data directly from operators and ISPs, it is important that operators/ISPs join the EGTI to share their technical expertise and experiences.

31. The Chair encouraged all WTIM participants and other stakeholders to take part in the discussions of new indicators, and to register in the EGTI online discussion forum. The importance of harmonizing indicators and definitions at the international level was also reiterated, to avoid additional work for countries. Finally, he recommended that ITU continue working with the OECD and the EU in harmonizing the definition of the indicators and recognized the importance of maintaining the membership of international and regional organizations in the EGTI.

32. Ms Esperanza Magpantay from the ITU presented ITU's Handbook for the collection of administrative data on telecommunication/ICT statistics, which is currently under preparation. The presentation outlined the progress made in revising the indicators to reflect the technological developments that took place since the release of the first edition of the Handbook in 1994. The first edition included indicators related to the fixed telephone network, which was the main technology available at that time. The Handbook was later updated in several WTIMs, to reflect the definition of new technologies and services entering the market. The new edition of the Handbook is intended to help telecommunication/ICT national agencies, particularly the ministries, regulators and operators to collect data from administrative records. It will include indicators that were agreed by the EGTI in March 2010, their definition, relevant methodological information, clarifications related to terminologies used, method of data collection, and examples to help illustrate the collection and interpretation of the indicators. The second edition of the Handbook is planned for release in the beginning of 2011. Countries are encouraged to use the Handbook in their national data collection to ensure the international comparability of the data.

33. During the discussions that followed, certain delegates mentioned that operators are reluctant to provide data for selected indicators to regulators or ministries due to concerns about data confidentiality. It was mentioned that legal provisions for data collection may be used to encourage operators to provide the data. The participants also highlighted the importance of collecting data for new indicators, particularly those related to bundled services, and more detailed information related to wireless broadband, such as collecting subscription data by speed. There was also a suggestion that regional capacity building workshops dedicated to the Handbook should be conducted to help countries clarify issues related to the definition of indicators included in the Handbook.

Session 5: ICT infrastructure and access indicators (continued)

34. The second part of the session on ICT infrastructure and access focused primarily on progress made towards measuring broadband. Mr Frederic Bourassa presented the OECD broadband indicators and experience from recent data collections. He informed the participants that the OECD collects broadband data twice a year, by technology. For wireless broadband, OECD

finished the definition in February 2010. The first data collection using the new definition was conducted in June 2010. However, the data are not yet released due to some harmonization issues. OECD is currently undertaking the second data collection of wireless broadband. There are a number of challenges that OECD encountered when comparing and analyzing the data collected, including differences in the definitions used by countries The data from the June 2010 data collection will be published as soon as these issues have been solved.

35. Mr Miguel Gil Terte presented the European Commission broadband data and highlighted EU's broadband measurement work which started in 2002. The data were collected to help develop a framework for competition issues as well as for benchmarking ICT policy, such as the Digital Agenda for Europe. The EU regulatory framework requires telecommunication operators to provide data to the national regulatory agencies. Mr Gil presented statistics that showed the uptake of broadband until July 2010, including data on subscriptions by speed. Challenges encountered when collecting the data include refusal of some operators to provide data (despite the regulatory framework) and the different country definitions being applied. There are also challenges related to the broadband technologies, including very high-speed lines, the issue of mobile broadband use through smart phones, and bundled services, both in terms of pricing and subscriptions. To overcome these challenges, the EU will continue to work with the Body of European Regulators in Electronic Communications (BEREC), through the COCOM sub-group, to improve the data on mobile broadband. Furthermore, the presentation listed some of the future activities of the EU regarding quality of broadband statistics that will be published in the first quarter of 2011.

36. Ms Nagwa El-Shenawi, Director of the Information Center of Egypt's Ministry of Communication and Information Technology presented Egypt's experience in measuring broadband. She highlighted the different broadband technologies that exist in Egypt and their market penetration, information on mobile broadband data collection as well as challenges related to differentiating 2G and 3G subscriptions. A survey on mobile Internet was conducted in the country to capture the profile of mobile Internet users and their different online activities. The survey was first conducted in 2009 through telephone interviews covering the areas of Cairo and Alexandria and using a sample of 1000 subscribers. The sample was stratified according to operators' market shares, the subscription type (prepaid/postpaid) and gender. Results showed that most mobile Internet users are men and those in age groups 25-34. Education also plays a role: those who have a university degree are mainly using the Internet through mobile devices.

