

ITU Symposium on ICTs and Climate Change
London, UK, 17-18 June 2008
Supported and hosted by BT plc



Chairman's Report (Final, 30 June)

- 1 The issue of climate change needs to be tackled from a global perspective through international cooperation, because its impact affects the entire planet and it is growing more serious every year, threatening achievement of the goal of the UNFCCC. Estimates from the Intergovernmental Panel on Climate Change (IPCC) showed that global greenhouse gas (GHG) emissions, the primary cause of climate change, have risen by 70 per cent since 1970. In Kyoto, in December 1997, the world took concrete steps to mitigate climate change with a roadmap to a new international agreement to limit and reduce GHG emissions. The first commitment period set out in the Kyoto Protocol runs from 2008 to 2012 and a UN-led process is now underway to develop a successor agreement to limit and reduce GHG emissions.
- 2 In Kyoto, ITU and MIC Japan held the first international symposium on ICTs and Climate Change, 15-16 April 2008. This second ITU symposium, held in London, UK, from 17-18 June 2008, hosted and sponsored by BT plc, aimed to build on the outcomes of the first one. The London symposium was chaired by Mr. Tom Walker, Director, Europe and International Business Relations, Department for Business Enterprise and Regulatory Reform (BERR), UK with approximately [140] participants, plus a further [60] participating remotely, drawn from a wide range of organizations including the private sector, research institutes, international organizations and governments. The report will be forwarded to the G8 Summit, to be held at Lake Toya, Hokkaido Prefecture in July 2008 and other relevant meetings.
- 3 Participants were welcomed by Sir Michael Rake, Chairman, BT Group, who outlined some of BT's achievements as a pioneer in the field of actions to mitigate climate change. A message from the UN Secretary-General, Ban Ki-moon, welcomed the initiative of organizing these symposia and called upon the ICT sector to apply international standards to reduce GHG emissions. Mr Malcolm Johnson, the Director of the ITU Telecommunication Standardization Bureau said that increased use of technology and associated use of electricity contributes to the threat of climate change, but it is clear that technology is also a key part of the solution. He handed over to Mr Matt Bross, Chief Technology Officer of BT Group who discussed the role of standards. "While we might be pleased with what has been achieved in terms of standards, we should by no means be satisfied", he said. He showed the role that standards organizations can play in working together to exploit the potential of ICTs. He stressed that the industry and ITU should be forward-looking in anticipating market trends and the challenges these will pose for increased energy efficiency in ICT. He also stressed the scope for ICTs to assist other sectors in improving their energy efficiency. Finally he concluded that the power to bring about the necessary behavioural and technical change was in the hands of the people.
- 4 During the opening session of the symposium, the BT chairman Mike Rake accepted a Queen's Award for Enterprise - recognizing the company's efforts in the field of sustainable development. The award - also received by BT in 2003 and which runs for five years - was presented by the Lord Mayor of the City of London Alderman David Lewis on behalf of Her Majesty the Queen.
- 5 The Symposium had six substantive sessions: "Climate change: ICTs to the rescue?", "Corporate responsibility: Towards a climate-neutral ICT Sector", "ICTs for monitoring climate change", "ICTs as a clean technology", "Towards a high-bandwidth, low carbon future" and "Adapting to climate change". The following discussion of these sessions highlights some of the main outcomes of the discussion.

6 Session 1: Climate change: ICTs to the rescue?

- 6.1 This session, chaired by Dr Tim Kelly (ITU) included presentations from Mr Masahiko FUJIMOTO, Director, Information Applications Promotion Office, Information and Communications Policy Bureau, MIC (Japan): on the outcomes of the Kyoto Symposium; from Ms Donna YOUNG, Head of Environment and Climate Change, BT Group, on protecting our changing world; from Mr Nigel HICKSON, Dept for Business Enterprise and Regulatory Reform (BERR), UK on UK initiatives on climate change, Global e-Sustainability Initiative; from Dr Luis NEVES, Head, Sustainable Development and Environment, Deutsche Telekom, on the Global e-Sustainability Initiative (GeSI); and from Mr Art LEVIN, Head, Corporate Governance and Membership Division (ITU) on the UN climate change process and the ITU background report for this event.
- 6.2 A range of different statistics were presented, for instance on the contribution (directly or indirectly) of ICTs to global greenhouse gas emissions, on the reductions achieved by BT and on the UK targets for future GHG cuts. These statistics were generally consistent with the goal stated in the IPCC report of a reduction of 25-40 per cent in GHG emissions by 2020. This indicated that the solution is achievable but that delay will at least make a solution much more costly.
- 6.3 The session showed that there are a number of new technologies that promise to cut GHG emissions, notably in the transition to next-generation networks (NGNs). But even more promising developments are on the horizon. It was also made clear that technology alone will not enable the emission targets to be met; there was a sense that behavioural and cultural change (across our working and home lives) was also an essential element.
- 6.4 Investment in GHG-reducing ICTs can be seen as a “smart opportunity” in that it not only helps in saving the planet but also contributes to reducing costs and improving profitability. For instance, BT’s own use of videoconferencing has saved an estimated £240 million. Ms. Donna Young from BT stated that some technologies are here today and have been around for sometime. However, even with clear commercial benefits take up is low, as such, it is behavioural and cultural barriers that need to be worked on as critical elements to success.

