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Commission on Science and Technology for Development
Seventeenth session
Geneva, 12–16 May 2014

Intersessional Panel Meeting on

Science, Technology and Innovation (STI) for the Post-2015 Development Agenda

ICTs for Inclusive Social and Economic Development

Follow-up to the World Summit on the Information Society

State Department
Washington, D.C., 2–4 December 2013

Draft summary report prepared by the UNCTAD secretariat[*]

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[*] This report summarizes the intersessional panel's discussions; it does not necessarily reflect the views of the UNCTAD secretariat. This document has not been formally edited.

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I.   Introduction

1.   At its sixteenth session held in May 2013, the Commission on Science and Technology for Development (CSTD) selected the following themes for its 2013–2014 Inter-sessional Panel:

• Science, technology and innovation (STI) for the post-2015 development agenda

• ICTs for inclusive social and economic development

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

2.   In order to address these themes, a panel meeting was organized by the CSTD Secretariat together with the current Chair, Mr. Andrew Reynolds, and the United States Department of State, in Washington, D.C., United States of America, from 2 to 4 December 2013. The aim of the panel meeting was to analyse the various issues related to the substantive themes, with a view to contributing to the deliberations of the Commission at its seventeenth session, scheduled for May 2014.

II.   Organization of the work

3.   The CSTD panel meeting was attended by members of the Commission, representatives of international organizations, representatives of non-governmental organizations in consultative status with the Economic and Social Council, representatives of civil society, the technical and academic community, business entities and other observers.[1]

4.   The documentation for the meeting consisted of papers prepared by the CSTD Secretariat, presentations and policy papers submitted by the participants.[2]

III.   Opening Session

5.   The opening session of the panel began with welcoming remarks from the Chairman, followed by two distinguished speakers. The first speaker[3] highlighted a notable concept consisting of five new rules on the development model and how the leverage of science, technology and innovation should be used. These are: (1) opportunity and not assistance – realizing what it means to be a donor and to work with other countries to tackle developmental challenges; (2) Understanding demand – science and technology for development has to be tied into local needs. It is important to appreciate, for example, whether developing countries should be investing in astronomy or in clean water to address global challenges; (3) Data and connectivity as critical parts of infrastructure – addressing the gulf in connectivity and access to affordable data between countries and regions; (4) Problem oriented education, research and innovation – the idea of using the problem-based approach to define educational curriculums and harnessing science and technology, in order to address many pressing issues around the world; (5) Rethinking assumptions – how do we create the space for creativity within our countries and systems to allow us to address global challenges?

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[1] See the annex to the present report for a complete list of participants.

[2] For all meeting documents, see http://unctad.org/en/pages/MeetingDetails.aspx?meetingid=387.

[3] Dr. Alex Dehgan, USAID.

6.   The second speaker[4] echoed the importance of information and communications technology infrastructure as being critical for the dissemination of innovation and knowledge. The internet has become a springboard for human development worldwide – growing economies, enabling social and democratic discourse, increasing collaboration between people in all nations and catalysing innovation. The progress made towards the Millennium Development Goals would be unimaginable without the internet, and the contributions it is making in increasing food security, developing natural resources, managing infrastructure and improving health services for hundreds of millions of people around the world. The internet's universal deployment will depend on us enabling and encouraging private investment in technology and infrastructure that will drive down the cost of access. The Commission has regularly identified this issue in the past and it should continue to do so in the future.

Discussion

7.   In relation to the five new rules to the development model, and with respect to the third rule in particular on data and connectivity, one participant made a comment on the concept of open data being very important to the development of science in general. Experimental data that has been financed by tax payer's money should be made open to the public if there are no other considerations such as intellectual property rights. Linking open data as a driver for small businesses in developing countries is critical. A speaker agreed and confirmed that this is a policy that is widely supported. The speaker gave the example of the Government of India which has established initiatives such as open-source drugs discovery – an open platform involving 5,000 scientists from over a hundred countries around the world developing new drugs and new mechanisms that are made available for anyone to use. This strengthened the notion that science is becoming much more collaborative and involves many scientists working together. The participant who made the initial comment added that it could perhaps fall upon the United Nations University to also deal with these issues.

8.   Another participant asked the question on how the understanding and awareness amongst governments around the world could be increased, at the parliamentarian level, about the importance of investment in science and technology, and what the Commission could do to contribute to that. A speaker confirmed that there is certainly a real need to connect parliamentarians in all countries, to the community of science and technology that are based within the constituencies. The speaker also suggested that in those places where there is no science and technology community, we have to help develop one, since all politicians are interested in bringing assets and resources to those people that they serve and to meet the interests of their constituencies. It is ultimately of mutual interest amongst politicians, practitioners and other stakeholders to bring this issue to the fore and make it an inclusive process involving women and clusters of communities, in order to realise the benefits of having an active interaction with science and technology. Another speaker also made the point that the issue of investment is of great concern at a time of budget cuts. The important factors that were stated here were to point out to policy makers how science and technology could improve the efficacy of our efforts, improve the speed at which we can achieve results, decrease the cost to tax-payers, and improves sustainability and scale for the benefit of society.

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[4] H.E. Ambassador Daniel Sepulveda, United States Department of State.

IV. Theme 1
Science, Technology and Innovation (STI) for the Post-2015 Development Agenda

9.   The Director of UNCTAD's Division on Technology and Logistics[5] provided the panel with a background on STI for development and how they integrate with the work taking place at the United Nations on the post-2015 development agenda. Two of the main processes in place were the High-Level Panel of Eminent Persons, and the UN Secretary General's Task team on the post-2015 partnership for development. She emphasised that the work of the CSTD was by essence, a key element of the discussions taking place within the UN system on the post-2015 development agenda. A decade of work on the priority themes by the CSTD contributed to the discussions in this regard. Some questions to examine for the panel included: (1) what is the place for STI in the post-2015 development agenda; (2) where do we stand now; (3) how can the rationale for it be improved; and (4) what are the critical issues in the post-2015 context? The speaker highlighted the issues of how to finance technological know-how and innovation capacity as areas which required some deliberation, as well as the partnerships that the CSTD could build in order to promote its message.

10.   The CSTD Secretariat[6] introduced a paper on the first priority theme. Beginning with a preamble which highlighted the important role of STI in development, the presentation outlined the work of the CSTD during the past decade. The priority theme papers that were presented and deliberated by experts and members of the CSTD Panels and Sessions over the past ten years focused on five thematic areas of work. These were:

(a)   Science, technology and innovation for the MDGs, and bridging the technological divide;

(b)   Science, technology and innovation to meet social goals, such as health, agriculture and energy;

(c)   Science, technology and innovation for capacity building, particularly through education and research;

(d)   ICTs and the digital divide;

(e)   The impact of new technologies on development.

11.   The role of STI in addressing a wide array of social and economic challenges for development had thereby been substantially elaborated. For example, STI was extremely pertinent to attaining sustainable cities and addressing the urban divide. This did not only relate to high-tech; but also low-tech applications and innovation could be implemented in harmony with high-tech facilities according to the needs of rapidly growing cities.

12.   On new and emerging technologies for development, ICTs could enhance education when combined with efforts to facilitate human development in related areas, such as ICT literacy training, curriculum reviews and maintaining teaching quality. Open Access and virtual science libraries were two ways in which ICTs can be harnessed to overcome barriers to the building and dissemination of the global stock of knowledge, particularly in developing countries. Geographic information systems (GIS) could enhance education and offer long term impacts on society and policy-making.

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[5] Ms. Anne Miroux, UNCTAD.
[6] Ms. Padmashree Gehl Sampath, UNCTAD.

13.   One speaker[7] provided a summary of the *Global Trends 2030 report*[8] and suggested that tectonic shifts were taking place simultaneously in terms of technological advancement and socio-economic development. This included developments such as the growth of the global middle class; wider access to "lethal and disruptive technologies"; a definitive shift of economic power to the East and South; unprecedented and widespread ageing; urbanisation; food and water pressures; and energy efficiency. The ways and means to address these issues in a sustainable manner undoubtedly involved the application of science and technology. In addition, the gender gap in education and health had narrowed. The speaker also suggested that the middle class would experience a sense of insecurity as a result of the very technologies that had presented them with employment opportunities up until now. This was due to the speed at which technology was developing and the likelihood that it would replace many jobs. It was a phenomenon taking place in the developed world, but was also in the developing world.

14.   Technological abundance, and not scarcity, was the current norm in the global economy.[9] This has required a different way of thinking for the Commission and how it addresses sustainability considerations in development. A similar example is the way that Rio+20 attempted to make the transition from normative statements to a more operationally active approach which is driven by a better understanding of issues like green technologies and green innovation. The Commission has indeed also made this transition during the last decade; things stand out in terms of the transition towards the operational needs for developing countries. Firstly, the transition entails a shift away from the classical focus on allocating a certain proportion of GDP towards research and development spending, which has been the current basis for debate in the United Nations system around science and technology. Secondly, there is a need to focus on harnessing existing technologies in an age of technological abundance. This requires the following new constituencies: (a) engaging the engineering community since engineering will become a much more significant part of the science and technology debate; and (b) a greater link with the private sector.

15.   One speaker[10] outlined the seven future development trends for which science and technology plays a paramount role.[11] The operational implications of these trends include the enhanced use of futures analysis and methods like scenario planning; adopting a system-based approach leading to more cross-sectional planning; intensifying public engagement with faculty, students and other problem-solvers; and boosting public-private partnerships.

