

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT



# WSIS FOLLOW-UP REPORT 2008



UNITED NATIONS



world summit  
on the information society  
Geneva 2003 - Tunis 2005



**UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT**

# **WSIS Follow-up Report 2008**



**United Nations**  
**New York and Geneva, 2008**

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## Preface

The World Summit on the Information Society (WSIS) was a landmark event and at the same time a unique international effort to understand the historical transformation of the way we live, learn, work, communicate and do business. WSIS told us not to submit passively to this transformation, but to get actively involved in the building of a people-centred, inclusive and development-oriented Information Society.

UNCTAD hosts the secretariat of the Economic and Social Council's Commission on Science and Technology for Development (CSTD), in charge of WSIS follow-up. UNCTAD therefore intends to publish, besides the annual *Information Economy Report*, an annual *WSIS Follow-up Report*, which will not only summarize every year the efforts made by entities of the United Nations system, other international organizations, non-governmental organizations (NGOs), civil society and business entities in the implementation of the WSIS goals and targets, but shall also seek to provide, every year, an analysis of some of the major trends in the Information Society.

The present *WSIS Follow-up Report 2008*, in its first part, aims to analyze the major trends in infrastructure and access, as well as in national and international networks and traffic, in convergence and in the field of social networking and energy and environment. Future reports may vary in the analytical part and look at trends in applications, in information and communication technologies (ICTs) for development or at the impact of mobile phones on poor people's lives. The second part of the report takes into account the contributions and presentations to the United Nations Secretary-General's report to the CSTD on WSIS follow-up made by United Nations agencies and other WSIS stakeholders and mentioned in annex 2.

The *WSIS Follow-up Report 2008* is a tangible contribution of UNCTAD to the implementation of the World Summit on the Information Society, bringing to it the much-needed holistic view of the ongoing important societal transformation.



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UNCTAD acknowledges the contributions and presentations of the major United Nations agencies and other stakeholders regarding WSIS implementation in 2007–2008, which were taken into consideration for the production of this report.

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## **Part 1. Recent global ICT developments**

### ***I. Background***

The Economic and Social Council, in its resolution 2006/46 of 28 July 2006, requested the United Nations Secretary-General to inform the Commission on Science and Technology for Development (CSTD) on the implementation of the outcomes of the World Summit on the Information Society (WSIS) as part of his annual reporting to the Commission. In its resolution 2007/8 of 25 July 2007, entitled “Flow of Information for the Follow-up of the World Summit on the Information Society”, the Council reiterated the above request, and further requested the United Nations organizations acting as action line facilitators, United Nations regional commissions, main theme facilitators, the Global Alliance for Information and Communications Technologies and Development (GAID) and other entities to submit to the secretariat of the Commission their respective reports, as inputs towards the elaboration of the annual report of the Secretary-General to the Commission, with their own executive summaries. The Secretary-General’s report (A/63/72–E/2008/48) submitted in response to those requests, provides a general summary of progress towards implementation of the summit outcomes at regional and international levels.

To complement the above report, the secretariat of CSTD prepared this *WSIS Follow-up 2008 Report*, which aims to give a more detailed analysis of current trends in the Information Society. It further aims to provide an expanded accounting of efforts at WSIS implementation at regional and international levels.

### ***II. Introduction***

ICTs have become so pervasive that it is difficult to find aspects of human existence that are left untouched. Personal communication has been revolutionized by telephony, e-mail and instant messaging. Governance, education and health care, as well as decision-making and management in all fields of endeavour have been transformed by immediate access to data, knowledge and expertise. And when combined with the ability to carry out rapid financial transactions, the use of ICTs has become a prerequisite for living in modern society, not to mention providing new work and leisure opportunities. However, the majority of the world’s population has yet to benefit from these developments. This phenomenon – the so-called “digital divide”, exists not only between developed and developing countries, but also within countries, where people who are poor, rural, disabled and/or women, may be excluded. The growing worldwide recognition of this inequitable situation, along with the need to better understand the widespread effects of ICTs on society led to the World Summit on the Information Society. The summit set forth a vision of the future Information Society and identified a series of activities and commitments necessary to reduce the divide and to assess the impacts of ICTs. Two and a half years has passed since the second phase of the WSIS Summit in Tunis in November 2005, and considering that many development projects have a two- or three-year lifespan, an assessment of progress in 2008 marks an important time to gauge the impact of the initiatives

spawned by the Summit and to learn the lessons necessary to guide future activities. It is also noteworthy that 2008 marks the mid-term to the 2015 target date of Millennium Development Goals (MDGs).

### ***III. Global progress towards an Information Society***

In such a fast moving area as ICT development, up-to-date reporting is needed for assessing trends in the information society. Unfortunately most global assessments of ICTs rely on some data that is at least one, if not two or three years old, especially for developing countries, and at the time of writing, there were no worldwide assessments of all the relevant data for 2007. Fortunately, data for the newer technologies, such as mobile telephony and Internet-use, is generally more up-to-date. As a result, this report makes use of a wide range of different sources<sup>1</sup> in order to present the most up-to-date picture of current trends, although there are necessarily some gaps for which 2006 data is used where available. Also, some of the regional statistics reported here are not necessarily in alignment with the regions used by the United Nations Regional Commissions because industry associations and regional economic bodies usually report using different country groupings.

#### **A. Trends in ICT infrastructure – mobile phones, Internet and broadband**

##### ***Global trends***

The year 2008 is an important marker in the history of progress toward a global Information Society. It is the year where over half the world's population had obtained at least some level of connectivity – via mobile telephony. There were an estimated 3.3 billion mobile subscriptions<sup>2</sup> at the end of 2007, and compensating for countries where mobile penetration is over 100 per cent, the expected double-digit growth this year will put the number at well over 50 per cent of the 6.6 billion people on the planet. In addition, 80–90 per cent of the world's population now lives within range of a cellular network, double the level in 2000, while only 27 countries have mobile penetrations under 10 per cent. By contrast, the global fixed line penetration was 19 per cent in 2006 according to the ITU, with little or no prospect of increase, and is in fact declining in some developed countries.

Aside from the convenience of mobility and the ability to provide service where no fixed infrastructure exists, growth in mobile phone use has also been fuelled by the ability to provide short message services (SMSs). SMS not only provides a low-cost alternative to voice communications that is especially popular in low-income countries, but also a wide variety of data services, such as financial transactions, news and market price updates (see below). It is estimated that 1.9 trillion text messages<sup>3</sup> were sent in 2007, producing revenues of \$52 billion for mobile operators. Messaging is forecast to grow almost 20 per cent in 2008 to reach 2.3 trillion messages. The Asia-Pacific region and Japan, in particular, are the biggest users of mobile messaging, where it is estimated that 1.5 trillion messages were sent in 2007, while the total for North America and Europe was 392 billion messages, leaving about 8 billion for the remaining regions.

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<sup>1</sup> These include industry association statements, commercial market research reports and a variety of development oriented studies and outputs from projects.

<sup>2</sup> See <http://investing.reuters.co.uk/news/articleinvesting.aspx?type=media&storyID=nL29172095>.

<sup>3</sup> See [http://www.smstextnews.com/2008/05/2\\_3\\_trillion\\_messages\\_sent\\_this\\_year.html](http://www.smstextnews.com/2008/05/2_3_trillion_messages_sent_this_year.html).

Current trends also highlight the significant shift toward the South that is taking place in the geopolitical information landscape. The number of people in developing countries that are connected now through mobile phones outnumbers those in the developed countries. At the end of 2006, International Telecommunication Union (ITU) figures showed that 61 per cent of the world's mobile subscriptions were in developing countries. This is also reflected in the concentration of ownership in ICT infrastructure, which is also shifting toward developing countries – some of the largest mobile operators in the world are now based in Africa, the Middle East, India, China and Indonesia, and the largest international submarine fibre cable companies are Asian<sup>4</sup> – FLAG, VSNL and Global Crossing.

The Internet gap between North and South is also closing, although more slowly. While in 2002, Internet penetration in developed economies was 10 times higher than in developing economies, in 2006 it was only 6 times higher. The global Internet community grew by 280 per cent between 2000 and 2008 and, in March 2008, there were about 1.4 billion Internet users worldwide,<sup>5</sup> giving an overall penetration rate of 21 per cent of the world's population. However, in 2007, there were more Internet users outside North America and Europe, buoyed by rapid growth in China, which has the second largest Internet users in the world (90 million) after the United States (150 million). Regionally, North America and Europe recorded the slowest Internet growth rates over the 2000–2007 period (120 per cent and 151 per cent, respectively), while the Middle East and Africa recorded the fastest growth rates (920 per cent and 883 per cent, respectively).

Although a large segment of the world's population still lacks even the most basic levels of connectivity, the current double digit growth rates in developing countries for mobile and Internet use means the digital divide is increasingly moving away from basic connectivity to issues of speed (bandwidth) and availability of local services. In this respect, the “broadband divide” is becoming an increasingly important issue considering that most local Internet services cannot thrive or be used efficiently without low-cost broadband, and that the gap in broadband penetration between developed and developing countries has only changed marginally between 2002 and 2006. In 2002, developing countries accounted for only 31 per cent of the world's broadband subscribers, while in 2006 this figure was 35 per cent.

In addition, those who are already connected are the wealthier segment of the world's population, and the challenge is how to reach the next 3 billion, of which the majority live on less than \$2 a day.<sup>6</sup> The cost of access and level of infrastructure pervasion in developing countries are two factors that will largely determine the potential for addressing the digital divide. While telephony and Internet access costs have been generally much higher in developing countries than in developed economies, there are encouraging signs that this is beginning to change. Mobile call tariffs are now much lower in some developing countries than in developed ones, and always-on Internet access is available for as little as \$6 a month in India (albeit not the broadband speeds commonly available in developed countries). Mobile phones costing less than \$30 are now available and the \$100 PC could shortly be within reach. Investment in telecom

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<sup>4</sup> Taking directly owned and operated capacity, Indian companies manage just under a quarter of all the world's major undersea cables as measured by route kilometres. Measured in terms of capacity, Indian firms directly own and operate 44 per cent of all capacity and 70 per cent of upgradeable capacity for the undersea cables.

<sup>5</sup> See <http://www.internetworldstats.com>.

<sup>6</sup> The world's lowest average revenue per user (ARPU) of a mobile telecom operator was recorded by Bangladesh's Banglalink in 2007, with an ARPU of \$3.3 per month.

infrastructure also continues to increase rapidly, with the global market for telecommunication infrastructure services reaching \$70 billion in 2007, an 8 per cent increase on 2006.

If these trends continue, the WSIS goal of ensuring that “more than half the world’s inhabitants have access to ICTs within their reach by 2015” can be said to have been met by 2008, through mobile phones, notwithstanding their generally higher cost and more limited Internet access. And while there may be some pockets of disconnection remaining as a result of geographic isolation<sup>7</sup> or exclusion because of factors such as language, gender or disability; at some point in the medium-term the digital divide will no longer be related to basic ICT access, but will be measured in levels of ICT use. To reach this point, many countries have still to improve access to basic telecommunication infrastructure and Internet services. The obstacles to promoting infrastructure development have often been attributed to policies that do not take into account the capabilities of new technologies, and restrictions on market entry, which limits competition in the telecommunication sector.<sup>8</sup>

### ***Global and regional variations in infrastructure***

Most countries in Asia and Africa have been lagging behind in their progress towards an Information Society, largely because of their low income levels and lack of ICT infrastructure. Internet penetration for Asia was 13.5 per cent at the end of December 2007, while the majority of rural Asians today still do not have access to basic telephony, let alone to Internet. Moreover, South Asia, which is home to about 50 per cent of the world’s poor, has more people who do not have access to the Internet or telephony than the rest of the world combined. The majority is similarly excluded in Africa, and although the number of Internet users in Africa continues to grow strongly, by December 2007, only 5 per cent of the African population had access to the Internet and broadband penetration was below 1 per cent.

As would be expected, North America and the more developed countries in Europe, the Caribbean and Asia, have the most advanced infrastructure. In these countries, fixed and mobile penetration rates are close to 100 per cent, and Internet penetration rates range between 71 per cent (North America) and 43 per cent (Europe). These high levels of access, combined with the higher income and education levels of the population in these regions have led to much greater diversity and use of online services, especially where broadband is widely available.

Broadband services are now available in at least 170 economies but high-income economies account for nearly three quarters of the total 300 million broadband subscribers recorded at the end of 2007 (giving a global penetration rate of 4.6 per cent). Denmark, Finland, the Netherlands and Sweden are the world leaders in broadband deployment, with penetration rates of over 30 per cent at the end of 2007. These countries, together with the United Kingdom, Belgium, Luxembourg and France, all had broadband penetration rates higher than the United States (22.1 per cent) in July 2007. Lower-middle income economies accounted for 20 per cent (with China alone accounting for 87 per cent of these or 15 per cent of the global total). Low-income countries accounted for less than 1 per cent of total global broadband subscribers, with India and Viet Nam accounting for virtually all of these, partly because broadband is often only available in the major cities. In the United States, 53 per cent of households have broadband, and

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<sup>7</sup> In this respect, geographically dispersed islands with small populations suffer from low economies of scale and the high cost of infrastructure (especially international). As a result, special efforts are likely to be necessary to ensure that they are not left behind.

<sup>8</sup> Where markets have been opened, this has often been limited to one or two new providers, or the high cost of licenses has limited market entry.

about 72 per cent of all household Internet connections are now broadband,<sup>9</sup> while in Japan and Spain, efforts by operators to encourage consumers towards broadband have resulted in three quarters of Internet subscribers now using broadband. In the Republic of Korea and Canada, virtually all Internet subscribers already have broadband.

There is also a striking digital divide in terms of the price of access to broadband between different parts of the world. Users in low-income countries pay on average, some \$186 per month<sup>10</sup> for every 100 kbit/s of connectivity, which is more than ten times higher than the average price paid in high-income economies, while prices of below \$0.10 per 100 kbit/s per month are available in Japan and Republic of Korea. The high costs in low-income countries are an even more extreme barrier when the much lower income levels of the majority of people in these countries is also taken into account.

Aside from the high cost of access relative to income levels in developing countries, which has been a major factor in limiting broadband uptake, another part of the reason has been the low penetration of fixed line infrastructure. While mobile and other wireless solutions for broadband access have recently shown major promise for meeting the needs of developing economies, the developed countries have benefited from their high levels of fixed infrastructure, which is particularly amenable to provision of high-speed broadband.

Mobile telephony is now the primary mode of ICT access in the LDCs, where mobile phones outnumbered fixed lines by almost eight to one at the end of 2007<sup>11</sup> and in some countries the ratio is as high as 20 to one. The overall average in sub-Saharan Africa is 10 to one, with less than 3 per cent of the approximately 400 000 localities in Africa having a fixed line telephone connection and less than 0.5 per cent of African villages with a public Internet facility. On the other hand, mobile communications covered about 45 per cent of the villages in 2006.

### ***Variations in Infrastructure within Regions***

#### **Europe**

While some countries in Europe have some of the highest levels of ICT uptake worldwide, the region also includes many countries in Eastern Europe, the Caucasus and Central Asia (EECCA) that have low levels of ICT uptake, which has been observed to be largely due to inadequate policy environments which have led to lack of infrastructure and high costs of Internet services.

As the most advanced ICT region in the world, the European Community (EC) countries probably represent the benchmark in terms of the positive outcomes of concerted policy promotion for the WSIS goals. Under the i2010 digital-led strategy for growth and jobs, which the EC launched in 2005, a variety of policy actions have been adopted to reduce barriers to market entry, harmonize national regulatory frameworks, encourage research and development in the area of ICT and promote a variety of public projects. Programmes aimed at overcoming the digital divide, such as e-Education, e-Accessibility, e-Health, e-Governance, e-Justice and e-Environment, have given further incentives for users to get online and for service providers to provide the needed infrastructure. As a result, about 50 per cent (250 million) of the population in the EC are regular Internet users, of which about 100 million have broadband connections. In

<sup>9</sup> Leichtman Group – see <http://www.clickz.com/showPage.html?page=3626328> also see: <http://www.websiteoptimization.com/bw/0704/>.

<sup>10</sup> See: [www.itu.int/osg/spu/publications/digitalife/docs/digital-life-web.pdf](http://www.itu.int/osg/spu/publications/digitalife/docs/digital-life-web.pdf).

<sup>11</sup> [http://www.unctad.org/en/docs/a63d72\\_en.pdf](http://www.unctad.org/en/docs/a63d72_en.pdf).

April 2008, it was reported that 96 per cent of schools are connected to the Internet, two thirds of which are on broadband, and half of all doctors make use of broadband. .

Nevertheless, there is a small but growing gap in broadband penetration between the best and worst performers in the EU,<sup>12</sup> for which policymakers cite the same factors present in other regions – lack of competition and regulatory weaknesses as the main obstacles to growth. The EU’s Telecoms Commissioner noted in March 2008 that competition is limited for access to the fixed network, which is still dominated by incumbent infrastructure. In addition, only 30 per cent of major operator business is outside the home market, showing that even the EU still lacks an attractive single market for businesses and services.

## **Africa**

The pervasiveness of the African region’s ICT infrastructure is very low and extremely uneven, largely owing to the wide variation in incomes, population size and telecommunication infrastructure policies. Fixed lines currently reach less than 4 per cent of the population, and over 75 per cent of them are found in just 6 of the 53 African nations. This has encouraged the uptake of mobile phones with mobile growth rates being the highest in the world, led by countries with more recent market entrants, more competitive pricing and improving coverage. For example, Nigeria’s mobile phone users are currently increasing at over 50 per cent per year. A number of regional mobile operators in Africa have also deployed “borderless roaming” between their networks on the continent, allowing people to make low-cost international calls to users of the same network operator in another country.

Africa had a total of 44 million Internet users by March 2008, yielding a penetration rate very similar to fixed line infrastructure – about 4.7 per cent. Four of the 53 countries in Africa account for almost 60 per cent of Internet users in the region, and only 22 of the 53 countries have broadband providers, resulting in an average broadband penetration rate for the continent of below 1 per cent. Countries with Internet populations of over 1 million people are located in (in order of size): Nigeria, Morocco, Egypt, South Africa, Sudan, Kenya, Algeria, Tunisia and Zimbabwe. However the only countries with penetration rates over 15 per cent are (in order): Seychelles, Mauritius, Morocco and Tunisia.

## **Asia**

Although some Asian countries have pervasive ICT infrastructures, others are at the early stages of adopting ICTs. Mobile penetration ranges from below 1 per cent in economies like Myanmar and Kiribati, to 90 per cent or more in Australia, Taiwan Province of China, Singapore, Hong Kong (China) and Macao (China). Internet penetration ranges from below 1 per cent in economies such as Timor-Leste, Myanmar, Bangladesh, Cambodia, the Lao People’s Democratic Republic and Nepal, to above 65 per cent in Japan, the Republic of Korea, Australia and New Zealand. In many developing countries in Asia, improvements in connectivity have been tempered by their limited penetration in rural areas. Similar to Africa and Europe, slow connectivity in Asia has been caused by inadequate and restrictive policy environments, lack of focus on technological research and development innovations, and limited understanding of the effects of ICTs on communities.

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<sup>12</sup> The gap between EU member States with the highest and lowest penetration increased from 27.4 per cent in January 2007 to 28.0 in January 2008.



## The Americas

The Americas are characterized by a North–South divide in Internet access, with the United States and Canada having a 71 per cent Internet penetration rate, or roughly 3.5 times the rate of South America, Central America and the Caribbean, where it stood at around 22 per cent at the end of 2007. In the Americas, 81 per cent of those who use the Internet are on broadband.<sup>13</sup> In the United States and Canada, 19 per cent and 22 per cent of the total population have access to broadband, respectively. In South America, the broadband leaders are Brazil, Mexico, Argentina and Chile, which accounted for around 80 per cent of all broadband subscribers in the region in early 2007. Chile (at 6.8 per cent) has the highest proportion of broadband users, followed by Argentina (4 per cent) and Uruguay (3.1 per cent). The three largest fixed telephone networks – in the United States, Canada and Brazil – account for more than 80 per cent of all fixed lines on the two continents. Latin America and the Caribbean have shown strong growth in the mobile sector, with most countries in South and Central America now showing mobile penetration rates of over 50 per cent. Apart from a few small Caribbean islands with mobile penetration of over 100 per cent, the highest rates are found in Chile, Jamaica and Argentina, with penetration rates of about 80 per cent. Cuba continues to stagnate at 1.4 per cent mobile penetration, while Costa Rica, Honduras, Nicaragua, Bolivia and Peru have about 30 per cent of mobile penetration. Seven countries – Brazil, Mexico, Argentina, Colombia, the Bolivarian Republic of Venezuela, Chile, and Peru – account for around 84 per cent of the region’s mobile subscribers, while Brazil and Mexico together account for 51 per cent of all mobile subscribers in Latin America.

### B. Wireless trends – mobile data and wireless broadband

Clearly, the major ICT trend over the last year has been the continued rapid growth of mobile phones and their emergence as the primary form of ICT access for over 50 per cent of the world’s population in 2008. Global sales of mobile phones surpassed 1.15 billion units<sup>14</sup> in 2007, a 16 per cent increase from 2006. There are now estimated to be three times as many mobile phones as personal computers and nearly twice as many mobile phones as television sets. In addition, twice as many people now use SMS text messaging on a phone as use e-mail. Furthermore, recent advances in mobile data technologies have seen mobile phone operators and handset manufacturers launch services and phones in most of the larger economies in 2007 that make it much easier, faster and cheaper to access the Internet. This is expected to spur wireless broadband uptake considerably over the next couple of years and Nokia estimates that there will be 250 million Internet-capable mobile phones by 2010.

By the start of 2007, 79 countries around the world had launched commercial services for cellular mobile services with speeds of 256 kbit/s or more<sup>15</sup> (in contrast to only 18 launches during 2006). Popularly referred to as third-generation (3G) mobile, there are now more 100 million users worldwide able to use their mobile phones at broadband speeds. Along with the more mature systems, such as the Global System for Mobile (GSM), an increasing variety of new technologies have been deployed and it is unclear as yet which standard will become dominant. At present, the largest group using a particular technology is the mobile GSM

<sup>13</sup> <http://www.itu.int/ITU-D/ict/statistics/ict>.

<sup>14</sup> [http://www.informationweek.com/blog/main/archives/2008/01/115\\_billion\\_mob.html](http://www.informationweek.com/blog/main/archives/2008/01/115_billion_mob.html).

<sup>15</sup> 384 kbit/s – 1.4 Mbit/s, is commonly provided, with the industry promising even higher speeds in the near future. For example, Telstra, a mobile operator in Australia, claims that it will soon be providing peak network speeds of 14.4 Mbit/s over its HSDPA network

operators. However, while their growth in voice subscribers continues, other newer fixed and mobile technologies – such as WiFi, WiMax and Code Division Multiple Access (CDMA) – are also being deployed to meet the demand for broadband, either by the existing GSM operators, or by new entrants.

Mobile operators using a competing technology to GSM, called CDMA, are now present in 30 countries, and users of these systems have shown strong growth over last year, increasing by 16 per cent to more than 431 million by the end of 2007.<sup>16</sup> The Asia–Pacific region added the most subscribers, while Europe, the Middle East and Africa grew the fastest. CDMA-2000 (EV-DO) broadband subscribers showed the highest growth rates from 55 million to 90.5 million in 2007, with an annual growth rate of more than 64 per cent. One of the technologies being adopted by the GSM operators called Wideband Code Division Multiple Access (W-CDMA) is now present in 49 economies, with about 100 million users at the beginning of 2007, and is particularly popular in Europe. Twenty-five countries have now also launched an advanced version of W-CDMA called High Speed Downlink Packet Access (HSDPA), which offers much faster speeds – up to 14.4 mbit/s. WiMAX has also shown much stronger growth in 2007, with the total number of subscribers worldwide growing by 85 per cent last year to surpass 1 million. More than 160 WiMAX initiatives have been recorded worldwide and two of the largest operators are based in the United States and two in Spain. Although off from a low base, WiMAX has expanded rapidly in Africa with about 20,000 corporate links<sup>17</sup> at the end of 2007.

Delays in finalizing WiMAX standards and in obtaining licenses for WiMAX radio spectrum have been said to be partially to blame for the slower-than-expected growth in WiMAX penetration, compared to WiFi, which has exploded worldwide using unlicensed radio spectrum. The number of WiFi users worldwide was expected to reach 707 million in 2007, and while many of these may also use a separate broadband connection, increasing numbers are able to use public hotspots to access the Internet. This has been boosted by the inclusion of WiFi in mobile phones, low-cost laptops and gaming consoles.<sup>18</sup> A total of 134 million WiFi devices were sold in 2007, and this number is expected to reach 500 million units by 2012. There were an estimated 70 000 WiFi hotspots in over 100 countries in 2007. Hotspot provider iPass reported that use during the first half of 2007 had increased 141 per cent in comparison to the first half 2006. The regions of the world in which commercial Wi-Fi hotspots are used most frequently are North America (56 per cent of the total worldwide usage), Europe (36 per cent), and Asia–Pacific (6 per cent).

The high popularity and low cost of WiFi devices, which are now less than \$30, has also led to increased numbers of initiatives by municipal authorities to establish city-wide public WiFi networks. The United States has led these efforts with about 400 such initiatives to date. The United Nations Development Programme (UNDP) and other agencies have highlighted the potential of WiFi and other wireless technologies to allow local communities to establish their own networks. Although regulatory environments in many countries do not yet allow private unlicensed networks to operate,<sup>19</sup> such community-built infrastructure has become popular in some of the more open developing countries and in rural communities in developed countries.

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<sup>16</sup> See: [http://news.soft32.com/431-million-cdma-subscribers-worldwide-in-q4-2007\\_6068.html](http://news.soft32.com/431-million-cdma-subscribers-worldwide-in-q4-2007_6068.html).

<sup>17</sup> <http://www.itu.int/osg/spu/newslog/Twenty+Thousand+WiMAX+Subscribers+In+Africa+At+The+End+Of+2007>.

