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Commission on Science and Technology for Development
Twelfth session
Geneva, 25–29 May 2009

Inter-sessional panel meeting on science, technology and engineering for innovation and capacity-building in education and research;

Review of the implementation of the outcomes of the World Summit on the Information Society and follow-up at the regional and international levels;

Development-oriented policies for a socio-economic inclusive information society that provides access to information and communication infrastructure in an enabling environment; and

The role of science and technology and information and communications technology in addressing the food crisis

Raúl Prebisch Conference Room,
Economic Commission for Latin America and the Caribbean
Santiago, Chile
12–14 November 2008

Summary report prepared by the UNCTAD secretariat[1]

[1] This paper summarizes the panel's discussions; it does not necessarily reflect the views of the UNCTAD secretariat.

Introduction

1. The Commission on Science and Technology for Development (CSTD) has a mandate to review and assess, on a continuous basis, the 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. The CSTD is also responsible for providing high-level advice to the Economic and Social Council and the General Assembly on the role of science and technology in addressing development goals. Discussions focus on one or more substantive themes that are identified as topical priorities on a biennial basis. The two substantive themes for the 2007–09 biennium are:

(a) Science, technology and engineering for innovation and capacity-building in education and research; and

(b) Development-oriented policies for a socio-economic inclusive information society, including access, infrastructure and an enabling environment.

3. An inter-sessional panel meeting of the CSTD was held in Santiago, Chile, from 12 to 14 November 2008, to update and review progress to date on the follow-up to WSIS, and to further debate and build consensus on key issues relating to the two current substantive themes, in preparation for the twelfth session of the CSTD in May 2009. In addition, a special session to debate the role of science and technology in addressing the current food crisis was included in this panel meeting.

I. Organization of work

4. The panel meeting was organized by the UNCTAD secretariat and the Economic Commission for Latin America and the Caribbean (ECLAC).[2] The meeting was attended by members of the commission, together with representatives of observer countries and other invited guests. Also present were four resource persons: Mr. Charles Wessner, Director of Technology, Innovation and Entrepreneurship at the National Academies Board on Science, Technology and Economic Policy; Mr. Alfred Watkins, Science and Technology Programme Coordinator at the World Bank; Mr. Sergio Faiguenbaum, a consultant with the Policy Group of the Food and Agriculture Organization of the United Nations (FAO); and Ms. Martine Dirven, Chief of the Agricultural Development Unit at ECLAC.

5. Documentation for the meeting includes two issues papers prepared by the UNCTAD secretariat, a written input provided by the International Chamber of Commerce, and presentations made by participants. These documents, together with presentations made at the session, are available online at the CSTD website (http://www.unctad.org/cstd).

II. Opening statements

6. Opening statements were made by Mr. Juan Eduardo Eguiguren, Chair of the CSTD, and Mr. Mongi Hamdi, Head of the CSTD secretariat. The importance of science, technology and innovation (STI), including information and communication technologies (ICTs), to achieving development goals was emphasized, and the commitment of the CSTD and its UNCTAD secretariat to helping developing countries to benefit from technological advancements was reiterated.

[2] The assistance of ECLAC staff members in facilitating the meeting is gratefully acknowledged.

7. Ms. Alicia Bárcena, Executive Director of ECLAC, gave an opening presentation on “Innovation for Development: Reflections from Latin America and the Caribbean”. Ms. Bárcena reported that Latin America’s levels of investment in research and development (R&D) had stagnated in the previous decade and was lagging behind other regions. In respect of the “digital divide”, recent data on per capita access to fixed-line and mobile telephony, Internet usage and access to broadband indicated that the region was not performing well in the diffusion of ICTs, despite the introduction of ICT policies in some countries in the region. It was suggested that the region needed more human resources, institutions to manage technological development, and policies for building and strengthening innovative capacity within the informal sector.

III. Science, technology and engineering for innovation and capacity-building in education and research

8. The UNCTAD secretariat presented a paper on the substantive theme “Science, technology and engineering for innovation and capacity-building in education and research”. The paper highlighted four key perspectives on the theme that had emerged from discussions at the eleventh session of the CSTD. These points were used as a focus for discussion at the panel meeting:

(a) Science and technology are essential tools in meeting development goals, especially those contained in the United Nations Millennium Declaration;

(b) The ability to acquire, adapt, diffuse and adopt existing knowledge is crucial for every country, as is the capacity to produce and use new knowledge;

(c) It is important for developing countries to integrate STI policies into national development strategies; and

(d) Global cooperation is important in harnessing knowledge and technology for development.

9. In general, progress towards meeting the Millennium Development Goals (MDGs) has so far depended more on increased public service provision than on the deployment of indigenous capabilities in science and technology. The potential contribution of scientific and technological innovations to meeting development goals is constrained by structural barriers and systemic weaknesses at the local, national and global levels, and by the long lead time needed to build capabilities. These capabilities include capacities to effectively absorb existing technologies, and the ability to create and use new knowledge.