16.   The links between STI and MDGs were briefly highlighted.[12] STI indeed generates knowledge spill-over between countries, firms, and industries and therefore impacts growth. It provides opportunities to leapfrog intermediate development stages. The role of STI towards the MDGs includes reducing poverty, increasing food security, improving health and education. STI also addresses energy efficiency, waste reduction, and mitigating climate change. Advances in science and technology through education as well as coinciding economic growth also often improve the prospects for peace and security. Furthermore, a growing middle class attuned to STI features strengthens governance and accountability. Therefore, STI is an important tool and enabler for the advancement of

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[7] Mr. Matthew Burrows, Strategic Foresight Initiative.
[8] "Global Trends 2030: Alternative Worlds, a publication of the National Intelligence Council." See http://globaltrends2030.files.wordpress.com/2012/11/global-trends-2030-november2012.pdf.
[9] Prof. Calestous Juma, Harvard Kennedy School.
[10] Mr. Steven Gale, USAID.
[11] See *The* Future *Can't Wait*, http://www.usaid.gov/sites/default/files/documents/15396/TheFutureCantWait.pdf.
[12] Mr. Neil Pierre, United Nations Department of Economic and Social Affairs.

sustainable development – economic, social and environmental. The speaker also emphasised the use of culture as an enabler and driver of sustainable development, which could be promoted through the application of STI within the creative industries.

17.   On the issue of gender and STI, one speaker[13] emphasised that any STI policy should not promote inequality and should foster inclusion for all. There is a disproportionate burden on women in various societal functions such as providing food security and energy efficiency for their families. The critical role of STI in addressing women's needs cannot be emphasised enough. Beyond supporting the STI workforce, women need education and educational opportunities to access scientific knowledge to advance the lives of their families and communities and to integrate knowledge from STI with local knowledge systems. Policymakers need STI literacy and access to STI professionals so that research can inform decision making. They need a better understanding of the means for applying a gender lens in STI for development. The fact that 13 out of 26 members of the United Nations Secretary General's Science Advisory Board are women is a testament to this. Furthermore, the speaker introduced Gender InSITE, a collaboration of NGOs and intergovernmental organisations that aims to bring vision and clarity to the post-2015 development agenda from a gender dimension.

18.   It was suggested that fundamental foundations include sound STI policies, human and institutional capacity-building, enhancing popular participation and support, and transformations in higher education.[14] It requires new multi-sector approaches to the integration of research, education, and local economic development. This calls for new models of international collaboration. In addition to the SDGs, we should also set separate goals that may not necessarily be quantifiable, such as "harnessing and enabling STI capacity worldwide". For UNESCO, STI for sustainable development spans a broad range of science and engineering. STI for sustainable development must include a strong focus on poverty eradication through innovation, entrepreneurship and job creation.

19.   The Inter-American Development Bank (IDB) considers broadband as a trigger for innovation. A speaker[15] suggested that broadband contributes to the process of inclusiveness and productivity of a country. The IDB has been working on broadband ecosystems which involve an enabling infrastructure for all to participate. Broadband connectivity is a priority for many countries in Latin America to narrow the digital divide. It is a cross-sectoral issue which involves various ministries, private enterprises and other stakeholders. New and innovative ways need to be created, taking into account the

20.   A speaker[16] made reference to the 2013 Africa MDGs report.[17] The progress made by Africa towards the MDGs was underpinned by science and technology, among other things. It started from a very low base but has been able to accomplish tremendous achievements particularly in education levels and women empowerment. Some countries within the continent had made further strides than others in various areas of the MDGs. Food insecurity remained a great challenge and regional programmes to tackle this have demonstrated that it is not simply an agricultural issue, but a multi-sector issue which requires coordination. Maternal health and child mortality rates were also concerns which largely remain. On the other hand, the African region was the second fastest growing economic region after East Asia and entrepreneurial opportunities have grown in parallel with the middle class population. STI policies were very much central to the process of not

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[13] Ms. Shirley M. Malcom, AAAS.
[14] Ms. Gretchen Kalonji, UNESCO.
[15] Mr. Antonio Garcia Zaballos, IDB.
[16] Ms. Aida Opoku-Mensah, UNECA.
[17] See http://www.uneca.org/sites/default/files/publications/mdgreport2013_eng.pdf.

only facilitating growth, but also addressing the remaining challenges. Structural transformation required a lesser dependency on primary commodities. The rationale for science and technology in underpinning this was the consideration of how scientific education and research and development could enable diversification of markets.

21.   Another speaker[18] made the point that the previous focus for development was on humanitarian relief and that was the reason why STI for development was left behind. This was in contrast to the development trajectory taken by countries of the North, where STI was the key for development through industrialisation. Evidence had emerged from South-East Asia that STI was the key for the rapid progress that took place there. This was somehow abandoned in regions such as Africa. In the United Republic of Tanzania, the Government had been investing more into educational enrolment and research infrastructure. The agricultural sector had experienced significant focus in recent years. Some researchers had started to develop poultry vaccines based on local strengths, as well as a number of seed varieties. A number of companies had also been established as a result of incubation initiatives in the ICT sector. Science and technology should indeed be an enabler for development, and would consequently help the transition away from relief models of development. Central repositories of organisations, whereby best practices could be shared, were currently missing.

22.   The representative of Lesotho presented to the Commission an update of the outcomes of Lesotho's STIP Review. Key recommendations included setting up a coordinating mechanism for STI (STI Steering Committee), establishing a Service Window (STI Hub), and creating an Innovation Fund. Implementation of the recommendations of the STIP Review included the following actions:

(a)   Creation of the National Strategic Development Plan of 2012;

(b)   Enhancing the skills base, technology adoption and foundation for innovation;

(c)   Enhancing technology transfer, diffusion and use through developing local intellectual property rights (IPRs) and establishing science, technology and innovation centres;

(d)   Developing an innovation culture and capacity for scientific research (establishing a Science and Technology Council, developing a national research and development agenda, improving infrastructure and facilities for science and technology with tertiary institutions.

23.   The representative of Oman outlined the national strategy development for research and innovation. As part of this endeavour, the five-year plan between 2011 and 2016 included establishing the following six initiatives: e-services and IT infrastructure, research programmes, innovation programmes, science and technology parks, promotion of awareness of research and innovation, and development of related policies and strategies.

24.   Oman was in the midst of building its national innovation system through the above initiatives and investments, in order to meet its vision of becoming an innovation hub in the Gulf region. Latest developments in research include new ways of oil extraction in harsh environments in the region, and how to manage smart oil fields through the use of ICTs.

25.   The representative of Bulgaria delivered a statement to the Commission on the recent developments in the national landscape for science and technology. The Bulgarian National Programme of Reforms, implementing the Europe 2020 Strategy for smart,

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[18] Dr. Hassan Mshinda, COSTECH.

sustainable and inclusive growth, was last updated in 2012. It focuses on harnessing STI to deal with economic recession and foster growth. The programme aims at rapidly increasing public expenditure for scientific research and innovation to 1.5 per cent of GDP, in compliance with the overall the European Union target of achieving 3 per cent of GDP by 2020.

26.   Bulgaria's National Strategy for Scientific Research 2020 focused on the creation of a modern science infrastructure, based on three main factors – education, research and innovation. It set the following national priorities for scientific research within the context of Bulgaria's international specialisation: energy, energy efficiency and transport; development of "green" eco-technologies ensuring ecologically sound patterns of production and consumption; health, quality of life, biotechnologies and ecologically clean food production; cultural heritage; and development of ICTs.

27.   A draft law on innovation was under discussion in Bulgaria, to streamline the country's existing system of stimulating creativity and innovation.

28.   The penultimate speaker for the day's theme[19] reiterated some key observations for a successful STI policy. In order for progress to be made, partnerships between industry, academia and governments must be promoted. Funding for major initiatives such as ubiquitous high-quality Internet connectivity will only come from industry, in partnership with academia and governments. Within the context of the Americas, but also elsewhere, vocational education and training must be expanded for development. Mobility of engineers must also be achieved, just as broadband interconnectivity.

29.   The final speaker for the day[20] talked about the African Science Academies that were now completing intensive 10-year cooperation plans with the support of the Gates Foundation and partner academies around the world. African Academies were providing authoritative evidence and advice on a wide range of challenges, such as HIV/AIDS, energy, neonatal mortality, water, and nutrition and agriculture. Quality-based institutions were increasingly important and academies of the world were addressing key issues, including scientific responsibility. There was a great need for science to have a clear articulation of its responsibility and role within societies around the world.

Discussion

30.   One participant posed a question on the subject of unemployment as a result of rapid developments in technology. More specifically, an elaboration was sought on how to deal with the deindustrialisation trend especially in Northern countries; the migration of industries to the East; the impact on unemployment rates, coupled with the ageing of the population. A speaker agreed that there are no easy solutions and that over time, it is expected that new jobs will be created after an initial lag where there will be structural unemployment.

31.   Given the diminishing gap between North and South, another speaker suggested that the ability of the North to maintain its monopoly power over technologies and retain intellectual property rights for a longer time was being reduced. Technological catch-up was of course a positive development, but how could we address this problem as a community without debilitating the prospects of further advancements? A speaker agreed that there was a delicate balance to be made between protecting intellectual property rights and spurring further innovations. At the start of a technological revolution, there were often low barriers to entry, but this quickly changes as advanced knowledge becomes acquired.