<sup>18</sup> Game console manufacturer Nintendo reported in June 2007 that 5 million WiFi users had logged on to their network since it was launched in November 2005.

<sup>19</sup> Or where they do, they are often precluded from connecting to the public (licensed) networks.

### C. Trends in ICT access devices and shared facilities

The relatively high cost of computers has been a significant restraint on increased uptake of more advanced ICT services, especially in low-income countries. As a result, there are only about 1 billion PCs in use worldwide,<sup>20</sup> with by far the majority of these concentrated in developed countries. The United States has the largest proportion, with about 25 per cent of the total, followed by Japan with 8 per cent. About 73 per cent of all PCs were located in just 15 countries, with China, India, Mexico and the Russian Federation being the only non-high-income countries on the list. However, computers have continued to drop in price and increase in power, which saw the release of machines costing about \$200 in 2007. This trend has continued to fuel worldwide PC sales, which totalled 271 million units in 2007, a 13 per cent increase from 2006. Growth was slowest in the United States at 5 per cent with 65 million units sold, while the European, Middle Eastern and African regions continued to be the largest PC market in 2007, and the Asian–Pacific region was the second largest market.

The further narrowing of the gap in performance and price between desktop and laptop (portable) PCs has resulted in an increasing proportion of laptops being used,<sup>21</sup> and this is expected to reach 50 per cent by the end of 2008. The reduced cost and increased demand for laptops is now also resulting in their subsidization by Internet service providers, which mirrors the mobile phone business model where the handset is given away or sold at a steep discount. The cost to the operator is absorbed in the air-time contract. Internet providers America Online and Orange launched laptop subsidy programmes for two-year contracts in the United States and United Kingdom at the end of 2006 and in early 2007, and other operators, such as T-mobile are expected to join the trend. This model could have a major impact in developing countries where lower-income users are less able to foot the high once-off cost of a PC but could absorb the cost in monthly payments.

Increased demand for PCs and laptops in developing countries is also likely to result from the various initiatives to manufacture computers designed for these lower-income markets. This has been highlighted by the One Laptop Per Child (OLPC) programme, a charity which hopes to spread sub-\$200 computers to schoolchildren in developing countries. This effort triggered a large number of commercial manufacturers to develop their own low-cost PC designs, the most well-known of which are the Intel Classmate PC, and the ASUS Eee PC, which are also now in commercial production.<sup>22</sup> In November 2007, the OLPC programme started mass production with initial recipients being children in Uruguay, Peru and Mongolia. In a novel fund-raising effort OLPC also launched a “buy one, give one” project where people in North America are able to buy a laptop for themselves and donate the other to a child overseas. AMD, the largest chip manufacturer in the world has also developed a range of low-cost PC units as part of its 50x15 initiative which aims to help accelerate digital inclusion by enabling affordable Internet connectivity and computing capabilities for 50 per cent of the world’s population by the year 2015. By September 2007, the AMD programme had also established about 25 learning labs around the world.

<sup>20</sup> <http://www.forrester.com/ER/Press/Release/0,1769,1151,00.html>.

<sup>21</sup> The increased demand for laptops has also been fuelled by the growing pervasiveness of wireless networks in homes and public locations.

<sup>22</sup> Other similar initiatives include: Alphasmart, Chang Feng, decTOP, InkPC, Intel Community PC, iT, ITP-C, IQ PC, Janata PC, Mecer Education PC, Sinomantic, Sirius, Solo and Terra PHD.

While PC costs are coming down, it is unlikely that they will become affordable for the majority of the developing country public in the medium-term. To meet their needs, two other developments are showing promise – the increasing capabilities of mobile phones and personal digital assistants (PDAs) to connect to the Internet, and the growing numbers of public access venues – cybercafés and telecentres, also known as Community Multimedia Centres (CMCs).

Phones that are Internet capable are generally known as Smartphones. While these accounted for only 10 per cent of phone sales in 2007, shipments of Smartphones in 2008 are expected to reach 173 million units,<sup>23</sup> an increase of 42 per cent over 2006, and by 2010 this is expected to reach over 1 billion units. While unable to give the same quality of user experience that a PC can provide, recent increases in screen size and better interfaces has improved this considerably, as evidenced by the global popularity of the Blackberry. Smartphones are of course also used to provide the Internet connection for PC.

Facilities that provide public access to ICTs aim to help meet the needs of those who cannot afford their own personal access. The emergence of these facilities has accelerated over the last decade, in both developed and developing countries, in the form of commercial cybercafés and government-supported programmes, often called telecentre initiatives. These are often dedicated facilities but may also be kiosks placed in a public space, or computers added to an existing facility, such as a community centre. Public-private partnerships are also increasingly being used to share the costs of deployment. Although cybercafés and telecentres are now relatively common in small towns and villages throughout the world, currently there is a lack of common definitions and inconsistency in efforts to measure the extent of access these facilities provide<sup>24</sup>. As one indication however, there were estimated to be over 50,000 such public access centres in India at the end of 2004 and a 2007 survey<sup>25</sup> found that nearly 36 per cent of the 17 million active Internet users in India obtain access from public facilities.

State programmes for the support of subsidized access at public access facilities are also becoming increasingly common and these efforts are also being supported by international organizations, in particular, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank, the Canadian Government's International Development Research Centre (IDRC) and Microsoft. In 2006, IDRC and Microsoft each contributed CAD 17mn to establish a new organization called telecentre.org, which is devoted to capacity-building of telecentre operators in developing countries. The Swiss Agency for Development and Cooperation (SDC), subsequently contributed an additional CHF 5 million to the project, which aims to train over a million people to operate telecentres.

Providing ICT access in schools and libraries is also gaining increasing attention. The provision of ICT access in schools is now a strong priority in most developing countries and is being supported by international agencies such as the Asian Development Bank, IDRC, and NEPAD's African e-Schools programme. While libraries have not until recently been seen as an important means of providing public access to ICTs, the Bill and Melinda Gates Foundation established a Global Libraries initiative in 2006, which provided over \$30mn in 2007 to support the provision of free Internet access in national public library systems in eastern Europe, Asia, Africa and Latin America, and to research and promote the use of public access ICT facilities. In

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<sup>23</sup> [http://www.gartner.com/DisplayDocument?id=579907&ref=g\\_sitelink](http://www.gartner.com/DisplayDocument?id=579907&ref=g_sitelink).

<sup>24</sup> In 2007, ITU began work to define and track the number of Public Internet Access Centres (PIACs) which is expected to lead to improved information on their availability.

<sup>25</sup> <http://www.iamai.in/Upload/Research/I-Cube-2007-Summary-Report-final.pdf>.

addition, a number of private companies are supporting dedicated ICT training facilities and access points through their corporate social responsibility programmes. For example, AMD's initiative mentioned above, and Microsoft, through its Unlimited Potential programme, had by 2007 invested about \$130 million in supporting community-based technology and learning centres in 89 countries worldwide.

Another approach to providing access for those who cannot afford their own equipment that has recently emerged is to provide them with their own telephone number and a voice mailbox. In South Africa, a company announced a service in early 2008, where agents operate pay phones in shops or kiosks, which provide customers with a free phone number and then sell them airtime. Customers are given a secure PIN code and once they log in, they can make low-cost calls and operate a voice mailbox with free message retrieval.

#### **D. Trends in national and international networks and traffic**

The rapid growth in mobile phone and Internet-use (particularly broadband) is placing increasing demands on the underlying telecommunication infrastructure linking cities and countries. Relatively high volumes of international traffic compared to domestic traffic are needed in developing countries because of the limited amount of local Internet content and applications. In most developing countries, at least 70 or 80 per cent of Internet traffic is international. This pattern has also been reinforced by macroeconomic trends, such as the rapid shift of Business Process Outsourcing (BPO) and call-centres to low-wage nations, greater regional cooperation resulting in increased regional traffic flows, and the emergence of pan-regional operators, which require increased intra-regional telecommunications bandwidth.

The capacity limitations of satellite, combined with rapid growth in traffic, is resulting in much increased use of fibre-optic cable for international infrastructure and domestic links between cities. The period leading up to the "dot-com bubble" in 2000, saw billions of dollars of investment in new fibre-optic cable in developed countries, while developing countries were left out of this trend due to their perceived smaller markets. Since then, growth in demand in developing regions has shown that, even for countries with small populations and low levels of development, there is sufficient demand to warrant the construction of fibre-optic connectivity and the discontinued use of satellite.

As of 2007, more than half (32) of the world's 53 poorest nations had no access to international fibre-optic connectivity<sup>26</sup>, representing an unserved population of close to half a billion. In addition, many other developing countries only have one international fibre-optic link. This not only encourages monopoly pricing but also fails to meet the need for more than one physically separate international connection to ensure continuity of service. This was highlighted by the submarine cable disruptions in the Middle East in early 2008, which resulted in some countries having to drastically reduce traffic flows while they reverted temporarily to low capacity satellite links. At the same time, additional infrastructure is being required because many of the existing fibre cables were designed in the pre-Internet era, and the levels of international capacity now being required means these cables cannot accommodate long-term demand.

As described in the next section of this report (chapter IV, C2), there are a large number of international fibre-optic cable projects currently taking place, either to link countries not

<sup>26</sup> [http://www.terabitconsulting.com/public/presentations\\_downloads.html](http://www.terabitconsulting.com/public/presentations_downloads.html).

previously connected to the global-fibre grid, or to augment existing international links. Of particular note are the projects linking the countries of the Greater Mekong Subregion (GMS), and plans to lay cable along the East coast of Africa, which forms the longest stretch of coastline in the world with no international fibre-optic connectivity. These and other similar developments are expected to address the need for international bandwidth for almost all countries, except some of the smaller and more remote islands, which may be too isolated and have such tiny populations that fibre-optic cable cannot easily be economically justified. In particular, these include the LDCs of the South Pacific, the Laccadive Islands, Seychelles and Rodriguez Island (part of Mauritius) in the Indian Ocean, and St Helena in the Atlantic.

The demand for national fibre infrastructure in developing countries follows a similar pattern to international infrastructure. However, the more rural-based and dispersed population demographics of developing regions means that many more kilometres of fibre are necessary to reach the same number of people as in a developed country. This has led to an initial focus on establishing national backbones to service major towns, and also in many cases to make these serve as international links to neighbouring countries. A major increase in the number of these projects appears to have taken place recently. However, comprehensive information is lacking because data on these important national activities is not consolidated on a global basis. A recent African survey has found the largest build-up of long-distance telecommunication infrastructure recorded to date. Between mid-2006 and the end of 2007, over \$1 billion in contracts were issued for about 30 000 kms of optic fibre in 17 countries, with loans from China Exim Bank for about two-thirds of the value.

For many of these projects, the use of non-traditional infrastructure over which to lay optic fibre, such as rail, gas and electricity networks, is gaining increased attention, especially in developing countries, because this can cut the cost of fibre deployment by a factor of up to 100<sup>27</sup>. This has in part led to the rethinking of telecommunication infrastructure deployment strategies in order to make best use of these options to ensure costs to the end-user are as low as possible. New business models of service provision are now emerging, which separate the operation of the physical infrastructure from the services which run over them.

The underlying infrastructure is provided to competing commercial operators on a non-profit cost-recovery basis in the expectation that the reduced input costs for the retail operators will result in lower end-user charges. Usually called “Open Access Principles”<sup>28</sup>, at the simplest level this can mean providing telecommunication operators with equal access to ducts in which to lay their cables. However, deeper application of open access principles are also being adopted, which are based on the fact that in most situations, one or two pairs of optic fibre have more than enough capacity to meet the needs of the people nearby. So there is actually no need to incur the additional expense of multiple operators with duplicate cables. As a result, to increase operational efficiency and drive costs down, national and local governments are establishing and operating their own fibre infrastructure as a public good which is leased to commercial retail service providers at cost. The most well-known example of this is the City of Stockholm’s open access network, Stokab. In Africa, the NEPAD Broadband Infrastructure Network (NBIN) (for

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<sup>27</sup> As a rule of thumb, “greenfield” fibre deployment (i.e digging a new trench or setting up dedicated overhead poles) will cost about \$15 000–25 000 per km. At the other end of the spectrum, adding an extra fibre pair in the planning stages of an electricity distribution grid will only cost \$250–300.

<sup>28</sup> Not to be confused with the same term when applied intellectual property – “Open Access to content, data, etc.”

which plans were announced last year) is to interconnect countries in East and Southern Africa and will also be based on open-access principles.

Until there is more widespread pervasion of terrestrial broadband infrastructure, satellite continues to play a vital role in television broadcasting and in connecting more isolated and rural areas, even in high income countries. In developing regions, even capital cities and other major urban areas are still being served by satellite due to the lack of, unreliability or high cost of terrestrial infrastructure. Two satellites were launched in 2007 to cater for these needs in Africa. In December 2007, after almost a two-decade gestation period, the Regional African Satellite Communication Organization (RASCOM) launched a satellite with an Africa-wide footprint aiming to reduce costs for countries with no international cable connectivity, as well as to provide domestic links for those with limited national terrestrial networks. In cooperation with China, Nigeria launched a communication satellite in May 2007, with a footprint in 38 African and five European countries. Other developing countries that launched communication satellites in the last 12 months include Brazil, China and Viet Nam.

Aside from the ongoing activities to establish national and international telecommunication infrastructure, most countries now also have locally interconnected Internet service providers which helps to reduce international Internet connectivity costs and improves the access speeds to local web sites. Commonly known as Internet Exchange Points (IXPs), these facilities are located in large cities where there are multiple Internet providers. IXPs usually operate on a non-profit basis, allowing service providers to route traffic directly between each other at a low cost, rather than via the international or inter-city links which are usually much more expensive and are often more congested. Close to 300 IXPs were identified worldwide at the end of 2007<sup>29</sup>, a growth of over 50 per cent since 2006. However, many developing regions are lagging behind the developed world in this respect, and about 90 countries still do not have even one IXP yet. Regionally, Latin America has experienced the fastest growth in IXPs, which now number 20, almost 100 per cent more than the previous year, while the Asia-Pacific region grew the slowest at 15 per cent, bringing the total number of IXPs to 67. Africa is the region with the fewest IXPs (only 17 of the 53 nations have them) and growth was only 21 per cent over the previous year. IXPs are not expensive to establish – it is estimated that about \$40,000 would fund the establishment of an IXP. Although some countries have regulatory barriers or onerous licensing requirements for IXPs, the main restraint on establishing them is the lack of human technical capacity within the staff of Internet providers to implement an IXP in developing countries. As a result, continuing efforts will be needed for capacity-building in inter-networking skills.

The deployment of local domain name servers also helps reduce demands for international bandwidth as well as improving reliability and responsiveness for users because domain name queries do not have to travel over slower international links. The technical design of the top-level (root) domain servers limits them to 13, most of which are concentrated in the United States.<sup>30</sup> However, mirror servers (copies of the 13 main servers) are now being deployed all over the world. By mid-2007, there were more than 130 mirror servers available in 53 countries, including a number of developing and middle-income countries – Argentina, Bangladesh, Brazil, Bulgaria, Chile, China, Colombia, Ecuador, India, Indonesia, Kenya, Malaysia, Pakistan, Panama, Qatar, Philippines and South Africa. ICANN makes the decision about where to locate

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<sup>29</sup> <http://www.pch.net>.

<sup>30</sup> 10 root servers are based in the United States, one in Tokyo (WIDE), one in Stockholm (NORDUnet) and one in London (RIPE).

mirror servers based on technical and institutional host assessments. Mirror servers are often located at IXPs, and are not costly to set up, but they need relatively large amounts of reliable bandwidth, which can be problematic in some developing countries.

### **E. Technical trends – convergence, NGOs and IP resources**

Since the beginning of the century, telecommunication networks have begun to move from primarily voice-oriented networks to primarily Internet-oriented networks. In 1999, operators in the United States began to report that they were carrying more data than voice traffic, and by 2007 the Internet was responsible for about 75 per cent of all international capacity. Internet traffic increased by 50–60 per cent in 2007, climbing to between 3,000 and 5,000 PetaBytes<sup>31</sup> (a million Gigabytes), while international voice traffic increased by 13 per cent in 2007 to 338 billion minutes. The proportion of non-voice traffic is likely to become even greater with the growing adoption of Internet TV (IPTV) and radio, gaming and local peer-to-peer (P2P) file sharing. IPTV in particular requires more bandwidth than almost any other widely used application. While largely confined to developed countries, some middle-income countries are also beginning to deploy IPTV services. The number of IPTV subscribers worldwide in 2007 was about 7.5 million,<sup>32</sup> with Europe having the largest population of users; forecast to grow from approximately 6.4 million in 2007 to 30.4 million in 2011. A number of companies are planning to launch IPTV, but are waiting for regulatory reform to allow Internet providers to offer pay-TV services. Spanish telecom operator Telefonica is hoping to launch IPTV in Chile, Argentina, and Brazil, where it could replicate the service it already offers in Spain. In addition, by 2007 more than 120 mobile network operators worldwide had rolled out commercial mobile TV services, including some in developing countries.

The emergence of Internet protocols as a more efficient means of carrying both voice and data has resulted in a steadily increasing transition of network infrastructure to purely Internet based platforms. Most developed country and many developing country operators are now moving to these Next Generation Networks (NGN) because they are less costly to deploy and maintain than the older switched networks. As a result, they are more able to cost-effectively provide bundled services, in particular the “triple-play” of telephony, Internet and radio/television over a single broadband connection. An EU survey<sup>33</sup> showed that 29 per cent of households in 2007 had subscribed to at least one bundled service, up from 18 per cent the previous year. One of the largest NGN equipment manufacturers, Juniper, announced in late 2006 that it had more than 100 customers. This convergence is also being augmented by fixed-mobile convergence (IMS) where operators provide a single phone, which uses the fixed connection when at home or the office, and the mobile network when elsewhere.

The use of VoIP is steadily increasing, often used by telecom operators on their international routes, but also by the end-user via the PC, as well as via dedicated VoIP handsets linked to broadband, and on mobile 3G networks. While growth of VoIP has been significant, overall, traditional switched networks still dominate the voice market, even in developed countries. For example, a 2007 survey<sup>34</sup> found that VoIP comprised 14 per cent of overall fixed traffic in France, 6.3 per cent in Austria and 5.6 per cent in Slovenia. In developing countries,

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<sup>31</sup> <http://www.dtc.umn.edu/mints>.

<sup>32</sup> <http://www.fierceiptv.com/story/iptv-middleware-breakdown/2007-09-25>.

<sup>33</sup> <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/582>.

<sup>34</sup> [http://ec.europa.eu/information\\_society/doc/factsheets/13thimplementation/9-28-consumer.pdf](http://ec.europa.eu/information_society/doc/factsheets/13thimplementation/9-28-consumer.pdf).



lack of broadband infrastructure and regulatory restrictions on use of VoIP have further limited its uptake, but where it is available, it is often heavily used for international calls due to the substantial cost-savings.

The move toward converged networks has coincided with increased demands for higher bandwidth, leading to much greater use of fibre optic cable connecting directly to the end-user. Known as fibre-to-the-home (FTTH), the technology currently accounted for about 20 million connections<sup>35</sup> in 2007. This is expected to expand especially quickly in developed parts of Asia where 54 million FTTH-connected households are expected by the end of 2012, followed by Europe/Middle East/Africa with 16 million, and North and South America with 15 million. Because of the very high capacities and relatively low cost of operating this infrastructure, charges for making voice calls is effectively tending toward zero, and are simply being rolled into a relatively small flat monthly fee for a basket of telephony, Internet and broadcast services. VoIP operator Skype already provides unlimited calls to landlines in 34 countries for about 7 euros a month. For the moment, the co-existence of NGN networks with the older PSTN model, has led to some irregularities in the market, in particular, international calls to a mobile number often cost 5 or 10 times as much as calls to a fixed line in the same country.

The growth of the Internet combined with the migration of traditional networks to the Internet is beginning to put strain on the current version of the Internet protocol (IP), which is based on version 4 (IPv4) addressing. The design of the protocol more than 20 years ago did not anticipate the huge growth of the Internet and is limited to 4 billion addresses. The free pool of addresses in 2007 had only about 0.7 billion addresses left,<sup>36</sup> and depending on estimates of Internet growth rate, is expected to fully deplete between the second quarter of 2011 and the third quarter of 2012. In mid-2006, the global authority for IP allocation, ICANN, finalized its allocation policy for the next generation of the addressing protocol (IPv6), and equipment capable of handling the new protocol has been available for some years. However, there has been inertia on the part of operators and software developers in adopting the new protocol, partly because of the need to upgrade equipment and skills. A particular issue is that many national domain name servers, especially those in developing countries, have not yet upgraded to IPv6.

There were more than 153 million domain name registrations<sup>37</sup> worldwide at the end of 2007 across all Top Level Domains (TLDs). China (.cn) now has the second largest country domain, after Germany (.de), while Argentina (.ar) and Brazil (.br) are also among 10 largest country domains. The global market has seen increasing growth rates over the last five years and the total number of domain names grew at a rate in excess of 30 per cent per annum in 2007 compared to 10 per cent in 2002. Among the key reasons for this rise is the growing recognition of the importance of an online presence, coupled with the increased global uptake of Internet access and broadband technology. This upward trend is expected to continue, at least in the short term, with growth in the first half of 2007 standing at more than 35 per cent. Although domain name uptake is affected by ease and speed of registration, as well as price, awareness and levels of Internet access, registrations also correlate closely to GDP. A number of countries have significantly more domains than could be predicted by GDP levels. In particular, the Netherlands ranks fourth in domain name volume but 16th in GDP, and Argentina ranks 7th in domain name volume and 31st in GDP. On the other hand, Japan, Canada and France underperform in

<sup>35</sup> <http://www.teleclick.ca/2008/02/worldwide-ftth-broadband-market-to-grow-30year-through-2012>.

<sup>36</sup> <http://www.nic.ad.jp/en/ip/ipv4pool/ipv4exh-report-071207-en.pdf>.

<sup>37</sup> <http://www.circleid.com/posts/83609> total\_domain\_names\_registered\_2007.

registrations versus GDP. Over the past six years, there has been steady growth in the China domain, (.cn,) and during 2007, there was heavy price discounting with registrations available for under 50 cents. This resulted in a phenomenal growth rate of 241 per cent for the first six months of 2007.

The availability of domain names in local language scripts has also limited uptake in countries with non-Latin scripts, but this problem decreased substantially in 2007. It is now possible to register Internationalized Domain Names (IDN) names with 43 per cent of the registries.

At present, very few new top level domains have been issued, but ICANN is now completing policies for registration of new generic TLDs (gTLDs such as the .aero .eu and .mobi) that were registered earlier on an experimental basis. The new policy is likely to greatly increase the number of top level domains, for example, to allow city gTLDs, such as .berlin or .nyc.

## **F. Trends in applications**

The explosion in mobile telephony has underscored the fact that voice communications is still, and is likely to remain, the most important ICT application. This is especially apparent in developing countries where the cost is a much higher proportion of income, compared to that in the developed economies. Until the Internet in developing countries becomes more widespread, the use of mobile phones is likely to have the most development impact in the short-to-medium term.<sup>38</sup> This is being reinforced by the use of text messaging and other low-bandwidth text-based services that are now available on mobile networks, for example banking, payments, trading and news or market information. Ring tones, digital photography and other mobile phone applications, such as e-mail, have also become increasingly popular.

Also of significance is the use of mobile phones by the public and NGOs for obtaining information from peers and organizing responses to information ranging from traffic blockages to political strife and natural disasters. These activities are now being augmented by interfaces to web sites, such as Twitter, which allow a single text message to be sent to thousands of recipients. Information on the unrest and violence that followed the 2007 elections in Kenya, continued to be disseminated via the Internet, even after the Government imposed a media blackout. Kenyans, unable to reach Internet cafes, were able to stay connected with each other and the rest of the world using SMS messaging available on the Mashada website, which caters to African online communities.

A global survey by the United Nations Foundation and the Vodafone Group found in 2007 that 86 per cent of non-governmental organization (NGO) employees use mobile technology in their work, and 25 per cent believe it has revolutionized the way their organization or project works. While the most common uses of mobile technology cited by NGO workers were voice calls (90 per cent) and text messaging (83 per cent), more sophisticated uses, such as mapping were cited by 10 per cent, data analysis 8 per cent and inventory management 8 per cent, were also reported.

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<sup>38</sup> The impact of telephony on the bottom of the pyramid is demonstrated in the Lao People's Democratic Republic, where a study found that 80 per cent of users earned less than 1 dollar a day. Their phone use focuses on contact with family members and information on government issues and by substituting one trip per month by a phone call, it was found that the poor were generating an average surplus of \$77 per year.  
<http://www.lao.net/html/ICT/conf01soonsong.htm>.

In terms of volumes of data, video content now uses the largest proportion of bandwidth on the Internet. In 2007, by one estimate,<sup>39</sup> the video sharing site, YouTube, consumed as much bandwidth as the entire Internet did in 2000. It is also estimated that digital traffic on the global network is growing at about 50 per cent a year. The amount of data available on the Internet in 2007 was 281 exabytes<sup>40</sup> (281 billion gigabytes), about 10 per cent larger than earlier predictions because of faster growth in digital cameras, digital TV, and better information replication techniques. By 2011, it is expected that the digital universe will be 10 times the size it was in 2006. The fastest growing areas include those related to digital TV, surveillance cameras, Internet access in emerging countries, sensor-based applications, data-centers supporting “cloud computing,” and social networks.

Creation of Internet-based content and applications in developing countries continues to lag the rest of the world because the number of users online in many of these countries is often insufficient to justify the cost of developing the service.<sup>41</sup> And without more universal access, manual services must be maintained in parallel to online services, increasing the overall cost of using ICTs, rather than decreasing it. Aside from lack of infrastructure, the lack of information services in local languages has also slowed the uptake in developing countries. According to most sources, English-language web sites accounted for between one-half and four fifths of all Internet content<sup>42</sup> in 2007. Virtually all online content (upwards of 95 per cent) is in a limited group of languages consisting of English, other European languages, Chinese, and Japanese. Major linguistic groups, especially those in Africa, are barely represented in the medium.