10. Building capacity in STI development is inherently cross-sectoral, and warrants the adoption of long-term strategies that put STI at the heart of development planning. Given the long lead times involved, STI policies that balance short-term and long-term priorities are needed. Bilateral and multilateral cooperation can play an important role in STI policy capacity-building at the national level, and a forum for debate and knowledge-sharing – such as the CSTD – could make a valuable contribution in this respect.

A. Capacity-building for STI

11. A resource person suggested that most of the knowledge that countries needed to address their most urgent social and economic problems already existed. On that basis, countries with a generally low level of STI capacity should focus national efforts on building and strengthening indigenous scientific, technical, vocational and engineering capacity to select and use existing global knowledge resources, in order to create jobs, generate wealth, and achieve the MDGs.

12. Case studies of Rwanda and Ghana were presented to show that capacity-building was needed at all skill levels: R&D, design and engineering, and technical and craft skills. It was reiterated that STI capacity-building was a cross-cutting issue that required effective public–private sector linkages and a coherent STI strategy at the national level.

B. Innovation policies

13. A resource person emphasized the critical role of innovation in maintaining national competitiveness in the global economy, and highlighted the importance of small-scale businesses and universities in the innovation process. New institutions and incentives may be required to address current realities and emerging challenges at the global level. The provision of incentives for innovative behaviour at the enterprise level might include a relaxation of labour rules, tax relief for start-up enterprises, and policies to support partnerships between government, industry and academia. Public investment in education and research, and support for cooperation and entrepreneurial activity are also key areas for innovation policy formulation.

14. Examples from China, Chile, India, Singapore, Finland and the United States were used to illustrate different national strategies to address capacity-building for innovation. The opportunity for countries to draw on international best practices was stressed.

C. Regional cooperation in Latin America and the Caribbean

15. During the panel meeting, a regional cooperation protocol on science and technology to support innovation efforts in Latin America was signed by senior government representatives from Argentina, Brazil, Chile, Costa Rica, Cuba, Mexico, Nicaragua and Uruguay. It was acknowledged that scientific, technological and productive capabilities among and within countries in the region were uneven and that the creation of such a cooperation mechanism would facilitate knowledge-sharing. The agreement created a platform through which countries could exchange experiences and strengthen regional dialogue in the implementation of policies and preparation of studies.

16. The agreement aims to consolidate efforts within the region to generate, diffuse and apply knowledge in key emerging areas such as ICTs, biotechnology and nanotechnology. It is also intended to increase human and financial capabilities for large-scale projects, and build synergies between scientific and technological development efforts that are at present fragmented.

D. Summary of discussion

17. It was agreed that indigenous capabilities in STI were essential to the achievement of both short- and long-term development goals. Building those capabilities was the role of STI policy, and STI should therefore be at the heart of national development strategies. In order for STI policy to achieve that, it was critical that cohesion be achieved, as far as possible, between policies and capacity-building initiatives across sectors and over different time periods.

18. It was suggested that innovation, in particular, should be a central theme in national development strategies. That might require some existing institutional structures, mandates and resources to be reviewed, and perhaps adjusted or re-oriented to focus on innovation.

19. Participants identified a number of key areas to be addressed by STI strategic and policy planning, including the development of a culture of innovation and entrepreneurship, support for the development of technological

capabilities in small and medium-sized enterprises (SMEs), the provision of incubators for promising technologies, and increasing the numbers of full-time researchers. It was agreed that resources allocated for STI activities should be balanced between short-term and long-term goals.

20. Several participants described policy initiatives and mechanisms that had been instituted in their respective countries to support the development of technological capabilities. It was agreed that some of these could be discussed during the CSTD's twelfth session in May 2009, and that further contributions to the sharing of policy-related experiences would be welcomed, including empirical studies and examples of best practice on:

(a) Initiatives and mechanisms for financing STI;

(b) STI networks that had been established at the local, national, regional and international levels, and/or local clusters;

(c) Mechanisms and incentives to encourage "brain circulation", and/or the retention of skilled personnel;

(d) Innovation strategies that had been developed and were under implementation;

(e) Studies and other activities that contributed to greater understanding of innovative capacity, how it was developed, and how long it took, with particular attention on building technological capabilities within SMEs; and

(f) Methods and indicators for monitoring and evaluating innovative capacity;

21. It was agreed that increasing the levels of global cooperation was essential for improving the efficiency and effectiveness of national efforts to build innovative capacity and tackle common development goals. Sharing knowledge and experiences related to the design and implementation of specific policy measures could maximize policy learning and minimize wasted resources, and could be used to build up an inventory of best practices. Regional cooperation agreements and networks could fulfil valuable roles in that respect. The agreement signed between countries from Latin America and the Caribbean on the first day of the panel meeting provided an illustrative example of regional cooperation arrangements.