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[19] Dr. Reginald I. Vachon, EFTA.
[20] Mr. John Boright, United States NAS.

Another speaker added that new industries will emerge in areas that have not been anticipated. Intellectual property rights might not play such a big role in these. An example of this is the mobile banking revolution where there are very few patents involved. Rather, the challenge is in new forms of enterprise development, ventures, partnerships and collaboration. We need to think about technological advancement in terms of an ecosystem rather than a race to the end, and promote technological diversity and adaptation of new technology in new markets.

32.   A participant asked about the role of basic research, either in contrast or in alignment with engineering. A speaker responded by suggesting that basic research could expand in two ways. Firstly, through research and development activities that explores new frontiers of knowledge. Secondly, through basic research that is triggered by problem-solving. Medicine was a good example for this. We did not know that we had muscles in our body until they were discovered through problem-solving, through new surgical techniques and new imaging technology. The result could be that the classical dichotomy that exists between basic and applied research will disappear.

33.   Another participant posed the question to the Panel on what the appropriate level of investment should be for STI in development and whether an earlier target of 2 per cent of GDP to be devoted to research and development was the right level of investment by a country. One speaker warned against this type of investment, just as an earlier speaker mentioned in a presentation. Previous declarations were made by African countries to commit 1per cent of GDP towards research and development but these had failed to materialize. Implementation of such commitments had been a problem for many countries, particularly in Africa. Also, the computation of types and levels of such investments had been problematic. Another speaker commented that varying levels of resources between countries in Africa has made it difficult to achieve desired targets. There was a huge difference between 1per cent of South Africa's GDP and 1per cent of the United Republic of Tanzania's GDP in terms of research and development expenditure. Furthermore, the vast majority of science institutions in Africa were largely dependent on external resources. This also indicated the limitations that governments have in their resource allocation abilities. So rather than questions on levels of GDP to be invested in research and development, the issue should be focused more on what exactly needed to be done in each country according to local needs.

34.   The question of how one could be more imaginative in research was posed to the panel. Having the research inform the operation was perhaps more interesting and easier in terms of resource allocation. The emphasis should perhaps be on getting more research done for less. Another participant commented that funding in development had often gone towards humanitarian assistance rather than science and technology. These humanitarian problems however, had often reoccurred in countries, despite this assistance. How do we strengthen development models to build up resilience to recover quickly from disasters? A speaker emphasized that while humanitarian assistance was very important, all of the MDGs could be linked to science and technology applications in one way or another. Therefore, a focus in this area could contribute to attaining long-term solutions. Another speaker pointed out the issue of environmental resilience was a key priority for Africa in particular, and that sustainable management of environmental resources was necessary. This resilience had to be underpinned by science and technology.

35.   In relation to engaging with parliamentarians on issues related to science and technology for development, a speaker commented that there was a huge disconnect, largely in developing countries, between the scientific community and the policymaking community. On the other end of the scale, the general public was hardly aware of how the work of the scientific community impacted their everyday lives.

36.   One participant spoke of the need to have women involved in different areas of science and technology for development, with particular attention going into the areas where they were poorly represented. For example, the number of women involved in agricultural research in Africa was around 18 per cent, despite the fact that the participation rate women in agriculture in Africa was much higher than this rate.

V.   Theme 2
ICTs for Inclusive Social and Economic Development

37.   The CSTD secretariat[21] presented a paper on the second priority theme. Despite the fact that access to ICTs had been improving in developing countries mainly due to mobile phones, the digital divide was changing its nature, from ICT access to how ICTs were used. Important new applications were creating a rift between those who had the ability to benefit from them, and those who were excluded from promoting development through their use. In this context, the presentation identified five new trends in ICTs: datafication, big data and big data analysis, cloud computing, the Internet of things and smart systems.

38.   These new trends in ICTs brought several benefits. They had the potential of undertaking macro and micro-level analysis to help diagnose issues and patterns in the areas of health, crime, resource consumption and disaster risk management. They also opened up new avenues for business innovation and efficient government.

39.   On the other hand, the new generation of ICT solutions also brought challenges and risks. For example, they relied on high infrastructure investments by service providers. They created the risk of commercial control over market forecasting capabilities, and new privacy concerns.

40.   It was imperative to adjust development policies to ensure that ICTs were an integral part of these. ICTs should not be seen from the infrastructure angle only. In order to overcome innovation constraints in economies, new applications of ICTs would need to be included in national and international policies.

41.   One speaker[22] summarized the second part of the paper on the priority theme. He mentioned that the growing capabilities of communications coupled with increased processing power of computing led to the five new trends mentioned in the issues paper. In an age of abundance in data, communications, and computing, it had become cheaper, faster and more efficient to use ICTs. These trends would also need to be put in the context of the long-term evolution of information society. In accordance with Moore's Law,[23] one could expect a 100-fold increase in computing power in 15 years. The continuous increase in communications and computing power resulted in a rapidly evolving ICT landscape. Key themes of ICT's gradually changed, which had implications that needed to be taken into account in the post-2015 development agenda.

42.   Meanwhile, few countries now had the capability to benefit from new trends like big data analysis. While emerging countries were likely to narrow the digital divide, least developed countries (LDCs) risked being further detached from the rest of the world. Three major constraints led to the digital divide:

        (a)   Infrastructure (redundancy, power, infrastructure sharing);

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[21] Ms. Padmashree Gehl Sampath, Chief, Science and Technology Section, UNCTAD.
[22] Mr. David Souter, ICT Development Associates.
[23] The number of transistors on integrated circuits doubling approximately every two year.

(b)   Legal/regulatory framework in four areas: ecommerce, business innovation, common standards, data protection/cybersecurity;

(c)   Human development capacities, resources, institutions.

43.   Although ICTs contributed to achieving the MDGs and led to profound systemic changes in economy, society and culture, there was little coverage on their systemic impact in the outcome document of the Rio+20 Conference, the Sustainable Development Solutions Network, or the report of the High Level Panel on the Post-2015 Development Agenda. Going forward, ICTs would be increasingly important in terms of their impact on social and economic change, especially through the new trends mentioned in the issues paper. The potential of ICTs for sustainable development, addressing the needs of development goals, and building knowledge societies would need to be articulated and included in the post-2015 development agenda.

44.   One speaker[24] presented on the developmental impact of ICTs. Information technology in its own was a development agenda, as digital technologies and applications contributed to the economic strength, societal well-being, and effective governance of nations. The mobile ecosystem made a key contribution to economic growth and the creation of jobs, most of which came from emerging countries. On the other hand, there was a funding gap of 1.2 trillion United States dollars for the digital inclusion of the so-called "bottom of the pyramid", which represented 580 million people across the world. This represented a large opportunity and had to be included in the post-2015 development agenda.

45.   The speaker also referred to the "National Readiness Model" of the World Economic Forum, which showed the elements of the ICT ecosystem that needed to be improved in all countries. He outlined the key responsibility of the public sector in establishing a sound legal and regulatory framework, for example through national broadband strategies, universal service funds, TV spectrum allocation, applications and content, as well as closing the urban–rural divide. He underlined the importance of following an ecosystem approach that engages all stakeholders.

46.   Another speaker[25] discussed the topic of spaces of exclusion in ICT for development strategies Inclusive development depended on the inclusiveness of the underlying innovation system. Although ICTs provided huge benefits to human welfare, only part of their potential had been realized, as there were certain spaces of exclusion, so-called "ants in the honey pot". ICT for development consisted of three pillars: hardware production, software production and IT use. So far, the approach of multilateral organizations had been to promote IT use on a needs basis, which helped to lift 10 per cent of the global population out of poverty since 1990. However, what was really needed was a capability-based approach related to the three pillars that rested on the foundations of learning, innovation and competence-building systems.

47.   In order to identify the spaces of exclusion in ICTs, they had to be explored at the micro level, looking at different sectors and technologies. For instance, UNCTAD's *Information Economy Report 2012*[26] addressed exclusion in software production. He also underlined the importance of understanding different categories of exclusion, whether they were due to policies directly aimed at bringing about exclusion, or indirect consequences of policies.

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[24] Mr. Darrell Owen, USAID.
[25] Mr. K.J. Joseph, Centre for Development Studies, India.
[26] http://unctad.org/en/PublicationsLibrary/ier2012_en.pdf.

48.   ICTs in general and recent innovations in particular, by their very nature, enhance efficiency, augment growth and are conducive for fostering inclusion. However, institutional innovations, such as the Information Technology Agreement (ITA) of the World Trade Organization, sometimes did not take into account capacity building and innovation, leading to multiple spaces of exclusion. This was evident from comparisons of the different indicators during the pre-and post-ITA periods. ITA was a tariff-cutting mechanism that did not include learning, innovation and competence building systems. The global production of ICT goods was becoming much more concentrated, while no new countries emerging as big producers. In software, apart from India, no other major players could be counted among developing countries. There was a risk of "subordinated inclusion" in ICTs, leading to new divides between large holders who have the means to benefit from them and those who do not.

49.   The next speaker[27] of the theme talked about the key elements of ICT ecosystems. He pointed out the importance of putting in place structured and formal processes, such as national steering committees, that enjoyed high-level political support, brought in the ideas of multiple stakeholders and established timetables. An ICT "ecosystem approach" ensured comprehensive and coordinated incorporation of all inter-related elements: supply and demand, infrastructure, access, services, devices, policy and regulation, applications, content, capacity-building, digital literacy, funding sources and mechanisms. In the absence of an ICT ecosystem, initiatives like providing laptops to each student may serve no purpose, as it would encounter issues such as connectivity or teacher training. A true ecosystem would include all local stakeholders (public and private, end users, financial sector, NGOs) in the development of ICT policies.