Limited financing, especially by government, and lack of investment capital for local application developers has also been a barrier to increased creation of online content in developing countries. To address this, public-private partnerships (PPPs) are increasingly being seen as necessary to stimulate the supply of local e-content.

As a result of the slow development of e-services, very few comprehensive global assessments of the use of online applications have been made. Those that are available generally cover developed countries. However, these still provide broadly useful data for identifying best practices and opportunities to build on existing open source applications.

## **G. Trends – social network services and user provided content**

Online social networking and services based on user-provided content (often associated with Web 2.0 applications) have recently become among the fastest growing areas of the Internet, and the biggest consumers of bandwidth. Services such as My Space, Facebook, Friendster, Wikipedia, YouTube, Bebo and Orkut have had explosive growth in the last two to three years. In 2007, it was estimated that Wikipedia, the free, volunteer-created encyclopedia, now has more than 6 million articles in more than 250 languages, YouTube hosted 15 million video streams a day and an estimated 1 billion songs in MP3 format were shared daily via P2P networks. By some estimates, file sharing consumed 60 per cent of Internet traffic<sup>43</sup> in 2007, although this varies widely from as little as 10 per cent to as much as 70 per cent depending on operator’s customer base and geographic coverage.

<sup>39</sup> <http://message.snopes.com/showthread.php?t=27283>.

<sup>40</sup> <http://www.infoniac.com/hi-tech/amount-digital-information-reached-281-exabytes.html>.

<sup>41</sup> Global or regional services that appeal to larger pools of users have seen greatest expansion to date.

<sup>42</sup> [http://www.terabitconsulting.com/public/downloads/Terabit\\_per\\_cent20Consulting\\_per\\_cent20- per\\_cent20Undersea\\_per\\_cent20Cable\\_per\\_cent20Markets\\_per\\_cent20and\\_per\\_cent20](http://www.terabitconsulting.com/public/downloads/Terabit_per_cent20Consulting_per_cent20- per_cent20Undersea_per_cent20Cable_per_cent20Markets_per_cent20and_per_cent20)

<sup>43</sup> [http://www.peerapp.com/Data/Files/Accelerating\\_the\\_Video\\_Internet\\_PeerApp\\_Ltd\\_January\\_2008.pdf](http://www.peerapp.com/Data/Files/Accelerating_the_Video_Internet_PeerApp_Ltd_January_2008.pdf).

Social networking sites often make the location of their users public, which provides useful data on the uptake of these services by developing countries. A recent study<sup>44</sup> of seven major social-networking sites found that Tagged and Hi5 had the most “balanced” user bases worldwide. Tagged had 23 per cent of its base from North America, 15 per cent from Latin America, 23 per cent from Europe, 10 per cent from Africa and the Middle East, and 29 per cent from Asia and the Pacific region. Hi5, similarly, is 15 per cent North American, 24 per cent Latin American, 31 per cent European, 9 per cent African/Middle Eastern, and 21 per cent Asia-Pacific. MySpace and Facebook both have large percentages of their users in North America (62 per cent for MySpace, 68 per cent for Facebook), with sizeable portions in Europe (25 per cent for MySpace, 17 per cent for Facebook), and single-digit numbers in all other regions. Orkut, has most of its users in Brazil and India, with almost half its user base in Latin America and the remainder in Asia-Pacific. Friendster leans the most disproportionately toward a single geographic market: it gathers nearly 89 per cent of its user base from the Asia-Pacific region.

Online fund-raising and micro-lending for developing countries is now starting to become significant, having benefited from development of social networking tools. RealityCharity, for instance, invites organizations and individuals to raise funds by posting appeals and then using social networking tools on its site, including Facebook, Twitter, StumbleUpon, and Slashdot, to spread the word to potential donors. Money raised through RealityCharity is disbursed electronically to fund-raisers, without a middleman. Two of the biggest services, Firstgiving in the United States and its United Kingdom counterpart, Justgiving, work only with charities and nonprofits based in the United States and the United Kingdom.

There are also other applications of social networking systems that have been adopted by the private sector, such as the Elephant Design website in Japan, which involves consumers in advising companies how to make better products. It currently claims that 6 out of 10 of one leading Japanese retailer’s top-selling products have been developed through the site.

## **H. Trends – energy and environment and ICT for sustainable development**

The impact of human activities on the environment – and on climate change in particular – became a major issue in 2007. It is estimated that the ICT-industry is responsible for about 2 per cent of the global carbon footprint<sup>45</sup> created by human activities. As a group, their overall emissions are at the same scale as industries such as airlines, and data centre greenhouse gas emissions are expected to quadruple by 2020.

With advances in capacity of fibre-optic cable, increased energy costs and mounting concern over carbon emissions has meant that it has now become more efficient to ship data around the world than it is to ship electric power to the data centres. With the massive capacities available on optic fibre, there is no need to host data centres close to the users. As a result, increased backbone infrastructure is consolidating more closely around sources of power generation to host bigger data centres which will minimize the effects of inefficiencies in power transmission and maximize economies of scale in the provision of hosting services<sup>46</sup>. One of the world’s first zero-carbon data centres has been built in Cheyenne, United States, which takes advantage of natural cooling because of its location in the northern United States. Several more

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<sup>44</sup> <http://www.researchrecap.com/index.php?tag=social-networks&paged=2>.

<sup>45</sup> [http://news.zdnet.com/2100-9584\\_22-6180528.html](http://news.zdnet.com/2100-9584_22-6180528.html).

<sup>46</sup> Google already locates its data centres close to power stations where it can, and in one case in the Netherlands, resurrected a mothballed power plant to host one of its European data centres.

of these zero-carbon data centres are being deployed around the world, such as Bastionhost.com in Nova Scotia. It is also expected that the introduction of more energy-efficient ICT devices and networks, as well as their environmentally sound disposal will reduce the current impact that ICTs have on the environment.

On the other side of the coin, the use of ICTs is reducing energy requirements significantly in the economy through increased use of telecommuting, home-entertainment and better supply chain and production efficiency. At a recent ITU conference in Kyoto on ICTs and Climate Change, it was demonstrated that it is possible for Japan to reach 90 per cent of its Kyoto target to reduce CO<sub>2</sub> emissions (68m tones) through application of ICT to various everyday activities. Naturally, these strategies are at present likely to have much more impact in the much higher energy consuming North. In contrast, the priority of developing countries is to increase basic energy supplies. For example, currently 1.6 billion people worldwide lack access to electric power<sup>47</sup> and only 15 per cent of sub-Saharan Africa rural households have electricity. Perhaps fortuitously, the lack of pervasive electricity grids in developing countries provides an additional incentive to explore renewable, low carbon footprint energy sources. One of the most promising recent developments has been the use of an alternate to silicon for photovoltaics. Dye sensitized solar cells, known as “Graetzel cells” are made of low-cost materials and do not need elaborate apparatus to manufacture<sup>48</sup>.

New business models for the production of energy are also being developed. Last year, UNIDO launched a project in Kenya to establish ‘energy kiosks’, which are small enterprises that make money from selling a local energy source, often renewable. UNIDO’s focus has been on nurturing these kiosks around very small scale hydroelectric projects, biogas-driven generators, solar panels and generators that use vegetable oil (biofuels). Of particular note is the linkage between ICT and electricity access, and in areas with neither of these, there are strong arguments for providing them in an integrated fashion at the same time. These dynamics were built on in the UNEP and United Nations Foundation supported initiative eCARE. It was conducted in Ghana, which is accelerating the extension of clean energy and modern telecommunications services to rural and peri-urban users in the country. The project helps small entrepreneurs establish rural business centres (RBCs) that sell voice telephony, Internet connectivity, clean energy products and services.

Another environmental aspect of ICTs is the waste created by broken and obsolescent equipment. Electronic waste is already accumulating at more than 1 billion units<sup>49</sup> a year — mostly mobile phones, but also personal digital electronics and PCs. UNEP estimates that as many as 50 million tons of e-waste are generated worldwide each year, and increasing at a rate of 3 – 5 per cent per year (faster than any other category of waste). The switch to digital TV is expected to increase this rate substantially over the next few years because many more analogue TV sets, obsolete set-top boxes and DVD players will need to be replaced. As a result, electronic waste is expected to double by 2011.

Not only does increased consumption of products, such as computers, cell phones and telephones generate substantial e-waste, but it also places a heavy burden on natural resources due to the quantities of water and energy used for producing these devices, not to mention the energy consumed during their use. A recent study reveals that the production of a single desktop

<sup>47</sup> <http://www.adbi.org/utility.regulation.in.developing.countries.the.electricity.and.water.sectors>.

<sup>48</sup> <http://www.g24i.com>.

<sup>49</sup> [http://newsinfusion.com/video\\_details.php?videoId=143](http://newsinfusion.com/video_details.php?videoId=143).

computer and standard monitor consumes the same amount of fossil fuels and water as the production of a medium-sized car.

Ironically, although the majority of e-waste is generated in the industrialized countries, much is transferred to developing countries, where environmental regulations and treatment capacity are significantly weaker. In the absence of adequate infrastructure, e-waste is commonly burnt in open air, dropped into bodies of water, or dumped in land fills, releasing toxic substances, which contribute to air, water, and soil pollution and accompanying health problems.

Awareness campaigns are increasing consumers' knowledge of e-waste and influencing what they purchase, and how they dispose of old technology, however regulatory intervention is also taking place. The European Union's new RoHS Directive, which bans new electrical and electronic equipment containing more than established levels of certain hazardous substances from the market, seeks to address the problem of e-waste at its source. The recent upgrade by ECE of the Aarhus Clearing House website<sup>50</sup> may also contribute to better consumer knowledge and political action.

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<sup>50</sup> <http://aarhusclearinghouse.unece.org/>.

## Part 2. Summary of WSIS implementation by Action Line and themes

### *IV. Implementation of Action Lines*

The activities listed below cover regional and international initiatives related to the implementation of WSIS outcomes for the period February-March 2007 to March-April 2008. Except for some items listed for illustrative purposes, the listings do not generally include national initiatives, as the mandate of the CSTD on WSIS follow-up does not cover national implementation. Geographic regions are classified according to the United Nations regional commissions. The text clusters international and regional activities under the 11 Action Lines (ALs), as adopted in the Geneva Plan of Action<sup>51</sup>.

#### **A – C1. The role of public governance authorities and all stakeholders in the promotion of ICTs for development**

<b>UN–DESA/IPU/Global Centre for ICT in Parliament</b>	
<b>World e-Parliament conference</b>	This Conference held in Geneva in October 2007 brought together for the first time, members of parliaments, Secretaries General, IT professionals and other parliamentary staff from around the world to address the promises and challenges of ICT in parliament. In collaboration with the Global Centre for ICT in Parliament, the Global Network of IT experts in Parliament was launched along with an online knowledge platform for exchanging information on the use of new technologies to strengthen parliamentary institutional and organizational capabilities.
<b>World e-Parliament Report 2008</b>	This Report establishes a baseline of how parliaments are using, or planning to use, ICT. It also outlined good practices and lessons learned from different regions of the world based on a survey in which 105 assemblies from around the world commented on the use of ICT in parliament between July and November 2007 as well as draws on experiences exchanged during the World e-Parliament Conference 2007.
<b>UNDP/Cisco</b>	
<b>Partnership for e-governance framework</b>	The partnership between UNDP and Cisco to support bottom-up citizen-centric approaches to using ICT in governance expanded its efforts to develop an e-governance framework in 2007, extending its research to Mexico and South Africa, following initial public surveys in Brazil in 2006. The partnership also plans to develop toolkits with the involvement of stakeholders from developing countries which will provide a methodology on pro-poor e-governance programming that will include relevant indicators, case studies, and good practices.
<b>World Bank</b>	
<b>e-Government Portals meeting</b>	This event held in Washington, D.C. in May 2007 focused on the best practices and lessons learned from some of the world's leading government e-portals and ongoing e-Government operations financed by the WBG in Viet Nam, Sri Lanka, Ghana, Rwanda, Romania, Morocco and Tunisia. The e-Development Thematic Group of the

<sup>51</sup> Available on the home page of WSIS, at <http://www.itu.int/wsis/index.html>.

	World Bank hosted a seminar in May 2007 on Open Systems for e-Government – Open Source, Open Standards and Open Document Format.
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#### UN–Habitat

<b>1,000 Cities Geographical Information Systems (GIS) Programme</b>	This programme offers GIS software and related training packages to 1,000 institutions such as local authorities, and other urban development stakeholders. The package includes modules on how to monitor and analyze urban information, and translate these results into local policy. In 2007 UN-Habitat announced it had converted its popular training modules into a web-based online training programme accessible to local governments around the world as part of its global programme for strengthen training institutions in the area of urban planning and management. The web based training will be expanded to include other subjects relating to sustainable urban development.
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#### USAID

<b>“e-Government for Development: Strategies and Policies” Seminar</b>	This annual seminar held in June 2007 and hosted by dot-ORG was a two-week event that included lectures, panel discussions, and interactive workshops presented by leading e-Government experts from a variety of organizations. The 2007 event brought together senior level officials from 14 countries in a course that focused on connectivity opportunities in each of their countries.
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### *Africa*

#### UN–DESA

<b>African Parliamentary Knowledge Network (APKN)</b>	Following on from establishing the Global Network of IT experts in Parliament (see above), under the Africa i-Parliaments Action Plan, UN–DESA is preparing to establish an African Parliamentary Knowledge Network (APKN). It will be a mechanism for coordination among parliamentary administrations in their various areas of responsibility, including legislation, information, research, documentation and technologies. The APKN was discussed among members and officials from twelve parliamentary delegations from African assemblies and the Pan-African Parliament at a African Legal Resources conference hosted by the National Assembly of Nigeria in Abuja in March 2007. The Conference agreed on the establishment of the APKN to promote the training and capacity-building of members of parliaments and parliamentary staff in the areas of legislation, information and research and ICT. Seventy-seven participants from 15 countries took part in the deliberations of the meeting. The work builds on lessons learned, and applications developed during the implementation of the initiative “Strengthening Parliaments’ Information Systems in Africa”, including AKOMA NTOSO <sup>52</sup> (Architecture for Knowledge-Oriented Management of African Normative Texts using Open Standards and Ontologies), and Bungeni – the Parliamentary and Legislative Information System is solution for managing and publishing legislative and other parliamentary documents <sup>53</sup> . A Charter of the African Parliamentary Knowledge Network, outlining membership, governance, secretariat services and funding, is being prepared under the auspices of the Abuja Conference co-organizers, in consultation with representatives of parliaments from the Africa regions.
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<sup>52</sup> <http://www.akomantoso.org>.

<sup>53</sup> <http://www.bungeni.org>.



<b>ECA</b>	
<b>Workshop on ICTs, Gender and e-Government</b>	A workshop on ICTs, Gender and e-Government took place in Mozambique in May 2007, organized by ECA, in cooperation with the Mozambican Ministry of Science and Technology, the Canadian e-Policy Resource Centre (CePRC) and the Open Society Initiative for Southern Africa (OSISA). The outcome of the workshop was a framework for a Pan African Action Plan for ICTs, Gender and e-Government. <sup>54</sup>

<b>Local Governance and ICTs Research Network (LOGIN)</b>	
<b>Fourth Annual Workshop</b>	In June 2007, LOGIN held its fourth annual workshop in Mauritius supported by IDRC and CAFRAD. The participants discussed local government and ICTs, heard presentations from nine African countries and concluded that although there were some promising pilots, no large-scale roll-out had taken place yet. As a result there was little evidence of the effects of ICTs on local governance which could inform national e-governance policies. Based on the work of LOGIN, in 2007 IDRC published a handbook on ICTs for local governance entitled “e-Governance in Africa – From Theory to Action”.

### *Asia and the Pacific*

<b>UNDP–APDIP</b>	
<b>Government Interoperability Frameworks (GIF) Workshop and Study Group Meeting</b>	In partnership with IBM and Oracle, this meeting was held in Beijing in April 2007, hosted by the Chinese Government’s State Council Informatization Office (SCITO). These meetings brought together Governments from 15 countries to share worldwide experiences on GIF formulation, implementation and revision. UNDP’s support for the GIF Study Group, comprised of government officials from 14 Asian countries and culminated in the publication of the e-Primer on e-Government Interoperability, launched in December 2007 at the GK3 event in Kuala Lumpur. The publications aim to provide a roadmap for e-government interoperability, based on flexible, universally compatible technologies for good governance and achievement of the Millennium Development Goals. <sup>55</sup>

<b>UN–DESA</b>	
<b>6th Annual Forum on City Informatization in the Asia Pacific region</b>	This forum, held October 2007 in Shanghai, provided a platform for policy and decision makers of municipal governments in the region to discuss the development of the information industry and the applications of information technology.

<b>APEC Economic Committee (EC)</b>	
<b>E-Government initiatives in EC’s Program for Structural Reform</b>	EC is discussing the use of ICTs in government as part of the EC’s program for structural reform. Aimed at raising awareness of the role of ICT as an enabler for good public sector governance, a workshop on e-governance in was held Lima in February 2008. In the subsequent EC workshop on Government Performance and Results Management (WGPRM) in New Zealand in March 2008, demonstrations in the use of ICT in the Public Sector Governance took place. Discussions covered three key areas: e-administration for better accountability, e-services for better efficiency and transparency; and e-participation by citizens, for better policy making. The event

<sup>54</sup> <http://www.epolafrica.org/gender-ict>.

<sup>55</sup> <http://www.apdip.net/projects/gif/gifprimer>.

	highlighted the close linkages between e-governance and good governance and follow-up planned includes opportunities to engage the private sector and intensifying technical training.
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### **Asian Development Bank**

<b>e-Asia and Knowledge Partnership Fund</b>	In November 2007, the Asian Development Bank published its e-Asia and Knowledge Partnership Fund annual report. The fund, which is supported by the Government of Korea will support four projects: (a) Hazard Risk Assessment Using Geo-Information Technology (Viet Nam); (b) Business Process Reengineering and Change Management for Tax Administration Modernization (Kyrgyzstan); (c) Implementation Support for the Computerization of the National Bank of Cambodia (Cambodia); and (d) Preparing the South Asia Subregional Economic Cooperation (SASEC) Information Highway Project (see below C2).
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### *Latin America and the Caribbean*

#### **ECLAC**

<b>e-Government interoperability meeting</b>	In Santiago in September 2007, ECLAC held this meeting which was attended by two-dozen governmental and non-governmental experts who provided inputs for the regional strategy that was subsequently launched in February 2008 – eLAC2010.
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#### **OAS**

<b>e-Government training and forum</b>	The OAS office of the Executive Secretary (SEDI) signed agreements in 2007 with the Instituto Geográfico Agustín Codazzi (IGAC) in Colombia and Centro Nacional de Registros (CNR) in El Salvador to train over 200 public officials in e-government. The training will use its online training course in e-government from which, to date, nearly 2,000 officials from 32 countries in Latin America and the Caribbean have graduated. Graduates of this multilingual course are included in a virtual collaboration and exchange mechanism called the “OAS e-Government Forum”.
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#### **Red GeALC**

<b>Annual meeting on ICTs for the public sector</b>	The Network of e-government leaders of 32 Latin America and the Caribbean countries <sup>56</sup> (Red GeALC) held its annual meeting in May 2007 in Santo Domingo. RedGeALC encourages the use of ICTs as tools to improve the public sector’s efficiency and transparency by learning from past lessons, best practices, and solutions of e-governance programs already established or in development.
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#### **USAID**

<b>Peru Connectivity Project</b>	In Oct 2007, USAID began the Peru Connectivity project, aiming to improve the transparency and efficiency of local municipal governments by helping them to adopt the Government of Peru’s software for financial management and procurement, and to solve related issues in a way that proves to be economically sustainable.
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<sup>56</sup> <http://www.redgealc.net>.

**Western Asia**

<b>ESCWA</b>	
<b>Online workshop on e-government policies and strategies</b>	This online workshop was held in early 2007 to help formulate and implement e-government strategies in the ESCWA region. It highlighted best practices of e-government applications in the developed countries, institutional dimensions of e-government strategies and policies, and discussed monitoring the progress and measuring the impact of e-government applications.
<b>e-Government implementation activities</b>	In 2007 ESCWA also cooperated with national/regional agencies on e-government implementation in: (a) the United Arab Emirates (Dubai School for Government) on regional activities; (b) the Syrian Arab Republic through participation in the First e-Government Conference with the Ministry of Communications and Technology; and (c) Iraq through delivering a series of lectures on e-Government awareness to several groups of middle managements from the Ministry of Municipalities and Works.

**B – C2. Information and communication infrastructure**

<b>ITU</b>	
<b>Initiatives and standardization work on ICT infrastructure</b>	ITU has assisted with a wide range of initiatives in this area, including: comprehensive research work on the ICT broadband infrastructure in Africa and the Connect Africa Initiative (see below), capacity-building activities on ICT policies and applications, and satellite diversity in the Pacific Islands. Current standardization work is focusing on Next Generation Networks (NGN), with the approval of specific standards on signalling protocols, security, multimedia services over NGN, fixed-mobile convergence, service level requirements and architectural framework to provide new services based on Internet Protocol Television (IPTV). Charging and accounting principles for NGN (including related telecommunication economic and policy issues) continue to be studied series of forward-looking conferences on standardization issues related to NGNs <sup>57</sup> .
<b>World Radio Conference</b>	In October/November 2007, the World Radio Conference was held under the auspices of ITU in Geneva. Recommendations approved include facilitation of access to the orbital/spectrum resources and related applications for a broader range of users.

<b>United Nations Foundation/The Vodafone Group</b>	
<b>Wireless Technology for Social Change Report</b>	In March 2008, the United Nations Foundation and The Vodafone Group published Wireless Technology for Social Change: Trends in NGO Mobile Use. <sup>58</sup> The report examines innovative uses of mobile technology by groups working to achieve the United Nations Millennium Development Goals and identifies emerging trends in “mobile activism”, humanitarian assistance and environmental conservation, and highlights the results of a global survey of NGO usage of mobile technology.

<b>Reliance Communications (India)</b>	
<b>NGN Project Financing</b>	In February 2007, Indian telecom operator Reliance Communications approved \$1.5 billion in finance for its Next Generation Network project which will almost double the size of its global undersea cable system to 115 000 kilometres by 2009, and land in 60 countries, comprising 80 per cent of the world population.

<sup>57</sup> <http://www.itu.int/ITU-T/uni/kaleidoscope/>.

<sup>58</sup> [http://www.unfoundation.org/vodafone/communications\\_publication\\_series.asp](http://www.unfoundation.org/vodafone/communications_publication_series.asp).

## Africa

<b>Connect Africa Summit</b>	
<b>Summit Proceedings and Outcomes</b>	The Connect Africa Summit in Kigali in October 2007 gathered some 1,036 participants from 54 countries. The Summit closed with investment commitments of over \$55 billion from private and public sector stakeholders, to be spent over the next five years, in support of the five goals adopted by the Summit. These goals aim at interconnecting all African capitals and major cities with ICT broadband infrastructure and strengthen connectivity to the rest of the world by 2012, and connecting all African villages to broadband ICT services by 2015. They also aim at adopting regulatory measures that promote affordable, widespread access to a full range of broadband ICT services, supporting the development of a critical mass of ICT skills, and the adoption of national e-strategies, with the aim of making multiple e-government and other e-services widely available by 2015. <sup>59</sup>
<b>Association for Progressive Communications (APC)</b>	
<b>Civil Society Workshop</b>	To coincide with the Connect Africa Summit, the Association for Progressive Communications (APC) convened a civil society workshop in Kigali on Open Access to ICT infrastructure in Africa. Participants called for new forms of corporate governance that would ensure the interests of all stakeholders, encouraged governments to support harmonization of policy and regulation and the development and implementation of cross border connectivity, and promoted greater participation of recipient communities in access initiatives.
<b>EU</b>	
<b>EU Trust Fund for Africa</b>	An EU Trust Fund for Africa of about 100 million euros in grants and some 260 million euros for loans was been established along with the European Investment Bank and 10 EU member States for the period 2007–2008. The fund, which will be substantially replenished at the end of 2008, will finance cross-border projects or national projects with a regional and continental impact that would include ICT.
<b>Commonwealth Telecommunications Organization (CTO)</b>	
<b>COMARCI</b>	In November 2007, CTO launched Commonwealth African Rural Connectivity Initiative (COMARCI). The project aims to collate all information about policies, regulations, technology and business models relating to rural connectivity so that rural communications initiatives in each country can be included in national development agendas.
<b>Celtel</b>	
<b>Abolition of international and roaming charges</b>	In June 2007, in a world first, all international and roaming charges were abolished for calls between users of mobile phone service provider Celtel. Operating in 14 African countries with a total population of nearly 400 million people in an area twice as large as Western Europe, this would allow about half of all African mobile phone subscribers to communicate across national borders, without incurring extra costs.

<sup>59</sup> Most notably Mobile operators of the GSM Association, the World Bank, European Commission, the African Development bank, ITU, the Governments of Rwanda, Tunis and Spain.

<b>Africa Finance Corporation</b>	
<b>Institutional Launch</b>	The Africa Finance Corporation, a new private sector-led investment and development financial institution was established in 2007 to foster economic growth and industrial development of African Countries. With a \$1bn capital base, it seeks to support and promote infrastructure and industry development in Africa through the provision of investment funds, to facilitate African trade and export-oriented trade by African countries and provide on-lending and refinancing facilities to African financial institutions.

<b>RASCOM</b>	
<b>RASCOM-QAF communication satellite launch</b>	The Regional African Satellite Communication Organization <sup>60</sup> (RASCOM), with investment from GPTC of Libya and France's Alcatel Spacecom, launched the RASCOM-QAF communication satellite in December 2007. The satellite can provide direct links between all African countries allowing national operators to save hundreds of millions of dollars paid out annually to operators outside the continent as transit charges for intra-African traffic. Unfortunately the satellite was affected by a helium leak shortly after launch, and although originally designed to last up to 15 years, the satellite may now only operate for about two-and-a-half years. However Rascom has plans to launch additional satellites.