22. It was suggested that CSTD could act as a "torch-bearer" for innovation, and innovation-oriented planning, by providing a forum for developing countries, the international community, the STI policy research community and other interested parties to share policy-relevant knowledge and experiences.

23. Participants agreed that UNCTAD's mandate in respect of science and technology for development should be reaffirmed, and its role in that area reinforced. In particular, it was suggested that UNCTAD should continue and expand its efforts to work with other United Nations and related agencies – including the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Bank – on STI issues and activities, and focus attention on cooperation activities, particularly the Science, Technology and Innovation Policy (STIP) Reviews.

IV. Review of the implementation of the outcomes of the World Summit on the Information Society and follow-up at the regional and international levels

24. The Special Adviser to the CSTD on follow-up to WSIS reported on WSIS-related activities that have taken place regionally and internationally since the eleventh session of the CSTD in May 2008. It was noted that hundreds of ICT-related events were taking place at the international and regional levels, and that the overview given must be regarded as incomplete. Furthermore, it was becoming increasingly difficult to identify specific "WSIS implementation" events, as ICTs were so pervasive in all aspects of people's lives. Brief summaries were presented of key WSIS-related activities that had already taken place between June and November 2008, together with selected meetings and activities scheduled to take place in the period immediately following the panel meeting until the end of 2008.

A. Key challenges

25. A major challenge for implementation of the outcomes of WSIS is to realize the potential of ICTs to address poverty reduction and achieve the MDG targets. WSIS recommendations and commitments are very often not reflected in Common Country Assessments/United Nations Development Assistance Frameworks (CCAs/UNDAFs) and Poverty Reduction Strategy Papers (PRSPs). Whilst the WSIS outcome texts contain a number of references to poverty reduction and the MDGs, they do not contain a clear conceptual framework to guide implementation in respect of these objectives.

26. Drawing on the conclusions of the *World Development Report 2000/2001: Attacking Poverty*, the WSIS texts can be examined for their references to three areas in which poverty can be tackled: the empowerment of poor people, the creation of enhanced opportunities and the enhancement of security.

27. The WSIS outcome texts contain elements of an empowerment strategy. One reference is in paragraph 14 of the Geneva Declaration: "We *are resolute* to empower the poor, particularly those living in remote, rural and marginalized urban areas, to access information and to use ICTs as a tool to support their efforts to lift themselves out of poverty." Another reference is in paragraph 11 (h) of the Geneva Plan of Action: "Empower local communities, especially those in rural and undeserved areas, in ICT use and the production of useful and meaningful content for the benefit of all." There are two references in the WSIS outcome documents to empowerment of youth and three references to empowerment of women. General empowerment effects are contained in the Action Line on e-government and the Action Line on e-education. Special empowerment effects are contained in recommendations on access, especially community access.

28. The general WSIS-target to link up half of the world's population with ICTs by 2015 has already been met through the spread of mobile telephony. Mobile phones have facilitated greater and wider access to information, which has created new business opportunities and better links to services. There are also a number of WSIS Action Lines and recommendations that deal specifically with the creation of enhanced opportunities through ICTs. In particular, the Plan of Action (paragraph 21) on e-agriculture envisages agricultural extension services that use ICTs to disseminate information on agriculture, animal husbandry, fisheries, forestry and food. One problem for implementation is to create opportunities for those who lack formal education and/or are able to read and write only in their local languages. Indigenous knowledge networks that

enable communication in local languages are likely to be important in this respect.

29. Action Line C7 on e-health contains several recommendations that are relevant to the enhancement of human security, but the potential role of ICTs in this aspect of poverty mitigation is wide-ranging. For example, e-environment applications include tools to improve communications of meteorological information, including warnings of severe weather events and other natural disasters.

30. A clear and cohesive strategy is needed to bring together the different strands of the WSIS outcomes relating to poverty reduction, where poverty is understood to relate not only to inadequate incomes, but also to a lack of empowerment, opportunity, and security.

B. Summary of discussion

31. Some participants suggested that a CSTD panel meeting could be held in 2009 to discuss ways in which ICTs could address poverty reduction and the achievement of the MDGs, and through this, develop a strategy to guide United Nations personnel in the preparation of UNDAFs and CCAs, and the World Bank and country counterparts in the preparation of PRSPs. It was noted that many World Bank and United Nations staff members, especially at the country level, might still not be aware of – or might underestimate – the potential of ICTs in supporting poverty reduction and achieving the MDGs.

32. Other participants proposed that the commission could, in 2009–2010, focus on one specific technology such as mobile telephony, and to try to gain a deeper understanding of how mobile phones could contribute to poverty reduction and accelerate progress towards the MDGs. A panel discussion could include representatives from mobile phone companies, regulatory authorities, international organizations and non-governmental organizations (NGOs).