50.   The speaker provided examples to effective policies on ICTs for development from Colombia, Kenya and Indonesia that contained the features he outlined. All three countries had been following an ecosystem approach. Kenya had prepared a strategy document covering several sub-issues, objectives, outcomes and strategies. Colombia's Live Digital Plan included strategic objectives under four categories and had a strong focus on e-government. The broadband plan of Indonesia was under development.

51.   The last part of the presentation was on new approaches and thoughts on innovative financial mechanisms for micro-investment in a network economy that were made possible due to the proliferation of mobile devices. Digital networks could become financial inclusion mechanisms through mobile money and mobile banking for the 75 per cent of people in developing countries who did not enjoy access to a bank. Mobile money (like M-Pesa in Kenya and the United Republic of Tanzania) and crowd-sourced micro-investment were promising ways to finance microentrepreneurs and could complement venture capital funding, universal service funds and micro lending. Likewise, mobile devices and ICTs made it possible to skip middlemen and greatly enhanced the capability to transfer remittances and support microenterprise in home countries. Already, more than 350 billion United States dollars were being transferred annually to developing countries from around 200 million expatriate workers. ICTs transformed the power and opportunity for individuals to financially support small business, charity and disaster relief efforts.

52.   The next speaker[28] provided an overview of the Microsoft 4Afrika Initiative, and focused specifically on projects that harness TV white space for internet connections. In the past year, several TV white space projects[29] were implemented in countries including Kenya, South Africa and the United Republic of Tanzania. National and international

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[27] Mr. David Townsend, DNTA.
[28] Mr. Paul Mitchell, Microsoft.
[29] http://www.microsoft.com/africa/4afrika/white_spaces_project.aspx.

regulation was also following suit, with a regulatory trial in the United Kingdom and the first global summit of the Dynamic Spectrum Alliance in Bangkok.

53.   When it came to ICTs, there was a need to think innovatively in terms of technology, business and regulation and to adopt a mindset of abundance, and not of scarcity, with the intention of creating more than what was currently available. The philosophy of sharing had already enabled the usage of certain radio bands like microwave, Wi-Fi and Bluetooth by entire industries once regulators allowed them. In these terms, unlicensed Wi-Fi networks represented an intellectual shift, by prioritizing sharing. The same should apply for TV spectrum regulation. New business models should be envisaged for communications and TV spectrum ecosystems. Already in the last 24 months, progress had been made in terms of standards. Anyone should be able to access allocated but unused TV bands through new technologies, thereby expanding the ability to utilize existing resources with the sharing mindset.

54.   Microsoft had been operating mainly in parts of Africa that had access to electricity, which represented a relatively small portion of the total population of the continent. In February 2013, Microsoft launched an off-grid project in Kenya (Mawingu Project) to connect Governments, schools and community centres to the internet via solar panels. 18 sites were already up and running, and would be increased to 40 sites soon.

55.   A speaker[30] introduced the theme of patterns of representation on the Internet, with a particular emphasis on the representation of knowledge. ICTs led to radically different ways of knowledge use across the world. Massive patterns of uneven information and knowledge could be observed. As more and more people were getting online and data was becoming increasingly digitized, some places were becoming hubs, while others ended up as peripheries in the knowledge economy. The speaker demonstrated through maps of internet domains, Google indexes and Wikipedia articles that there was huge unevenness of information on the Internet in terms of number of domains per population, amount of content on places, content by language, locally generated content or even content on personalities. These large inequalities were not necessarily linked to differences in internet penetration.

56.   On Wikipedia, a high degree of visibility was afforded to Europe in particular. In terms of content generation, European countries created most of their content in their own language, while the same pattern was not visible in the rest of the world. In some parts of the world, fewer than 5per cent of edits came from local people. These observations, based on the analysis of several layers of information, showed that patterns which existed in the pre-Internet world were merely being amplified on the Internet. Furthermore, the speaker demonstrated with examples that the global knowledge economy was creating new barriers to participation to underrepresented groups, for example through content editing rules on global platforms. Information inequalities were being produced and reproduced through governance systems that regulated content on the Internet.

57.   There was no single, easy answer to address the digital divide, which went beyond basic connectivity. This is why it was imperative to address the broader ICT ecosystem, covering various aspects from reliable infrastructure to local content creation to prevent the amplification of geographic divides on the Internet.

58.   Another speaker[31] presented projects undertaken by his company in various areas in Bangladesh, a country that had made a lot of progress in ICTs for agriculture, education, health, Government, e-commerce and process automation. One of these was on mobile

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[30] Mr. Mark Graham, Oxford Internet Institute.
[31] Mr. Shohorab Ahmed Chowdhury, Synesis IT Ltd., Bangladesh.

health. Eighty per cent of doctors were located in urban areas of Bangladesh. Meanwhile, the mobile phone penetration reached 63per cent of the population. Hence Synesis IT launched a medical call centre with the participation of more than 40 doctors to provide health services to rural areas.

59.   The speaker also shared information on Synesis IT projects on education management information systems, e-government, and addressing urban issues such as water and sewerage. An education portal collected information and produced analytical reports for education policymakers that previously had to be gathered through a manual questionnaire before. Call centres received water and sewerage related complaints from citizens in Dhaka that were routed to local engineers via SMS. Synesis IT had also launched a procurement hub and an SMS-based knowledge dissemination service to facilitate learning for people in rural areas.

60.   A speaker[32] presented highlights of the latest report of the Broadband Commission[33] entitled "State of Broadband 2013: Universalizing Broadband". The Broadband Commission tracked five specific targets annually in the run up to 2015 to measure progress in the world in terms of broadband adoption. These targets were as follows:

        (a)   Making broadband policy universal: By 2015, all countries should have a national broadband plan or strategy or include broadband in Universal Access Service Definitions;

        (b)   Making broadband affordable: By 2015, entry-level broadband services should be made affordable in developing countries (amounting to <5 per cent of average monthly income);

        (c)   Connecting homes to broadband: By 2015, 40 per cent of households in developing countries should have Internet access;

        (d)   Getting people online: By 2015, Internet user penetration should reach 60 per cent worldwide, 50 per cent in developing countries and 15 per cent in LDCs;

        (e)   Gender Equality in Broadband: By 2010, gender equality in access in broadband by 2020.

61.   The speaker provided an update on the current status in terms of achieving the five targets. 134 countries already had a national broadband plan in 2013, with 12 additional countries setting up new plans. Progress had been made towards the targets, but gaps remained in terms of broadband affordability, connecting homes, and gender equality. The Broadband Commission would continue its advocacy work and thought leadership to promote the importance of broadband to achieve the Millennium Development Goals (MDGs) and include it in the post-2015 development agenda.

62.   The following speaker[34] provided information on the Alliance for Affordable Internet (A4AI), which was launched in October 2013 with participation from the public and private sectors as well as civil society members. Its primary objective was policy advocacy to contribute to meeting the Broadband Commission's target of making entry-level broadband available for less than 5 per cent of average monthly income, thereby raising Internet penetration rates to at least 40 per cent in all countries. Affordability remained a key issue as there was a large gap between broadband prices as a per cent of GNI per capita in developed vs. developing countries. In least developed countries (LDCs), more than 90 per cent of people were not connected.

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[32] Mr. Jaroslaw Ponder, ITU.
[33] www.broadbandcommission.org.
[34] Ms. Wendy Seltzer, World Wide Web Foundation.

63.   A4AI work included production of an affordability index that would be published in a research report,[35] facilitating South–South dialogue and sharing of best practices, as well as working directly with countries through concrete action plans, stakeholder mapping exercises and validation missions. The speaker mentioned that A4AI supported policies and practices aimed at establishing liberalized markets with an open, competitive environment and a lower cost structure for industry. A4AI research on affordability complemented the World Wide Web Foundation's existing initiatives such as the Web Index, which measured data points such as web access, participation and use, internet freedom, and access to local content, among others.

64.   Another expert[36] made a presentation on the work of Techno Brain, a software company that provided solutions and training for government and commercial enterprises in Africa. Techno Brain undertook public–private partnerships (PPP) in several African countries and partnered with global ICT companies on business process outsourcing and IT-enabled services in Africa. It also provided extended management training programs in countries including Kenya and Uganda, which could lead to recruitment. The speaker introduced a maternal health solution implemented in South Sudan, the Kenyatta Hospital Record Digitization project in Kenya that digitized four million patient records, and the Techno Brain Child Helpline solution. Techno Brain also cooperated with the new Konza IT Tech Park of Kenya, and the National IT Association of Uganda. In the long term, the key question was the sustainability of financing for projects in Africa.

65.   The second day of the inter-sessional panel also featured the presentation of country cases. In this part of the panel, two CSTD delegates provided updates on developments in their countries on ICTs for inclusive social and economic development. The delegate from Japan[37] shared information on Japan's new national ICT strategy entitled "Declaration on the Creation of the World's Most Advanced IT Nation". She provided examples on home medical treatment using mobile communications technology, and ICTs for disaster management. She emphasized the potential of international cooperation in the areas of e-health, disaster prevention, and ageing of society based on Japan's ICT utilization and application, as well as sharing Japan's information and best practices towards establishing a safe and secure platform for ICT utilization and application. She concluded by mentioning that Japan is undertaking cooperation efforts through OECD, APEC and ITU-D on priority issues.