<b>CSIR (South Africa)</b>	
<b>Wireless Africa Group</b>	The Wireless Africa <sup>61</sup> group was established by the South African Council for Scientific and Industrial Research (CSIR) in 2007 to research ways to develop sustainable access models for developing countries through community-owned decentralized mesh networks built on open source technology.

### *Asia and the Pacific*

<b>Google/APAC Telecom companies</b>	
<b>“Unity” Undersea Cable</b>	In September 2007, Google announced it plans to lead a consortium of telecom companies that is working on a new trans-Pacific undersea cable linking the United States with Japan called “Unity”. Existing cables such as Pacific Crossing-1 and the Japan-United States Cable system are being upgraded and two new cables, Trans-Pacific Express and the Asia America Gateway, are under construction and should be complete in 2008. The cumulative effect of these upgrades and new cables will be to boost trans-Pacific submarine cable capacity by 120 percent to 7.2 tbps by the end of 2008.

<b>ESCAP</b>	
<b>Satellite System Study</b>	In response to requests from Pacific leaders ESCAP conducted a study, in cooperation with ITU and the Pacific Island Forum secretariat on the role of a dedicated satellite system to connect less populated islands of Pacific countries. The Study was supported by the United Nations Office of the High Representative for Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States and the UNDP Office for South-South Cooperation and its findings will be presented to the Pacific leaders in 2008.

<sup>60</sup> <http://www.rascomstar.com>.

<sup>61</sup> [http://wirelessafrica.meraka.org.za/wiki/index.php/Wireless\\_Africa\\_Home\\_Page](http://wirelessafrica.meraka.org.za/wiki/index.php/Wireless_Africa_Home_Page).

<b>Asian Development Bank</b>	
<b>Information Highway Project</b>	In December 2007, the Asian Development Bank approved a \$21.2 million Information Highway Project for the South Asia Sub-regional Economic Cooperation (SASEC) countries which will establish SASEC fibre-optic regional network to integrate member countries and reduce international Internet costs. The project will also build the SASEC village network to expand broadband wireless connectivity to 110 rural communities and set up a SASEC regional research and training network to facilitate the flow and integration of information, knowledge, and services.

<b>Greater Mekong Subregion Economic Cooperation Program (GMS)</b>	
<b>Eighth meeting of the Subregional Telecom Forum</b>	This GMS-sponsored meeting was held in Bangkok, Thailand on in May 2007 and co-hosted by the Ministry of ICT of the Royal Thai Government and the ADB. The meeting discussed the status of national and other developments in the development of the GMS Information Superhighway Network (ISN) and the development of the Telecommunications Backbone Project. In March 2008 phase 1 of the GMS ISN was completed which will see the countries bordering the Mekong Delta connected with a high-speed fibre optic backbone.

<b>Verizon/Asian operators</b>	
<b>Undersea cable project</b>	United States operators Verizon and five Asian operators commenced building a \$500 million undersea cable linking the United States to China which is expected to be in service in late 2008. The cable will have about 60 times the capacity of existing lines between China and the United States (1.28 tbps). Branch cables will also land in Taipei, Taiwan Province of China, and the Republic of Korea.

<b>EVN Telecom (Viet Nam)/VSNL International</b>	
<b>Undersea Cable Network</b>	Viet Nam's telecom operator, EVN Telecom partnered with VSNL International in 2007 to invest \$200 million in an undersea cable network, which will link major telecom hubs in Asia. The cable's initial capacity will be 320 Gbps, upgradeable to 5.6 TBps and will link Singapore, Viet Nam, the Philippines, Hong Kong (China), Taiwan Province of China, Japan and Guam.

<b>Australia</b>	
<b>PPC-1</b>	PPC-1 is Australia's first cable connecting Australia to the global hub in Guam, providing onward connectivity to Asia and the United States. The cable will have a design capacity of 1.92Tb/s and is expected to be operational in July 2009.

**ECE-Region**

<b>EU</b>	
<b>Test Satellite Launch</b>	The European Union launched the second and final test satellite for its \$5.3 billion Galileo Global Positioning System in April 2008. The €3.4 billion project is due to have 30 satellites up and running by 2013 and is Europe's biggest single space programme, joining the United States GPS and similar projects planned by Russia and China.

*Latin America and the Caribbean*

<b>Latin America and the Caribbean</b>	
<b>eLAC2010</b>	In infrastructure and access, eLAC2010 includes goals such as: promoting the development of infrastructure in each country and in the region, fostering the deployment of traffic nodes, the installation of copies of root servers and local content hosting, with the object of improving the network's quality and stability and reducing access costs.

<b>Flag Telecom</b>	
<b>Network Expansion</b>	In June 2007 Flag Telecom (now rebranded Reliance Globalcom), the undersea submarine cable arm of Indian telecom group, Reliance Communications, agreed with British virtual network operator Vanco to expand its network to South America and Australia.

<b>Atlantic Tele-Network (United States Virgin Islands)</b>	
<b>Network Cable Project</b>	Atlantic Tele-Network based in the United States Virgin Islands announced in November 2007 an investment of \$35mn in a new cable to be completed in 2009 which will provide improved service to Guyana, Suriname and Brazil.

*Western Asia*

<b>Alcatel-Lucent</b>	
<b>Mediterranean segment of submarine cable network</b>	In October 2007 French telecommunication group Alcatel-Lucent announced it would lay the Mediterranean Sea segment of a new 3,850 km submarine cable network, named Middle East North Africa (MENA) for telecom operator Orascom. MENA will link Egypt, Italy and Saudi Arabia, delivering an ultimate capacity of 5.76 Tbit/s and aims to make Egypt a central hub for traffic transiting across Europe, Middle East and Asia.

**C – C3. Access to information and knowledge**

<b>UNESCO</b>	
<b>Medium-Term Strategy priorities</b>	In its 2008-2013 Medium-Term Strategy, UNESCO has singled out youth, least developed countries (LDCs) and small island developing states (SIDS) for priority attention as these three areas are where the challenges are the greatest in providing access to information.
<b>Memory of the World Programme</b>	In 2007 UNESCO continued implementation of the Memory of the World Programme for the protection of documentary heritage, both analogue and digital, to encourage wider access to local content. In September 2007 it organized the thirteenth meeting of the Bureau of the Intergovernmental Council for the Information for All Programme (IFAP) in Paris, the objectives and activities of which closely align with those of WSIS. The Bureau decided to fund a global project on information literacy and agreed on a series of regional workshops on information literacy and information ethics.
<b>Open Science Directory Launch</b>	Efforts to improve scientific information availability have resulted in the February 2008 launch of the Open Science Directory (OSD) <sup>62</sup> by the Intergovernmental Oceanographic Commission of UNESCO (IOC), with the support of commercial database provider, EBSCO, and Hasselt University Library. The OSD aims to create

<sup>62</sup> <http://www.opensciencedirectory.net/>.

	a single access point to all online the journals contained in the many different programmes for developing countries. About 13,000 scientific journals are now available in the “Open Science Directory” and it is expected to contain more than 20,000 titles shortly.
<b>Community Media Centres</b>	By 2007 UNESCO had helped to set up Community Media Centres (CMCs) in 25 countries with 130 pilot projects, training nearly 1,500 community media workers on local content development and supporting other capacity-building projects on media pluralism in 80 countries.

### WIPO

<b>Session on Intellectual Property and Development</b>	The Fourth Session of the Provisional Committee on Proposals Related to a WIPO development agenda (PCDA) took place in Geneva in June 2007. The meeting considered recommendations for WIPO to play a role in helping developing countries and LDCs to gain improved access to technology and knowledge through the preservation of the public domain within WIPO’s normative processes and to deepen the analysis of the implications and benefits of a rich and accessible public domain. The meeting also discussed proposals to negotiate a multilateral agreement where signatories would place into the public domain, or find other means of sharing at modest cost, the results of publicly funded research, proposals to examine non-exclusionary systems for fostering, creativity, innovation and transfer of technology (e.g., free software development and creative commons models), and to establish a Treaty on Access to Knowledge and Technology.
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### World Bank

<b>Breaking Boundaries II seminar</b>	In June 2007, the World Bank hosted the Breaking Boundaries II seminar “Print on Demand and Internet Distribution of Public Interest Books” <sup>63</sup> in Washington. Publishers discussed how the digital age has fundamentally changed the way information is accessed and changed the nature of publishing content, created new issues around the ability for content creators to be recognized for their work while allowing audiences to freely and fairly access publications.
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### EU

<b>FLOSSInclude</b>	In February 2008 the European Union awarded a United States 1million grant to a consortium of 11 organizations to explore the use of Free/Libre/Open Source Software (FLOSS) as a development tool. Called FLOSSInclude, the project is funded under the EU’s 7th Framework Programme, and will be carried out by a team of research institutes, government agencies, private companies and non-governmental organizations in nine countries. The consortium is led by UNU-MERIT, a joint research and training centre of United Nations University and Maastricht University in the Netherlands. The result is expected to be a roadmap for future EU development research cooperation <sup>64</sup> .
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### ICTP

<b>Workshops on Wireless Networking for Scientists</b>	The ICTP in Trieste, continued its programme for training scientists on the use of wireless networking with three workshops, in February and December 2007 and one in March 2008. ICTP has since 1996 trained about 1,500 participants from all the continents.
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<sup>63</sup> <http://info.worldbank.org/etools/bSPAN/PresentationView.asp?PID=2110&EID=960>.

<sup>64</sup> <http://flossinclude.eu>.



<b>Bill and Melinda Gates Foundation</b>	
<b>Global Libraries Programme</b>	The Global Libraries <sup>65</sup> programme of the Bill and Melinda Gates Foundation disbursed over \$30 million in 2007 to help support the provision of free Internet access in the national public library systems in eastern Europe, Asia, Africa and Latin America, and to research and promote the socio-economic impact of public access to ICT facilities.
<b>Telecentre.org</b>	
<b>Telecentre Leaders Forum</b>	Telecentre.org, the partnership between IDRC, the Swiss Agency for Development and Cooperation (SDC) and Microsoft, hosted the Telecentre Leaders Forum in December in Kuala Lumpur, prior to the GK3 event where it also co-sponsored a Telecentre Village exhibition. The forum was attended by 85 people from 61 organizations and 42 countries.
<b>Knowledge Sharing Partnerships</b>	Telecentre.org engaged in knowledge sharing partnerships with Centre Songhai (Benin), UNDP Egypt, CSDMS (India), CEPES (Peru), and UgaBYTES (Uganda) to strengthen and expand community content facilitators and increase community engagement. GAID has also announced plans to collaborate with telecentre.org to support the scaling up of the telecentre movement, promote assistive technologies for people with disabilities, and advocate for free Internet accessibility for schools.
<b>AMD</b>	
<b>“50x15” Initiative</b>	Chip maker AMD has taken an active role providing ICT training labs in developing countries through its “50x15” initiative which aims to help ensure that 50 percent of the world’s population have Internet access by 2015. By 2007, Learning Labs supported by the 50x15 Initiative were present in Brazil, China, the Caribbean, and in particularly in Africa (Egypt, Ghana, Kenya, Lesotho, Mali, Mauritius, Rwanda, South Africa, Uganda), with more in planning.
<b>IDRC</b>	
<b>GRACE Project Expansion</b>	Building on the success of the African Gender Research in Africa into ICTs for Empowerment (GRACE) project, in 2008 IDRC began financing the expansion of the network to North Africa and Asia. The network of researchers currently supports studies in 12 countries looking at how women use ICTs to improve their lives and to identify the barriers that prevent many women from doing so.
<b>W3C</b>	
<b>Web Content Accessibility Guideline 2.0</b>	In April 2008, the World Wide Web Consortium (W3C) released the candidate recommendation for the new Web Content Accessibility guideline 2.0, which covers a wide range of recommendations for making web content more accessible, including for persons with disabilities <sup>66</sup> .

<sup>65</sup> <http://www.gatesfoundation.org/GlobalDevelopment/GlobalLibraries>.

<sup>66</sup> <http://www.w3.org/TR/2008/CR-WCAG20-20080430/>.

<b>ITU</b>	
<b>Telecommunication accessibility guidelines</b>	As part of its work on standards development for telecommunications equipment, software and associated telecommunications services, ITU published telecommunication accessibility guidelines and an accessibility check list. These publications were to ensure that the needs of those for whom accessibility to ICTs may be restricted, <sup>67</sup> are taken into account at an early stage of the process.
<b>Workshop</b>	A workshop “Making Accessibility a Reality in Emerging Technologies and the Web” was organized by ITU during the Internet Governance Forum (IGF) in Rio de Janeiro in November 2007. The event brought together experts from around the world to examine the best way to resolve accessibility needs in ICT and emerging technologies. As a result, ITU proposed to the IGF in February 2008 the establishment of a Dynamic Coalition on “Accessibility and Disability”. <sup>68</sup>
<b>Joint forum</b>	In April 2008, ITU, together with G3ict, held a joint forum in Geneva to review areas of challenges and opportunities for international ICT accessibility standards in light of the United Nations Convention on the Rights of Persons with Disabilities. The Convention has been signed by a high number of United Nations member States in a relatively short time – 126 since March 2007. World Telecommunication and Information Society Day 2008 is focused on Connecting Persons with Disabilities, and a global celebration in Cairo will take place during ITU Telecom Africa in May.

### *Africa*

<b>Organisation Internationale de la Francophonie (OIF)</b>	
<b>African Conference on Free Software (RALL)</b>	In Morocco in November 2007, the African Conference on Free Software (RALL) took place with support from the Organisation internationale de la Francophonie (OIF) and local partners, the Ministry of Commerce, Industry and New Technologies and the Department of Posts, Telecommunication and Information Technologies. The event focused on the application of free software in education, in line with the 11th Francophone Summit in Bucharest in 2006 which called for greater use of ICTs in education in developing countries.

<b>UNIDO</b>	
<b>Renewable energy powered Business Information Centres (BICs)</b>	UNIDO has been working to extend ICTs to rural areas through renewable energy powered Business Information Centres (BICs). In December 2007 the first centre was opened in Mozambique, where, in addition to the provision of access to ICT, the centre will also demonstrate the use of renewable energy for productive activities, particularly to empower rural small-scale entrepreneurs. Other renewable energy powered Centres will soon be replicated in Nigeria, Uganda and Kenya. UNIDO is also using mobile telephony to take the services of the Centres to the surrounding community, aiming to enable women entrepreneurs to build businesses as ‘village phone operators’, farmers to make better choices based on market conditions, the rural poor to receive banking services and to stimulate locally designed mobile based solutions.
<b>Lighting Up Kenya programme</b>	In December 2007, UNIDO completed the Lighting Up Kenya programme which tested 10 sites in developing a model for an “Energy Kiosk” – a shop, where electricity can be bought in off-grid villages of Kenya for battery recharging for mobile phones, to run community centres, or to power nearby local schools by

<sup>67</sup> <http://www.itu.int/ITU-T/studygroups/com16/accessibility/>.

<sup>68</sup> <http://www.itu.int/themes/accessibility/>.

	extending lines from the Kiosk. The Kiosk receives electricity from a local renewable energy source such as a micro hydro-power unit, solar-, wind- or biomass-based power generator running on locally available vegetable oils. In 2008 the project aims to replicate this to 100 communities.
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#### **ECA**

<b>ICT Best Practice Forum</b>	The ECA's <i>ICT Best Practice Forum</i> , which took place in Burkina Faso in June 2007, drew over 350 delegates from 60 countries across West and Central Africa. At the event UNIDO and Microsoft announced they will expand their strategic partnership to create a sustainable and environmentally responsible local computer-refurbishment program for emerging markets. The refurbishment centres complement UNIDO's Business Information Centre programme by creating an affordable supply of hardware for the BICs, providing additional income sources for the centres by enabling them to sell computers to SMEs and increasing the outreach of affordable quality hardware to rural areas.
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#### **UNEP/United Nations Foundation**

<b>Solar Powered Business Centre Project</b>	UNEP and the United Nations Foundation's e-CARE project commissioned the 50th solar-powered rural business centre in Ghana in January 2008. The project, with support from Telecom Management Partners (Norway), aims to develop ecommerce as a viable sector of rural economies by extending internet and other IT services; and to eliminate the energy barrier to telecom through renewable energy technologies.
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### *Asia and the Pacific*

#### **ESCAP**

<b>Community e-centres (CeCs)</b>	In 2007 ESCAP facilitated the establishment of community e-centres (CeCs), to provide increased ICT accessibility to rural areas in Bangladesh, Bhutan, India and Nepal. ESCAP is also building the capacity of enterprise support agencies through training workshops and pilot e-business implementation in four countries, namely China, Cambodia, Laos and Vietnam, for the development of e-business services for Small and Medium-sized Enterprises (SMEs).
<b>Meeting for regional knowledge network of e-centers</b>	ESCAP held a meeting in September 2007 in Bangkok on establishing a regional knowledge network of e-centres to improve their effectiveness and maximize limited resources by networking with each other to share experience and products, including content such as market information and training materials. Around 30 participants representing information and communication technology ministries, telecentres and telecentre associations, NGOs and United Nations agencies participated.

#### **UNESCO**

<b>FOSS conference</b>	A conference on Developing National Strategies on FOSS in Central Asia was held in Dushanbe, Tajikistan, in July 2007, organized by UNESCO with the Global Internet Policy Initiative Tajikistan and the Open Society Institute Tajikistan. The conference focused on applications that have been supported by UNESCO, such as Museolog, the museums digital catalogue software, which was upgraded in April 2008.
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#### **APDIP**

<b>Published e-Notes</b>	In September 2007 APDIP published an e-Note on how the affordability of FOSS and its openness to modification and localization is contributing to the sustainability of telecentres, and more broadly, to empower communities and aid poverty reduction.
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	Another e-Note was published on Standards for Electronic Documents which details the development of OpenDocument Format for Office Applications (ODF). It also looks at how governments worldwide have started to adopt ODF in public administration.
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### UNEP

<b>Indian Solar Loan programme</b>	In India, by 2007 UNEP's Indian Solar Loan programme had financed 20000 households, benefiting over 100,000 people. Other lenders have since entered the market which is now generally financed 50 percent on credit, a situation that did not exist prior to the UNEP programme. In recognition of its success, UNEP, the UNEP Risoe Centre and the Indian Solar Loan Programme received the Energy Globe Award in 2007.
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### APEC

<b>Establishment of e-Commerce Centres</b>	Under the APEC Digital Opportunity Centre project (ADOC), two e-Commerce Centres were established in Peru in March 2007. These aim to provide ICT related training for small and medium size businesses (SMEs) to help them to take advantage of the business opportunities afforded by the Internet. ADOC is a four-year project initiated by Chinese Taipei and seven APEC economies currently participate in the project – Chile, Indonesia, Peru, Papua New Guinea, the Philippines, Vietnam and Thailand.
<b>Expert Group Meeting</b>	To enhance partnership for the inclusive Information Society, the APEC secretariat organized an Expert Group Meeting on the Provision of ICT Access for Disadvantaged Communities through Public-Private Partnership where various aspects of partnership, including related policies and legislations, ICT infrastructure, content, capacity-building, financing, perspectives on gender and persons with disabilities, were discussed.
<b>Women's Digital Economy Forum</b>	The Women's Digital Economy Forum took place in June 2007 in Australia as part of the APEC's Women in the Digital Economy programme (2005–2009) which aims to generate e-business opportunities for women entrepreneurs. The initiative comprises four components – research, capacity-building, e-community building and a policy forum. About 90 CEOs and policy makers from ten APEC economies attended and policy recommendations for each country were produced. This Forum complements APEC's other related activities, including the Women's e-Biz Training workshops as well as its recently published report: "Women-Owned SMEs and E-Business in Twelve APEC Economies."

### ECE-Region

#### European Commission

<b>ICT Policy Support Programme</b>	The European Commission instituted the ICT Policy Support Programme in 2007 which will run until 2013 with a budget of €738 million. The fund is the main financial instrument for the 2010 initiative which is the EU policy framework for promoting the information society and media. In 2007 the programme focuses on three main themes: (a) Efficient and interoperable e-Government services; (b) ICT for accessibility, ageing and social integration; and (c) ICT for sustainable and interoperable health services.
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**EU's Seventh Framework Programme (FP7)**

<b>Public ICT Research Funding</b>	ICT research is one of the key themes of the EU's Seventh Framework Programme (FP7) which will provide €9.1 billion to fund public research across Europe from 2007 to 2013. The ICT research priorities are: (a) pervasive and trusted network and service infrastructures; (b) cognitive systems, interaction and robotics; (c) components, systems and engineering; (d) digital libraries and content; (e) sustainable and personalized healthcare; (f) mobility, environmental sustainability and energy efficiency; (g) independent living and inclusion; and (h) future and emerging technologies (FET).
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**Latin America and the Caribbean****ESCAP**

<b>Published study</b>	In March 2007, ESCAP published an Assessment of the Status of the Implementation and Use of ICT Access Points in Asia and the Pacific as part of the programme "Knowledge Networks through ICT Access Points for Disadvantaged Communities." According to the study, it was estimated that more than 400,000 new telecentres would be needed to extend the reach of the telecentres to the rural population of these countries. The study also recommended that two regional knowledge networks in Asia-Pacific be established under the project: the first one on agricultural and rural related information, and the second one on e-literacy initiatives including e-learning.
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**ECLAC**

<b>Seminar</b>	In September 2007, ECLAC held a seminar on Latin American Encounter of Telecentres and Social Inclusion 2007. About 300 participants attended the meeting.
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**IACD/OAS**

<b>Rural Connectivity and Energy Initiative</b>	In 2007 the Executive Secretariat for Integral Development of the Inter-American Agency for Cooperation and Development (SEDI/IACD) in collaboration with the Renewable Energy in the Americas (REIA) Initiative of the Organization of American States (OAS) has continued to develop its Rural Connectivity and Energy Initiative. The programme supports the use of appropriate energy generation and storage systems, telecommunication systems and information technology packages including computers with Internet connection to meet community service needs.
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**WILAC**

<b>Regional Wireless Training Project Workshop</b>	The first Latin American Region Wireless Training Project workshop for NGOs took place in Peru in 2007, organized by WILAC <sup>69</sup> , a network on wireless technology for development in Latin America and the Caribbean hosted by the Fundacion ESLARED and supported by IDRC's Institute for Connectivity in the Americas. Subsequent workshops were held in October 2007 in Argentina and in Mexico in December.
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<sup>69</sup> <http://www.wilac.net>.

**Western Asia**

<b>ESCWA</b>	
<b>Smart Community Project (SCP)</b>	To meet WSIS goals of connecting all villages by 2010, ESCWA initiated the Smart Community Project (SCP), as a mechanism for local resource development and job creation in rural communities. Pilot facilities, which combine a Multipurpose Technology Community Centre (MTCC) and an Agro-Food Processing Unit (AFPU), were successfully set up in Iraq, the Syrian Arab Republic and Yemen and connected to MTCCs in Lebanon.

**D – C4. Capacity-building**

It should be noted here that many of the activities outlined under other action lines also include more specific capacity-building elements related to the particular activity.

<b>ITU/UNCTAD/UN-DESA</b>	
<b>Workshops and Training Courses</b>	ITU, UNCTAD and UN-DESA organized workshops and training courses in 2007 on a wide range of topics, including ICT and telecommunication regulations and policy, rural communications, spectrum management and standardization, ICT policies, information economy, and e-commerce legal issues. Some of the events were undertaken electronically, such as through UNCTAD's Virtual Institute, or ITU's public digital library. ITU also engaged in the formulation and implementation of various human capacity-building projects such as the rehabilitation and reconstruction of the Information and Communication Training Institute (ICTI) in Kabul, Afghanistan.

<b>ITU</b>	
<b>Human Capacity-Building ITC Initiative</b>	By 2007 the ITU's Human Capacity-Building ITC Initiative for Developing Countries, which was launched in May 2001 in partnership with Cisco Systems to provide students and professionals in developing countries (including women, youth, and the disabled) with affordable training in Internet Protocol (IP) networking had trained reached the following mile-stones: 66 centres, in 56 countries, over 3,500 students currently enrolled, more than 4,000 graduates and 20 centres expanded.
<b>Global Capacity-Building Initiative</b>	A new Global Capacity-Building Initiative (GCBI) was launched in 2007 by ITU with <i>InfoDev</i> and the World Bank. The initiative includes targeted, client-oriented capacity-building activities for policy makers and regulators from developing and least developed countries support governments in leveraging the role of the ICT sector as a key driver for economic and social development. The first GCBI training event took place in collaboration with ARICEA and COMESA for regulators and policy makers in Eastern and Southern Africa, in Addis Ababa in November, 2007.

<b>UNIDO</b>	
<b>Entrepreneurship Curriculum Programme</b>	UNIDO's The Entrepreneurship Curriculum Programme (ECP) aims at stimulating entrepreneurial talents among young people by enhancing their ability to identify economic opportunities and by developing creativity, innovativeness, planning and leadership skills, which will aid them in their professional life. In order to start familiarizing youth with the entrepreneurial potential of ICT, UNIDO announced in 2007 that it was developing, in partnership with Microsoft, tailored ICT training modules within its ECP.

<b>Intel</b>	
<b>World Ahead Programme and Alliance</b>	In September 2007, a new phase of Intel's World Ahead Programme began when it was announced that an alliance of 16 companies had been formed to expand Intel's efforts to provide people in developing countries with the benefits of technology. The World Ahead Alliance brings together 16 Indian organizations that have been influential in the results achieved during the early phases of the Intel World Ahead Programme, including non-profits, education companies, hospitals and service and technology providers. Intel's World Ahead efforts in India include working with state governments to equip approximately 100 schools with desktop PCs and the Intel-powered Classmate PC. Since the program began Intel and 15 state governments have trained more than 730,000 teachers how to apply technology to improve student learning through the Intel Teach Programme.