37. Mr Koay Hoak Eng from the Malaysian Communications and Multimedia Commission (MCMC) presented Malaysia's experience in measuring wired and wireless broadband. Following the release of the revised ITU definitions in March 2010, MCMC required service providers to report the number of standard mobile subscriptions with advertised speeds above 256 kbps that have accessed the Internet in the last three months. The service providers reported a total of 3.6 million unique standard mobile subscriptions. With the aim of testing the validity of the data submitted by the operators, MCMC launched a survey in August/September 2010 using as the

survey frame those subscriptions that were reported by the operators as ”active”. The survey results were classified into four groups: mobile subscriptions in households with no fixed Internet access; in institutional households; in households with fixed broadband access; and those that did not access the Internet despite being reported as “active” by the operators. Results showed that close to half (46%) of the standard mobile broadband subscriptions reported by the service providers/operators were not really using broadband Internet. This result is a cause for concern for MCMC (and perhaps other countries) that needs to be addressed in future data collections.

38. During the discussion that followed, participants requested more detailed information on the surveys done in Egypt and Malaysia, particularly related to regression estimations and survey frames. In addition, clarifications on how the EU handles the confidentiality of the data were requested. There was also a discussion on the relevance of publishing fixed broadband subscriptions per inhabitants rather than households. It was mentioned that fixed broadband subscriptions normally include both residential and business subscriptions and are widely available. A more accurate indicator on households access to fixed broadband can be obtained from household surveys.

Session 6: Partnership on Measuring ICT for Development – measuring e-government

39. Sessions 6 and 7 of the meeting were organized in cooperation with the Partnership on Measuring ICT for Development. The first part focused on progress made by the Partnership on measuring e-government, and the second part on measuring the WSIS targets. Both sessions were chaired by Torbjörn Fredriksson of UNCTAD.

40. The session started with a presentation by Mariana Balboni of ECLAC, providing an overview of the achievements and work of the Partnership in the last two years. These include an update of the Partnership core list of ICT indicators, and the publication of three methodological manuals on ICT statistics, covering the area of businesses, households & individuals, and education. The members of the Partnership carried out several capacity building workshops and continue to raise awareness on the importance of ICT statistics. While the number of countries collecting ICT data through representative household and business surveys continues to increase, there are still major data gaps in terms of demand side ICT statistics. The Partnership continues its work in the area of ICT impact measurement and is planning to add a set of e-government indicators to its core list of indicators in 2011. It also recently launched a new Partnership Task Group on Measuring the WSIS targets (see session 6).

41. Ms Virginia Balea from the Romanian National Institute of Statistics then presented her organization’s work in the area of e-government measurement. She provided information on the contextual and legal framework of collecting e-government statistics, including the eRomania national strategy. Romania carries out an annual survey to measure ICT access, use,

expenditure and investment by central and local public authorities, public education institutions, as well as health services. In 2005, a special survey was carried out to find out which services government institutions were providing to citizens. This will be repeated in 2011. Romania also collects demand side data on e-government services by including e-government questions in the household and business ICT surveys. Results from these surveys are used to benchmark Romania against other EU countries.

42. The presentation on the Partnership on Measuring ICT for Development list of proposed indicators to measure e-government was given by Mr Makane Faye of the UN Economic Commission for Africa (UNECA), the lead agency of the Partnership's Task Group on measuring e-government (TGEG). The list of proposed indicators has been presented and discussed at several regional meetings and is expected to be finalized in early 2011. The list is composed of a total of eight indicators, including access to and use of ICTs by governments, and online services provided by governments. It will help produce internationally comparable e-government statistics and guide policy makers in making ICT investments and promote administrative efficiency. The presentation also highlighted some of the challenges in collecting such indicators, including capturing the intensity and quality of online services and the definition and comparability of statistical units in terms of national, regional and local government authorities. The list of indicators will be open for comments until end 2010. The TGEG will then produce a final document by mid-2011, including definitions, data collection methods, and model questions. The final list, which countries are encouraged to use to measure e-government developments, will be submitted for approval to the UN Statistical Commission in its 2012 session.

Session 7: Partnership on Measuring ICT for Development – measuring the WSIS targets

43. Ms Vanessa Gray of the ITU presented on behalf of the Partnership on Measuring ICT for Development the work of the recently established Task Group on Measuring the World Summit on the Information Society targets (TGWSIS), which is led by the ITU. In particular, she presented the proposed list of indicators that could be used to monitor the ten targets identified by the WSIS. The targets, which are expected to be achieved by 2015, are vaguely formulated and do not have associated indicators nor benchmarks attached to them. One of the main objectives of the TG WSIS therefore is to identify a monitoring framework to assess the progress made in achieving the targets. The targets range from connecting villages, schools and hospitals, to ensuring linguistic diversity on the Internet, cover areas that go beyond the scope and mandate of the Partnership. Therefore, the task group is open to non-Partnership members, including external collaborators from other organisations and the broader WSIS community. The proposed list, which was first introduced in the ITU World Telecommunication/ICT Development Report (WTDR) 2010, includes existing Partnership indicators but also new indicators. The task group, which was launched in May 2010, has been working primarily through an online forum. It will continue its work to finalize the list, and to address some remaining challenges, particularly

in terms of those indicators that only few countries track. WTIM participants are encouraged to send their comments to ITU or the online forum, until the end of 2010. The final list of indicators will be the basis for a more detailed framework document, which will include definitions, address methodological issues and propose model questions. This document is expected to help guide countries in their data collection efforts to monitor the WSIS targets, and to produce a global progress report by 2015.