66.   Following this presentation, the representative of Mexico[38] announced the launch of a National Digital Strategy in November 2013 by President Enrique Peña Nieto. All main stakeholders had been involved in the development of the strategy, which had established five main targets in the areas of Governmental Transformation, Digital Economy, Quality Education, Universal Health, and Citizen Security to improve economic and social welfare in Mexico. Furthermore, a constitutional amendment in June 2013 had established Internet access as a basic human right. Based on this constitutional amendment, the legal framework would be adapted and measures would be taken in terms of connectivity, inclusion, interoperability of government services for citizens, and open data. Already, one big step had been made through the creation of an autonomous Institute for Telecommunications. Mexico also set ambitious targets to broaden optical fibre lines and extend access to rural communities so that more than 95 per cent of the country's population would be covered within three years.

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[35] http://a4ai.org/wp-content/uploads/2013/12/Affordability-Report-2013-FINAL.pdf.
[36] Mr. Clint Cuny, Techno Brain, United States.
[37] Ms. Mari Ichikawa, Ministry of Internal Affairs and Communications, Japan.
[38] Mr. Jose Ramon Lopez de Leon, Ministry of Foreign Affairs, Mexico.

67.   A speaker[39] made a presentation entitled "Imagery to the crowd", which introduced the projects of the Office of the Geographer and Global Issues of the United States Department of State in addressing humanitarian emergencies. ICTs provided new possibilities to make use of crowd sourced mapping to provide location-enabled services to citizens, especially in the context of natural disasters. Open digital geographic data such as street maps and buildings could be accumulated with the volunteer help of real time citizen reporting, applied to a geographic foundation of satellite imagery. Maps would serve as a pathway for action and response. The speaker then provided examples to applications of open street maps, including the Haiti earthquake, Horn of Africa famine, fire risk in cities of north-western Uganda, a World Bank assessment of buildings in Katmandu, Nepal, and post-disaster damage assessment in Tacloban, the Philippines, following the recent typhoon. The speaker also mentioned mapping initiatives underway for the 10 provincial capitals of South Sudan, and the use of open street maps in Kibera, Kenya to document violent incidents.

68.   The last panellist[40] of the day made a presentation on the activities of the United States Institute of Peace, particularly the Peacetech Initiative, which leveraged technology for conflict management. Technologies such as social media were leading to dramatic change in conflict management. All people had become media makers to a global audience. Social media carried potential to bridge divides between adversaries, and especially youth. The speaker mentioned the contribution of crowd sourced maps to monitor elections in Kenya and South Sudan. He also talked about the applications of technologies like social media and crowd sourcing in tackling violence, preventing conflict over resources, and drafting constitutions. Last, the speaker covered new trends in technology that would have an impact in the future, including low cost sensor systems, volunteer technologists, 3D printing and prototyping, off-grid energy, crowdsourced data, and big data.

Discussion

69.   In the ensuing discussion, one participant asked about the impact of ICTs on the environment, particularly in terms of negative impacts on energy consumption and emissions. A speaker agreed, stating that ICTs represented the sector with fastest growth in carbon emissions, but that they also had mitigating effects. Another participant highlighted that the panel did not include a substantive discussion on gender and ICTs. There was a substantive gender gap around ICTs particularly in Africa and South Asia. Although mobile banking solutions were very important for women in these regions, many of them did not even own mobile phones. Another participant mentioned that the United Nations High Level Panel on the post-2015 development agenda did not address ICT issues, and mentioned that people with disabilities should be taken into account in discussions of ICTs and inclusion.

70.   One participant noted the opportunity that cloud computing created to make small companies more scalable through on-demand services. He also underlined the importance of Linked Data method and semantic web, which were being promoted by W3C and should be mentioned in future reports and discussions of the CSTD. Open data was also a key issue, especially in the context of the Internet of things, with more and more data being collected from sensors.

71.   A participant introduced the issue of capturing tacit, uncodified, traditional knowledge with the help of ICTs. One speaker mentioned that the information inequality on the Internet was not due to some places producing more information, but some knowledge

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[39] Mr. Josh Campbell, United States Department of State.
[40] Mr. Sheldon Himelfarb, United States Institute of Peace.

being easier to codify, resulting in broad swaths of human practice being left out. The issue was not just about technology, but the governance systems surrounding technology. For instance, the rules and regulations of tools such as Wikipedia were not always designed to incorporate the information scarcity context.

72.   One participant contributed to the discussion on factors explaining why there was little local content production in some regions by asking to what extent freedom of speech could be an explanatory factor. A speaker on this issue mentioned that statistical modelling with variables such as literacy, access, education and economic development accounted for most variants, but that explicit or less explicit restrictions on freedom of speech explained some outliers. Qualitative research on content editors unveiled that surveillance and Internet freedom affected patterns of participation and creativity.

73.   The Director of Technology and Logistics of UNCTAD summarized the panel discussions by touching upon the pervasiveness of ICTs in all aspects of economic and social life, and how the digital divide impacted other divides and vice versa. ICTs could benefit the so-called "bottom of the pyramid" – the most vulnerable segment of populations, but meanwhile, existing zones of exclusion in the world were amplifying digital divides. This is why it was important to develop the right policies through open consultative processes, gap analyses and specific targets. Barriers to participation in a knowledge society did not only exist in connectivity, but social and cultural life, such as gender divides and digital literacy. Rather than just providing ICTs in terms of hardware, a capacity-building approach would be necessary to build the right skills for ICT usage. It was also important to better articulate ICTs in the post-2015 development agenda.

74.   One participant mentioned that the panel discussion should make references to the principles of transparency and accountability of organizational practices. The absence of these exacerbated exclusion. There should also be reference to children and women, and the issue of aging in communities in the context of ICT usage. Another participant requested that more emphasis be made on people with special needs. ICTs provided new opportunities in this realm, for example by employing people with autism in software testing. Similar solutions existed for people with hearing impairments and mental needs. He also referred to the important role of social networks in awareness raising, monitoring, and early alerts on societal issues like child labour and corporate social responsibility. A speaker added that converting early warning into early response by the involved communities themselves was important.

75.   Several participants alluded to the importance of looking at ICTs through the ecosystem approach, which consisted of several parts that worked together in cohesion. For example, developing a national broadband plan was one of the tools of the broadband ecosystem, just like establishing universal service funds, driving demand for investment, content development, and ICT applications. Countries could make use of the ecosystem approach to identify strengths and weaknesses, and adjust policies accordingly. Japan and Mexico had just presented national plans that followed the ecosystem approach for ICTs. The Chair of the CSTD further reinforced this point by stating that further than ICTs, STI, engineering, infrastructure, culture and the workforce were all important elements of the ecosystem that drives social and economic development.

76.   During the discussion, participants provided examples on ICT usage in addressing societal issues in their countries. One participant mentioned that ICTs are an integral part of the smart urbanization plan of China. Remote sensing technology was applied to assess damage after the Sichuan earthquake in 2013. The Chair of the CSTD mentioned the

iShake[41] project that used seismological sensors with GPS in smart phones, which could be a useful way to gather anonymous data for early warning on earthquakes. A speaker referred to the use of crowd sourcing[42] by the United StatesGeological Survey as part of its post-earthquake formal reporting to supplement its analysis.

77.   Another participant said that the National Disaster Management Council of India used ICTs during cyclones to prevent loss of lives among fishermen. SMS-based warning services were provided to boats, and all boats in the coastal area were required to register and have GPS systems so that they could be located when necessary. In addition to "push" efforts by government, the participant also provided examples to creating a pull in India for ICTs, which was critical to make them popular. The first involved prioritizing mobile phone ownership and the opening of bank accounts for women through innovative regulation (reserving specific branches for women, proposing double return on investment) so that they could put aside their savings. The second example was on increasing financial security of women through proposing lower fees than men when registering property through e-systems in India. Last, he mentioned the use of an innovative plastic eyecap solution of a high school student by the National Informatics Centre. It would be integrated with mobile phones to identify citizens that required cataract surgery so that the required surgery could be undertaken based on findings.

78.   In the last part of the discussion, participants and speakers debated the issue of privacy in the context of geographic data, which increasingly became more granular and personally identifiable. It was important to maintain anonymity especially in the context of whistle-blowers. Privacy was a key concern for activists, as technologies could be used both to identify and make contacts anonymous. The trade-off between privacy and gathering information through the use of technology was not an easy problem to solve.

VI.   Theme 3
Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the international and regional levels

79.   The Head of the CSTD Secretariat[43] opened the panel session by providing an overview of the outcomes of WSIS. The Tunis Agenda for the Information Society contained three main themes: Measuring the Information Society, the eleven WSIS action lines, and the Internet Governance Forum (IGF) / Enhanced Cooperation (EC). These came in addition to the targets set in the Geneva Plan of Action. He mentioned the work of international regional organizations in measuring ICT for development and ICT indicators, such as the Partnership on Measuring ICT for Development. With respect to the action lines, he gave an update on the role of ITU, UNESCO, UNDP, UN regional commissions and other stakeholders in the implementation of action lines. He summarized the activities of the Working Group on Improvements to the IGF and the Working Group on Enhanced Cooperation. He also mentioned that the ICT for Development resolution of the United Nations General Assembly, which was under negotiation, would provide guidance on the ten year review of WSIS.