33. It was suggested that the CSTD should consider making proposals aimed at improving Action Line Facilitation, if the lead agencies or the United Nations Group on the Information Society (UNGIS) took no action. A smooth and timely flow of information from the Action Line Facilitation meetings to the CSTD was necessary. Re-clustering of the Action Lines could be a possible solution.

34. It was agreed that the CSTD should be kept informed of efforts regarding Digital Solidarity and should also consider addressing issues related to innovative financial mechanisms. To this end, the participants recommended that the outcome of the Lyon Summit on the subject (November 2008) should be considered at the following session.

35. It was suggested that the next report of the United Nations Secretary-General to the CSTD on WSIS implementation and follow-up should contain the results of the written consultation on enhanced cooperation initiated by the office of the Secretary-General.

36. Finally, it was noted that the Internet Governance Forum was an important forum to discuss issues related to Internet governance, and that the CSTD might have to consider the future of the forum beyond 2010.

V. Development-oriented policies for a socio-economic inclusive information society that provides access to information and communication infrastructure in an enabling environment

37. The UNCTAD secretariat presented a paper on the theme "Development-oriented policies for socio-economic inclusive information society, including access, infrastructure and an enabling environment". The paper highlighted the rapid growth in the use of mobile phones and Short Message Service text messaging in developing countries. It was noted that mobile phones had increased empowerment and encouraged entrepreneurship. They enabled users to access information relating to education, health and jobs, carry out banking transactions, and maintain family and social ties. On the other hand, Internet – particularly broadband – penetration was lagging behind, especially in Africa.

38. The cost of Internet access and services remained high, particularly for broadband access. That was mainly due to limited broadband services, which provided national and international connectivity, and the relatively high cost of personal computers and portable laptops in most developing countries. It was suggested that shared access and community access offered a potential solution to those existing barriers. There were several existing shared access models, such as telecentres, which were mostly based on a public–private (or NGO) partnership. Other access models were cybercafés. However, for shared access models to be successful, the right range of services had to be found to generate the levels of usage required to make them sustainable. It was noted that community involvement was crucial for successful and sustainable community access initiatives.

39. At the national level, ICT development required a multi-thematic perspective and a coherent national policy. Institutional challenges lay in a broader context of policy coordination, which took into account political, educational, cultural, scientific, legal and financial factors. Examples from Mauritius and Chile illustrated successes in implementing a cohesive ICT development strategy.

40. It was noted that regional cooperation in deploying ICT could play an important role in taking advantage of the market size, ensuring the harmonized investment and regulatory frameworks of policy at regional levels, and avoiding the issues of regulatory competition. Furthermore, regional cooperation could provide platforms for information exchange and policy discussion. The protection of intellectual property rights, cyber-security, transparency of regulation, and protection of privacy and personal data were some of the issues that could effectively be addressed at a regional level.

A. The online ICT Statistical Information System of the Observatory for the Information Society in Latin America and the Caribbean

41. A member of the Observatory for the Information Society in Latin America and the Caribbean team presented details of the team's ICT Statistical Information System, an online database for harmonized ICT indicators in the region. The objectives of the project were to monitor and analyze the progress of countries in the region towards the creation of information societies. The database could be freely accessed and used to search for, for example, country-specific and time period data, and generate comparative datasets.

B. The development of the Information Society in Latin America and the Caribbean

42. The findings from publication *Information Society in Latin America and the Caribbean: Development of ICTs or ICTs for Development?* were presented by a representative of ECLAC. The book began by noting that present-day challenges were quite different from those faced a decade previously. The gap in access to technologies was shrinking as prices dropped, but effective deployment of ICTs in the region must address new challenges, including appropriation, digitalization and the harmonization of front-office and back-office operations. Latin America was lagging both in hardware production and in the development of new software. Key areas of capacity-building included infrastructure, training systems, and the expansion of applications.

43. The presenter emphasized the need for policy coordination in the region. He noted that Latin America had a Regional Action Plan, called eLAC, which had created a platform for public–private coordination of efforts, validated by government representatives. The plan covered education, infrastructure, health, public management, the productive sectors, and policies and strategies. There was a need to strengthen capacity to develop software and services in the region, and to coordinate the budgets and initiatives of individual countries.

C. Private sector round table on the state of research and innovation in third-generation services and their impact on access to ICT and development in Latin America and the Caribbean

44. Five major companies participated in a round table to discuss long-term product and innovation strategy at the corporate level, especially in the context of the global financial crisis, and the prospects for the region as a producer of ICT technologies. The overall picture that emerged was that all the companies continued to invest large amounts in infrastructure and R&D, despite the current economic crisis, but may need to focus on a post-recession production strategy. One company representative stated that Latin America was seen mainly as a consumer of ICTs, and it seemed that local content in respect of R&D and production, on the whole, was low.