7 Session 2: Corporate responsibility: Towards a climate-neutral ICT Sector

- 7.1 This session, chaired by Ms Sheridan NYE, University of Sussex, included presentations from Dr Chris TUPPEN, Director, Sustainable Development, BT Group, on Setting a Global Climate Stabilization Intensity (CSI) Target; from Dr Jack ROWLEY, Director, Research and sustainability, GSM Association, on Unwiring the Planet - Wireless Communications and Climate Change; from Mr Paolo GEMMA, ETSI Environmental Engineering Secretary, Senior Manager, Huawei Technologies Co. Ltd., on Broadband energy saving strategy; from Mr Paolo BERTOLDI, European Commission, DG JRC, on European policies for energy efficiency in ICTs; from Mr Douglas JOHNSON, Senior Director, Technology Policy and International Affairs, Consumer Electronics Association (CEA) on Consumer ICTs: Industry initiatives and policy approaches for saving energy and reducing emissions; and from Mr Martin EUGSTER, EMPA (Switzerland) on ICTs: from cradle to e-waste.
- 7.2 This session introduced a new innovative metric for measuring the impact of ICTs on climate change – the climate stabilization intensity index (CSI) target, as proposed by Dr Chris Tuppen from BT. This has the advantage that it recognizes the need for economic growth whilst ensuring a transformation to a low carbon economy. It takes the overall reductions needed over time to achieve stabilization of the climate system and enables a company to assess its position relative to that level. It requires companies to measure their emissions relative to their contribution to GDP or added value.
- 7.3 A number of presentations also looked at life cycle assessment (LCA) methodologies for assessing the GHG emissions at different stages of production, use and end-of-life and of the value of using renewable energy, for instance solar or wind power for charging mobile base stations.

7.4 Presentations contrasted regulatory approaches in the European Union, such as the broadband codes of conduct, with voluntary private sector-led initiatives in the USA, such as the *Energy Star* mark used by the consumer electronic industry. In particular, this session focused on the hardware and manufacturing side of the industry.

8 Session 3: ICTs for monitoring climate change

8.1 This session, chaired by Mr Bill THOMPSON, Technology Writer (UK) included presentations from Dr Michel SCHOUPE, Research Programme officer in the field of ICT and the environment, DG Information Society, European Commission, on EU initiatives on ICT and the environment; from Mr John HOWIE, Director, International Affairs, Trustworthy Computing Initiative, Microsoft, on Microsoft Collaboration with UNEP World Conservation Monitoring Centre; from Mr Nangapuram VENKATESH, Study Group Counsellor, ITU-R on ITU Radiocommunication Conferences and monitoring, mitigating and adapting to climate change; from Mr Dave BERRY, National e-science centre (UK), on Achieving Carbon & Cost Accounting Per Service or Task, through Data Collection and Simulation Modelling; and from Mr Pankaj BHATIA, GHG Protocol Initiative, on Methodologies for measuring the carbon footprint.

8.2 This session focused on the application of advanced ICTs to counter climate change through more effective measurement and management of activities that contribute to carbon emissions and for the effective monitoring of the environmental and meteorological impact of climate change, for instance by using ICTs for environmental monitoring, for supporting carbon trading systems, for assisting cities in monitoring emissions, for calculating the carbon footprint or for carbon cost accounting.

8.3 A wide range of initiatives and programmes were introduced and described. They included the interconnected projects that contribute to the development of SISE, the European Commission's plan to develop a Single Information Space in Europe for the Environment through the integration of sensor networks and the facilitation of technical interoperability between different tools and services. The need for monitoring to incorporate diverse sources providing vast amounts of data that must be stored for long periods of time was highlighted.

8.3 Presentations demonstrated the value of the spectrum as a support for basic science, especially in the fields of weather forecasting, remote sensing, climate monitoring and environmental management and explained current methodologies for calculating carbon footprint. Noting that demand for computing power is growing so fast that efficiency gains will not be enough to reduce the carbon load of ICTs in the future. One solution would be to model the energy use of computers in data centres as a path towards providing per-process accounting for ICT use.