44. In his presentation on measuring linguistic diversity on the Internet, which addresses target 9 of the WSIS, Mr Daniel Pimienta representing Funredes and Mayaa, highlighted the lack of recent and reliable data to track this target. Existing data suggest that only a very limited proportion of world languages are represented on the Internet and that a few languages dominate the online world. However, much more research and better data are needed to fully understand the current situation, and to track progress over time. The growing size of the Internet and the sheer number of web pages today make traditional methods of measuring linguistic diversity obsolete. He introduced a project proposal to construct indicators of linguistic diversity in cyberspace, which would address measurement issues. This project, based on a consortium of different international and regional organisations and researchers, will be presented to the EU to request financial support. The main objective of the project is to test various measurement techniques to identify new ways, including demand and supply side data, to measure linguistic diversity, and to be able to measure progress over time. ITU, the Partnership on Measuring ICT for Development and others were invited to join the project.

45. Ms Helani Galpaya from LIRNE*asia*, in her presentation, addressed the indicator on the (estimated) number of Internet users – one of the key indicators used to track the information society and also one of the indicators to track target 10 of the WSIS. She highlighted the importance and some of the shortcomings of this indicator. While an increasing number of countries collect this indicator through representative household surveys – the only way to produce reliable and comparable data - estimates are made whenever survey data are not available. One proxy indicator that could be used to produce better quality estimates is the proportion of households with Internet access at home. When no survey data are available at all, countries and ITU often make estimates based on the number of Internet subscriptions. Existing Internet user data suggest that for some countries these estimates seem very high, compared to subscription data. LIRNE*asia* therefore suggests reviewing current estimation methods and applying a multiplier that is calculated based on both Internet subscriptions and actual Internet user data based on surveys, on the one hand, and GNI per capita data, on the other hand. For countries without survey data, the multiplier could be used to determine a ceiling to the number of Internet users. When testing this new method, LIRNE*asia* found that in a number of countries Internet penetration levels decreased (compared to current estimation methodologies applied). While this methodology allows countries and the ITU to cross-check and adjust current data, it also has some shortcomings. In particular, the methodology does not take into account the number of mobile broadband subscriptions since these could lead to some double counting in the number of subscriptions. Another shortcoming is that the multiplier is based on survey data

that are primarily produced in developed countries, while survey data from developing, and particularly low-income countries, could result in a somewhat different multiplier.

46. The discussion following the **two** Partnership sessions highlighted the interest in expanding the core list of indicators to the area of e-government, and in helping countries measure the WSIS targets.

47. Several delegates, including from Oman and Egypt, informed the audience about their experiences in measuring e-government, their willingness to share it with other interested countries, and the importance of identifying an internationally agreed list of indicators.

48. The meeting mentioned that the proposed TGEG may want to take into account not only central, but also local government administrations, and to look into how automation of e-government services could be measured. In addition to the proposed e-government indicators, the Partnership was asked to review and possibly update its demand side indicators concerning the use of e-government services by businesses, individuals, and among government agencies.

49. Tunisia provided an overview of the progress it has made to improve information society measurements. This includes a number of national workshops to bring together all key players involved in ICT measurement and two new national surveys to measure access to and use of ICTs by households, individuals, and by businesses. In November 2010, Tunisia hosted the ICT 4all Tunis +5 Forum, which included a parallel event on *Measuring ICT indicators to achieve the WSIS objectives in the Africa region*.

50. In relation to WSIS target 9, Eurostat informed the meeting about an ongoing feasibility study on applying different methods (including crawling, the installation of software on users' computers, and surveys) to identify and measure Internet user behavior and preferences. This study could perhaps be expanded to include a language component. Brazil, which is using an open source software to track and compile information on the languages of Brazilian web sites, proposed to share its experience with interested participants.

51. The discussion also highlighted the need to take advantage of administrative data, whenever possible and useful, so as to limit the burden that countries (including regulatory authorities, Ministries, NSOs and operators) face from of an increasing number of questionnaires.

Session 8: Measuring Child Online Safety

52. The session was moderated by Mr Souheil Marine, Head, ICT Applications and Cybersecurity Division of the ITU Telecommunications Development Bureau (BDT). He briefly informed the participants about the ITU Child Online Protection (COP) initiative that was launched in 2008 as a multistakeholder effort within the Global Cybersecurity Agenda (GCA) framework. It aims to

bring together partners from all sectors of the global community to ensure a safe and secure online experience for children.