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[41] http://ishakeberkeley.appspot.com/.
[42] http://earthquake.usgs.gov/earthquakes/dyfi/.
[43] Mr. Mongi Hamdi, UNCTAD.

80.   Following the introduction by the Head of the CSTD Secretariat, a remote speaker[44] made the first presentation of the day entitled "WSIS follow-up, including WSIS+10 and preparations for the 17th session of the CSTD". He first provided information on the UNESCO WSIS+10 review event entitled "Towards Knowledge Societies for Peace and Sustainable Development' that took place in February 2013 in Paris.[45] The Final Statement[46] of the said event was a multi-stakeholder agreed outcome, which was subsequently endorsed at UNESCO's 37th session of the General Conference (37 C) by 195 member states. The speaker then made reference to the joint statement of the United Nations Group on the Information Society (UNGIS) on the Post-2015 Development Agenda, which was signed by 30 United Nations agencies, funds and programs. The statement called for the inclusion of lessons learned during the past decade in the implementation of the WSIS outcomes in the Post-2015 Development Agenda, and interaction between the Post-2015 Development Agenda and the WSIS+10 Review processes to create synergies.

81.   The remote speaker also mentioned that following a proposal during the 192nd Executive Board of UNESCO, a discussion paper on "Internet related issues: including access to information and knowledge, freedom of expression, privacy and ethical dimensions of the information society" was prepared by the Secretariat and submitted to the 37th session of the General Conference. The presentation was then continued by a representative[47] of UNESCO present in the panel, who informed the panel that a resolution adopted at the 37th session of the General Conference mandated UNESCO to prepare a comprehensive study on the above mentioned theme, which could be undertaken through convening an inclusive multi-stakeholder process.

82.   The Vice-Chair of the CSTD and Chair of the Working Group on Enhanced Cooperation (WGEC) provided an update to the panel on WGEC's activities. The WGEC was mandated by the General Assembly to report to the CSTD in its seventeenth session in 2014. It had its first meeting in May 2013, where a questionnaire was prepared based on the WSIS Tunis Agenda. A second meeting in November 2013 evaluated the responses to the questionnaire. The Chair of WGEC then shared information on the multi-stakeholder nature of the working group, where observers were also able to participate within the framework of ECOSOC rules. A five-day meeting would be held on 24–28 February 2014 to finalize the group's work. The recommendations would be finalized in March, in time for submission through the official procedure to the seventeenth session of the CSTD. The Chair of WGEC also provided an overview on the methodology of the work and modalities of WGEC meetings, and responses to the WGEC questionnaire. According to the mandate of WGEC to identify the gaps in implementing enhanced cooperation, a Correspondence Group was established within WGEC that was in the process of conducting a mapping exercise, which would be submitted to the next WGEC meeting.

83.   A speaker[48] made a presentation on the preparations for the WSIS+10 High Level Event that will take place in Sharm el-Sheikh, Egypt, on 13–17 April 2014, on behalf of all organizations involved in this work. The event would be an extended version of the WSIS Forum to address progress made in the implementation of WSIS outcomes related to WSIS action lines, and a platform for multi-stakeholder coordination. Twelve United Nations

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[44] Mr. Janis Karklins, UNESCO.
[45] UNESCO WSIS+10 Review Event Outcome report: http://www.unesco.org/new/fileadmin/ MULTIMEDIA/HQ/CI/CI/pdf/wsis/WSIS_10_Event/wsis10_outcomes_en.pdf.
[46] UNESCO WSIS+10 Review Event Final Statement: http://www.unesco.org/new/ fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/wsis/WSIS_10_Event/wsis10_final_statement_en.pdf.
[47] Mr. Cedric Wachholz, UNESCO.
[48] Mr. Jaroslaw Ponder, ITU.

organizations were participating in the organization of the High-Level Event.[49] The two expected outcomes of the Event were a WSIS+10 Statement on the implementation of WSIS outcomes, and a WSIS+10 Vision for WSIS beyond 2015 under the mandates of the participating agencies.

84.   The speaker explained in detail the preparatory process leading up to the High-Level Event. It involved a multi-stakeholder preparatory platform, including meetings, formal submissions, online discussions and reference documents. Its aim was to prepare the outcome documents of the event and it was expected to conclude on 1 March 2014. A clear distinction had been made between the focus areas of the preparatory process and the overall WSIS+10 review of the United Nations General Assembly that would take place in 2015. The preparatory process would be supported by 10-year country reports, as well as data collection in order to prepare the final quantitative assessment report on the achievement of WSIS targets, to be launched at the Event. The speaker concluded by underlining the importance of linking the WSIS+10 processes with the Post-2015 Development Agenda.

85.   Another speaker[50] talked about the complexities involved in current Internet governance from the perspective of an international relations and law scholar. Internet governance at a macro level was very much part of the "ICT for development ecosystem", which was an approach of looking at ICTs that resonated in the interventions throughout the inter-sessional panel meeting. Realizing the potential of ICTs depended on a stable, reliable and responsible Internet through the continuous efforts of a large number of stakeholders. The speaker mentioned that as Internet penetration increased, new voices brought new interests and values to the debate. The delivery of mass public services, the dependence of critical infrastructures on the internet, cybercrime, and surveillance all affected the Internet agenda.

86.   Each actor had an important role to play in the space of Internet governance, including ICANN, IETF, WWWC, the Internet Society, private actors and states. It was important to note that simply having a multi-stakeholder model was not enough for good governance, as demonstrated through the international financial system. Internet governance was a confluence of different kinds of structures, including formal and informal, corporate and technologist, as well as hierarchical and decentralized. It was evident that the multitude of procedural rules affecting the Internet created grounds for disagreement among different actors on issues such as equity, fairness, and the level inclusion of civil society in governance processes.

87.   In order for the Internet not to founder on disagreements regarding procedural rules, soft law was an especially effective method of rulemaking that could weather a rapidly changing landscape due to its flexible nature. It provided time and opportunity to learn and amend rules at a much lower negotiating cost. The Internet was a set of "nested clubs" in terms of how rulemaking was done, and in order to avoid conflicting rules, soft law might be more suitable than formal treaties and overarching rules. The setup of the early nuclear period, linking physicists and policymakers, was a noteworthy precedent.

88.   The second panel featured presentations from different WSIS stakeholders. One speaker,[51] representing ICC-BASIS, talked about the importance of participation by multiple stakeholders as a pathway to development. This approach promoted responsiveness to societal needs. ICTs should not be seen as an end, but as a tool to solve specific problems. In this context, capacity building was a key issue that gradually evolved,

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[49] ITU, UNESCO, UNCTAD, UNDP, UNDESA, WHO, UNEP, UPU, ITC, FAO, ILO, WHO.
[50] Mr. Mark Raymond, Centre for International Governance Innovation.
[51] Mr. Joseph Alhadeff, ICC-BASIS.

taking different forms depending on the local context. For example, the business process outsourcing industry in India had started from a very basic service, leading to a world class industry. Business was supportive of the IGF due to its role as an intra-and inter-stakeholder consultation platform outside of the context of negotiation. The multi-stakeholder IGF was an important part of the ICT ecosystem and had strong potential for capacity building. It was necessary to improve on existing models, for example by improving funding and exploring ways to better reflect IGF discussions in the national context.

89.   A speaker[52] presented on the developmental impact of the Internet, and how the IGF in particular facilitated such outcomes. The fastest growth in Internet usage was now in developing countries, where people were increasingly becoming "internet creators", with 150 thousand internet-related start-ups. The past twenty years had shown that promoting Internet development required a truly multi-stakeholder approach, for which the IGF was a key catalyst. IGF partners had been putting together capacity-building workshops to establish IXPs around the world in cooperation with OECD, the African Union and other organizations. Every successive IGF was resulting in new collaborations and new requests for assistance, answered by several stakeholders. Combating SPAM was a key area for multi-stakeholder partnership and exchange of experience, through tips and best practices that were developed for ISPs. The principles of multi-stakeholder cooperation in the IGF had laid a foundation for development cooperation, which was an achievement to be recognized. Voluntary collaboration among organizations was the best formula for the Internet to evolve, and the extension of the IGF's mandate was necessary for the health of the Internet.

90.   The next speaker[53] summarized the position of Brazil on the ten-year review of WSIS. Brazil supported the democratic, transparent and multi-stakeholder nature of Internet governance, which were principles practiced by Brazil Internet Steering Committee. A global meeting on the future of Internet governance would be held in São Paulo on 23–24 April 2014. New ideas and inputs would be harnessed in this multi-stakeholder meeting, which did not replace any of the current initiatives. Brazil also proposed to host the IGF in 2015, thereby showing its commitment to this process as well.

91.   The speaker stressed that WSIS+10 should not become a purely bureaucratic exercise, but should highlight both accomplishments and challenges in achieving WSIS targets, and feed into the Post-2015 Development Agenda. Brazil was committed to efforts for developing principles related to the Internet, as demonstrated by the speech of President Dilma Rousseff at the opening of the 68th session of the General Assembly, as well as Brazil's support of General Assembly and UNESCO resolutions on privacy and ethics. Last, it was Brazil's view that enhanced cooperation had not been fully implemented as mandated by the Tunis Agenda. There was a gap in the current Internet governance model, because there was no platform for governments to discuss Internet-related public policy issues.