8.5 Speakers also looked at current methodologies for assessing carbon footprints, noting that 'what you measure you can manage' and 'what you measure well you can manage well'. The session provided a broad introduction to the many ways in which ICTs are being used to improve the quality both of measurement and management in the area of climate change.

9 Session 4: ICTs as a clean technology

9.1 This session, which was chaired by Mr Richard LABELLE, Aylmer Group (Canada), included presentation from Mr Sean KIDNEY, Director of Science and Systems, Climate Risk Pty Ltd (Australia), on Telecom-based opportunities to reduce greenhouse gas emissions; from Ms. Katalin SZOMOLÁNYI, European Telecom Network Operators' Association (ETNO) and Magyar Telecom (Hungary) on Saving the climate @ the speed of light; from Mr Christian OLLIVRY, FTTH Europe on Fibre Optics and energy efficiency; from Mr José Alberto VARELA SANZ, Telefónica, Large Companies and Public Administration (Spain) on Building automation for energy efficiency; from, Mr Sukhdev DLAY, Communications, Media and Entertainment, SAS Institute (Belgium) on Optimal decision-making in the sustainability agenda; and from Dr Fabrice SAFFRE, Principal Researcher, BT Group on Enabling energy micro-management through ICT.

- 9.2 One of the main elements of this session was the presentation of reports concerning the use of ICTs for mitigating greenhouse gas emissions, including through the process of dematerialization. These include studies of Australia (presented by Climate Risk), of the European Union (presented by ETNO) and on fibre optics (presented by FTTH Council Europe).
- 9.3 Applications that show the greatest promise for dematerialization include flexible working, telemedicine/home care, personalized public transport, sustainable community/city planning, high-performance video-conferencing. The reports show that the direct impacts of GHG emissions from increased use of ICTs is greatly outweighed – perhaps in the ratio of 10:1 – by the savings facilitated by the carbon abatement opportunities they generate.
- 9.4 Another promising technology is in building automation. Critical “levers” that enable reduced energy consumption include presence management (i.e., adjusting for unoccupied rooms), lighting and air heating/cooling. Telefónica’s studies show that optimization through the use of ICTs can save up to 27 per cent of annual energy of a typical branch office. Similarly, the Telstra study showed that presence-based power could save some 3 million tonnes of CO₂ equivalent in Australia. BT also showed what can be achieved through micro-management of energy demand to maximize the use of renewable sources.
- 9.5 Demand side management using ICTs is a way of helping utilities and consumers level demand for energy by providing greater access to information about supply and demand and allowing the utility to schedule appliance use to level out peak demand in order to avoid brown outs. Participating consumers can see their utility bills decrease accordingly and the electrical utilities benefit by leveling peak use. This is possible by using ICTs embedded in appliances and using software and network connections that allow smart billing and scheduling of individual energy consuming processes. Load can be shaped to match local supply. Micro generation can also be factored in.

10 Session 5: Towards a high-bandwidth, low carbon future

- 10.1 This session, which was chaired by Mr James MACFIE, Nortel (Canada), included presentations from Mr Peter INGRAM, Chief Technology Officer, OFCOM (UK), on A regulator’s view; from Mr Bernard DUGERDIL, Freescale Semiconductor and ETSI Board Member; on ETSI Green Agenda; from Mr Yoichi MAEDA, Chair, ITU-T Study Group 15 (Optical and other transport network infrastructure), on Energy Efficiency Checklist; from Dr Yuji INOUE, President and CEO, Telecommunication Technology Committee of Japan, on Proposals for ITU standardization activities on ICTs and Climate Change; and from Mr Dominique ROCHE, France Telecom Group, Infrastructure and Transmission Standardization Manager and Mr Flavio CUCHIETTI, Telecom Italia on Energy Efficiency Inter-Operator Collaboration Group on ICTs and efficient broadband; and from Mr James MACFIE, Nortel, on Views From The ICT Standards Advisory Council of Canada.
- 10.2 The main focus of this session was on standardization. In addition to the first presentation, which looked at standards-making from a regulator’s viewpoint, there were presentations based on the work of ITU-T, ETSI, TTC, the newly-established Energy Efficiency Inter-Operators Collaboration Group and Standards Advisory of Council. Many standards bodies have now launched new initiatives in the field of climate change. Tools used including a checklist approach for review of standards, a move towards paperless working methods and use of remote participation facilities.
- 10.3 In addition to putting their own house in order, standards development organizations (SDOs) can also develop energy efficient standards for implementation by the industry. For instance, ETSI is working on Intelligent Transport Systems while ITU-T is working on power consumption for xDSL technologies. As a result of the Kyoto Symposium, ITU-T is establishing a Focus Group on climate change, with a terms of reference to look at a common methodology for evaluating the impact of GHG emissions of ICTs; directly, indirectly and systemic.
- 10.4 There is a need for coordination between the green agendas of the different SDOs and also among some of the spin-off initiatives. In particular, there is a need for a gap analysis of who is doing what, so

that a more efficient division of labour can be arranged and topics receiving insufficient attention (for instance, e-waste) can be addressed.