53. Ms Susan Teltscher of the ITU/BDT presented the new ITU publication *Child Online Protection (COP): Statistical Framework and Indicators 2010*. The publication was produced as an input to the ITU COP Initiative and the ITU Council Working Group on COP. The report is a comprehensive methodological document on the subject of measuring COP and the first attempt to provide a statistical framework and a set of quantitative indicators that could be applied internationally to measure COP. It takes into consideration existing data sources and surveys that have been implemented on COP and focuses primarily on quantitative, statistical indicators and less on qualitative or policy indicators. The report is organized in several chapters that include background information on the subject of COP, a conceptual and statistical framework for measuring COP, different actors that are involved (children, parents, educators, governments, perpetrators), ways to measure the context (such as Internet access and use by children, and what they do on the Internet), an overview of different surveys that have been carried out to measure subjective aspects of COP, and ways to measure children's risk-prone behavior (such as the measurement of preventive actions that could be taken by parents, children and other actors). The report also addresses a number of statistical challenges that need to be considered when measuring COP.

54. The presentation emphasized the importance of monitoring COP, and noted that although surveys have been conducted in some developed countries, this is not the case in developing countries. Ms Teltscher presented several recommendations on how a country can effectively measure COP. They include the types of indicators, survey questions, and types of surveys that can be used to measure different aspects of COP. The presentation further showed some examples on available data on the subject and some of the challenges related to measuring COP. For example, survey sample sizes need to be large enough to be able to capture specific COP aspects. The ITU hoped that the report will be useful for the future data collection, and noted that it be revised as appropriate to reflect comments that will come from users of the publication.

55. In the presentation that followed, Ms Sonia Livingstone from the London School of Economics presented the latest survey conducted under the EU Online Kids project. The project aims to enhance knowledge regarding risky and safer use of the Internet and new online technologies based on the experiences and practices of European children and parents,in order to promote a safer online environment for children. The main objectives of the project include to design a robust survey instrument appropriate for measuring children's online access and use; to conduct a survey in a reliable and ethically-sensitive manner; and to analyze and disseminate the results. The survey was conducted between May and October 2010 in 25 European countries using face-to-face interviews with parents and children and covered more than 20 000 Internet users. The survey included children's experiences of the Internet, classified by age and gender; the range of risks experienced by children online; children's perception of the subjective harm associated

with the risks; children's roles as 'victim' and 'perpetrator' of risks; and accounts of risks and safety practices reported by children and their parents. The data collected allowed cross-country analysis of similarities and differences. The presentation also highlighted the challenges that were faced in the data collection, such as having proper translation of questionnaires and terminologies to ensure comparability of the meaning of key terms, limited questions that children can be asked (especially in the self-completion section of the questionnaire where children's availability, concentration, interest are limited), and the representativeness of the sample. Professor Livingstone also shared some of the preliminary results of the survey and a timeline of major publications and initiatives related to the project.

56. Ms Nevine Tewfik, Director of Research and Strategies at the Information Infrastructure Division of the Ministry of Communications and Information Technology, Egypt, presented Egypt's experience in measuring COP. The work is carried out under the Cyber Peace Initiative of the country which aims at empowering youth through ICT. Egypt carried out its first data collection using the indicators included in the ITU COP statistical framework. The survey, which was translated into Arabic, focused on children aged 9 to 18 and was piloted in schools (not in households). A number of challenges were encountered, including the difficulty of translating the questions, and the limitation associated with conducting the survey in school rather than in the households. While the latter allows both parents and children to be interviewed, surveys conducted in school only cover children. This requires designing separate questionnaires for parents and children. The presentation further illustrated some of the preliminary results of the survey.

57. Mr Juliano Cappi from the Brazil Network Information Center (NIC) presented Brazil's ICT KIDS 2009 survey, the country's experience in collecting indicators related to measuring ICT usage by children. The survey was first conducted in 2009 to assess the use of computers and the Internet by children aged 5 to 9 years. The 2009 survey was conducted in urban and rural areas in Brazil using systematic stratified sampling. Both parents and children were interviewed while cognitive tests were conducted to ensure that children are able to understand the content of the questionnaire, particularly questions related to technologies. The presentation also highlighted some of the main results of the 2009 survey. Lessons learned included the importance of assessing children's cognitive skills, the importance of varying the types of questions included in the questionnaire, and the importance of the length of the questionnaire for getting useful replies (the length of the questionnaire impacts the children's concentration and behavior during the interview). The survey, which included five modules, was expanded in 2010 to include a module on COP.

58. During the discussions that followed, questions were raised related to the effectiveness of conducting the survey in schools instead of households. It was emphasized that to ensure the quality and the representativeness of the data collected, the survey needs to be conducted in households, where both parents and children can be interviewed. At the same time, a controlled environment should be avoided, which can influence the answer of the respondent.