<b>UNESCO/infoDev/IDRC</b>	
<b>Promotion of Knowledge Parks</b>	Led by UNESCO, <i>infoDev</i> and IDRC, the promotion of IT parks, "knowledge parks" or "clusters" have gained increasing attention in 2007 as a means to achieve a critical mass of both applied and academic ICT skills. The International Conference and Exhibition on Knowledge Parks was hosted by UNESCO in Doha, Qatar, in March 2008 with support from <i>infoDev</i> and the Qatar Foundation. The event provided a platform for key players around the world to discuss how to use ICTs to foster entrepreneurship, improve education and empower individuals in developing countries was the subject of the International Conference and Exhibition on Knowledge Parks.

<b>infoDev/World Bank</b>	
<b>Commissioned Study on IT Parks</b>	<i>infoDev</i> , in cooperation with the Global ICT Department (GICT) of the World Bank Group, announced that it has commissioned a global best practice study on IT Parks which will draw on the experience of several countries and leverage <i>infoDev</i> 's global network of business incubators. The objectives of the study are to deliver a "Best Practice Guide", documenting global lessons learned and best practices in establishing sustainable IT Parks and identifying the critical business success factors. In addition, it will develop guidelines for policymakers to stimulate private sector investment in the IT sector and spill over into the broader economy.

## *Africa*

<b>Microsoft</b>	
<b>NGO ICT4D Academy</b>	In April 2008, Microsoft launched the NGO ICT4D Academy at the African ICT Best Practices Forum in Burkina Faso. It will focus on three areas: ICT4D skills development, IT support services and e-Readiness. Partners, including the Aga Khan Foundation and the Academy for Educational Development, are supporting the project and the first Centre of Excellence will open in South Africa, serving as a venue where NGOs can network and explore collaborative opportunities. Additional regional centres are being discussed with local partners in Ghana, Kenya and Senegal.

<b>IDRC</b>	
<b>Acacia Programme Expansion</b>	In 2007, IDRC expanded its Acacia programme which was first established in 1997 with the objective of supporting sub-Saharan communities to integrate ICTs in their development strategies, and helping them to meet their own social and economic development. Acacia has since invested more than \$40 million in research,

	demonstration and evaluation projects on key ICTs issues, focusing on support for the development of regional African research networks on specific themes such as ICT policy (RIA), women and ICTs (GRACE) and local e-government (LOGIN).
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### *Asia and the Pacific*

<b>ESCAP</b>	
<b>Regional Workshop</b>	ESCAP held a regional workshop on Knowledge Sharing through Community-based E-Learning Facilities in Rural Areas <sup>70</sup> in June 2007 in Xining, China. The workshop brought together international and local participants to discuss the promotion of knowledge sharing services and networks in rural communities through community-based e-learning facilities and multi-purpose community e-centres took place.
<b>Capacity-Building Seminars</b>	Within the framework of the Working Group on ICT under the Special Programme for the Economies of Central Asia (SPECA), several regional capacity-building seminars on ICT policy making were organized jointly with ESCAP.

### *ECE-Region*

<b>ECE</b>	
<b>Regional Activities</b>	ECE continued to promote gender mainstreaming in ICT strategy and action plans at regional and sub-regional levels through training workshops, and supported capacity-building within National Statistical Offices to develop gender-disaggregated data related to ICTs. ECE also continued its series of workshops to address issues relating to the support systems for women in small business and the use of information and communication technologies for SMEs. ECE organized two 14-training workshops in 2007 and two more training workshops have been planned for 2008.

<b>OECD/Spain</b>	
<b>Conference on Innovation in the Software Sector</b>	A conference on Innovation in the Software Sector was jointly organized by the OECD, the Spanish Ministry of Industry, Tourism and Trade and the regional Government of Extremadura, in November 2007. The conclusions of this conference provided inputs for the development of OECD projects on software innovation, and will be taken into account in an interim report to OECD Ministers in 2008.

### *Latin America and the Caribbean*

<b>Latin America</b>	
<b>New Connectivity Targets</b>	In Latin America, new targets were set for connectivity in educational institutions in 2007. In the previous strategic plan the target was to connect one third of public schools and libraries to the Internet (double the number then connected). In the plan agreed in February 2007 (eLAC2010) the target is to connect 70 percent of public educational institutions or triple the number connected as of 2007.

### *Western Asia*

<b>ESCWA</b>	
<b>Technology Centre for Development</b>	As part of ongoing ESCWA efforts towards establishing the Technology Centre for Development, an expert consultation meeting was held in Amman during November 2007. The focus of discussion was a report produced by ESCWA: "Detailed Assessment of Regional Needs and Priorities and Identification of Implementation Mechanisms". Experts from different science, technology and innovation domains

<sup>70</sup> <http://www.unescap.org/icstd/applications/projects/e-learning-CeC/reg-workshop.asp>.



	attended the meeting with the aim of reviewing the report and producing an enhanced version. Deliberations concluded that such a centre is relevant and necessary for the socio-economic development of the ESCWA member countries and the region given the increasing globalization and world competitiveness.
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## E – C5. Building confidence and security in the use of ICT<sup>71</sup>

<b>ITU</b>	
<b>Global Cybersecurity Agenda</b>	The ITU Secretary-General launched the <i>Global Cybersecurity Agenda</i> (GCA) in May 2007. The GCA, a framework for international cooperation in cybersecurity, <sup>72</sup> is made up of seven strategic goals <sup>73</sup> and builds upon five pillars: (a) Legal Measures; (b) Technical and Procedural Measures; (c) Organizational Structures; (d) Capacity-Building; and (e) International Cooperation. GCA will build on existing national and regional initiatives to avoid duplication and encourage collaboration amongst all relevant partners. A High-Level Experts Group was subsequently established to advise the ITU Secretary-General on strategies of implementation.
<b>Study Group on ICT Network Security</b>	ITU set also up a new study group on securing ICT networks. As part of this Group's activity, a report on "Best Practices for a National Approach to Cybersecurity" outlined a framework for national approaches to cybersecurity.
<b>CyberSecurity Work Programme</b>	ITU's <i>Cybersecurity Work Programme</i> plans a series of regional capacity-building events on Frameworks for Cybersecurity and Critical Information Infrastructure Protection (CIIP) <sup>74</sup> . It also released a National Cybersecurity/CIIP Self-Assessment Toolkit <sup>75</sup> which is being piloted in Malaysia, and a Botnet Mitigation Toolkit <sup>76</sup> . ITU has also developed an ICT Security Standards Roadmap to assist in the development of security standards <sup>77</sup> . In 2007 ITU organized a series of regional forums on cybersecurity and critical internet resources in Cape Verde (November), Damascus (October), Buenos Aires, (October), Geneva (September) and Hanoi, (August). A contact database and Who's Who publication, along with the development of cybersecurity indicators and a survey on anti-spam legislation worldwide is planned for 2008. ITU and Microsoft announced they will collaborate globally on cybersecurity and provide support for regulators in developing countries.
<b>OECD</b>	
<b>Workshop on Digital Identity Management</b>	An OECD Workshop on Digital Identity Management (IDM) took place in Trondheim in May 2007. Hosted by the Norwegian Ministry of Education and Research and the Ministry of Government Administration and Reform, it brought together experts from government, industry and civil society to explore the main information security and privacy issues surrounding digital identity management.

<sup>71</sup> Some activities listed here are also often associated with action lines on Enabling Environment (C6) or e-Business (C7) and vice-versa.

<sup>72</sup> <http://www.itu.int/cybersecurity/gca>.

<sup>73</sup> <http://www.itu.int/osg/csd/cybersecurity/gca/goals.html>.

<sup>74</sup> <http://www.itu.int/ITU-D/cyb/events>.

<sup>75</sup> <http://www.itu.int/ITU-D/cyb/cybersecurity/projects/readiness.html>.

<sup>76</sup> <http://www.itu.int/cyb>.

<sup>77</sup> <http://www.itu.int/ITU-T/studygroups/com17/ict/index.html>.

<b>Interpol</b>	
<b>International Conference on Cyber Crime</b>	The 7th International Conference on Cyber Crime organized by Interpol took place in New Delhi in September 2007 and The Fourth International Conference on Cyber Crime Investigation (ICCyber) & The Second International Conference on Forensic Computer Science (ICoFCS) took place in September 2007 in Sao Paulo <sup>78</sup> .

<b>Council of Europe</b>	
<b>Octopus Interface Conference</b>	In June 2007, the Council of Europe held its Octopus Interface Conference in Strasbourg to promote its Cybercrime Convention and the additional Protocol as a guideline for national legislation and practice, to strengthen cooperation among different stakeholders and to encourage wide and rapid ratification and accession to these treaties. Some 140 representatives from 55 countries, international organizations and from the private sector participated. <sup>79</sup>

### *Africa*

<b>ECA</b>	
<b>Workshop</b>	In January 2007 a workshop organized in Ouagadougou by ECA gathered ICT experts, lawyers, trade specialists and economists to identify the most effective legal framework for ICT development in the region. Discussions focused on how to put in place an enabling legal environment for e-commerce and for an enhanced cybercrime control. The event considered two studies funded by Finland and by the Canadian e-Policy Resource Center, on a harmonized legal framework for e-commerce and a harmonized legal framework on ICT in general. This workshop was part of a process involving the Economic Community of West African States (ECOWAS) and the West African Monetary Union (UEMOA) which have formed a partnership with ECA to assist with arrangements for the adoption of a common regulatory framework on ICTs for West Africa, as a way of attracting foreign direct investments by modernizing the instruments for promoting e-commerce, preserving personal data and curbing cyber crime. ICT experts from ECOWAS subsequently adopted guidelines on combating cyber crime in December 2007 in Lomé and ECOWAS Heads of State are expected to adopt the guidelines as directives in 2008. ECA also assisted Burkina Faso, Ghana, Kenya and Mozambique to develop national cyber security frameworks <sup>80</sup> .

### *Asia and the Pacific*

<b>APEC/OECD</b>	
<b>Malware Workshop</b>	In April 2007 the APEC-OECD Malware Workshop in Quezon City, Philippines was held to explore issues raised by malware and other related malicious activities over the Internet. Participants also examined the scope for closer coordination with various other organizations involved in fighting malware. It was concluded that there is a need for structured coordination at national and international levels with involvement of all stakeholders. The workshop was the first step in a joint work programme on the subject of malware being undertaken by APEC and the OECD.

<sup>78</sup> <http://www.ICCyber.org>.

<sup>79</sup> [http://www.coe.int/t/e/legal\\_affairs/legal\\_co-operation/combating\\_economic\\_crime/3\\_Technical\\_cooperation/CYBER/Octopus\\_if\\_2007.asp](http://www.coe.int/t/e/legal_affairs/legal_co-operation/combating_economic_crime/3_Technical_cooperation/CYBER/Octopus_if_2007.asp).

<sup>80</sup> [http://www.uneca.org/disd/events/2007/ecowas-legal-framework/content/Harmonising\\_Legal\\_Framework\\_ICTs\\_West\\_Africa-Cisse-en.pdf](http://www.uneca.org/disd/events/2007/ecowas-legal-framework/content/Harmonising_Legal_Framework_ICTs_West_Africa-Cisse-en.pdf).

<b>APEC</b>	
<b>Seminar on APEC Privacy Framework</b>	The second seminar on the implementation of the APEC Privacy Framework, took place in June 2007 in Cairns, Australia, on Cooperation and Cross-Border Privacy Rules. The seminar brought together privacy experts, government officials, privacy regulators, businesses to discuss the implementation of a Cross-Border Privacy Rules (CBPR) system based on the model identified in the previous seminar. The seminar also provided input to decisions on APEC in 2008 within the proposed Data Privacy Pathfinder framework that would assist in implementing these cooperative arrangements.
<b>Seminar on Data Privacy and E-Commerce</b>	A seminar on the implementation of the APEC Privacy Framework – “Data Privacy and E-Commerce: Fostering Economic Growth” was held in Lima in February 2008 to support enhanced understanding of the diverse cultures of privacy among APEC member economies and to consider how the APEC Framework can address privacy in the region.

***ECE-Region***

<b>European Commission</b>	
<b>Public Forum</b>	The European Commission held a public forum in January 2007 in Brussels on the availability and robustness of electronic communication networks. The meeting considered a study conducted for the Commission on the availability and robustness of electronic communication networks which provides insights in the availability and security provisioning of electronic communication networks and makes a number of key recommendations to enhance their protection and resilience.

<b>Council of Europe</b>	
<b>Regional Conference on Cybercrime</b>	In March 2007 the regional conference for countries of south-eastern Europe on cooperation against cybercrime was held in Belgrade, funded by the Council of Europe PACO Serbia project on economic crime.

***Latin America and the Caribbean***

<b>OAS</b>	
<b>Cyber-Security Program</b>	The OAS Cyber-Security Program advanced in 2007 to help OAS Member States establish Computer Security Incident Response Teams (CSIRT); to train designated CSIRT staff; and to facilitate the creation of the Inter-American Network of CSIRTs. By April 2007, 11 OAS Member States had formally designated national CSIRTs. The first OAS Course on CSIRTs took place in Brasilia in June 2007, with support from the Brazilian Intelligence Agency (ABIN) and the Department of Information Security and Communications (DSIC). The 43 participants produced a non-binding strategic document entitled Carta de Brasilia (Charter of Brasilia). CICTE Secretariat 2006–2007 efforts on cyber security culminated in a Second Cyber Security and Cyber Crime Workshop held in Miami November 2007. Representatives from thirty-one OAS Member-States attended. The OAS Office of Information Technology is to host a pilot project to begin establishing the Inter-American Network of CSIRTs.

**Western Asia**

<b>Arab Region</b>	
<b>First Regional Conference on Cybercrime</b>	About four hundred representatives from public and private sector institutions in the Arab region participated in the first regional conference on cybercrime in Cairo in November 2007. The Conference was organized by the Egyptian Association for the Prevention of Information and Internet Crimes and supported by the Information Technology Industry Development Agency (ITIDA), the Council of Europe, the United Nations Office on Drugs and Crime, Microsoft, Ain Shams University, IRIS, EASCI and other partners.
<b>UNDP</b>	
<b>Regional Workshop</b>	A regional workshop on cybercrime for prosecutors of the Arab region was held in Casablanca, Morocco in June 2007, organized by the POGAR programme of the United Nations Development Programme.
<b>ESCWA</b>	
<b>Published Study on Cyber Legislation</b>	In February 2007 ESCWA published a study entitled “Models for Cyber Legislation in ESCWA Member Countries”. The study reviews the status of regional and international cyber laws and uses examples of legislative principles to illustrate the benefits and challenges of enacting comprehensive cyber legislation. The following areas were highlighted: (a) data protection and privacy rights; (b) protection of privacy and freedom of information in the electronic communications sector; (c) censorship and freedom of expression in cyberspace; (d) intellectual property; (e) e-transactions, e-commerce and related fields; (f) consumer protection; and (g) cyber crime.
<b>Peer Consultation Meeting on Cyber Legislation</b>	In December 2007, ESCWA held a Peer Consultation Meeting (PCM) in Amman which discussed the aforementioned study and introduced a cyber legislation template. Participants expressed the need to develop regional models for cyber legislation. They also emphasized the necessity of updating such models periodically to keep up with the rapid pace of technological change. Nine countries were represented in the meeting and ESCWA was urged to propose a regional model to help harmonize cyber legislations in the region. It was also recommended that ESCWA promote activities aimed at improving the adoption of a common Arabic terminology for the field and creating data banks that would be used for the research and development of cyber legislation.
<b>Gulf Cooperation Council</b>	
<b>Conference on Combating Cybercrime</b>	A conference on Combating Cybercrime in countries of the Gulf Cooperation Council was held in Abu Dhabi in June 2007. It was organized by the UAE Ministry of Justice in cooperation with Microsoft and with the participation of high-level officials.

**F – C6. Enabling environment**

<b>ITU</b>	
<b>ITU/EU Joint Project for Harmonized Regulatory Frameworks</b>	In December 2007 the ITU and the EU announced a joint project to attract greater investments in ICT infrastructure in the Caribbean, Africa and Asia and the Pacific. The project aims to harmonize regulatory frameworks within the different regions, and to build human and institutional capacity in the field of ICT through a range of training, education and knowledge-sharing measures. As part of the agreement, the European Union has allocated €8mn from the European Development Fund, to which ITU will add \$500,000.
<b>Recent Publications</b>	ITU publications released in 2007 include the 8th edition of Trends in Telecommunication Reform 2007, and the Road to Next-Generation Networks (NGNs). In 2007 new modules were included in the ITU/ <i>InfoDev</i> ICT Regulation Toolkit <sup>81</sup> , a web-based tool which provides regularly updated regulatory topics, best practices and case studies. Publication of Executive Summaries of the Toolkit in English, and subsequently other languages, is currently being planned, starting with French and Spanish in 2008.
<b>Other Related Activities</b>	ITU continued to carry out studies and establish recommendations on questions related to the broad aspects of spectrum management, and the improvement of the international spectrum regulatory framework was considered during the 2007 World Radio-Communication Conference. The 7th Global Symposium for Regulators (GSR) took place in Dubai in February 2007 and focused on the best practice guidelines needed to facilitate the migration of Next Generation Networks.
<b>UNCTAD</b>	
<b>National and Regional ICT Policy Assistance</b>	UNCTAD has also continued to support countries with national ICT policies and strategies towards creating a competitive information economy. UNCTAD also provided assistance to the East African Community (EAC) and with Asociacion Latinoamericana de Integracion (ALDI), to help harmonies their regional e-commerce legislations.
<b>Information Economy Report</b>	In 2007 UNCTAD published the Information Economy Report 2007–2008 which aims to inform and enable governments to understand the policy challenges and opportunities. The analysis identifies important areas of concern and best practices necessary for the formulation of targeted policy decisions to support and accelerate ICT diffusion.
<b>World Dialogue on Regulation</b>	
<b>Published Book</b>	With support from <i>infoDev</i> and the IDRC, LIRNE.NET's World Dialogue on Regulation (WDR) published Diversifying Participation in Network Development in 2007, a book which provides reports and case studies on techniques for building networks in developing and emerging markets. The publication provides policy makers, regulators, operators and customers in emerging markets with a framework to help ensure sustainable solutions to the challenges of digital inclusion <sup>82</sup> .

<sup>81</sup> <http://www.ictregulationtoolkit.org>.

<sup>82</sup> <http://www.lirne.net>.

<b>OECD</b>	
<b>Published Report</b>	In October 2007 OECD published a report on “Global Opportunities for Internet Access Developments”. <sup>83</sup> The report seeks to address the question of where the next billion users will come from and to examine the large shifts in communications policy which will make this a possibility.
<b>APC/Third World Institute</b>	
<b>Published Annual Report</b>	APC and the Third World Institute launched the “Global Information Society Watch Report 2007” <sup>84</sup> in May 2007. This is the first in a series of annual reports that monitors the efforts made by governments and international agencies to ensure that the benefit ICTs reach the broader public, and examines local and global ICT policies and their impacts on people living in developing countries. <sup>85</sup>
<b>PANOS</b>	
<b>Published Studies</b>	The international NGO network, PANOS, published in 2007, several studies on communication for development, including the series called “At the heart of change” and the study “Common knowledge, how access to information and ideas can drive development”. <sup>86</sup> PANOS’ Communication for Development programme has been working in the past to ensure that recent development debates on the importance of ICTs are rooted in an analysis that puts poor and marginalized people first, and that policy making for communication is demand-driven.
<b>IDRC</b>	
<b>Regional Initiatives on the Information Society</b>	In 2007–08, IDRC supported regional initiatives aimed at bringing together stakeholders from different sectors to discuss and work together on issues that relate to the effective insertion of the region into the information society. IDRC is continuing to support two large networks of African and Asian ICT policy researchers – Research ICT Africa <sup>87</sup> (RIA), and LIRNEAsia <sup>88</sup> which were set up to inform policy makers and the private sector to adapt their strategies and applications to the needs of the poor in Africa and Asia. LIRNEAsia also coordinates an activity entitled Communications Policy research South <sup>89</sup> (CPRSOUTH), a vehicle for building capacity in communication policy research in the Asia Pacific.
<b>Global Knowledge Partnership</b>	
<b>Third Global Knowledge Conference</b>	A major event that took place in 2007 which brought together policy makers, experts, visionaries and practitioners to focus on issues related to the WSIS goals was the third Global Knowledge Conference, GK3 <sup>90</sup> , organized by the Global Knowledge Partnership from in December 2007 in Kuala Lumpur. GK3 gathered over 1,700 experts, innovators, practitioners and policy makers to debate the development and human dimension of ICT.

<sup>83</sup> [http://www.oecd.org/LongAbstract/0,3425,en\\_2649\\_33703\\_40199860\\_119666\\_1\\_1\\_1,00.html](http://www.oecd.org/LongAbstract/0,3425,en_2649_33703_40199860_119666_1_1_1,00.html).

<sup>84</sup> <http://globaliswatch.org>.

<sup>85</sup> <http://www.globaliswatch.org/download>.

<sup>86</sup> The new studies are at [http://www.panos.org.uk/global/program\\_news.asp?ID=1002](http://www.panos.org.uk/global/program_news.asp?ID=1002).

<sup>87</sup> <http://www.researchictafrica.net>.

<sup>88</sup> <http://www.lirneasia.net>.

<sup>89</sup> <http://www.cprsouth.org>.

<sup>90</sup> <http://www.gkpeventsonthefuture.org/gk3>.

**Africa**

<b>ECA</b>	
<b>African Regional Action Plan on the Knowledge Economy</b>	ECA continues to support the African Regional Action Plan on the Knowledge Economy (ARAPKE) which was by both the African Information Society Initiative (AISI) and NEPAD with support from the African Union. Eleven flagship projects have been proposed. <sup>91</sup>
<b>National E-Strategy Formulation</b>	Many countries in Africa continued efforts to formulate and implement national e-strategies in 2007. With the assistance of the ECA, ten countries either began or consolidated their national ICT policymaking processes <sup>92</sup> during 2006–2007. The total number of countries in Africa with ICT policies increased from 13 in 2000 to 35 in 2007.
<b>Regional and subregional programmes and activities</b>	Regional and subregional programmes and activities focused on capacity-building, e-trade, combating cyber crime, and ICT applications. Supported by the Canadian Government funded Global E-policy Resource Network (e-PolNet) an expert group meeting was held in Kigali in October 2007, organized by the ECA, in partnership with the Canadian e-Policy Resource Centre (CePRC) and the Open Society for Southern Africa (OSISA). Under the theme “National ICT Policies: Regulation and Public and Community-based Access” for Eastern, Western and Southern English-speaking African countries the workshop brought together 40 African policy makers and other stakeholders who reached consensus that most countries had developed policies which remained unimplemented for various reasons, and there was a need to move from policy development to implementation. The participants urged the ECA and its partners to continue supporting this process to ensure that benefits from the Information Society are realized.
<b>Association of Regulators of Information and Communication for Eastern and Southern Africa (ARICEA)</b>	
<b>Fifth Annual General Meeting</b>	The Fifth Annual General Meeting of ARICEA took place in Cairo in February 2007 which concluded that the COMESA Secretariat and Member States should work on: (a) building ICT awareness; (b) elaborating and monitoring implementation of a National ICT Declaration and Action Plan; (c) verifying that the national plan is in line with the WSIS action plan, being implemented by the COMESA member States; and (d) developing and implementing ICT impact indicators in economic development.
<b>Training Workshop</b>	A training workshop for ICT regulators and policy makers in Eastern and Southern Africa on competition and changing market conditions took place in Addis Ababa in November 2007 in collaboration with the Association of Regulators of Information and Communication for Eastern and Southern Africa (ARICEA) and supported by <i>infoDev</i> , the World Bank and the ITU and COMESA. The workshop was the first regional training event under the Global Capacity-Building Initiative (GCBI).

<sup>91</sup><http://www.itu.int/ITU-D/connect/africa/2007/bgdmaterial/flagship-11.html>.

<sup>92</sup> Cameroon, DRC, Chad, Liberia, Malawi, Niger, Nigeria, Rwanda, Sierra Leone and Togo.

<b>NEPAD e-Africa Commission</b>	
<b>Framework and Protocol for Fibre-Optic Cable</b>	In 2007, in consultation with member states of the African Union, the NEPAD e-Africa Commission developed an enabling policy and regulatory framework for international fibre-optic cable in East and Southern Africa. The outcome of this was a Protocol which was signed by 12 countries.

*Asia and the Pacific*

<b>ESCAP</b>	
<b>National and Regional Workshops</b>	ESCAP organized a series of national and regional workshops in 2007 in Nepal, Lao PDR, Mongolia and Cambodia, which aimed at assisting policy makers to formulate and implement essential public and other ICT policies relevant to Internet Governance for socio-economic development. With the assistance of UNCTAD, Lao PDR and Cambodia, are both expected to have enacted e-commerce legislation in compliance with the e-ASEAN initiative by 2008.

<b>APEC</b>	
<b>Workshop on Universal Service Strategies</b>	At the APEC Telecommunication and Information Working Group (Tel) workshop on Universal Service Strategies in Santiago in October 2007, participants discussed common challenges and identified a number of common principles that might be considered (economic efficiency, consumer satisfaction, transparency, sustainability in the long term, competitive neutrality, cost effectiveness), and different issues that arise such as competitive ways to deliver services, security issues, copper vs. fibre, wireless broadband and issues around the sustainability of telecentres. A project group was established to build upon the work done in the workshop, which will take advantage of work done in Regulatel, ASEAN, and APEC TEL's own information on WTO implementation of USO commitments.

<b>IDRC</b>	
<b>Asia ICT Programme</b>	The IDRC Asia ICT programme for 2006-2011 continues targeted research support in three key areas: Policies: Building evidence and promoting dialogue to inform policies that enable knowledge societies in Asia; Technologies: Applied research and piloting of innovative ICT applications for development (notably in education, health, livelihoods and governance); and Effects: Research and build capacity for understanding the socio-economic effects of ICTs on Asian communities.