92.   The last speaker[54] in the morning panel commented on the key role of the CSTD in terms of advising the General Assembly and ECOSOC with analysis and options on STI and ICTs for development. There was a need to broaden and deepen the visibility of CSTD to discuss the potential contributions of STI in the face of global challenges such as climate change, as well as governance issues. The CSTD should embrace and integrate its STI and WSIS follow-up mandates to bring about a better understanding on Internet governance for

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[52] Ms. Karen Rose, Internet Society.
[53] Mr. Alexandre Scudiere Fontenelle, Ministry of External Relations, Brazil.
[54] Ms. Marilyn Cade, mCADE LLC.

member states and ECOSOC. The speaker also referred to the gap analysis work that was underway in the WGEC. This was a very important issue as there were gaps in awareness, understanding, and access. The three expected outcomes of the WGEC were to identify where enhanced cooperation did exist, what were the gaps, and what solutions could address them. In this context, it was necessary to think carefully in terms of definitions, so that the right solutions could be designed. The CSTD had a unique perspective to propose them, with its role of providing advice to Ministers.

93.   The speaker shared a timeline of key Internet governance and other relevant meetings for 2013–2015, and said that within this busy agenda, it was important for all stakeholders to work together and find solutions to bring the Internet to all citizens of the world.

94.   In the afternoon session, a speaker[55] highlighted the three key meetings that shaped the events for 2013: World Conference on International Telecommunication (WCIT), World Telecommunication Policy Forum (WTPF), and the IGF Annual meeting of 2013. The IGF meeting in Bali was described as the best ever, as it was a defining moment with a strong sense of community among the participants where everyone stood up to defend the principle of multi-stakeholder cooperation. The meeting reinvented its traditional agenda, mainly triggered by the abovementioned events. Topics covered included surveillance, the role of governments, internet governance and multi-stakeholder principles, human rights, cybercrime, SPAM, as well as the contribution of the internet to sustainable development and the post-2015 development agenda. The IGF dealt with these issues in some depth, documenting that there are solutions available to address these problems, with suggestions to take these discussions a step further and integrate them in the 2014 IGF programme in the form of technical training workshops. In all these debates, participants agreed to take the discussions to a point of convergence.

95.   Another speaker[56] gave a summary of the CSTD Working Group on the Improvements to the IGF Recommendations. This Working Group, which is a multi-stakeholder approach within the United Nations system, has overcome certain challenges in its work. Many of the recommendations of the group have been implemented while others are still ongoing. Issues related to funding require improvement in order to sustain its work for the future.

96.   The private sector perspective on IGF matters was highlighted by a speaker[57] who suggested that this forum is an important way to identify new cutting-edge issues. The IGF can be a platform for sharing and addressing practical problems rather than simply a high-level forum for discussing theoretical policy issues. For example, developing legal frameworks to deal with spam and malware is something that can be useful for stakeholders. Exchanging views on how to combat such issues with IGF members on the ground in places such as Africa, as well as at official meetings, is something that needs to be considered.

97.   The next speaker[58] gave a briefing on the 2013 Annual Meeting of the IGF which was held in Bali, Indonesia. Issues discussed include a range of topics of mutual interest to stakeholders of the forum. Recommendations of the WGIGF were considered, including issues such as fundraising for the IGF, strengthening of the Secretariat, improve the website and maintain and build linkages with other actors.

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[55] Mr. Markus Kummer, IGF.
[56] Mr. Peter Major, Chair of the WGEC and CSTD Vice-Chair.
[57] Mr. Jeff Brueggman, AT and T.
[58] Mr. Chengetai Masango, IGF Secretariat.

Discussion

98.   A rich and lively discussion followed the panel sessions, particularly on multi-stakeholder Internet governance. One participant asked whether the definition of a multi-stakeholder concept existed for the Internet. A speaker, in response, said that there was no such model, but highly differentiated models of actors. The different governance structures between IETF and ICANN were examples to this. Another participant questioned whether the multi-stakeholder approach was useful, as it did not allow a level playing field, with too many parties, lack of clarity, and duplication, which all lowered the ability of the CSTD to operate for developing countries. The low representation of developing countries due to the lack of resources, particularly sub-Saharan Africa, resulted in a poor multi-stakeholder approach. Furthermore, the IGF needed accountability, transparency and more participation from developing countries. It was not sufficiently fulfilling its mandate and primarily focusing on the needs of large companies.

99.   One participant added that the roles of all stakeholders had not been clearly defined as they should have been according to the Tunis Agenda. The WSIS overall review had not yet started, and the focus had to be on the General Assembly mandate as contained in Tunis Agenda. The IGF represented a distinct process. The role of governments had not been operationalized yet, particularly in terms of social development aspects related to tackling cyber security, spam, identity theft and other criminal activities, denial of service, child pornography and other issues.

100.   Meanwhile, another participant stated that he was encouraged by the ongoing multi-stakeholder process in Geneva on WSIS+10 preparations and that the work of WGEC enhanced the multi-stakeholder approach. A participant asked whether there was an alternative to the multi-stakeholder governance approach.

101.   A speaker commented on the issues raised in relation to the multi-stakeholder model by mentioning that patience and caution would be necessary in an environment with conflicting values between actors, where it was hard to set common regulations or laws. No real alternative existed to the current model. Another speaker underlined that he always called for attention to the mandate. Significant results had been achieved with the current model, which was an experiment that had to tested and improved where necessary. Furthermore, in terms of enhanced cooperation, it was important not to focus too much on definitions, but more on the actual work. Another speaker mentioned some tools that were very useful to WGEC, such as remote participation, transcripts, and participation of observers. A speaker added that UNESCO had a number of General Conference decisions that supported the WSIS multi-stakeholder approach.

102.   One participant contributed to the debate by mentioning that it was necessary to understand how all the ideas from different forums would converge in the United Nations system. Mexico supported the IGF and would like to host its first meeting under a new mandate. Within the United Nations, it was important to be innovative when tackling new issues on new dimensions of the Internet, for example through the IGF and multi-stakeholder processes, rather than trying to fit them into outdated models. For instance, technical issues could be addressed by ECOSOC and UNCTAD, while political issues could be left to other forums. A speaker referred to the co-evolutionary nature of the ICT ecosystem that included institutions, technology and innovations. Institutions remained in inertia, which was an impediment to co-evolution. Such conflicts could only be overcome through a learning process.

103.   The Chair of the CSTD made reference to the simultaneous, dynamic processes taking place within the United Nations. All entities were fulfilling their responsibilities as part of an overall vision on the Post-2015 Development Agenda, which was work in progress. The CSTD had a unique role as a multi-stakeholder forum that combined STI and

ICTs to bring consensus messages to ECOSOC and the General Assembly, including those on the issues of Internet governance and enhanced cooperation. The Head of the CSTD Secretariat supported the remark by Brazil that the WSIS+10 review should not only mark progress, but also address constraints faced in the implementation of WSIS outcomes, as well as new issues such as cloud computing, social networks, the broadband divide, and convergence in mobile devices.

104.   A participant opened another topic by asking how far it had been possible to create appropriate indicators to measure the information society. Another participant mentioned that in terms of the ten-year review of WSIS, it was important to measure the implementation of WSIS action lines first, to understand their level of contribution to achieving the MDGs, so that they could be linked to the Post-2015 Development Agenda. One participant said that many ICT indexes existed in relation to the same issues, and asked whether it was possible to have a uniform set of indices.

105.   One speaker responded by highlighting the importance of three pillars: the assessment by action line facilitators, collecting information on success stories through the WSIS stocktaking process, and agreeing on indicators, as had been done through the Partnership on Measuring ICT for Development. In an evolving ICT ecosystem, it was natural that new measurements could be needed, while not everything was measurable. Meanwhile, it was also important to increase capacity for measurement at national level and preserve the ability to measure progress in time. Another speaker said that UNESCO was making investments to measure ICT in education, but that some other areas like ethics were more difficult to measure due to their qualitative nature. UNESCO would issue a report before February 2014 reviewing work on all of its action lines in the last ten years.

106.   A participant directed a question on the issue of fundraising for the IGF and how the role of the private sector plays into this. One particular concern here relates to corporate interests in the governance of the internet through channels other than the IGF. In response, a speaker suggested that it is in the interest of industry to support a strong IGF. Another speaker commented that fundraising was a fairly time-consuming activity for the IGF Secretariat and that they rely on existing MAG members. On the same issues, one speaker said that the development of new funding mechanisms were important to enable small companies to make a contribution to the IGF.

107.   Consultations had taken place the past year through national and regional IGF initiatives, as highlighted by one speaker. National level initiatives include those held in Portugal and the United States. About 20 national initiates had been held since 2006. These initiates were focused on specific areas of concern for each country or region. For example, in Africa it tended to focus on cyber security and access, while in Europe the focus was more on privacy and other issues. On the issue of funding, the participant wanted to note the significance of the national initiatives, and that those Governments who host the IGF are encouraged to make a significant financial commitment.

108.   Another participant posed the question on what steps had been taken on accountability and transparency at the IGF. In response, a speaker indicated that information on donations and related donors to the IGF trust fund was published on the IGF website. This consisted of donors from 2006 to 2013 but not host country contributions.

109.   It was pointed out by one speaker that the renewal of mandate will occur as part of WSIS+10 process and reiterated that the IGF was extremely important for the Internet ecosystem. As a consequence, funding was central to the stability of this forum. . It is therefore, high time that its stability was maintained. The CSTD was encouraged to support the extension of funding (perhaps for 10 years next time), as the IGF is a significant forum that has implemented some recommendations of the CSTD.