59. The importance of using both a qualitative and quantitative approach was also mentioned. It was also emphasized that it is important to have an adequate sample size, as well as covering age groups below 16 years for the case of the EU, to measure COP. Finally, some of the questions addressed to children may be useful to address to adults as well.

Session 9: Measuring ICT and climate change

60. Session 9 addressed one of the emerging areas in ICT measurement, how to measure the impact of ICTs on climate change. It was organized in cooperation with ITU/TSB and moderated by Mr Reinhard Scholl, Deputy Director of ITU/TSB. The presentations highlighted the efforts that ITU, GeSI, Telefónica and other partners are conducting to develop methodologies for assessing the positive and negative impacts of ICT on climate change, in particular to measure the present and future energy consumption and greenhouse gas (GHG) emissions of ICTs.

61. Mr Keith Dickerson, Director, Climate Associates and Chair of the ITU-T Study Group 5 (SG5) Working Party 3 (WP3) presented the work of the Study Group on monitoring the impact of ICTs on Climate Change. SG5 focuses on assessing energy and GHG emission impacts and providing guidance on how to evaluate direct and indirect impacts of using ICT products, networks and services. He pointed to the increase in the energy consumption levels due to the development of standards for faster broadband equipment. The challenge now is how to increase the speed while saving energy, for example, by cutting emissions in the ICT sector through introduction of more energy-efficient equipment and networks, by reducing emissions and enabling energy efficiency in other sectors. The ITU-T recommendation L.1400 which provides examples of the way ICTs can be used to reduce environmental impacts has been recently consented (October 2010), and a set of recommendations on assessing the impacts of ICTs on climate change is expected to be released by mid-2011. For comparison purposes, there is a need for developing global standards for the actual consumption (by operators, devices etc.) in different countries, and the way of measuring it. For example, operators are consuming different levels of energy per connection in different countries; or a person in an office in country X consumes more energy than in country Y. It is also necessary to increase the quantity of data to carry out the analysis. Among others, SG5 is recommending to measure the energy consumption of network equipment, while setting benchmarks and targets for reductions and promoting more energy-efficient ICT products and services.

62. Ms Daniela Torres, Head of the Climate Change Office of Telefónica Group and leader of the Climate Change Working Group of the Global e-sustainability initiative (GeSI), made two presentations. First, she presented an assessment methodology developed by GeSI in cooperation with the Boston Consulting Group. GeSi is an non-profit international association that brings together leading ICT companies, international and non-governmental organisations committed to help improving the global environment and to enhance human and economic

development. There are four main sectors that have been identified to apply smart solutions for reducing CO_2emissions: industry, transport, construction and energy. Six case studies have been conducted to assess possible solutions in these areas. She highlighted that ICT solutions have the potential to reduce 15% of global CO_2 emissions. Among others, studies conducted by GeSI revealed that government support is needed to accelerate the adoption of ICT solutions and foster CO_2 reduction. The way forward currently proposed includes: the development of additional case studies to demonstrate the successful application of the proposed methodology; increasing the volume of primary data to more accurately capture real-world impacts; and the development of assessment tools and databases to better monitor the impacts. The proposed methodology is also a contribution to the work of ITU-T.

63. Ms Torres' second presentation dealt with the business perspective. She explained the way in which Telefónica is accounting for GHG emissions and energy efficiency. Measures to reduce emissions include the reduction of energy consumption inside the company, for example by optimizing combustion used by company fleets and reducing business trips, while encouraging employees commuting; and developing new energy-efficient products and services. Her presentation illustrated how companies can take action, while highlighting challenges, such as reporting GHG emissions across countries in which the company operates, in a comparable way.

64. Mr Ewan Sutherland of the LINKL Centre, presented a critical view on how the impact of ICT on climate change is being measured and reported. He illustrated the increase in GHG emissions and the contribution of the ICT sector. He showed, for example, that computers and peripherals are accounting for the main share of the emissions when compared to data centres and telecommunication services. He also showed that the mobile sector, which was contributing to GHG emissions similarly to the level of fixed narrowband services in 2002, will account for the largest share (compared to fixed narrowband and broadband) by 2020. He warned the audience about the still limited scope for reductions due to factors such as the strong growth of telecommunications and the non-affordability of green energy initiatives in some sectors and countries. While acknowledging that ICTs can be used to reduce emissions in other sectors, many personal and organizational changes need to be put in place. Finally, he encouraged the development of a standardized methodology to account for the emissions caused by telcos and by customers and a more effective auditing of corporate social responsibility reports.

65. During the discussion, delegates and speakers further commented on the way forward to decreasing GHG emissions and improving the measurement of ICT impact. The participant from Intel suggested two steps: to increase broadband via optical fiber infrastructure and to increase teleconferencing. However, this would require a higher broadband penetration, especially in developing countries. Delegates also encouraged ITU to continue working on a methodology that can be used by all countries in order to measure energy emissions by companies. It was also recommended that company reports on emissions be publicly available and that data should be harmonized.