<b>ADB/Microsoft</b>	
<b>ICT Partnership</b>	In April 2007 ADB and Microsoft announced a partnership to enable countries in the Asia Pacific region to benefit from new opportunities created by ICT. The partnership will jointly undertake projects, studies and capacity-building initiatives in five strategic areas of common interest: innovation, ICT and governance, ICT and education, enabling jobs and opportunity, and regional integration and trade.

*ECE-Region*

<b>European Commission</b>	
<b>Regulatory Activities</b>	The introduction of a European Commission's Roaming Regulation which limits the fees operators charge for international roaming calls took place in August 2007. The Commission subsequently approved proposals in November 2007 to review the



	regulatory framework that had been in place since 2002. To ensure that national regulators have the necessary tools and powers to ensure fair competition, the Commission is proposing to create a new EU-wide telecom regulatory agency. The agency would also act as a European centre of excellence for network and information security, helping the Commission to step up the fight against spam, and taking over the tasks of the European Network and Information Security Agency (ENISA). The Commission has also proposed introducing a Europe-wide system for trading radio spectrum.
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### European Union

<b>Published Report</b>	In preparation for the launch of the i2010 e-Inclusion strategy in 2008, the European Union published its Report on the Public Consultation on its e-Inclusion strategy in November 2007, following a public on-line consultation, which took place between June and August 2007.
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### *Latin America and the Caribbean*

#### Latin America and the Caribbean

<b>Second Ministerial Conference on the Information Society</b>	Building on the success of the implementation of the 2005-2007 Regional Action Plan (eLAC2007) a subsequent 2008-2010 Action Plan (eLAC2010) was adopted at the Second Ministerial Conference on the Information Society in Latin America and the Caribbean, which took place in San Salvador in February 2008. The Conference, which gathered over 250 decision makers, also set up a new follow-up mechanism which includes a second level of thematic coordination for each of the focal areas in eLAC2010, to be led by Cuba (on education), Costa Rica (infrastructure and access), Mexico (health), Peru (public administration), Uruguay (production sectors), and Bolivia (policy and strategy tools).
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#### ECLAC/UN-DESA/IDRC/GAID

<b>Launch Seminar for GAID Regional Network</b>	In February 2007, just prior to the Ministerial meeting, ECLAC, UN-DESA, IDRC and GAID held a launch seminar for GAID regional network which brought together 100 ICT4D experts to present proposals on the role of ICT in poverty eradication, health, education, youth employment and e-Government. During 2007, ECLAC organized a series of four seminars in Santiago in September 2007, which gathered more than 500 stakeholders, representing governments, NGOs and the private sector. These seminars were on e-Government Interoperability, Latin American Encounter of Telecenters and Social Inclusion 2007, Multi-stakeholder consultation, and the Millennium Goals and ICT.
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#### ICT-Enabled Growth Initiative

<b>17<sup>th</sup> Electronic Commerce Steering Group Meeting</b>	The 17th Electronic Commerce Steering Group (ECSG) meeting took place in Lima in February 2008 under the ICT-Enabled Growth Initiative, a collaboration between APEC economies and the private sector, represented by the International Chamber of Commerce and ABAC which aims to help create policy tools to promote the use and development of ICTs as a means to enhance capacity to participate in the global digital economy. The meeting proposed the development of a checklist of five main areas (the Five I's) that need to be addressed in such frameworks: Infrastructure, Investment, Innovation, Intellectual capital and Information flows.
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<b>IDRC</b>	
<b>Regional Dialogue on the Information Society</b>	In 2007 IDRC continued to support the work of a regional network of researchers in ICT policy and regulation called DIRSI <sup>93</sup> (Regional Dialogue on the Information Society). The project aims to stimulate economic assessments of the impacts, benefits, and costs of governance and regulatory reform, and ICT diffusion in households and communities.

*Western Asia*

<b>ESCWA</b>	
<b>Published Report</b>	To assist with ICT policymaking, in 2007 ESCWA published “Guidelines for the Formulation and Implementation of ICT Strategy”, and the 2007 edition of the “Regional Profile of the Information Society in Western Asia” <sup>94</sup> , which contains national profiles on all WSIS action lines as well as ICT advances related to achieving the MDGs.
<b>Commissioned Study</b>	As referred to above under C5, ESCWA commissioned a study on models for cyber legislation, which reviews the status of local and international laws governing cyber legislation within the ESCWA region, in order to enable policy makers and legislative bodies to determine priorities for their jurisdiction.

<b>Arab Working Group</b>	
<b>13<sup>th</sup> Meeting on ICT Strategy</b>	The 13th meeting of the Arab Working Group (AWG) on ICT Strategy took place in Cairo in March 2008. In 2007 the AWG had formulated the Arab Information and Communication Technologies Strategy for Building the Information Society (2007-2012) and adopted a set of indicators for measuring progress. The meeting developed criteria for selecting regional projects and discussed the proposals of ESCWA and Iraq which specify for each objective of the strategy: actions, expected accomplishments and indicators of achievement.

**G – C7. ICT applications**

While most activities in this action line have focused on support for specific ICT application areas, some activities have covered more general issues around ICT application development. In addition, because of the cross-cutting nature of ICTs, activities listed under a particular category in this Action Line could have relevance for other categories.

<b>ITU</b>	
<b>ICT Applications’ Work Programme</b>	While the ITU ICT Applications’ Work Programme to Assist Developing Countries (2007–2009) is still currently being developed, ITU has established new websites gathering key resources on e-services/applications, e-government, e-health and e-environment.

<sup>93</sup> <http://www.dirsi.net>.

<sup>94</sup> E/ESCWA/ICTD/2007/15 – <http://www.escwa.un.org/wsis/profiles.html>.

<b>UN-Habitat</b>	
<b>Web for Development Conference</b>	In November 2007, UN-HABITAT hosted the United Nations' annual Web for Development Conference in Nairobi. The conference brought together some 300 participants from United Nations agencies, governments, civil society, the private sector and local authorities to discuss how the Internet can be used to accelerate achievement of the Millennium Development Goals.

<b>IDRC</b>	
<b>Information Society Innovation Fund</b>	IDRC has extended its Information Society Innovation Fund (ISIF-Asia) in 2007 which is designed to provide seed funding for grants that develop innovative ICT solutions that address pertinent issues in education, health, governance and livelihoods in Asia.

## H – C7. E-Government<sup>95</sup>

<b>UN-DESA</b>	
<b>E-Government Tools</b>	In 2007 UN-DESA produced two tools on e-Government. One was a <i>Compendium of ICT Applications on Electronic Government: Volume 1</i> , <sup>96</sup> which focuses on more than 130 software applications for education and health. METER2, a ready-to-use interactive web-based tool, designed to assist governments in monitoring and refining the enabling environment for e-government, is currently being developed in collaboration with the State University of New York at Albany and Microsoft Corporation.
<b>E-Government Projects</b>	UN-DESA also carried out several e-government projects in the Caribbean region, including a cooperative project that will lead to the transfer and implementation process of Jamaica's Customs Automated Services (CASE) solution in Antigua and Barbuda. At the national level, UN-DESA worked with national Governments on e-government solutions in Belize, Morocco, Saint Lucia, Saint Vincent and the Grenadines, and Lesotho.

<b>UNCTAD</b>	
<b>Customs Reform and Automation Programme</b>	UNCTAD's customs reform and automation programme, ASYCUDA underwent a system upgrade in 2007 and was expanded to include new members, including the Palestinian Authority, the Commonwealth of Puerto Rico, and the Governments of Georgia, Yemen, Zimbabwe, Haiti, Côte d'Ivoire, Jordan, Lebanon and the Syrian Arab Republic. The ASYCUDA system went live in the Democratic Republic of the Congo, Eritrea, Saint Vincent and the Grenadines, Seychelles, and Trinidad and Tobago. In 2007, the ASYCUDA Programme also created regional support and maintenance centres to facilitate regional integration.

<sup>95</sup> Some activities in C7 e-Government are also often associated with Action Line C1 on the role of public governance authorities, and vice versa. Similarly, e-education and e-health can be seen here, because public services are also sometimes grouped under e-government.

<sup>96</sup> <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN028661.pdf>.

<b>UNDP</b>	
<b>Oslo Governance Centre Access to Information Programme</b>	The UNDP Oslo Governance Centre's Access to Information (A2I) programme has increased from 69 projects in 2003 to 279 in 60 countries in 2007. This includes both direct support, such as for the development of independent and pluralist media, and projects where access to information is a component of other democratic governance initiatives, such as legislation support or justice initiatives. Currently, most projects are carried out in the Arab and Europe-CIS regions. In 2007 there was a substantial increase in projects related to communication mechanisms for vulnerable groups. The Oslo Governance Centre is also continuing to support the Communication Initiative (CI) – an online space for sharing experiences and building bridges between people and organizations supporting communication as a fundamental strategy for development.
<b>Democratic Governance Group Activities</b>	The UNDP's Democratic Governance Group (DGC), published its annual report in 2007 which highlighted improving access to information and strengthening media in post-conflict situations. The DGC is composed of policy advisors, research analysts, programme managers and knowledge management professionals at UNDP agencies around the world. The DGC hosts the Democratic Governance Network (DGP-Net), which connects people through an online interactive knowledge sharing platform, was one of the most active knowledge networks in UNDP, responding to 145 queries and requests from the larger Community of Practice.
<b>Republic of Korea/World Bank</b>	
<b>ICT Trust Fund Established</b>	In October 2007 the Republic of Korea announced the establishment of an ICT trust fund with the World Bank to provide \$15 million over the next three years on a grant basis to projects worldwide, with the possibility of further contributions depending on progress. The fund will support integration of ICT into the delivery of government services, and to help small- and medium-sized enterprises in developing nations.
<b>European Commission</b>	
<b>ERINA Project</b>	The European Commission presented the results of its ERINA project, at the e-IRG Open Workshop on e-Infrastructures in Lisbon in October 2007. ERINA analysed the role of e-Infrastructures to bring innovation to key ICT areas, in e-Government, e-health and e-learning. The study surveyed over 300 existing use cases – in the health, public sector and learning domains and recommended various actions for fostering adoption to the European Commission and national Governments.
<b>ECA</b>	
<b>Technology in Government in Africa Award</b>	ECA initiated several programmes in 2007, including the <i>Technology in Government in Africa (TIGA) award</i> , a joint initiative of ECA and the Government of Canada, to recognized achievements that have led to e-government changes at national, regional or provincial level. The 2007 award was won by Al-Akhawayn University for its eFoz municipal e-governance project, supported by IDRC.
<b>IICD/Altran Group</b>	
<b>MOU Signed</b>	In March 2008 the Netherlands-based foundation IICD signed an MOU with the French Altran Group to send employees to development projects in Africa focusing on sharing knowledge and expertise in the field of e-governance.

<b>Latin America and Caribbean</b>	
<b>Interoperability of E-Government Systems</b>	In public management, the elac2010 goals seek to promote the interoperability of standards-based e-government systems in Latin America and the Caribbean, and to ensure that 80 per cent of local governments interact with citizens and other branches of the public administration via the Internet.

## I – C7. E-Business

<b>UNCTAD</b>	
<b>e-Business activities</b>	In 2007 UNCTAD continued to support the efforts of developing countries in e-business development, in particular among SMEs, in sectors of economic importance and with export capacity, through a mix of sector-specific policies, training programmes and deployment of ICT tools. UNCTAD's Information Economy Report 2007 studied trends in e-business and the appropriate policy environment to increase the diffusion of ICTs in business and its positive impact on enterprise competitiveness.
<b>Meeting on E-business and E-employment</b>	In May 2007 UNCTAD, ILO and ITC jointly organized a facilitation meeting on "E-business and E-employment" on the theme of "ICTs, Global Supply Chains and Development" in Geneva. The meeting explored the role of technology and innovation in supply chains, the measures that policy makers and enterprises can adopt to exploit the opportunities of greater market access and strengthen enterprise competitiveness, the labour market implications and the costs and benefits of such changes.

<b>UPU</b>	
<b>Published Report</b>	A report on "E-shopping through Posts: A key opportunity for the postal sector in the Information Society" was released by the Universal Postal Union (UPU), which identified ways the postal sector and the UPU could contribute to the growth of e-business.
<b>E-services strategy</b>	In April 2007, the UPU approved <i>The UPU E-services strategy: Facilitating communication between the inhabitants of the world</i> , expected to be implemented through an Action Plan to be approved by the UPU Congress in August 2008.
<b>MOU Signed</b>	UPU signed a Memorandum of Understanding with ITU in July 2007 to enhance cooperation and coordination between the two organizations.
<b>Related UPU Projects</b>	UPU projects are under way in Afghanistan, Nepal, Bhutan and Southern Africa with the objective of enhancing the physical infrastructure of the postal network with ICT connectivity and related training using post offices as telecentres. Priority attention was given to the development of UPU's worldwide electronic payment network in Africa. Altogether, 29 African countries are currently equipped with the UPU's International Financial System (IFS) applications. UPU has also been working with the International Fund for Agricultural Development (IFAD) and the International Organization for Migration (IOM) to make available affordable remittances for migrants based upon advancements in ICT in the postal network. UPU is working with UNCTAD, WCO and the International Air Transport Association (IATA) to ensure that interoperability of transportation and customs clearance system helps remove barriers to cross border movements related to e-commerce growth.

<b>United Nations Centre for Trade Facilitation and Electronic Business</b>	
<b>11<sup>th</sup> United Nations/CEFACT Forum</b>	The United Nations Centre for Trade Facilitation and Electronic Business held its 11th United Nations/CEFACT Forum in Stockholm in September 2007. The meeting highlighted the importance of global standards and brought the various United Nations/CEFACT working groups together to focus on facilitating transactions and e-procurement through the simplification and harmonization of processes, procedures and information flows. At the meeting publication of three new United Nations/CEFACT e-business standards were announced — the eTendering Standard for Public Procurement, the Project Schedule and Cost Performance Management Standard and the Small-Scaled Lodging House Standard.
<b>ITC (International Trade Center UNCTAD/WTO)</b>	
<b>Trade at Hand Initiative</b>	The ITC's Trade at Hand initiative expanded in March 2008 to include Senegal in collaboration with the Senegalese exporters association, ASEPEX. The project provides small exporters with access to a selection of fruit and vegetable prices via mobile text messages. Business opportunities, contacts and market news are also provided. Tradenet.biz, a regional mobile2mobile trading platform for farmers and traders expanded in 2007 to include Tanzania in March 2008. The concept is to improve intra-regional trading by making markets more transparent and efficient and providing sufficient information to make better decisions on bringing products to market.
<b>infoDev/ODI/IDS</b>	
<b>Compilation of "Knowledge Map"</b>	infoDev, in partnership with the Overseas Development Institute (ODI) and the Institute for Development Studies (IDS), are currently compiling a "Knowledge Map" on the contribution made by ICT to the livelihoods of the rural poor. Donors and policy makers are being encouraged to complete a brief survey.
<b>ECE</b>	
<b>UNeDocs</b>	In Europe progress towards paperless trade was made with the publication in 2007 of the electronic Cross Industry Invoice and the Business Requirements Specification of the United Nations electronic trade documents project, UNeDocs.
<b>TIR Computerization</b>	Progress was also made in making border crossings easier, faster and more secure through the computerization of <i>Transports Internationaux Routiers</i> (TIR) carnets, over three million of which are issued every year.
<b>EU Directive</b>	
<b>Payment Services Directive</b>	In March 2007 the Payment Services Directive was adopted by the EU Council of Ministers which will put in place (by 2009) new EU rules to allow alternative providers such as mobile phone operators to deliver new payment services alongside banks and credit card firms, paving the way for a more efficient non-cash economy. The PSD aims to create a true European market for payments, improving business and offering consumers more and cheaper services. By end of 2010 European businesses and consumers will be able to use a single bank account regardless of their country of operation.

<b>ECA</b>	
<b>Study on ICTs and trade</b>	In Africa, ECA undertook a six-country <sup>97</sup> study on ICTs, trade and economic growth aimed at building capability and capacity in creating policy frameworks for use and adoption of ICTs in trade.
<b>UNIDO/Microsoft</b>	
<b>AfrIPANet</b>	In March 2007, UNIDO and Microsoft launched the prototype of a web-based technology solution, which is a key component of the monitoring platform for the Africa Investment Promotion Agency Network (AfrIPANet).
<b>ESCAP</b>	
<b>Regional Workshops on eBusiness</b>	ESCAP promoted the sharing of good practices through a regional workshop, and provided support to pilot projects in four countries <sup>98</sup> for the development of e-business services for SMEs. It also promoted entrepreneurship and e-business for women in rural cooperatives through regional workshops, training and developing guidebooks.
<b>eBusiness Forums and Conferences</b>	ESCAP also organized the 6 <sup>th</sup> international forum on online dispute resolution in Hong Kong, China, in December 2007. In March 2007 in Sabah, Malaysia, UNCTAD organized a sub-regional ministerial conference on “Asia-Pacific: E-tourism for Growth: Matching market efficiency and social inclusion”, which focused on e-Community tourism and was represented by 22 countries as well as ESCAP, UNDP, UNWTO, ADB and several development agencies.
<b>APEC</b>	
<b>Second Trade Facilitation Action Plan</b>	The Committee on Trade and Investment (CTI) prepared the APEC’s Second Trade Facilitation Action Plan endorsed by Ministers Responsible for Trade in July 2007. This plan sets out a framework and timetable for achieving a further five percent reduction in trade transaction costs by 2010. It focuses on customs procedures, standards and conformance, e-commerce and mobility of business people.
<b>Single Window Strategic and Development Plans</b>	Also, the APEC Sub-Committee on Customs Procedures (SCCP) adopted the Single Window Strategic and Development Plans in June 2007. The Strategic Plan provides a framework for the development of Single Window systems by members to achieve paperless trading targets and enable seamless data sharing. It contains six recommendations to assist members in this endeavour and provides the mechanisms for APEC members to work collaboratively. Model measures for e-commerce were developed and adopted in 2007.
<b>Symposium on Paperless Trading Capacity</b>	The APEC Symposium on Paperless Trading Capacity-Building and Intellectual Property Protection took place in Beijing in August 2007. The event produced a series of recommendations to facilitate paperless trading: 1) a roadmap towards paperless trade capacity-building and intellectual property protection on APEC; 2) a framework of intellectual property resources related to paperless trading; 3) a directory of APEC paperless trading products and APEC intellectual property resources related to paperless trading; and 4) a Digital Rights Management Promotion Committee of APEC E-Commerce Business Alliance.

<sup>97</sup> Egypt, Ethiopia, Ghana, Kenya, Senegal and South Africa.

<sup>98</sup> China, Cambodia, Lao People’s Democratic Republic and Viet Nam.

<b>Training Program on E-Trade</b>	The APEC Training Program on E-Trade and Supply Chain Management held its second training course in Sanya, China, in March, 2007. The training aimed to raise the awareness level and understanding, knowledge and skills of e-trade and e-commerce through education among APEC members, especially developing member economies, in particular so that strengthened bilateral or multilateral trade development among APEC member economies is reinforced.
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#### ILO

<b>Published Study</b>	In April 2007 ILO published a study titled “Combining micro insurance and new technologies to protect the poor”. <sup>99</sup> The study concludes that to fulfil the potential of micro insurance in protecting the poor, it is necessary to develop an insurance culture among the low-income market and introduce products that meet their primary needs. Information technologies, including smart cards, bar code systems and the Internet could contribute significantly to expanded outreach, better products, cost cutting, and the sustainability of providers.
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#### Kiva.org

<b>Electronic microfinance</b>	Kiva.org operates a web site that allows any individual to make micro loans to specific individuals and projects. Kiva partners with micro finance institutions around the world (60 partners in 36 countries) that identify potential borrowers whose needs are posted on Kiva’s Web site. By 2008 the fund had about \$530mn deployed to 410 credit banks and almost 220 cooperatives, which work directly with the borrowers.
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#### eBay

<b>Acquisition of MicroPlace</b>	The online auction company eBay, which recently bought PayPal, also entered the microfinance market in October 2007 when it acquired MicroPlace, a web-based brokerage firm where loans made through the company earn interest and can be traded.
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### J – C7. E-Learning

E-learning activities are also often incorporated within the activities of other Action Lines.

#### UNESCO

<b>E-Learning Initiatives</b>	During 2007, UNESCO supported e-learning initiatives in Africa, the Arab States, Asia and the Pacific, Europe, Latin America and the Caribbean, for both formal and non-formal education. UNESCO offered capacity development opportunities on the use of ICT for education, targeting Ministries of Education, higher education institutions, teachers and educators in community learning or multimedia centres. At the end of 2007 UNESCO launched the ICT Competency Standards for Teachers, which define the range of skills needed for teachers to effectively integrate ICT in the teaching process. The Standards also provide modules for training, and emerged from multi-stakeholder collaboration between UNESCO, Microsoft, Cisco and Intel, the International Society for Technology in Education and the Virginia Polytechnic Institute and State University.
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<sup>99</sup> [http://www.ilo.org/global/About\\_the\\_ILO/Media\\_and\\_public\\_information/Press\\_releases/lang--en/WCMS\\_082345/index.htm](http://www.ilo.org/global/About_the_ILO/Media_and_public_information/Press_releases/lang--en/WCMS_082345/index.htm).



<b>Online Collaborative Knowledge Hub</b>	In March 2007 UNESCO launched an online collaborative knowledge hub for training and capacity-building resources for development. The Platform is a resources directory with relevant resources on local development and poverty reduction. It provides 1,700 free training resources from over 630 development stakeholders, including all United Nations agencies.
<b>ICT in Education Toolkit</b>	In April 2007 UNESCO, <i>infoDev</i> and partners announced version 2.0 of the ICT in Education Toolkit for Policymakers, Planners and Practitioners. Beta versions of the Toolkit have been used as part of country planning exercises in Asia and the Pacific Island nations, and the Toolkit will now be used in country and regional workshops in 2008. Version 2.0 includes the ability to plan for multiple <sup>100</sup> projects within a single country simultaneously, conduct surveys, an off-line version on CD and a variety of security enhancements.

#### OSI/Shuttleworth Foundation

<b>Meeting on Open Education</b>	In September 2007, the Open Society Institute (OSI) and the Shuttleworth Foundation convened a meeting in Cape Town to gather leading proponents of open education. Participants were educators, foundations and internet pioneers, who proposed the Cape Town Open Education Declaration <sup>101</sup> which urged governments and publishers to make publicly-funded educational materials available freely over the internet. The Declaration also encourages teachers and students around the world to join a growing movement to use the web to share, remix and translate classroom materials to make education more accessible, effective, and flexible.
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#### *infoDev*

<b>Survey</b>	In October 2007 <i>infoDev</i> published A Survey of ICT and Education in Africa, based on 53 Country Surveys. The survey aimed to gather together in a single resource the most relevant and useful information on ICT in education activities in Africa.
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#### eLearning Africa

<b>eLearning Africa conference</b>	More than 1400 participants took part in the second eLearning Africa <sup>102</sup> conference in Nairobi in May 2007. The commercial event brought together academia, business, civil society and Governments, and with nearly 80 percent of the participants coming from Africa and a participation by African Ministries of Education.
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#### Asian Development Bank

<b>Conference on ICT for Education</b>	In October 2007 the Asian Development Bank (ADB) hosted a conference in Manila on Optimizing ICT for Education, Sharing Practical Experiences from the Asia and Pacific Region. The event aimed to address a range of current ICT in education issues, lessons learned, and best practices. <sup>103</sup>
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#### Latin America Network of Educational Portals

<b>RELPE Launch</b>	The Latin American Network of Educational Portals <sup>104</sup> (RELPE) was launched in 2007 aiming to encourage the free circulation of locally produced educational and
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<sup>100</sup> <http://www.infodev.org/en/Publication.353.html>.

<sup>101</sup> <http://www.capetowndeclaration.org>.

<sup>102</sup> <http://www.elearning-africa.com/>.

<sup>103</sup> <http://www.adb.org/Documents/Events/2007/Optimizing-ICT-Education/default.asp>.

<sup>104</sup> <http://www.relpe.org>.

	improve quality and equity in education through the innovative application of ICTs in the education sector. The initiative will develop both the institutional linkages and compatible software enabling content contribution and sharing. Currently the focus is on primary and secondary education content, with plans to expand to the tertiary (university and college) sector.
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## K – C7. E-Health

<b>WHO</b>	
<b>Global Observatory on E-Health</b>	WHO's Global Observatory on e-Health continues to monitor, analyse, and report on developments and trends in e-Health worldwide. The second global survey on e-Health is planned to be conducted in 2008 and the results published in early 2009. Building on the first global survey, it will explore in more detail areas such as policy, partnerships, infrastructure, funding, capacity-building and the adoption of e-Health applications. The next two years will also see the extension of the Observatory with the establishment of national observatories in participating countries which monitor and report e-Health developments at the national level as well as promote findings to key country stakeholders.
<b>Private Sector Partnerships for e-Health</b>	A number of WHO's programmes, undertaken in partnership with the private sector, respond to the call for improving access to the world's health information. Chief among them is the Health InterNetwork Access to Research Initiative (HINARI), <sup>105</sup> which provides free or low cost online access to major journals from over 70 publishers in biomedical and related social sciences to local, not-for-profit institutions in developing countries.
<b>Health Metrics Network</b>	To improve national health information systems, WHO has set up the Health Metrics Network (HMN) <sup>106</sup> and the planned African Health Infoway <sup>107</sup> , in partnership with member states, other international organizations and the private sector. An important milestone for strengthening health information systems was reached when the World Health Assembly in May 2007 called on health information and statistical communities, international organizations, global health initiatives and other stakeholders to "provide strong, sustained support for strengthening health information systems". During 2007 HMN developed the second edition of its Framework and Standards, which is increasingly adopted as a technical guide. Sixty-two countries have so far received grants for intensified efforts to strengthen their health information systems with HMN and partner support.

