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International Telecommunication Union

Report on the World Summit on the Information Society Stocktaking 2012

International Telecommunication Union
World Summit on the Information Society
WSIS Stocktaking Process

working together towards 2015

World Summit Geneva 2003 Tunis 2005 on the Information Society
Turning targets into action

Report on the World Summit on the Information Society Stocktaking 2012

www.wsis.org/stocktaking

world summit on the information society
Geneva 2003 - Tunis 2005

ITU

Report on the WSIS Stocktaking 2012

Version 1.1

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Acknowledgements

The WSIS team would like to acknowledge the tremendous contributions of governments, international organizations, private sector, civil society and other stakeholders in providing information on ongoing projects and initiatives to the WSIS Stocktaking Platform. WSIS Stocktaking Report is based on the contributions provided by stakeholders in response to the ITU official call for update and new entries. The full descriptions of the activities are available at accessible online database www.wsis.org/stocktaking.

The project submissions that were provided later than 15th January 2012 will be included in the upcoming WSIS Stocktaking Report.

The preparation of this report was coordinated by Regina Valiullina, WSIS project officer, under the direction of Jaroslaw Ponder, Strategy and Policy Advisor, Corporate Strategy Division (CSD).

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In case of any suggestions or recommendations, please, do not hesitate to contact us at wsis-stocktaking@itu.int

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Foreword by the ITU Secretary-General, Dr Hamadoun I. Touré

It is with great pleasure that I present the fourth edition of the Report on WSIS Stocktaking, 2012.

The World Summit on the Information Society (WSIS) was organized to establish a clear vision for building an inclusive global information society in our increasingly technology-driven, interconnected world. The first phase of WSIS took place in Geneva in 2003, and the second phase in Tunis in 2005. Since the first edition of the WSIS Stocktaking Report was issued back in 2005, biannual reporting has been a key tool for monitoring the progress of ICT initiatives and projects worldwide. The 2012 report will reflect more than 1 000 recent WSIS-related activities, undertaken between May 2010 and the present day, each emphasizing the efforts deployed by stakeholders involved in the WSIS process.

I am aware of fact that, particularly since the onset of the financial crisis in 2008, many organizations are facing financial challenges when it comes to implementing projects. However, I would like to highlight that, thanks to multistakeholder cooperation and partnership, enormous progress has been made towards the WSIS targets.

Further progress of this kind can only be achieved if all WSIS stakeholders - governments, international organizations, the private sector, civil society and other entities - work together. Greater focus on concrete actions and projects in the field of ICT will help support the development of an inclusive information society and create more investment and employment in the world's economies.

We hope that this report will serve as an overview of ICT activities worldwide for readers seeking updated information on the progress of implementation of the WSIS outcomes.

Perhaps the most important of all the many advances that are helping to shape the global information society is broadband connectivity. Broadband brings huge economic and social benefits, and facilitates the efficient provision of services in virtually every walk of life – be it business, healthcare, education, environment, science, employment or agriculture, to name but a few. Accordingly, this report dedicates an entire chapter to ICT applications, giving updates on the latest projects implemented as a consequence of broadband infrastructure.

I would like to take this opportunity to express my sincere gratitude to all stakeholders that have responded to the call for updated information and new entries for the period 2010 - 2011 and have thereby contributed to this fourth edition of WSIS Stocktaking Report.

The World Summit on the Information Society (WSIS) outcome documents and the UN General Assembly Resolution 60/252 resolved to conduct an overall review of the implementation of the Summit outcomes in 2015. Preparatory process for the Overall Review WSIS+10 has been launched at the WSIS Forum 2012. This process will require significant reporting on ten-years achievements and identification of challenges to be addressed beyond 2015. In this context I encourage all stakeholders to use WSIS Stocktaking as the unique platform, that will provide the basis for overall assessment and evaluation.

We look forward to ongoing collaboration with all WSIS stakeholders, as we work towards our common objective: achieving all the WSIS goals by 2015.

Dr. Hamadoun I. Touré
ITU Secretary-General

Foreword by the ITU Deputy Secretary-General, Mr Houlin Zhao

The International Telecommunication Union (ITU) remains committed to the World Summit on the Information Society (WSIS) process, and to implementation of the WSIS goals by 2015. I therefore recognize and highly appreciate the extremely valuable contributions made by stakeholders to enable the continuation of WSIS monitoring and reporting. There can be no doubt whatsoever that, in today's fast-moving world, innovation and efficiency are vital to success. Accordingly, I am pleased to share with you the most recent updates and success stories in the WSIS stocktaking process.

The Web 2.0 WSIS stocktaking platform continues to foster implementation of the WSIS outcomes and to facilitate exchange of information among 6 400 members representing governments, the private sector, international organizations, civil society and others. As the Web 2.0 platform continues to flourish, so does the promotion of social development and economic growth through ICTs.

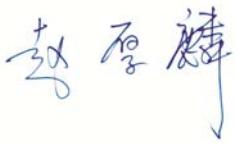
We continue to maintain and improve the WSIS Stocktaking Database, which is approaching the landmark of 6 000 entries. This encouraging outcome reinforces stakeholders' belief in, and commitment to, the WSIS stocktaking process. In addition, we are also pleased to announce the launch of a new and innovative interface which will facilitate searches of all WSIS related activities.

The publication WSIS Stocktaking: Success Stories 2011 was released at the previous WSIS Forum in order to illustrate key lessons drawn from the management of ICT-related projects. All stakeholders have benefited from the sharing of these interesting case studies, which have thus certainly facilitated the transfer of knowledge, experiences and models for project implementation.