Concluding session

66. During the concluding session, the Chair of WTIM, H.E. Lamia Chaffai Sghaier, Secretary of State of the Ministry of Communication Technologies of Tunisia, presented the draft conclusions and recommendations of the meeting. There was a lively debate and delegates provided constructive comments on various parts of the text. Annex 1 presents the final version of the conclusions and recommendations as agreed by the meeting.

67. Before moving towards the closing of the meeting, the delegate of Mauritius announced that his country was offering to host the next (9th) WTIM in December 2011, which was applauded by the participants.

68. In her closing remarks, H.E. Lamia Chaffai thanked the ITU for inviting her to Chair this important meeting, which had been an invaluable experience for her. She also thanked the participants, speakers and moderators for their active contributions to make the WTIM a useful and interesting event.

69. Mr Sami Al Basheer Al Morshid, Director of ITU/BDT, formally closed the meeting. He congratulated the participants to a successful event and commended the agreed conclusions, which reflect the importance, diversity and depth of the discussions. He thanked the Chair for her excellent conduct of the meeting and for having accepted the invitation to come to Geneva and preside over the conference. He also thanked other agencies for their cooperation, especially the members of the Partnership on Measuring ICT for Development. Finally, he confirmed ITU's commitment to continue to work closely with Member States to assist them in their efforts to collect data and measure the information society.

ANNEX

8th World Telecommunication/ICT Indicators Meeting
Geneva, 24-26 November 2010

Conclusions and recommendations

Presented by the Chair

1. The 8th World Telecommunication/ICT Indicators Meeting (WTIM) focused on the measurement aspects of seven topics: impacts of ICT; household ICT access and individual ICT use; ICT infrastructure and access indicators, in particular broadband; e-government; the WSIS targets; child online safety; and ICTs and climate change.

2. Based on the WTIM presentations and discussions, the following conclusions and recommendations are made.

1. Measuring the impact of ICTs

3. Delegates agreed that measuring the impact of ICTs is essential to inform and guide governments and the private sector in both developed and developing countries in their efforts to implement the most effective ICT policies and investments. The joint ITU-OECD-EU session provided important insight into available results from both macro and micro-level research, which point to a positive impact of ICTs on economic growth, productivity, employment and competitiveness; this includes the economic impact of broadband and the impact of mobile phones.

4. A number of presentations underscored the importance of intangible capital/assets, which play an important role when it comes to the impact of ICTs. Further work is needed to identify ways and means to measure intangible assets and develop appropriate indicators. The contribution of Internet use to productivity can be substantial but further research is required to measure it.

5. Detailed country-level data are indispensable in order to carry out meaningful ICT impact analyses. Acknowledging the fact that the cost of producing data is lower than the cost of implementing wrong policies, the meeting recommends a number of indicators that are key to measuring the economic impact, including - among others - indicators on (fixed and wireless) broadband, ICT investments, the ICT producing sector, ICTs in households, ICTs in business, ICT skills, indicators related to intangible assets, research and development, input-output matrices and employment data. The need for survey-based data was highlighted, in particular for measuring the impact of mobile telephony. Other useful suggestions include the collection of national data at a more disaggregated level and the need for time series data to monitor impact over time.

6. To date, a significant amount of research work has been carried out on measuring the economic impact of ICTs, but several delegates mentioned that not enough is known yet about the social and environmental impact, as well as the negative impact of ICTs. The meeting recommends that further work should be carried out on those aspects.

7. Finally, the meeting recognized that the international community plays an important role in measuring ICT impact, especially the OECD, the EU and ITU as well as the Partnership on Measuring ICT for Development. ITU and its partners should continue to address the issue of measuring ICT impact, and advocate the collection of relevant indicators.

2. Measuring household ICT access and individual ICT use

8. Collecting ICT statistics via household surveys is one key element in measuring the impact of ICTs and the only way to obtain data on the particular socio-economic and demographic characteristics for both households and individuals. The meeting recommends the collection of ICT statistics through household surveys based on the internationally agreed core list of ICT indicators.

9. The core indicators are a minimum recommended basis. Countries are also encouraged to include additional indicators in households surveys, which are needed to guide and monitor policy making. Important issues that can also be monitored are security and trust in the Internet, civil and political participation, use of e-health services, and access barriers, among others.

10. Challenges related to the indicator on Internet users were highlighted in the session. The meeting recommends collecting information on the use of Internet by individuals via household surveys. In this regard, it is recommended to take into account to the extent possible the entire population.