45. The companies spoke of commitment to expanding access to ICTs of low-income and rural populations, and some had launched targeted initiatives to support that objective. One company predicted that the rapid spread of mobile telephones would lead to radical social transformations in the future, and argued that this was the time to innovate and invest. The need to increase investment levels in innovation in Latin America was noted by several companies, and increased access to ICTs in education was stressed.

D. Summary of discussions

46. Participants agreed that a key point that has emerged on this substantive theme was that access to broadband was fast becoming essential, and should no longer be regarded as a "luxury option" for Internet connection. As ICTs were a driving force in the development of STI capabilities more generally, the issue of broadband was one that warranted the commission's close attention.

47. Related to this, it was agreed that shared access and community access arrangements should be encouraged, as individual access to the Internet remained costly in many developing countries, especially in rural areas.

48. There were some suggestions for the commission to propose a focus on a narrower thematic approach for ICTs at the twelfth session of the CSTD, in May 2009. Possible themes identified for discussion at the session were poverty, education, empowerment and the strengthening of democratic processes.

49. It was also suggested that, in addition to addressing the positive development impacts of ICTs, the commission should also consider addressing the negative sides of ICTs (for example, cybercrime, child pornography, and hatred and racism propaganda).

50. Participants agreed that regional cooperation in relation to the development of ICT strategies was important. Cybersecurity, transparency of regulation, and protection of privacy and personal data were highlighted as issues that could be effectively addressed at the regional level.

VI. The role of science, technology and information and communication technologies in addressing the food crisis

51. A resource person gave a presentation on agricultural science and technology for food production, comparing the Green Revolution of the 1960s to the more recently emerging "Biotechnology Revolution". One key difference highlighted was the strong role of the public and not-for-profit sectors in developing and diffusing new technologies – particularly, high-yielding varieties (HYV) of wheat, rice and maize, during the Green Revolution. This was contrasted with the privatization of knowledge and R&D that had so far characterized the biotechnology revolution. In addition, the environmental impact of the new technologies had been of major concern in both cases. It was argued that, in order for science and technology to be used to reduce hunger and poverty, public sector agricultural R&D at the national and international levels should adopt an agenda that concentrated on addressing poverty, food security and nutrition, and environmental sustainability, taking into account the potential threats from climate change and the diffusion of biotechnology.

52. A second resource person spoke of the potential for ICTs to address the problem of low agricultural productivity in Latin America and the Caribbean. It was reported that, in general, per capita mobile phone use was more common than Internet usage, and in both cases per capita usage in urban areas was significantly higher than in rural areas. Going beyond those technologies, there was a wide range of ICT-based or ICT-dependent technologies that could be important for agricultural growth, including remote sensing, Global Positioning System (GPS), Geographic Information Systems (GIS) and specialist software packages. The presentation examined some of the technologies deployed in developed countries.

VII. Main findings and suggestions

53. The following main findings and suggestions were highlighted by the panel and put forward for consideration by the commission at its twelfth session, scheduled to take place in Geneva in May 2009.

A. Science, technology and engineering for innovation and capacity-building in education and research

54. It was agreed that indigenous capabilities in science, technology and innovation were essential tools in the achievement of both short- and long-term development goals. Building those capabilities was the role of STI policy, and STI should therefore be at the heart of national development strategies. At the national level, a strategic approach was needed, in which:

(a) The institutional structures, mandates and resources to manage National Innovation Systems are reviewed and rationalized where appropriate to focus on innovation as a central theme in innovation development strategies;

(b) Efforts to create an enabling environment – including effective linkages between different elements and entities with a national system – are recognized as essential for building innovative capacity;

(c) Realistic timescales to meet national goals are established;

(d) Resource allocation for STI activities is balanced between short- and long-term goals and between public sector R&D and supporting the development of technological capabilities within the productive sectors;

(e) Development of technological capabilities in SMEs is given due attention;

(f) Cohesion is achieved, as far as possible, between policies and capacity-building initiatives across sectors and over different time periods; and

(g) An overall objective of long-term strategy is the development of a culture of innovation and entrepreneurship.

55. It was agreed that increasing the levels of global cooperation was essential for improving the efficiency and effectiveness of national efforts to build innovative capacity and tackle development goals. Sharing knowledge and experiences related to the design and implementation of specific policy measures could maximize policy learning and minimize wasted resources, and could be used to build up an inventory of best practices. Regional cooperation agreements and networks could fulfil valuable roles in this respect.

56. Several members to the commission spoke on policy initiatives and programmes in their own countries that supported the development of technological capabilities. It was agreed that some of those could be discussed during the twelfth session of the commission in May 2009.