<b>European Union</b>	
<b>E-Health in i2010 Programme</b>	e-Health is one of the priorities of the European Union's i2010 programme to boost innovation and jobs, which aims to provide user-friendly and interoperable information systems for patients and health professionals. In July 2007 the European Commission published draft recommendation on e-Health interoperability. <sup>108</sup> The EC observed that regional health networks, electronic health records and deployment of health cards have contributed to the emergence of an 'e-Health industry', which has the potential to become the third largest industry in the health sector, after the pharmaceutical industry and the medical device and imaging industry. The European Commission also carried out a pilot on e-Health indicators: 'Benchmarking ICT use

<sup>105</sup> <http://www.who.int/hinari/en/>.

<sup>106</sup> [www.who.int/healthmetrics](http://www.who.int/healthmetrics).

<sup>107</sup> [www.who.int/kms/initiatives/ahi/en/index.html](http://www.who.int/kms/initiatives/ahi/en/index.html).

<sup>108</sup> [http://ec.europa.eu/information\\_society/newsroom/cf/document.cfm?action=display&doc\\_id=369](http://ec.europa.eu/information_society/newsroom/cf/document.cfm?action=display&doc_id=369).

	among General Practitioners in Europe' which surveyed electronic services supporting healthcare. The study report published in April 2008 showed that e-Health applications have a growing role in the doctor's practices but there remain significant country differences in their availability and use across Europe.
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### ECA

<b>Study on African Health Infoway</b>	In Africa, ECA, in collaboration with WHO and the government of Canada, commissioned a joint regional needs assessment and scoping study on the African Health Infoway: a district-based public health information network and geospatial health system for African health. The first report on the needs assessment undertaken in Kenya, Mozambique, Rwanda, Swaziland, Uganda and the United Republic of Tanzania was published in 2007.
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### African Union/India

<b>Pan-African Telemedicine Project</b>	A pan-African telemedicine project was launched in Addis Ababa in July 2007 which establishes satellite links between hospitals in Africa and India's leading health institutes. The \$136 million scheme is a joint initiative between the African Union and India.
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### ESCAP

<b>Regional Expert Meeting</b>	ESCAP with the support of OOSA (Office of Outer Space Affairs) organized a regional expert meeting on Using Space Technology for Avian Influenza Monitoring and Early Warning in Asia in 2007. The Meeting established a working group to further develop operational models for avian influenza monitoring and early warning by use of remote sensing and GIS technologies, and to develop a network mechanism of national avian influenza control authorities and supporting institutions, as the basis for an information system for avian influenza at the global/regional/subregional levels. WHO and FAO expressed their supports to this effort by provision of their relevant data and information.
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### APDIP

<b>Published e-Note</b>	APDIP published e-Note 22 on e-Health in 2007 which provides an overview of the benefits and challenges of some of the most used e-Health tools. Lessons learned in e-Health in the Asia-Pacific region are highlighted through three case studies from Indonesia, Philippines and Thailand. The APDIP e-Note also examines different approaches to e-Health, such as the use of free and open source software and the relationship between e-Health and the Millennium Development Goals.
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### USAID

<b>Research and Demonstrations on ICT-Health Surveillance Systems</b>	USAID completed demonstrations in 2007 which showed that ICT-based field surveillance of health threats can demonstrate the benefits of ICT for advancing health solutions. In support of this, USAID conducted research which concluded that a number of Health Management Information Systems that could be used for an Avian Influenza initiative, and these could also be expanded to cover other public health risks. However, there are common challenges among these solutions, such as prohibitive costs and overly-complex business model or technical systems that cannot be easily understood and implemented in the developing country context. As a result the USAID supported the development of a "Spot Map" prototype, which can compile and report epidemiological evidence using PDA and/or cell phone based technologies. After field testing in Madagascar, the Spot Map will be provided in other countries in the Asia Near East (ANE) and Africa (AFR) regions.
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<b>IDRC</b>	
<b>OpenMRS</b>	A similar e-health project continues to be funded by IDRC which supports the use of computers and handhelds and wireless technologies to gather health information and to establish national health Management Information Systems (MIS). This has led to an international collaboration of individuals and institutions known as OpenMRS <sup>109</sup> which is developing the core application. A network of implementers is configuring specific implementations of OpenMRS for treating and managing care for patients with HIV/AIDS and tuberculosis at sites in Eastern and Southern Africa.
<b>FOSS Electronic Health Delivery Project</b>	A project to develop electronic health delivery using open source software (FOSS) and Personal Digital Assistants in Argentina and Columbia was established by the University Austral of Argentina with support from IDRC. Researchers will develop an electronic clinical registry based on FOSS compatible with international health data standards and devise indicators for measuring the cost-effectiveness and impact of healthcare delivery using ICTs.
<b>European Commission</b>	
<b>Published Report</b>	The European Commission's eHealth ERA programme published <sup>110</sup> a report and survey on eHealth priorities and strategies in 32 European countries in April 2007.
<b>Pilot Projects on Satellite-Based Technology</b>	During 2007, the European Union has been supporting three pilot projects which demonstrate the potential of satellite based technology to extend the reach of health services in Africa and to complement other forms of ICT in support of e-Health. Medical eContent will be delivered via satellite. Satellite-based clinical services for remote areas will be tested, and electronic communications between healthcare facilities in a isolated areas with high burden of diseases (for example HIV/AIDS, tuberculosis and malaria) will be established with medical centres of excellence in Africa.
<b>e-Health for East Africa</b>	The European Union is also supporting a project to promote e-Health practice in the East African Community (EAC) through the establishment of a Regional Integrated e-Health Management Information System (RIHMIS) and Geographical Information System (GIS) database and ICT infrastructure in the region. The third meeting of the Telemedicine Task Force (TTF) took place in Gabarone in March 2007 and it is planned to connect key database servers within East Africa through a Wide Area Network (WAN) secured by Virtual Private Network (VPN) technology.
<b>Latin America</b>	
<b>E-Health in eLAC2010 Strategy</b>	The elac2010 strategy identifies the use of ICTs in health as a lagging area which requires greater efforts in order to achieve the modernization of health services. Aside from promoting the integration of ICTs into the health sector and the encouragement of public policies in this area, eLAC2010 places emphasis on the task of linking national health portals with a view to establishing a regional network that can be used to share experiences.
<b>MedNET Kick Off</b>	The MedNET kick off meeting took place in Darmstadt in March 2008. MedNET <sup>111</sup> is establishing a framework in Latin America to promote access in underserved regions to high quality medical resources. A healthcare database and medical platform will focus on patient safety by enhancing clinical services and improving the primary healthcare in pilot locations.

<sup>109</sup> <http://www.openmrs.org>.

<sup>110</sup> [http://ec.europa.eu/information\\_society/activities/health/docs/policy/ehealth-era-full-report.pdf](http://ec.europa.eu/information_society/activities/health/docs/policy/ehealth-era-full-report.pdf).

<sup>111</sup> <http://www.ehealthnews.eu/content/view/1087/66/>.

## L – C7. E-Employment

A variety of national initiatives to promote employment through teleworking have taken place in 2007, which also address Action Line C7 on e-environment due their effect on energy consumption through reduced travel.

<b>IDRC</b>	
<b>Telework Initiative</b>	In Latin America IDRC is continuing a regional initiative on Telework, New Forms of Work and Employment which is supporting research into a wide variety of telework issues, including case studies in Argentina, Brazil, Colombia and Costa Rica.

<b>ECA</b>	
<b>E-Employment in Central Africa Project</b>	In May 2007 ECA launched the e-Employment in Central Africa pilot phase in three countries (Congo, Gabon and Cameroon) to assist youth in obtaining jobs through access to ICTs. With support from ECCAS, UNDP and local partners, the project will support building capacity to search and prepare interviews, provide access to a multimedia centre and provide timely information on job opportunities. At the launch 120 young graduates were enrolled.

<b>EU</b>	
<b>Published Report on Telework and the Disabled</b>	Opportunities for disabled people provided by teleworking was the subject of an EU report in November 2007 on: Improving Disabled People's Access to the Knowledge Based Society. The report was designed to aid further understanding of the need for eAccessibility in furtherance of EC ambitions within its employment and social policy fields.

## M – C7. E-Environment

<b>WMO</b>	
<b>WMO Information System</b>	The World Meteorological Organization (WMO) continues the development of a coordinated global information infrastructure, the WMO Information System (WIS) as an initiative to use ICTs to monitor, prevent and mitigate natural disasters. WIS builds upon the components of existing WMO information systems, and is expected to be a major component of the Global Earth Observation System. A Global Telecommunication System (GTS) for the exchange of time-critical and operation-critical data will be implemented by the WMO Members. In the Indian Ocean, several GTS centres' systems were upgraded and training activities organised to provide an effective support to the operation-critical exchange of multi-hazard warnings, especially for Tsunami and tropical cyclones. <sup>112</sup> In 2007, several WMO Members implemented pilot projects for data recovery, access and retrieval services. The project is expected to be operational from the end of 2008.

<sup>112</sup> Including Madagascar, the United Republic of Tanzania, Kenya, Pakistan, Maldives, Sri Lanka, Bangladesh, Myanmar, Thailand and Indonesia.

<b>Aarhus Clearinghouse for Environmental Democracy</b>	
<b>New Phase Launch</b>	A new phase of the Aarhus Clearinghouse for Environmental Democracy <sup>113</sup> was launched in May 2007 at UNCSTD's side event on the Information Society – From Declaration to Implementation. The upgraded global web portal's new features include an improved Resource Directory with more than 1000 sources of information. The Aarhus Clearinghouse promotes the exchange of information on implementation of the Aarhus Convention and principle 10 of the Rio Declaration for Environmental and Development.

<b>ESCAP</b>	
<b>Study on Natural Disaster Information Management</b>	ESCAP conducted a study in 2007 to review the modalities for strengthening regional coordination and cooperation in natural disaster information management and early warning in the Asia the Pacific region, as well as assess the needs for and feasibility of establishing a regional centre for information, communication and space technology-enabled disaster management.
<b>Regional Cooperative Mechanism for Disaster Monitoring</b>	ESCAP is also working closely with the International Centre for Drought Disaster Reduction, which is established by ISDR and hosted by China, in the development of regional cooperative mechanism on drought disaster monitoring and early warning using space technology for the Asia-Pacific region, including sharing of operational space information products and services for drought disaster monitoring and early warning, and to explore the possibility to extend existing national services to cover neighbouring countries

<b>Group on Earth Observations</b>	
<b>27<sup>th</sup> Session</b>	United Nations organizations and partners in the Group on Earth Observations held its 27 <sup>th</sup> session in January 2007. The meeting reviewed the participation of the United Nations system in the process and the organizations endorsed the Services Oriented Architecture concept as the basis for the GEOSS architecture. This will ensure a common approach to enhance access to data and information through interoperability arrangements that are uniform across the diverse component systems that comprise GEOSS.

<b>OOSA</b>	
<b>United Nations-SPIDER Programme</b>	United Nations OOSA (Office of Outer Space Affairs) is implementing the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (United Nations-SPIDER) which was established by the United Nations General Assembly in December 2006. This programme is helping to provide universal access to all countries and all relevant international and regional organizations to all types of space-based information and services in support of the full disaster management cycle. In 2007 a first United Nations-SPIDER office was opened in Bonn (Germany). Further offices will be opened in 2008 in Beijing (China) and Geneva (Switzerland). Additionally, United Nations-SPIDER will have the support of a Network of Regional Support Offices which will ensure that all countries benefit from the space-based technologies for disaster management.

<sup>113</sup> <http://aarhusclearinghouse.unece.org/help.cfm>.

<b>ECE</b>	
<b>Established Task Force</b>	In 2007, the ECE Working Group on Environmental Monitoring and Assessment established a task force to: (a) review the collection of meta information on available sources of environmental information and activities in EECCA countries, (b) develop practical tools and instruments using ICTs to improve the use and exchange of information in these countries, and (c) harmonize their approaches with those applied within the European Environment Agency (EEA) networks.
<b>ITU</b>	
<b>Symposia on ICTs and Climate Change</b>	As part of a new initiative on ICTs and climate change, ITU has been organizing two symposia. The first was held in Kyoto, Japan in April 2008, hosted by MIC Japan, and the second will be held in London, on 17–18 June, 2008 hosted by BT. Supplemented by the publication of the ICTs for e-Environment Report <sup>114</sup> , these symposia will bring together key specialists in the field, from top decision-makers to engineers, designers, planners, government officials, regulators, standards experts and others to examine the potential for ICTs to assist in addressing climate change issues.
<b>Scoping Studies and Policy Reviews</b>	ITU is undertaking new scoping studies and policy reviews of available reference materials and guidelines to support national decision-making and implementation of ICT applications and services in the areas of e-environment which will be made available in early 2008.
<b>ITU/UNEP Global Sustainability Initiative</b>	The partnership between ITU and UNEP – the Global e-Sustainability Initiative <sup>115</sup> (GeSI) which works with the private sector on issues relating to the environment is exploring ways to reduce the increasing challenge of e-Waste, including programmes to reuse and recycle existing equipment. GeSI is working with the Mobile Phone Partnership Initiative, a United Nations public-private partnership of the Basel Convention with representatives of mobile phone manufacturers, telecom operators, phone recyclers, NGOs and representatives of the Basel Convention Secretariat.
<b>ECLAC</b>	
<b>Study on Disaster Management</b>	In April 2007, ECLAC, with support from the EC, published a study on disaster management called Regional Perspectives on Digital Disaster Management in Latin America and the Caribbean. It includes an assessment of the role of ICTs and in particular new technologies such as WiFi.
<b>Latin American and Caribbean</b>	
<b>Regional Platform on E-Waste</b>	A project to develop a regional platform on personal computer electronic waste in Latin America and the Caribbean was established in 2007. Based at the Corporacion de Estudios Sociales y Educacion in Chile with support from IDRC, through applied research, capacity-building and communications, the project <sup>116</sup> will promote the proper management and disposal of e-waste in the region. The project will also explore the social business opportunities presented by recycling.

<sup>114</sup> <http://www.itu.int/ITU-D/cyb/app/e-env.html>.

<sup>115</sup> <http://www.gesi.org>.

<sup>116</sup> <http://www.rrtic.net>.

<b>Caribbean Disaster Emergency Response Agency</b>	
<b>ICT for Disaster Management</b>	The Caribbean Disaster Emergency Response Agency <sup>117</sup> in Barbados established a project in 2007 to enhance the effectiveness of ICT tools for disaster management in the Caribbean with support from IDRC. Activities will include the testing of ICT applications and research in three island states to assist in developing set of policy recommendations to enhance regional strategies to respond to natural hazards using ICTs.

## N – C7. E-agriculture

<b>FAO</b>	
<b>e-Agriculture Community of Expertise</b>	FAO launched the first phase of the e-Agriculture Community of Expertise in 2007, a global initiative to enhance sustainable agricultural development and food security by helping stakeholders to share experiences and best practices the use of ICTs in the agricultural sector. The community is coordinated by the e-Agriculture Working Group (EAWG) <sup>118</sup> while FAO manages the development, editorial content, and maintenance of the web-based platform.
<b>e-Agriculture Week</b>	An “e-Agriculture Week” was held in September 2007 in Rome which highlighted the role of information, communication and knowledge management in agriculture and rural development, and allowed more than 300 participants to interact in discussions related to technologies, policy and sharing of expertise. One of the main open events during this week was a conference on <i>Web2ForDev: Participatory Web for Development</i> , initiated by partner CTA and organised by FAO and a number of collaborating organizations. <sup>119</sup>

<b>IICD/ACP-EU</b>	
<b>Collaboration on ICT for agriculture</b>	IICD and the ACP-EU Technical Centre for Rural and Agricultural Cooperation (CTA) announced a collaboration agreement in December 2007 in the area of ICTs for agricultural and rural development. Capacity-Building of stakeholders in ACP countries will take place through in-country training events as well as through the use of distance learning tools to be able to increase the number of people that can be trained.

<b>Knowledge Access in Rural Inter-connected Areas Network (KARIANET)</b>	
<b>3rd Annual Thematic Workshop</b>	The IFAD and IDRC funded Knowledge Access in Rural Inter-connected Areas Network (KARIANET) focuses on promoting knowledge sharing in agricultural development projects in North Africa and the Near East. It held its 3rd Annual Thematic Workshop on Technology Transfer, Marketing Constraints and Tested Solutions in Cairo in October 2007.

<sup>117</sup> <http://www.cdera.org>.

<sup>118</sup> Members include: Consultative Group on International Agricultural Research (CGIAR); Technical Centre for Agriculture and Rural Development (CTA); United Nations Department of Economic and Social Affairs (DESA); FAO; Gesellschaft für Technische Zusammenarbeit (GTZ); Global Forum on Agricultural Research (GFAR); Inter-American Institute for Cooperation on Agriculture (IICA); International Association of Agricultural Information Specialists (IAALD); International Centre for Communication for Development (IICD); International Fund for Agricultural Development (IFAD); International Telecommunications Union (ITU); World Bank.

<sup>119</sup> IICD, GTZ, CGIAR, Euforic, IAALD, APC, ACP secretariat, IFAD, UBC and UCAD.



## O – C7. E-Science

UNESCO	
<b>e-Science Multi-Stakeholders Consultation Meeting</b>	During the cluster of WSIS-related events in 2007, UNESCO facilitated the e-Science multi-stakeholders consultation meeting, with the participation of ITU, the European Organization for Nuclear Research (CERN), the WSIS-SI (Scientific Information) Civil Society caucus, the Max Planck digital library and the Monash University. The meeting defined four sub-themes (academic network access, Open access, P2P knowledge sharing, preservation of scientific data, standardized metadata and ontologies).

European Commission	
<b>Continued funding of GEANT</b>	In March 2007 the European Commission announced that GEANT <sup>120</sup> , the world's largest high speed computer network, would receive a further €90 million in funding to ensure all of Europe's researchers have access to <i>a high-capacity high-speed communications network and high performance Grid-enabled advanced test-beds</i> . GEANT already links researchers from Reykjavik to Vladivostok, serving around 30 million users in over 3,500 universities and research centres connected via 34 national research networks.
<b>Funding of TEIN</b>	In February 2008 the EC provided a further € 12 million for the Asia-wide Trans-Eurasia Information Network (TEIN). TEIN currently enables 10 countries in Asia and Pacific to use high bandwidth connections to carry out research projects globally. With the new budget and an additional €6 million coming from Asian partners, TEIN will be able to operate until 2011 with improved capacity in a greater number of countries. Four thousand research and education institutions with about 30 million end-users in the Asian countries are benefiting from the TEIN network.
<b>Extended Funding for ALICE Project</b>	In May 2007 the EC agreed to extend funding for network expansion of the ALICE project which connects the Latin American regional research network, RedCLARA <sup>121</sup> , to GEANT. As part of the process CLARA is expanding its role by increasing staff and taking greater responsibility for the running and administration of the network.

Open Grid Forum	
<b>19<sup>th</sup> Open Grid Forum</b>	The 19th Open Grid Forum – OGF19 took place in Chapel Hill, United States. The OGF is a community-initiated forum of thousands of individuals from industry and research who are leading the global standardization effort for grid computing. OGF's primary objectives are to promote and support the development, deployment, and implementation of Grid technologies and applications via the creation and documentation of 'best practices' – technical specifications, user experiences, and implementation guidelines.

## P – C8. Cultural diversity and identity, linguistic diversity and local content

UNESCO	
<b>World Digital Library</b>	In October 2007 in Paris, UNESCO and the United States Library of Congress signed an agreement to build a World Digital Library, to digitize unique rare materials from libraries and other cultural institutions around the world and to make them available free of charge on the Internet. These materials include manuscripts, maps, books,

<sup>120</sup> <http://www.geant2.net>.

<sup>121</sup> <http://www.redclara.net>.

	musical scores, sound recordings, films, prints and photographs. The prototype functions in Arabic, Chinese, English, French, Russian, Spanish and Portuguese.
<b>IFAP</b>	To encourage communities using information for development to share their success stories UNESCO's Information for All Programme (IFAP) is inviting organizations to submit success stories to the IFAP website where others can learn from them and either replicate or adapt them to their own local situations.
<b>Workshop</b>	At the 2nd IGF in Rio de Janeiro, UNESCO, with ICANN and ITU presented a workshop, "Towards International Standards for a Truly Multilingual Global Internet." Representatives of ITU, ICANN and UNESCO announced that they would work together on developing a set of universal standards aimed at facilitating the creation of multi-lingual knowledge repositories.

#### GAID

<b>Global Forum</b>	GAID organized a Global Forum on Youth and ICT on the theme "Youth as Agents of Change" in Geneva, September 2007. Participants explored ways to empower the community and to participate more fully in society through the appropriate and responsible use of ICT. The Forum also provided a platform to showcase youth-led initiatives and foster adult-youth cooperation to encourage the inter-generational transfer of skills and resources.
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#### UNDP

<b>Workshop</b>	UNDP organized a workshop on e-Inclusion and Media for Indigenous Peoples at the e-Bario Knowledge Fair, in December 2007 in Malaysia. The Workshop addressed the use of the media and ICTs in realizing the human rights for development that have been denied to indigenous peoples and participants formulated the e-Bario Agenda on e-Inclusion for Indigenous Peoples as a supplement to the United Nations Declaration, as well as discussing the develop a global network of Indigenous Peoples' telecentres.
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<b>Partnership</b>	The Mohammed bin Rashid Al Maktoum Foundation and the UNDP launched a new partnership to promote creative knowledge generation and investment in education in October 2007 at the Knowledge Conference in Dubai. The partnership marks the first of a series of strategic initiatives aimed at identifying challenges, best practices and policy solutions for the effective generation and application of knowledge in the region.
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#### European Commission

<b>Progress Reports</b>	The European Commission made a broad series of recommendations to governments, libraries and archives on promoting on online accessibility of cultural material and digital preservation in member countries. The Commission required reports from each country on progress made in the 18 months following the recommendations in 2006. These progress reports for all European countries have now been made available <sup>122</sup> on the EC Information Society portal.
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#### ICANN

<b>Accommodating new language scripts</b>	ICANN is continuing work to develop the capability for internationalizing the characters that can used in top level domain names so that they can accommodate the scripts of other languages such as Arabic and Hebrew. Ten test top-level domains
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<sup>122</sup> [http://ec.europa.eu/information\\_society/activities/digital\\_libraries/commission\\_recommendation/reports/index\\_en.htm](http://ec.europa.eu/information_society/activities/digital_libraries/commission_recommendation/reports/index_en.htm).

	were inserted into the root servers in October 2007 and the development of allocation processes are under way. Twelve scripts have been adapted, with Amharic, Thai and Hebrew planned.
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### Network of Francophone National Digital Libraries

<b>Digital Portal</b>	Work has begun on a digital portal for the Network of Francophone National Digital Libraries which will be launched in June 2008. The portal will make available collections of French literature online for developing countries.
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### UNIDO/Uganda/Microsoft

<b>Local software industry promotion</b>	In September 2007, UNIDO, the Government of Uganda and Microsoft launched an initiative to promote the development of the local software industry in Uganda and to enhance the role that local software developers and ICT graduates can play in the economies of developing countries. The first centre established in Uganda will act as an incubator for innovations and solutions in ICT and is expected to lead to similar centres in other countries.
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### ESCWA

<b>Digital Arabic Content</b>	ESCWA has made efforts to promote Digital Arabic Content (DAC) in 2007 and an assessment of the status of DAC in the region was carried out which examined opportunities, priorities and strategies for its promotion. ESCWA has provided financial support for the incubation of selected projects by young entrepreneurs. It also continued to be involved in the development of an Arabic Domain Names System (ADNS), joining efforts with the Arab Working Group on Arabic Domain Names to assess pilot projects in the region for the development of an ADNS.
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### League of Arab States

<b>Meetings on Digital Arabic Content</b>	The League of Arab States convened the 7th meeting of the Arab Working Group on Arabic Domain Names and the 2nd meeting of the Arab Working Group for the preparation of the Internet Governance Forum in Cairo in September 2007. Strengthening cooperation with ICANN, UNESCO and ITU was discussed and ESCWA is expected to continue to coordinate efforts pertaining to ADNS on the global and regional levels.
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## Q – C9. Media

### UNESCO

<b>Media Education Initiatives</b>	UNESCO established indicators of media development and carried out a series of activities relating to media education in 2007. This included developing a comprehensive model curricula for Journalism Education, which was validated at the World Congress on Journalism Education in June 2007; establishment of quality criteria for media training institutions that focused on African media training institutions; and the launching of the first comprehensive media education module, for teachers, students and parents in June 2007. At the UNESCO facilitation meeting for C9, two additional themes were identified, on “media education and information literacy” and “community media, particularly radio and multimedia centres”.
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<b>ECA</b>	
<b>AISI Media Awards</b>	The winners of the African Information Society Initiative (AISI) Media Awards were announced at the GK3 Gala Dinner in December 2007 <sup>123</sup> . The award is an initiative of the ECA supported by the Swiss Agency for Development and Cooperation (SDC), the International Development Research Centre (IDRC) and the International Institute for Communication and Development (IICD) and is presented to African journalists to encourage more informed coverage of the information society and ICT for development issues in Africa.

<b>Panos London</b>	
<b>Published Reports</b>	In September 2007 the NGO Panos London, published ‘At the heart of change’, a report on the role of communication in sustainable development. The report set out challenges to governments to involve civil society in decision-making and to recognize the role the media can play in debating development issues and challenging government accountability. Panos London also published ‘Better connected – Empowering people through communications technology’ in February 2008. This briefing for journalists sets out the main issues around the topic of promoting an enabling environment for ICTs, and shows how journalists can use academic research in their reporting.