11. While supply side indicators – collected primarily by telecommunication operators – are important in documenting the spread of telecommunication networks and services, they are limited in terms of measuring the actual demand. In developing countries, the indicator on Internet use by individuals is often estimated from fixed (wired) Internet subscriptions. However, it is recognized that estimates based on these subscription data have limitations, especially if they do not take into account Internet users that access via wireless technologies. Countries are therefore strongly encouraged to obtain the data on Internet users from surveys on household ICT access and individual ICT use.

3. ICT Infrastructure and Access Indicators

3.1. Expert Group on Telecommunication/ICT Indicators (EGTI)

12. The meeting recognized the excellent work of the EGTI, under the chairmanship of Denmark, in revising the telecom/ICT indicators and harmonizing definitions in accordance with other international organizations. The meeting recommends that the mandate of the EGTI should continue in order to discuss new indicators related to tariffs, bundled services, quality of service, wireless broadband indicators, indicators related to convergence and other new indicators, as well as the ITU composite index.

13. National regulatory agencies and sector ministries collect telecommunication/ICT data directly from operators and ISPs and aggregate them at country level. The meeting agreed to encourage operators and service providers to participate in the work of the EGTI by sharing their experiences and technical expertise.

14. Countries provide telecommunication/ICT statistics to a number of international agencies. It is important that the definition of indicators is harmonized at the international level to avoid additional work to countries. The meeting recognized the importance of maintaining the participation of international and regional organizations in the EGTI. In this context, ITU should continue to work with OECD and the EU to harmonize the definitions, in cooperation with Member States.

3.2 ITU Handbook on the collection of telecommunication/ICT statistics

15. The revised ITU Handbook on the collection of telecommunication/ICT statistics will be a valuable tool for national and international collection of administrative data on telecom/ICT Statistics. The meeting encourages ITU to continue working towards the improvement of the current draft Handbook and to include new indicators as they become available.

16. To improve the availability, quality and comparability of administrative data on telecommunication/ICT statistics, the meeting encourages countries to use the Handbook in their national data collections.

17. Regional meetings and capacity building workshops dedicated to the Handbook are important in sharing country experiences and challenges. In addition, it will help clarify issues related to the definition of indicators included in the Handbook. The meeting suggests conducting regional capacity building workshops to help countries who may face difficulty in collecting the data.

18. A number of countries have collected data on fixed (wired) and wireless broadband indicators. The experiences and challenges faced during the data collection by countries will help improve future data collections and definition of the indicators. The meeting encourages countries to share their experiences related to the collection of fixed (wired) and wireless broadband indicators.

19. In some countries, operators are reluctant to provide the data to regulators or ministries due to concerns about confidentiality of the data. The meeting highlighted the importance of assuring operators about confidentiality of the data collected. Legal provisions for data collection may be

used when requesting data, while ensuring that the data will be disseminated at the country level.

4. Partnership on Measuring ICT for Development: measuring e-government and the WSIS targets

20. The sessions organized in cooperation with the Partnership on Measuring ICT for Development[1] highlighted the importance of the work of the Partnership in terms of guiding countries in their data collection efforts and in helping produce internationally comparable ICT statistics. The meeting recommends that the Partnership should continue its work in the area of ICT measurement and the harmonization of international ICT indicators, definitions, and methodologies, as well as providing technical assistance on ICT measurement to developing countries. The meeting acknowledges the Partnership's efforts to expand its work to other areas of ICT measurement and to collaborate with other organizations, as well as external experts and members of the WSIS community.

4.1 Development and collection of e-government indicators

21. The meeting welcomes the work of the Partnership Task Group on e-government (TGEG) in developing a core list of indicators on e-government and its proposed way forward. Following the meeting, the TGEG will continue its work, including on definitions and model questions. The list will eventually be added to the Partnership's core list of indicators, as guidance for countries. The finalized list of e-government indicators should be submitted for consideration to the UN Statistical Commission. The Partnership demand side indicators concerning the use of e-government services by businesses and individuals should be reviewed and possibly updated.

22. The core list of e-government indicators will be open for comments[2] until the end of 2010 and then finalized by the TGEG. Based on the recommendations and the list of e-government indicators developed by the Partnership, all countries are encouraged to collect data on e-government.

4.2 Measuring the WSIS targets

23. The meeting recognizes the Partnership's endeavors to address and measure the WSIS targets, which include a number of new areas, such as e-health. It recognizes the usefulness of the Partnership's proposed indicators to measure the WSIS targets. The indicators will be reviewed and finalized during the first quarter of 2011 and will provide the basis for a more detailed

[1] Current members of the Partnership are the International Telecommunication Union (ITU); the Organisation for Economic Co-operation and Development (OECD); the United Nations Conference on Trade and Development (UNCTAD); the United Nations Educational, Scientific and Cultural Organization's Institute for Statistics (UIS); the United Nations Economic Commission for Latin America and the Caribbean (UNECLAC); the United Nations Economic and Social Commission for Western Asia (UNESCWA); the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP); the United Nations Economic Commission for Africa (UNECA); the UN Department of Economic and Social Affairs (UN-DESA); Eurostat; and the World Bank.