11 Session 6: Adapting to climate change

- 11.1 This session, which was moderated by Mr Bruce STANFORD, Managing Director, Major Programmes, BT Wholesale, included presentations from Mr Don MACLEAN, Associate, International Institute for Sustainable Development (Canada) on ICTs, adaptation to climate change, and sustainable development at the edges; from Prof Naoko IWASAKI, Assistant-Director, ITU-Waseda ICT Centre (Japan) on Disaster preparedness and the global environment; from Dr Neena SINHA, University School of Management Studies (India: *Remote presentation*) on An integrated framework for ICT-supported disaster preparedness in India; from Dr Thomas DOWNING, Executive Director, Stockholm Environment Institute, Oxford office, on Technological paths to sustainability; from Ms Kerstin LUDWIG, Project Officer, ICT Applications and Cybersecurity Division, ITU-D on ICTs for e-environment and from Prof. Shoichiro ASANO, National Institute of Informatics and Dr. Susumu YONEDA, Softbank Telecom Corp. Lab (Japan) on Using networked ID systems to prepare for Global Environmental/Health Concerns.
- 11.2 It was noted that, while the costs of adaptation to climate change is likely to be measured in terms of billions of US dollars, the cost of failing to adapt would amount to trillions. On a pessimistic note, climate change experts report that current efforts to mitigate global warming will inevitably fail, so adaptation is inevitable. While there may be certain benefits to be gained from global warming, the net effects are overwhelmingly negative. The papers from India and Japan focused on the need for disaster-preparedness and the role of a Chief Information Officer (CIO) as well as government structures, in this respect. The paper from Canada focused on the challenges faced by Arctic community.
- 11.3 The challenges of climate change adaptation are only poorly understood, and therefore there is a need to leverage ICT-based techniques – such as wikis, social networks, diffusion of best practice examples – to support technology transfer. The Swedish Programme for ICT in Developing Regions (SPIDER) provides a good example in this respect, in providing a link to poverty reduction strategies. Adaptation strategies need to be scale-free, and ICT offer the best way of delivering this.
- 11.4 The main burden of adaptation will fall on developing countries, which are often in a vulnerable position and not able to use ICTs effectively or to integrate scientific data into policy-making. The presentation from Softbank Telecom looked at how monitoring networks can be deployed to assist developing countries. Such networks would need to have identity management functionality, which is an important area of ongoing standardization.

12 Review and wrap-up session

- 12.1 The overall and wrap-up session was chaired by the overall Symposium chair, Mr Tom Walker, with the participation of moderators from the six substantive sessions who provided a brief report on their sessions. Mr Walker then proceeded towards adoption of this report, with changes proposed by participants being incorporated into this revised document. He invited further comments on the version posted on the ITU website by 27 June 2008.

13 Close of meeting

- 13.1 Mr Malcolm Johnson (ITU-T) took the floor to close the meeting, with some reflections on the discussion and a vote of thanks for the speakers and moderators, the participants, the hosts, and BERR who hosted a reception on the first day. Mr Johnson said “There seems to be three order effects to address:
- Energy consumption of ICT equipment;
 - Efficiencies to be gained through the use of ICTs in other sectors;
 - The need for a behavioural change – both for businesses and consumers.

I believe ITU has a role to play in all three areas. We will study the Chairman's excellent summary of this symposium to adapt our future work programme accordingly." He also expressed confidence in taking the Kyoto proposal to establish a Focus Group forward to TSAG now it had received the endorsement of this meeting.

- 13.2 Mr Bruce Stanford (BT) echoed his words and thanked ITU, as the organizer, for bringing such diversity to the event. He note that the gestation of the event had taken less than six months, and there was a need now to take time to digest the very rich material presented. BT will continue to try to lead in this field, he said, but it is never possible to do enough. Tom Walker closed the meeting noting the words from Ms Ludwig's presentation that ICTs can be either heroes or villains in the coming combat against climate change, and ensuring that we make sure it is the former.