57. Further contributions to the sharing of policy-related experiences would be welcomed, including empirical studies and examples on best practice on:

(a) Initiatives and mechanisms for financing STI;

(b) STI networks that had been established at the local, national, regional and international levels, and/or clusters;

(c) Mechanisms and incentives to encourage “brain circulation” and/or the retention of skilled personnel;

(d) Innovation strategies that had been developed and were under implementation;

(e) Studies and other activities that contributed to greater understanding of innovative capacity, how it was developed, and how long it took, with particular attention on building technological capabilities within SMEs; and

(f) Methods and indicators for monitoring and evaluating innovative capacity.

58. The CSTD could act as a torch-bearer for innovation and innovation-oriented planning, and support efforts by national governments to integrate STI into national development strategies by providing:

(a) A forum for developing countries, the international community, the STI policy research community and other interested parties to:

(i) Share and analyze available empirical evidence on technological earning and STI policy impacts, and

(ii) Identify critical gaps in "innovation system" understanding that the policy research community might usefully address;

(b) A clearing house for sharing information and new knowledge on scientific, technological and STI-related policy issues, including financing and regulation.

59. Participants spoke of the need to reaffirm UNCTAD's mandate in respect of science and technology for development, and to reinforce its role in this area. In particular, UNCTAD should:

(a) Continue and expand its efforts to work with other United Nations and related agencies, including UNESCO and the World Bank, on STI issues and activities; and

(b) Focus attention on cooperation activities, particularly STIP Reviews.

B. Development-oriented policies for a socio-economic inclusive information society that provides access to information and communication infrastructure in an enabling environment

60. It was felt that mobile telephones and broadband could currently be seen as the two major areas of ICT for development. The commission should pay particularly close attention to the issue of access to broadband, which was essential for efficient internet usage.

61. Other issues that were identified as potentially important for the CSTD to consider further were:

(a) Shared access and community access arrangements;

(b) Free and open software for e-government projects;

(c) ICT education/training: teaching people how to use ICTs; and

(d) The negative aspects of ICTs, including cybercrime.

62. The CSTD should encourage regional cooperation with regards to ICT strategies. Some key issues – including cybersecurity, transparency of regulation, and protection of privacy and personal data – could be effectively addressed at the regional level.

63. It was felt that the commission might consider identifying one or more focus areas within the present substantive theme on the information society. Empowerment and education could be priority themes. Other themes could be strengthening democratic processes and election processes through ICTs.

C. The review of the implementation of the outcomes of the World Summit on the Information Society and follow-up at the regional and international levels

64. It should be requested or confirmed that the next report of the Untied Nations Secretary-General to the CSTD on WSIS implementation and follow-up would contain the results of the written consultation on enhanced cooperation initiated by the office of the Secretary-General.

65. It should be requested that the CTSD be kept informed of efforts regarding Digital Solidarity. The CSTD should also consider addressing issues related to innovative financial mechanisms.

66. The CSTD should consider making proposals aimed at improving Action Line facilitation, if the lead agencies and UNGIS take no action. A smooth and timely flow of information from the Action Line meetings to the CSTD is necessary. Re-clustering of the Action Lines may be a possible solution.

67. At each annual session, the commission should address new and emerging issues related to WSIS that have emerged since the previous annual session, even if a full-fledged WSIS resolution is not necessary at every CSTD meeting.

68. The CSTD secretariat should take into account the suggestions made in the paper submitted by the International Chamber of Commerce.

Annex

List of participants

A. CSTD members

Angola
Mr. Pedro Sebastiao Teta, Vice Minister, Ministry of Telecommunication and Information Technology

Mr. Bartolomeu Milton, Advisor to the Vice Minister of Telecommunication and Information Technology, National Coordinator of the Commission for ICT

Argentina
Ms. Olga Cavalli, Ingeniero, Asesora del Grupo Especial de Asuntos Tecnológicos, Ministerio de Relaciones Exteriores, Comercio International y Culto

Austria
Mr. Johann Stockinger, Head of Department, Austrian Computer Society

Brazil
Mr. Felipe Costi Santarosa, Head, Division of Science and Technology, Ministry of External Relations

Burkina Faso
Mr. Lamoussa Oualbeogo, Secretary-General, Ministry of Post and ICT

Chile
Mr. Juan Eduardo Eguiguren, Ambassador, Director of Special Policy Division, Ministry of Foreign Affairs

Mr. Luciano Parodi, Counselor, Global Issues Division, Subdivision of Aerospace and Telecommunication, Ministry of Foreign Affairs

Cuba
Mr. Jorge Ferrer Rodriguez, Minister Counsellor, Permanent Mission of Cuba to the United Nations Office at Geneva

Democratic Republic of the Congo
Mr. Fidele Khakessa Sambassi, Minister Counsellor, Permanent Mission of the Democratic Republic of the Congo to the United Nations Office at Geneva

El Salvador
Mr. Miguel Angel Alcaine Castro, Ambassador, Deputy Permanent Representative of El Salvador to the United Nations Office at Geneva