[2] Comments should be sent to itca@uneca.org

framework document, which will address methodological issues and include definitions, and model questions.

24. The document will be open for comments until the end of 2010[3] and then finalized by the Partnership Task Group on Measuring the WSIS targets.

25. Once finalized, the meeting encourages countries to use the framework document and the indicators proposed to monitor the WSIS targets as a basis for tracking progress towards the WSIS targets until (at least) 2015. This will help countries to see how they are moving towards becoming information societies and making progress towards the WSIS targets

26. The meeting welcomed the project to construct indicators of linguistic diversity on the Internet and endorses efforts to measure this important aspect of the Information Society. It suggests that the Partnership through its Task Group on Measuring the WSIS Targets, become involved in this project to enhance the international harmonization of indicators to measure linguistic diversity.

27. The meeting also encourages the different members of the Partnership to continuously improve and refine the existing indicators, including through cooperation with national and regional experts from academia, the private sector, as well as non-governmental organizations. It acknowledges ITU's efforts to improve data on the number of estimated Internet users and at the same time encourages countries to collect the Internet user indicator through surveys on household ICT access and individual ICT use.

5. Measuring child online safety

28. Child online safety is becoming increasingly important with the increasing participation of children the Internet/web and its social networking sites. The meeting recommends that child online safety needs to be monitored to reduce the related risks and threats for children. The availability of measurable and comparable indicators is critical in this regard.

29. The meeting welcomes the ITU Child Online Protection (COP) statistical framework as a useful document that provides an overall framework and indicators for measuring COP, which could be applied internationally. The meeting recommends that national and international organizations involved in child online safety as well as countries are encouraged to use the framework as a basis for their COP measurement efforts. It is proposed that the document should be reviewed regularly, in cooperation with relevant stakeholders, as more countries gather experience that can be used a basis for revision.

[3] Comments should be posted on http://groups.itu.int/wsis-targets or sent to indicators@itu.int.

30. The experiences from the EU Kids Online project as well as from countries that have piloted COP measurement are useful as it is a new subject and the proposed indicators need to be tested; their experiences should be taken into consideration in future revisions of the indicators.

6. Measuring ICT and climate change

31. ICTs are a cross-cutting technology that can help drive the deep transformation needed in the global effort to combat climate change by driving down emissions in the ICT sector itself through the more efficient use of current equipment and networks and the introduction of more efficient equipment and -networks; by reducing emissions and enabling the monitoring of and increased energy efficiency in other sectors through, for example, substituting for travel and replacing physical objects by electronic ones (dematerialisation); and by helping Member States address the negative effects of climate change using ICT based systems for monitoring weather and the environment worldwide.

32. The meeting recognizes the necessity to develop concrete and common methodologies, including unified metrics to describe and estimate objectively and transparently the present and future energy consumption and GHG emissions of ICTs over their entire life cycles. The work can start from already existing experience of methodological developments on air emissions in the field of environmental statistics.[4] Delegates welcome the ITU work on climate change, including the work by ITU-T Study Group 5, as Lead Study Group on ICT and Climate Change, which has developed Recommendation L.1400 "Overview and general principles of methodologies for assessing the environmental impact of ICT". This presents the general principles on how to assess the environmental impact of ICT (including impact on greenhouse gas (GHG) emissions) and outlines the different methodologies that are being developed by ITU, including the assessment of the environmental impacts of ICT goods, networks, and services; and the assessment of the environmental impacts of ICT in organizations, ICT projects, cities and countries. In order to minimize the negative effects of ICT and maximize the positive effects, ITU-T Study Group 5 develops methodologies that cover both the positive and negative environmental aspects of ICT.

33. Assessing the impact of ICTs on climate change is an emerging area that needs to be further improved, including the calculation and collection of data that will help monitor environmental impacts along the complete ICT devices and services life cycles, including embedded GHG emissions and GHG emissions during use and end of life phases and evaluate the potential of "smart" ICT solutions and management practices (e.g. smart transport or building management systems) to reduce energy consumption and GHG emissions.

34. The meeting agrees that overall there is a need to collect data to assess and improve environmental performance, enhance energy efficiency and resource management. An

[4] For example, the Manual on air emissions accounts, ISBN 978-92-79-12205-7.

increasing number of countries and companies are being requested to report on ICT-related GHG emissions worldwide. The meeting recommends that Member States should collect data from all telecommunications operators and service providers in order to publish the total Green House Gas (GHG) emissions. ITU should consider collecting these data and setting up a global database on ICT-related GHG emissions. ITU Member States and Sector Members are encouraged to engage actively in this process.