## **R – C10. Ethical dimensions of the Information Society**

<b>UNESCO</b>	
<b>Info-Ethics Conferences</b>	UNESCO initiated a series of regional Info-Ethics Conferences, which took place in December 2006 for Latin America and the Caribbean, and in 2007 for the African Continent and for the European Region. At the African conference in Pretoria in February 2007, participants made the Tshwane Declaration on the Information Ethics in Africa and recommended the establishment of an African Information Ethics Advisory Board as a platform to advise African governments on the policy implications of the ethical dimensions of ICT use. Also an Africa Center for Information Ethics at the University of Pretoria was proposed and as well as a reader on Africa Information Ethics that can be used as a textbook for students and scholars.
<b>Survey and Report on Ethics of emerging technologies</b>	In March 2007 UNESCO published a survey on ethical implications of emerging technologies such as semantic web, biometrics, radio-frequency identification, location-based services, mesh and ubiquitous networking, grid computing and other new computing technologies. The report offers recommendations on ways to advance info-ethics goals in anticipation of these oncoming technologies.

<b>European Commission</b>	
<b>ICT-Ethics Activities</b>	In June 2007 the Commission Action Plan on Ageing well in the Information Society was launched, accompanied by a EU1bn increase in research funding for ICTs targeted at improving the life of older people. The Commission notes that the majority of older people in Europe do not yet enjoy the benefits of the digital age since only 10 per cent use the internet, and severe vision, hearing or dexterity problems, frustrate many older peoples’ efforts (21 per cent of the over 50s) to engage in the information society. The EC has also engaged in a more general dialogue on ethical issues related to ICTs, holding a workshop on “Ethical Aspects of

<sup>123</sup> <http://www.uneca.org/aisi/mediaaward.htm>.

	Inclusion in the Information Society” in October 2007 in Brussels. The event aimed to identify all the ethical issues relating to ICTs that are likely to emerge over the next 5 years.
<b>Published Guide</b>	To encourage use of new online technologies, the European Commission has announced it will publish a Guide to EU Users’ Digital Rights and Obligations in 2008.

#### IDRC/Ford Foundation

<b>Global Project on Media Piracy</b>	The worldwide phenomenon of media piracy will be examined in a global project <sup>124</sup> launched in 2007 by IDRC and the Ford Foundation. A set of country case studies will be developed by project partners Fundação Getúlio Vargas in Brazil, the global Association for Progressive Communications (APC) and the Centre for the Study of Developing Societies (CSDS) in India.
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#### OpenNet Initiative – Asia

<b>Digital Censorship and Surveillance</b>	The OpenNet Initiative – Asia (ONI-Asia) has been seeking to understand the technical and social aspects of digital censorship and surveillance across different countries in South and South East Asia. Additional support from IDRC in 2007 will allow ONI-Asia to network a group of research teams exploring the social, cultural, political and technical aspects of digital censorship and surveillance, breaking new ground in the areas of mobile telephone censorship and surveillance.
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### S – C11. International and regional cooperation

#### ITU

<b>WSIS Implementation Stocktaking</b>	As of mid May 2007, approximately 40 countries submitted a progress report on WSIS activities to the portal available at the ITU web site which provides through an interactive map, access to the national reports on WSIS implementation prepared in collaboration with members States. <sup>125</sup> In 2007 the ITU also circulated the new request for updating information and submitting new project descriptions to the WSIS Stocktaking database. <sup>126</sup> More than 300 new projects focusing on the information and communication infrastructure have since been registered and at the end of April 2007, there were more than 3,300 projects registered.
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#### United Nations Regional Commissions

<b>The Information Society – From Declaration to Implementation</b>	As a follow up to the WSIS Summits and parallel to the 2007 Annual Session of the United Nations Commission on Science and Technology for Development, the five United Nations Regional Commissions organized an event, “The Information Society – From Declaration to Implementation” in Geneva, in May 2007. Discussions highlighted the need to ensure strong and continuous regional ICT agendas in developing regions. Participants stressed that native language on the Web should be promoted to help increase the usage of the Internet.
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#### UNGIS

<b>Second Meeting</b>	The United Nations Group on the Information Society (UNGIS), currently chaired by UNESCO, held its second meeting in July 2007. Participants recognized the importance for coherence in WSIS implementation and follow-up, as well as the role
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<sup>124</sup> <http://mediaresearchhub.ssrc.org/toward-detente-in-media-piracy>.

<sup>125</sup> <http://www.itu.int/wisd/2007/wsis-implementation/>.

<sup>126</sup> <http://www.itu.int/wsis/stocktaking/plugin/search.asp>.

	of UNGIS in this regard. Participants reported on the cluster of WSIS-related events in Geneva in May 2007 and reviewed progress in implementing the UNGIS work plan. The meeting decided to focus its work for the coming 12 months on community access with a view to outlining a common United Nations approach.
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### GAID

<b>Regional Networks</b>	GAID launched regional networks for Asia and the Pacific, Europe, Africa, and countries in transition, as well as stakeholder networks composed of representatives from civil society, youth and persons with disabilities. A GAID Regional Network for Latin America and the Caribbean is to be launched in 2008.
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### UNESCO

<b>10th United Nations Inter-Agency Round Table on Communication for Development</b>	The 10th United Nations Inter-Agency Round Table on Communication for Development was hosted by UNESCO in Addis Ababa in February 2007. The Round Table aims at facilitating co-operation in developing a United Nations system-wide approach to Communication for Development in the context of achieving the Millennium Development Goals. Held on a biennial basis since 1988, the theme chosen for the Round Table was “Developing a United Nations system-wide common approach to communication for development in view of achieving the Millennium Development Goals”.
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### ESCWA

<b>Information Society Portal</b>	During 2007, an Information Society Portal <sup>127</sup> was set up by ESCWA as a regional tool for follow-up on the implementation of the Regional Plan of Action (RPoA). The portal, available in English and Arabic, included a database with country specific information by themes. It was also designed to host real time online working groups, facilitate the establishment of communities of practice and promote partnerships.
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### Summit of the Americas

<b>Virtual Platform</b>	Summit of the Americas Virtual Platform <sup>128</sup> was established in 2007 to develop an on-line virtual platform that will complement and enhance the face-to-face consensus-building activities of the Summits of the Americas process. The virtual platform will utilize ICTs to address the significant challenges of reaching multilateral consensus among multiple stakeholders on a broad spectrum of policy priorities in a relatively short time period and with limited resources.
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### APC

<b>Published Book</b>	Responding to the growing demand for information on multi-stakeholder processes in ICT policy, the Association for Progressive Communications (APC), published the book “Frequently Asked Questions about Multi-Stakeholder Partnerships in ICTs for Development – A Guide for National ICT Policy Animators” in October 2007.
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<sup>127</sup> <http://isper.escwa.org.lb/isper/>.

<sup>128</sup> <http://www.summit-americas.org>.

## V. Implementation of the themes of the Tunis Agenda<sup>129</sup>

### A. Financing mechanisms

<b>Digital Solidarity Fund</b>	
<b>1 per cent digital solidarity principle</b>	The “1 per cent digital solidarity principle” proposed by the Digital Solidarity Fund (DSF) continued to garner political support in 2007, including from the Pilot Group on Solidarity Levies to Fund Development <sup>130</sup> , which met in Seoul in September 2007. A “World Conference on Digital Solidarity and its Financing”, has been proposed. Expected to be held at the level of heads of State, the Conference will provide an opportunity for the international community to consider the adoption of an international convention on the “1 per cent digital solidarity principle”.
<b>Health and Education Priorities</b>	The DSF has set two priorities for action geared towards health and education. In health, the DSF encourages local authorities in the advanced countries to become involved in specific digital solidarity initiatives through the “1,000 telemedicine units for Africa” programme. Cities and local authorities in the North are being invited to support fixed or mobile telemedicine units, contributing the expertise of their doctors and hospitals to remote diagnosis networks. In education, DSF promotes initiatives to equip schools with computers and interactive white-boards, and also make digital education resources available to teachers in the poorest countries.
<b>Government of Tunisia</b>	
<b>ICT 4 All Forum – Tunis+2</b>	At the Second anniversary of the second phase of WSIS, the Government of Tunisia organized the second ICT 4 All Forum – Tunis+2 in Hammamet, in November 2007. The forum focused on the deployment of ICTs through public-private-partnerships (PPPs) and provided an opportunity for participants to share experiences with best practices in PPPs and to present models, approaches and national strategies for establishing PPPs.

### B. Internet governance

<b>Internet Governance Forum</b>	
<b>Second Meeting</b>	The Internet Governance Forum held its second meeting <sup>131</sup> in November 2007 in Rio de Janeiro. The meeting focused on seven themes: (a) critical Internet resources; (b) openness; (c) security, (d) diversity, (e) access; (f) taking stock and the way forward; and (g) emerging issues. The session on critical Internet resources covered a wide range of issues related to the infrastructure of the Internet. Participants discussed the role of Internet Corporation for Assigned Names and Numbers (ICANN) and governments, as well as Internet oversight. Participants underlined the importance of cyber-security, especially with respect to child protection and child pornography on the Internet. They called for harmonization of legislation between countries and also for bringing into force new legal instruments that apply to the online environment. Participants also called for innovative methods to get the next billion people online, which was linked to the issue of diversity, where participants underscored the importance of a multilingual Net with additional IDNs (Internationalized Domain Names) to reflect the expanding trends of Internet users in non-English speaking parts

<sup>129</sup> The Tunis Agenda for the Information Society is available on the WSIS homepage at <http://www.itu.int/wsisis/index.html>.

<sup>130</sup> Comprising 54 States.

<sup>131</sup> See [http://www.intgovforum.org/Rio\\_Meeting/Chairman\\_per\\_cent20Summary.FINAL.16.11.2007.pdf](http://www.intgovforum.org/Rio_Meeting/Chairman_per_cent20Summary.FINAL.16.11.2007.pdf) for summary report.

	of the world. The link between Internet governance and sustainable development emerged as a new issue. Participants addressed the environmental impact of ICTs, as well as the positive contribution the Internet could make in the fight against climate change.
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#### ICANN

<b>2007–2008 Public meetings</b>	ICANN held a series of public meetings in 2007/8 in Dubai, New Delhi and Lisbon aimed at policy makers, managers of country code Top-Level Domain (ccTLD), and Internet businesses to discuss a variety of topics, in particular ICANN’s multi-stakeholder model for addressing issues under its mandate; Internationalized Domain Names (IDNs); challenges and opportunities in Registry/Registrar businesses and the current developments in the generic Top-Level Domains (gTLDs) space.
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#### ITU

<b>ccTLDs Study</b>	ITU published a study on ccTLDs titled “Policy, Business, Technical, and Operational Considerations for the Operation of a ccTLD” in January 2008. The study is derived from ITU technical assistance to Somalia, but can be applied to other countries.
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#### Diplo Foundation

<b>Internet Governance Programme</b>	In the three years since the programme began, it trained 264 young professionals from 90 countries and built a community of experts of nearly 300 people around the world. The programme aims to raise awareness about IG related issues through a toolkit of text and visual resources, to train policymakers through seminars, workshops and training programmes, to promote research on issues of special concern to developing countries and to build a community of experts in developing countries who can contribute to the regional and global debate on Internet governance.
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### C. Measuring ICT for development

#### Partnership on Measuring ICT for Development

<b>Partnership Activities</b>	Since the endorsement of the Partnership on Measuring ICT for Development’s core list of ICT indicators by the United Nations Statistical Commission in 2007, several developing countries have integrated the indicators into existing household and business surveys. In July 2007, Partnership members signed a MoU in which the ten member organizations agreed to expand their joint efforts in the area of ICT measurement. During 2007, the Partnership mainly focused on assisting developing countries in the production of ICT statistics, through an assessment of capacity-building needs in countries, the organization of training sessions, seminars and workshops, and advisory missions. A new Partnership publication, <i>The Global Information Society: a Statistical View</i> was published in May 2008 which takes stock of progress made in meeting WSIS goals.
<b>Capacity-Building Workshop</b>	As part of activities of the Partnership, ESCAP, ITU and APT co-organized the Capacity-Building Workshop on Information Society Statistics: Infrastructure, Household and other Indicators in November 2007.



<b>UNCTAD</b>	
<b>Methodological Manual</b>	In 2007, UNCTAD launched the Manual for the Production of Statistics on the Information Economy which supports the production of official statistics on the ICT sector, ICT trade and the use of ICT by businesses, in particular in developing and transition economies.
<b>ITU</b>	
<b>6th World Telecom/ICT Indicators Meeting</b>	ITU commissioned an independent study of index methodologies and indicators as a background document for the 6th World Telecommunication/ICT Indicators Meeting, held in Geneva in December 2007. The meeting made a number of recommendations regarding the single ITU index, including recommendations on the methodology and choice of indicators to be included. The single ITU index is expected to be finalized and published during 2008. The meeting also considered new indicators in the area of mobile/wireless broadband measurement and computer virus infection levels. In addition, Community Access Indicators were examined and the meeting suggested a number of measures, including tracking the percentage of localities (villages, towns etc) with a public Internet access centre and those that are connected to the public telephone network.
<b>ITU Global View</b>	This new joint effort between ITU and Microsoft, announced at the Connect Africa Summit, is a virtual earth-based online platform that integrates a broad range of new and existing data sources on global ICT for development accomplishments, allowing users to check status, identify gaps and avoid overlap in collaborative efforts to achieve the WSIS goals.
<b>OECD</b>	
<b>Workshop on the Economic and Social Impacts of Broadband Communications</b>	This workshop took place in May 2007 to review studies of the impacts of broadband roll-out and use on a) economic performance at aggregate level and in the business sector, and b) the geographical distribution of economic activity and employment, on content producers and users, and on households.
<b>“Measuring the Impacts of ICT using Official Statistics” Report</b>	The OECD Working Party on Indicators for the Information Society published this report in January 2008. Among other conclusions, the report found that there is evidence that e-commerce makes markets more price competitive by opening up supply to more firms and reducing transaction costs. The report also found that IT productivity gains are greatest in firms with more qualified (degree level) employees.
<b>Second OECD World Forum</b>	The second OECD World Forum on “Statistics, Knowledge and Policy” <sup>132</sup> took place in June 2007 in Istanbul. The Forum focused on the role of information production and dissemination for knowledge generation, and the importance of information in the “statistics, knowledge and policy” chain. The declaration addressed four main action points: to carry out statistical research on the measurement of societal progress in all its dimensions; to design, develop and promote the use of innovative ICT tools to facilitate the transformation of statistics into knowledge – especially making use of wiki 2.0 technology; to establish a global network to help measure progress in every country; to develop a global infrastructure to facilitate the assessment of societal progress at national and global levels.

<sup>132</sup> [http://www.oecd.org/document/51/0,3343,en\\_21571361\\_31938349\\_37115187\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/51/0,3343,en_21571361_31938349_37115187_1_1_1_1,00.html).

<b>UNDP</b>	
<b>Workshop on Measuring and Assessing Democratic Governance</b>	UNDP organized this workshop in Bangkok, in November 2007 in co-operation with the UNDP Regional Centre in Bangkok and the UNDP Oslo Governance Centre. The workshop focused on existing methods for measuring democratic governance and examined the processes of governance assessments.
<b>ARICEA</b>	
<b>Fifth Annual General Meeting</b>	At this meeting which took place in Cairo in February 2007, it was concluded that the COMESA Secretariat and Member States should work on: (a) building ICT awareness; (b) elaborating and monitoring implementation of a National ICT Declaration and Action Plan; (c) verifying that national plans are in line with the WSIS action plan; and (d) developing and implementing ICT impact indicators in economic development.
<b>ECLAC</b>	
<b>OSILAC Report and Activities</b>	ECLAC's Observatory for the Information Society in Latin America and the Caribbean (OSILAC) released a report entitled Monitoring eLAC2007 in August 2007. OSILAC also organized the 4th workshop on Information Society Measurement in Latin America and the Caribbean in February 2008 in San Salvador. OSILAC is planning to expand its online information system; monitor national policies and projects related to elac2010 regional action plan; and increase the number of countries and indicators involved.

## Annex 1. Glossary

3G	Third-Generation (mobile phone technology)
ADB	Asian Development Bank
ADOC	APEC Digital Opportunity Centre
AfDB	African Development Bank
AISI	African Information Society Initiative
APC	Association for Progressive Communications
APEC	Asia–Pacific Economic Cooperation
APKN	African Parliamentary Knowledge Network
ARAPKE	African Regional Action Plan on the Knowledge Economy
ARPU	average revenue per user
ATU	African Telecommunication Union
BACI	Banque Analytique de Commerce International (International Trade Analytical Database)
BIC	Business Information Centre
BPL	broadband over electric power lines
BPO	business process outsourcing
CAD	Canadian Dollar
CAFRAD	African Training and Research Centre in Administration for Development
CAGR	compound annual growth rate
CDMA	code division multiple access
CDPF	Country Development Programming Framework
CEEAC	Communauté Économique des États de l’Afrique Central
CEMAC	Communauté Économique et Monétaire de l’Afrique Centrale
CEPII	Centre d’Etudes Prospectives et d’Informations Internationales (Institute for Research on the International Economy)
CePRC	Canadian e-Policy Resource Centre
CIDA	Canadian International Development Agency
CIS	Commonwealth of Independent States
CMC	Community Media Centre
COMARCI	Commonwealth African Rural Connectivity Initiative
COMESA	Common Market for Eastern and Southern Africa
CPRGS	Comprehensive Poverty Reduction and Growth Strategy
CRASA	Communications Regulators Association of Southern Africa
CSTD	United Nations Commission on Science and Technology for Development
CTA	ACP–EU Technical Centre for Rural and Agricultural Cooperation
CTO	Commonwealth Telecommunications Organization
DAC	Development Assistance Committee or Digital Arab Content
DAX	Deutsche Aktien Exchange
DFID	United Kingdom Department for International Development
DOT-Force	Digital Opportunity Task Force
DSL	digital subscriber line
EAC	East African Community
EAP	East Asia and the Pacific
EC	European Community

EC	APEC Economic Committee
ECA	United Nations Economic Commission for Africa
ECCAS	Economic Community of Central African States (CEEAC)
ECE	United Nations Economic Commission for Europe
ECLAC	United Nations Commission for Latin America and the Caribbean
ECOWAS	Economic Community Of West African States
ECP	Entrepreneurship Curriculum Programme
EMBIG	Emerging Market Bond Index-G
EPO	European Patent Office
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ESCWA	United Nations Economic and Social Commission for Western Asia
EU	European Union
FCC	Federal Communications Commission (United States)
FDI	foreign direct investment
FLOSS	free/libre/open source software
FTTH	fibre to the home
GAID	Global Alliance for ICT and Development
gbps	gigabits per second (one billion bits per second)
GDP	gross domestic product
GIF	Government Interoperability Frameworks
GIS	Geographical Information Systems
GKP	global knowledge partnership
GK3	Third Global Knowledge Conference
GNI	Gross National Income
GMS	Greater Mekong Subregion
GPS	global positioning system
GSM	global system for mobile
ICANN	Internet Corporation for Assigned Names and Numbers
ICD	Information and Communication for Development
ICT	information and communication technologies
ICT4D	Information and Communication Technology for Development
IDRC	Canadian International Development Research Centre
IFC	International Finance Corporation
IFI	International Finance Institution
IGF	Internet Governance Forum
IICD	Netherlands International Institute for Communication and Development
IMF	International Monetary Fund
<i>InfoDev</i>	World Bank Information for Development Program
IOM	International Organization for Migration
IP	Internet Protocol
IPA	Investment Promotion Agency
IPTV	Internet Protocol Television
IPU	Inter-Parliamentary Union
IRU	Indefeasible Rights of Use
ISDN	Integrated Services Digital Network

ISO	International Organization for Standardization
ISP	Internet Service Providers
IT	Information Technology
ITU	International Telecommunication Union
IXP	Internet Exchange Points (exchanges traffic between different local networks)
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
LAC	Latin America and the Caribbean
LDCs	least developed countries
LOGIN	Local Governance and ICTs Research Network
mbps	megabits per second (unit for measurement of electronic data traffic)
MDG	Millennium Development Goal
MENA	Middle East and North Africa
MP	Member of Parliament
MSP	multi-stakeholder partnership
NBIN	NEPAD Broadband ICT Network
NEPAD	New Partnership for Africa's Development
NGN	Next Generation Networks
NGO	non-governmental organization
NICI	National Information and Communication Infrastructure
NORAD	Norwegian Agency for Development Cooperation
OAS	Organization of American States
OCCAM	Observatory for Cultural and Audiovisual Communication
ODA	official development assistance
ODI	Overseas Development Institute
OECD	Organization for Economic Cooperation and Development
OECD- DAC	OECD Development Assistance Committee
OFC	Optical Fibre Cable
OPEC	Organization of the Petroleum Exporting Countries
OSD	Open Science Directory
OSILAC	Observatory for the Information Society in Latin America and the Caribbean
OSISA	Open Society for Southern Africa
P2P	Peer-to-peer
PC	personal computer
PDA	personal digital assistant
PICTA	Partnership for Information and Communication Technologies in Africa
POVNET	Network on Poverty Reduction
PPG	pro-poor growth
PPP	public-private partnership
PPP	purchasing power parity
PRS	Poverty Reduction Strategy
PRSP	Poverty Reduction Strategy Paper
PSTN	Public Switched Telephone Network
PTO	Public Telecommunications Operator
RASCOM	Regional African Satellite Communication Organization

R&D	research and development
REC	regional economic community
SADC	Southern Africa Development Community
SAR	South Asia Region
SCADA	Supervisory Control and Data Acquisition
SDC	Swiss Agency for Development and Cooperation
SIDA	Swedish International Development Agency
SLF	Sustainable Livelihoods Framework
SME	small and medium-sized enterprise
SMS	short message system
SSA	sub-Saharan Africa
tbps	terabit per second (one thousand gigabits per second)
TICAD	Tokyo International Conference on African Development
UEMOA	Economic and Monetary Community of Central Africa
UMA	Union of Maghreb States
UNCTAD	United Nations Conference on Trade and Development
UN-DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UNU	United Nations University
UPU	Universal Postal Union
USAID	United States Agency for International Development
VoIP	Voice over Internet Protocol
WATRA	West African Telecommunications Regulators Association
WBG	World Bank Group
WiFi	Wireless Fidelity
WiMax	World Interoperability for Microwave Access
WIPO	World Intellectual Property Organization
WLL	Wireless Local Loop
WSIS	World Summit of the Information Society
WMO	World Meteorological Organization
WTO	World Trade Organization
WTSA	World Telecommunication Standardization Assembly

### Measures

Kilobyte	1,000 bytes
Megabyte	1,000,000 bytes
Gigabyte	1,000,000,000 bytes
Terabyte	1,000,000,000,000 bytes
Petabyte	1,000,000,000,000,000 bytes
Exabyte	1,000,000,000,000,000,000 bytes

## Annex 2. List of submissions

The following United Nations contributions and presentations available on the UNCTAD Web site were taken into consideration in the production of this report. The documents are available for download at:

<http://www.unctad.org/Templates/Page.asp?intItemID=4447&lang=1>

#	Documents
1	Gender Dimensions of Development-oriented policies for a socio-economic inclusive information society, including access, infrastructure and enabling environment by the Gender Advisory Board to the Commission on Science and Technology for Development, 15/04/08 , 4 pages, 35KB
2	Gender Dimensions of Science, technology and engineering for innovation and capacity-building in engineering and research by the Gender Advisory Board to the Commission on Science and Technology for Development, 15/04/08 , 10 pages, 71KB
3	Highlights of UNESCO's involvement in the WSIS follow-up process (2007) by United Nations Educational, Scientific and Cultural Organization, 10/04/08 , 13 pages, 54KB
4	Contribution to the United Nations Secretary-General's Report on the Implementation of the World Summit on the Information Society by the Secretariat of the Internet Governance Forum, 10/04/08 , 7 pages, 117KB
5	UNECE Report on WSIS implementation by Economic Commission for Europe, 24/02/08 , 7 pages, 64KB
6	Progress made in the implementation of the outcomes of the WSIS by UNCTAD Secretariat, 24/01/08 , 12 pages, 77KB
7	Activities in relation to ICT and WSIS action line implementation in United Nations-Habitat by United Nations – HABITAT, 24/01/08 , 6 pages, 43KB
8	Contribution to the United Nations Secretary-General's Report on the implementation of the World Summit on the Information Society, by the Global Digital Solidarity Fund (DSF), 24/01/08 , 6 pages, 49KB
9	The Status of Implementation of WSIS Outcomes in Latin America and the Caribbean by Economic Commission for Latin America and the Caribbean, 24/01/08 , 8 pages, 58KB
10	UN-DESA's contribution to the United Nations Secretary General's Report on the Implementation of the World Summit on the Information Society (WSIS) by the United Nations Department of Economic and Social Affairs (UN-DESA), 24/01/08 , 10 pages, 77KB
11	ESCWA's contribution to the Secretary-General progress report on WSIS outcomes to CSTD's 11th Session by Economic and Social Commission for Western Asia (ESCWA), 24/01/08 , 8 pages, 84KB
12	Contribution to the United Nations Secretary-General's Report on the Implementation of the World Summit on the Information Society by International Telecommunication Union, 24/01/08 , 11 pages, 149KB
13	WMO contribution to the 2007 report on the implementation of the outcomes of the WSIS by World Meteorological Organization, 24/01/08 , 4 pages, 38KB
14	WHO Contribution to Secretary-General's Report to CSTD by World Health Organization, 24/01/08 , 3 pages, 31KB
15	Flow of Information for the follow-up to the World Summit on the Information Society by Universal Postal Union, 24/01/08 , 7 pages, 54KB
16	Input to the Secretary-General's report to the Commission on Science and Technology for Development on the system-wide follow-up to WSIS by Economic and Social Commission for Asia and the Pacific, 24/01/08 , 6 pages, 39KB

17	Report on the Implementation of Outcomes of the World Summit on the Information Society by Economic Commission for Africa, 24/01/08 , 7 pages, 93KB
18	E-AGRICULTURE COMMUNITY OF EXPERTISE by FAO, 24/01/08 , 9 pages, 82KB



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**The Digital Divide Report: ICT Diffusion Index 2005.** 70 p. UNCTAD/ITE/IPC/2006/5. Free of charge.

**The Digital Divide: ICT Development Indices 2004.** 67 p. UNCTAD/ITE/IPC/2005/4. Free of charge.

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