Equatorial Guinea
Mr. Sisinio Mbana Makina, Chargé d'affaires a.i, Permanent Mission of Equatorial Guinea to the United Nations Office at Geneva

Eritrea
Mr. Hailezghi Tesfamariam, Head and CEO, Eritrean Science and Technology Development Agency

Finland
Mr. Yrjö Länsipuro, Ambassador, ICT and Information Society Policy Coordinator, Ministry of Foreign Affairs

Germany
Mr. Ingo Imhoff, Advisor to the Federal Ministry for Economic Cooperation and Development (BMZ) and Manager, Sector Project ICT for Development, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)

India
Prof. Sarvagya Katiyar, Vice Chancellor, Chhatrapati Shahu Ji Maharaj University

Jamaica
Ms. Kofiann Spence, Coordinator, Science & Technology Education Unit, Scientific Research Council

Jordan
Mr. Mohammad Hamdan, Advisor, Engineering Sector, the Higher Council for Science and Technology

Latvia
Mr. Janis Mazeiks, Ambassador, Permanent Mission of Latvia to the United Nations Office at Geneva

Lesotho
Mr. Mothetjoa Metsing, Minister of Communications, Science and Technology

Ms. Maseqobela Williams, Director of Science and Technology, Ministry of Communications, Science and Technology

Malaysia
Dato' Dr. Sharifah Zarah Syed Ahmad, Ministry of Science, Technology and Innovation

Dr. Hasan Mat Daud, Ministry of Science, Technology and Innovation

Mr. Ahmad Wafi Harussani, Principal Assistant Secretary, International Division, Ministry of Science, Technology and Innovation

Oman
Mr. Mohamed Al-Mughairi, Assistant Secretary General for Innovation, the Research Council

Mr. Saoud Al-Shoaili, Research Assistant; ICT Sector, the Research Council

Peru
Mr. Jorge Del Carpio, Director de Sistemas de Información y Comunicación, Consejo Nacional e Ciencia Tecnologia e Innovación Tecnológia

Philippines
Mr. Fortunato Dela Peña, Undersecretary for Science and Technology, Department of Science and Technology

Sierra Leone
Mr. Thomas Yormah, Associate Professor and Head, Department of Chemistry, Fourah Bay College, University of Sierra Leone

Slovakia
Mr. Štefan Morávek, Ambassador, Government Office of the Slovak Republic, European Policy and Knowledge Society Division

Sri Lanka
Prof. Vijaya Kumar, Chair, Industrial Technology Institute.

Sudan
Mr. El Tayeb Idris Eisa, Secretary-General, Ministry of Science and Technology

Switzerland
Mr. Thomas Schneider, Coordinator Information Society, Swiss Federal Office of Communications

Turkey
Mr. Ferhat Guner, Expert on Scientific Programs, the Scientific and Technological Research Council

Uganda
Mr. Benjamin Mukabire, Second Secretary, Economic Affairs, Permanent Mission of Uganda to the United Nations Office at Geneva

United States of America
Mr. Andrew Reynolds, Deputy Science and Technology Adviser to the United States Secretary of State

B. Observer countries

Congo
Mr. Jean Marcellin Megot, Counsellor, Permanent Mission of Congo to the United Nations Office at Geneva

South Africa
Ms. Lindiwe Gama, Deputy Director, Department of Science and Technology

C. Resource persons

Dr. Charles Wessner, Director, Technology, Innovation and Entrepreneurship, The National Academies Board on Science, Technology and Economic Policy, Washington, DC

Mr. Alfred Watkins, Science and Technology Program Coordinator, the World Bank, Washington DC

Mr. Sergio Faiguenbaum, Consultant, Policy Group, Food and Agriculture Organization of the United Nations (FAO), Santiago, Chile

Ms. Martine Dirven, Chief, Agricultural Development Unit, Officer-in-Charge, Division for Productive Development and Management, ECLAC, Santiago, Chile

D. Invited guests

Ms. Susana Aguero, Delegation of the European Union, Chile
Mr. Gabriel Aintablain, Division of Innovation, Science and Technology, Uruguay
Mr. Rogers Atero, University of Santiago, Chile
Ms. Valeria Betancourt, APC, Ecuador
Mr. Aldo Bonilla, eLAC 2010 National Focal Point, Guatemala
Ms. Jennifer Britton, CARICOM Secretariat, Guyana
Ms. Angélica Cabrera, Embassy of Colombia, Chile
Mr. Gustavo Campos Fallas, Embassy of Costa Rica, Chile
Ms. Martha Patricia Cardoso Ramírez, eLAC 2010 National Focal Point, Mexico
Mr. Jose Vitor Carvalho Hansem, Ministry of External Relations, Brazil
Ms. Ignacio Casas, Pontificia Catholic University, Chile
Ms. María Angélica Celedón, Vice-President, ATACH, Chile