110.   Finally, a speaker called for getting the public at large more involved in the IGF, through increased opportunities to raise concerns, from grassroots level, particularly in the LDCs.

VII.   Findings and Suggestions

111.   The following main findings and suggestions were highlighted by the Panel and put forward for consideration by the Commission at its seventeenth session, scheduled to take place in Geneva, from 12 to 16 May 2014.

A.   Main Findings

1.   Science, technology and innovation for the post-2015 development agenda

(a)   Bridging the technological divide calls for innovative strategies for new and existing technologies. Policies and capacity-building efforts are needed to stimulate the diffusion and the effective usage of technological diffusion in countries.

(b)   In order to foster the effective role of technology and innovation in sustainable agriculture, national innovation coalitions and innovation platforms are needed around particular technologies. Attention needs to be paid to all components of agricultural innovation systems including research and development, extension, credit, infrastructure and institutions.

(c)   The deployment of STI for development requires building indigenous capabilities through absorptive capacity. The coordination of STI-related policy will indeed overlap various sectors and ministerial mandates, including education, trade, industry, health, education, agriculture, energy and the environment. Sharing experiences and lessons between international organizations and involving national counterparts from the participating countries can prove to be beneficial.

(d)   New opportunities for technology transfer include knowledge brokering and linking technology transfer clearly to certain goals such as entrepreneurship. Extension of global innovation infrastructure to all countries should become a critical issue in discussions. Improving STI education to promote skills creation is important for enhancing capabilities.

(e)   Measures of bridging the digital divide need to go beyond simply providing access to quality of access. At the national levels, ICT development requires a multi-thematic perspective and coherent national policies. ICT infrastructure is not an end in itself, its role and contribution to economic and social development needs to be explored. ICTs development should be viewed as part of the national innovation systems in developing countries.

(f)   There is a need to power development and foster inclusion with STI through focusing on existing technologies in an age of technological abundance.

(g)   Advances in science and technology through education as well as coinciding economic growth often improve the prospects for peace and security.

(h)   A growing middle class attuned to STI features strengthens governance and accountability. Therefore, STI is an important tool and enabler for the advancement of sustainable development – economic, social and environmental.

2. ICTs for Inclusive Social and Economic Development

(a)   The digital divide is changing its nature, from ICT access to how ICTs were used. The emergence of new applications including datafication, big data and big data analysis, cloud computing, the Internet of Things and smart systems are creating a rift between those who have the ability to benefit from them, and those who are excluded. Especially least developed countries (LDCs) risked being further detached from the rest of the world.

(b)   The success of deploying ICTs in countries depends on following an ecosystem approach that engages all stakeholders and ensures comprehensive and coordinated incorporation of all inter-related elements: supply and demand, infrastructure, access, services, devices, policy and regulation, applications, content, capacity building, digital literacy, funding sources and mechanisms.

(c)   Although ICTs provide huge benefits to human welfare, only part of their potential has been realized, while spaces of exclusion remain.

(d)   ICTs need to be considered innovatively in terms of technology, business and regulation. A mindset of abundance, and not of scarcity, should be adopted, with the intention of creating more than what is currently available.

(e)   There is huge unevenness of information on the Internet in terms of number of domains per population, amount of content on places, content by language, locally generated content or even content on personalities. These large inequalities are not necessarily linked to differences in Internet penetration. Existing zones of exclusion are being amplified on the Internet.

(f)   Affordability and the sustainability of financing for ICT projects persist as key issues.

(g)   ICTs provide new solutions and opportunities for inclusion of segments of society such as people with special needs and the elderly.

(h)   ICTs play an important role in enhancing the transparency and accountability of government and businesses.

(i)   ICTs such as social media and crowdsourcing provide new possibilities for location-enabled services to citizens, especially in the context of natural disasters, as well as conflict management.

3. Progress Made in the Implementation of and Follow-up to the Outcomes of the World Summit on the Information Society at the International and Regional Levels

(a)   Internet governance is an important aspect of the ICT ecosystem, where each stakeholder, including States, private actors, civil society, and the technical community has an important role to play. Meanwhile, simply having a multi-stakeholder model is not enough for good governance, as demonstrated through the international financial system. Internet governance is a confluence of different kinds of structures, including formal and informal, corporate and technologist, as well as hierarchical and decentralized.

(b)   The fastest growth in internet usage is in developing countries, where people are increasingly becoming "internet creators", with 150 thousand Internet-related start-ups annually.

B. Suggestions

1. Science, technology and innovation for the post-2015 development agenda

112.   The CSTD should consider the following:

(a)   Promoting efforts for human capital development, improving physical and services infrastructures; and global efforts, such as international technology transfers and internationally coordinated projects.

(b)   Encouraging regional cooperation with regard to ICT strategies. Some key issues, including cyber security, transparency of regulation, and protection of privacy and personal data, could be effectively addressed at the regional level.

(c)   Providing the forum in which experiences and lessons can be shared between international organizations and involving national counterparts from the participating countries can prove to be beneficial.

113.   Member States, especially developing countries, should consider the following:

(a)   Building local capabilities to target and facilitate acquisition of technology through FDI. Policies on technology transfer through FDI should focus not only on the "physical" aspect of investment, such as imports of machinery and equipment, but also on the acquisition of information and knowledge.

(b)   Establishing national innovation coalitions and innovation platforms around particular technologies, policies, or processes which can be effective vehicles for innovation.

(c)   Paying closer attention to all the components of agricultural innovation systems including research, extension, credit and technical support, healthy markets, functioning infrastructure, and a supportive policy and institutional environment. These are required for successful agricultural innovation.

(d)   Resources spent on promoting research and development activities should be linked to local demands for specific products, processes, and services in agriculture.

(e)   Promoting the development of absorptive capabilities within enterprises and social welfare provider organizations, should be a major goal for STI policy, as these capabilities are necessary for innovation to take place in a country.

(f)   The establishment of technology offices, technology parks and incubators, which have proven to be effective conduits to pool the scarce resources to stimulate research commercialization and subsequent enterprise growth, are also encouraged.

(g)   Focusing policy efforts in the promotion of appropriate channels of technological exchange. The main channels of technology transfer are capital equipment imports, followed by foreign direct investment (FDI) inflows. Licensing seems to play a much lesser role.

(h)   Intervening to correct market failures, maintain competition, attract domestic and foreign investment and enhance ICT infrastructure and applications to maximize the socioeconomic benefits of ICTs, especially for underserved communities.

(i)   Including technological assistance in policies and strategies based on the local context, on the basis that it will provide additional benefits and if the capabilities to fully integrate it exist.

114. The international community should consider the following:

(a) At the technical front, international organizations should continue to provide support for technical assistance in training, capacity-building, and strategic planning to promote new and renewable energy sources and technologies.

(b) At the political front, it is necessary to address the unresolved issue of how to balance trade and IP regimes for technology transfer, processes and production methods. (e.g. open source software, Eco-Patent Commons, global technology patent pools).

(c) Assessing whether the measurement of impact of ICTs in certain areas should be given higher priority than others in the years leading up to 2015 and beyond.

(d) Producing relevant and internationally comparable data to undertake impact studies are essential. It is important to examine the role of governments, development partners, and international organizations, in extending ICT impact indicators. Assessing which impact studies to conduct in what areas are also crucial.

2. ICTs for inclusive social and economic development

115. The CSTD should consider the following:

(a) The CSTD should play an active role in creating awareness on the potential contribution of ICTs to the Post-2015 Development Agenda through substantive inputs to relevant processes and bodies of the United Nations.

(b) The CSTD should continue to share findings and best practices on STI and ICTs among member states and beyond.

116. Member States, especially developing countries, are invited to consider the following suggestions:

(a) ICTs should be promoted through a capability-based approach rather than a needs-based approach that rests on the foundations of learning, innovation and competence-building systems.

(b) Member states should seek international cooperation opportunities in ICTs, particularly in best practices on e-education, e-government e-health and disaster resilience through existing and new cooperation platforms.

(c) Member states should seek to create autonomous ICT institutions, based on a sound legal framework, that guarantee economic competition and content plurality, and encourage universal coverage, convergence, quality, and access.

(d) The gender gap in ICTs, which is particularly prevalent in Africa and South Asia, should be addressed by creative, demand stimulating regulation that popularizes ICTs and encourages the participation of women.

117. The international community should consider the following:

(a) The importance of ICTs will grow in terms of their impact on social and economic change. Therefore, the potential of ICTs for enabling sustainable development, addressing the needs of development goals, and building knowledge societies should be articulated and included in the Post-2015 Development Agenda.

(b) There is a need to continuously measure global progress in terms of ICT adoption through data collection and the development of indexes that measure a broad array of data points. The ability to develop the right policies largely depends on identifying gaps and establishing targets based on data.

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

118. The CSTD should consider the following:

(a) The CSTD should integrate its STI and WSIS follow-up mandates to bring about a better understanding on Internet governance for member states and ECOSOC.

119. The international community should consider the following:

(a) It is imperative to ensure interaction between the Post-2015 Development Agenda and the WSIS+10 Review processes to create synergies. WSIS+10 should not become a purely bureaucratic exercise, but should highlight both accomplishments and challenges in achieving WSIS targets, and feed into the Post-2015 Development Agenda.

(b) Soft law, as opposed to formal treaties and overarching rules, is an especially effective method of rulemaking for the Internet that can weather a rapidly changing landscape due to its flexible nature.

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