Mr. José Clastornik, eLAC 2010 National Focal Point, Uruguay
Mr. Gabriel Contesse, Motorola, Chile
Mr. Raúl Déjean, Ministry of Foreign Affairs, Argentina
Mr. Gonzalo Donoso, Ministry of Education, Chile
Mr. Raúl Echeverría, LACNIC, Uruguay
Mr. Luis Antonio Elias, Executive Secretary, Ministry of Science and Technology, Brazil
Ms. Maria Eugenia Flores, Minister for Science and Technology, Costa Rica
Ms. Karlene Francis, Director General, Ministry of Energy, Mining and Telecommunications, Jamaica
Mr. Hernán Galperín, DIRSI, Argentina
Ms. Elena Garcia, RELPE, Argentina
Ms. Luz María García, Department of Energy, Science, Technology & Innovation, Ministry of Foreign Affairs, Chile
Mr. Francisco Gómez Alamillo, AHCIET, Spain
Mr. Patricio Gutiérrez, Executive Secretary of the Chilean Digital Strategy
Mr. Juan Miguel Heiremans, Ministry of Foreign Affairs, Chile
Mr. Alejandro Hernández Pulido, eLAC 2010 National Focal Point, Mexico
Ms. Vivian Heyl, President, CONICYT, Chile
Mr. Pablo Hinojosa, ICANN, USA
Ms. Astrid Hollandes, UNESCO Regional Bureau for Education, Chile
Mr. Erick Iriarte, representative of the Government of Peru
Mr. Alberto van Klaveren, Acting Minister of Foreign Affairs, Chile
Ms. Ruth Graciela Ladenheim, Secretary of State, Ministry of Science, Technology and Productive Innovation, Argentina
Mr. Juan Pablo Lira, Ministry of Foreign Affairs, Chile
Mr. Claudio Maggi, Director, INNOVA Chile
Mr. Andrés Maz, Cisco, United States
Ms. Cynthia Karolina Moncada, National Telecommunications Commission, Honduras
Mr. Juan Nazal, INNOVA Chile
Mr. Dag Nielsen, Ericsson, Sweden
Mr. Rafael Orduz Medina, Colombia Digital
Mr. Claudio Ossa Rojas, Chile
Mr. Andrés Pacheco, Microsoft, Chile
Mr. Rafael Pando, Director of Planning, Evaluation and Technology, CONACYT, México
Mr. Miguel Pastore, National Telecommunications Commission, Paraguay
Mr. Alexander Peñaranda Zarate, Embassy of Costa Rica, Chile
Mr. Joaquim Penna, First Secretary, Embassy of Brazil, Chile
Mr. Fernando Perini, Institute for Connectivity in the Americas, Uruguay
Mr. Alex Pessó Stoulman, Microsoft, Chile
Mr. Ben Petrazzini, IDRC-ICA, Uruguay
Mr. Fermin Pineda, Director for Science and Technology, CONICYT, Nicaragua
Ms. Lorena Piñeiro, Ministry of Transport and Telecommunications, Chile
Ms. Ruth Pinos, CONATEL, Ecuador
Mr. Vito Quevedo, Director of Technology and Innovation, Ministry of Science, Technology and the Environment, Cuba
Mr. Miguel De La Rosa, Fundación Telefónica
Mr. Jan Ruge, Embassy of Costa Rica, Chile
Mr. Fabián Saenz, CONATEL, Ecuador
Mr. Didier de Sainte Pierre, Ministry of Education, Chile
Mr. Laurentzi De Sasia, Intel, Chile
Mr. Alejandro Sfeir, First Secretary, Department of Special Policy, Ministry of Foreign Affairs, Chile

Mr. Florencio Utreras, RedCLARA, Chile
Mr. Marit Varmo, Head of Research and Knowledge Management, EuroChile, Chile
Ms. Maite Vizcarra, Ericsson, Peru

E. Economic Commission for Latin America and the Caribbean

Ms. Mariana Balboni
Ms. Alicia Bárcena, Executive Secretary
Mr. Mario Cimoli, Coordinator for the Area of Innovation
Mr. Cesar Cristancho
Mr. Matteo Grazzi
Mr. Massiel Guerra
Ms. Valeria Jordán
Mr. Wilson Peres, Chief, Industrial and Technological Development Unit
Ms. Annalisa Primi
Ms. Jennifer Ross, Project Assistant, Information Society
Mr. Sebastián Rovira
Ms. Martha Sanchez

F. UNCTAD secretariat

Mr. Mongi Hamdi, Head of the CSTD Secretariat and Chief, Science, Technology and ICT Branch, Division on Technology and Logistics
Mr. Charles Geiger, Special Adviser to the CSTD
Ms. Kathryn Stokes, Economic Affairs Officer, Science, Technology and ICT Branch, Division on Technology and Logistics
Ms. Marion Motari, Associate Economic Affairs Officer, Science, Technology and ICT Branch, Division on Technology and Logistics