In the past few years, the WSIS platform has helped create partnerships, provide greater visibility and add value to ICT projects all around the world. The many and varied stakeholders who have implemented innovative projects and have contributed to the success of the WSIS stocktaking process deserve our sincere gratitude. I urge these stakeholders, along with all Member States, international organizations, the private sector and civil society, to continue submitting such contributions in the future.

Last but not least, I am also pleased to announce the WSIS Project Prizes 2012, and wholeheartedly congratulate all the winners for their significant achievements towards implementation of the WSIS outcomes.

I trust that readers will find this report insightful, and sincerely hope that it will encourage and indeed inspire them to help participate in the construction of a broader and more inclusive information society for all.



Houlin Zhao
ITU Deputy Secretary-General

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Introduction to WSIS

United Nations General Assembly Resolution 56/183 (21 December 2001) endorsed the holding of the *World Summit on the Information Society (WSIS)* in two phases. The first phase took place in Geneva, from 10 to 12 December 2003, and the second phase took place in Tunis, from 16 to 18 November 2005. The objective of the first phase was to develop and foster a clear statement of political will and take concrete steps to establish the foundations for an Information Society for all, reflecting all the different interests at stake and the objective of the second phase was to put the *Geneva Plan of Action* into motion as well as to find solutions and reach agreements in the fields of Internet governance, financing mechanisms and follow-up and implementation of the Geneva and Tunis documents.

Since the two WSIS summits, we have seen an extraordinary transition, from a world where most people did not have access to even basic telecommunications, to today's increasingly connected world, one-third of whose 7 billion inhabitants are using the Internet.[1] We are seeing information and communication technologies (ICTs) bring people – and things – together in ways that we could never even have dreamed of just a decade or two ago. We should not forget, however, that two-thirds of the world's people still do not have access to the Internet, and that the number of people worldwide with broadband access is still relatively small – even despite the very rapid growth of new technologies such as mobile broadband. ICTs will also play a critical role in helping to create a more sustainable world in the 21st century. Through smart grids, environmental sensors, intelligent transport systems, dematerialization and the digitization of goods and services, and new ways of improving energy efficiency, we can help drive the transition to a low-carbon economy, while better adapting to the effects of climate change. In this context, the main challenge we face together today is to plan a vision for the WSIS Process beyond 2015.

To ensure that everyone will benefit from the opportunities ICTs can offer, the Geneva Plan of Action set out Action Lines which lay down the key principles for building an inclusive Information Society. Building on this, the *Tunis Agenda for the Information Society* states that the WSIS implementation mechanism at the international level should be organized taking into account the themes and action lines in the Geneva Plan of Action, and moderated/facilitated by UN agencies when appropriate.[2] It also states that ITU, UNESCO and UNDP should play a leading facilitating role in the implementation of the Geneva Plan of Action.[3] The WSIS implementation process has been noteworthy for its multistakeholder engagement and approach in the implementation of the WSIS action lines, with the direct involvement of all WSIS stakeholders – governments, the private sector, civil society and international organizations.

The WSIS Forum[4]

Pursuant to §§ 108 and 109 of the Tunis Agenda, the *WSIS Forum* serves as a unique global platform to coordinate implementation of the WSIS outcomes in a multistakeholder format. The cluster of WSIS-related events was rebranded as the "WSIS Forum" in 2009, since which time the WSIS Forum has provided an international platform for WSIS stakeholders to network, learn and share, resulting in concrete actions and outcomes. Each year, the WSIS Forum is hosted and organized by ITU, and co-organized by UNESCO, UNCTAD and UNDP. The forum provides a perfect platform for world leaders to shape strategies that will harness the power of ICTs more effectively in order to accelerate progress towards achievement of the UN Millennium Development Goals (MDGs) and the WSIS connectivity targets for 2015 and beyond.

The WSIS Forum is also a platform for networking, learning and sharing experiences and outcomes in regard to projects implemented by stakeholders. Each year, the forum is enriched by case studies and projects submitted to the *WSIS Stocktaking Database*. Real stories about project implementation by stakeholders complement the forum programme, thereby linking the policy and planning processes with implementation and grassroots action.

1 www.itu.int/ITU-D/ict/facts/2011/material/ICTFactsFigures2011.pdf

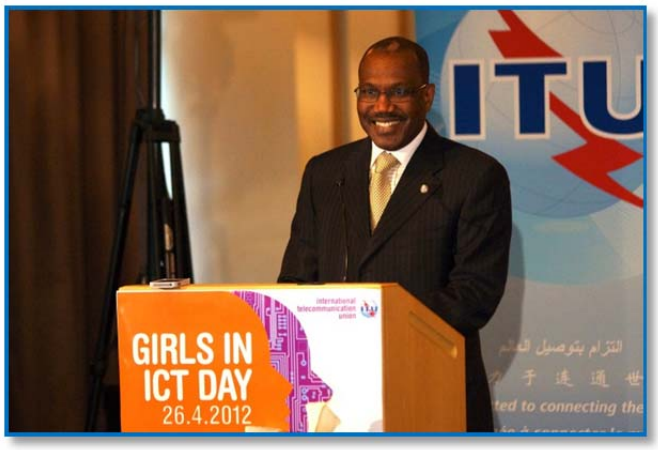
2 Tunis Agenda, § 108

3 Tunis Agenda, § 109

4 www.wsis.org/forum

WSIS Forum 2012

Welcoming an expected 1 200+ delegates from governments, the private sector, civil society and international organizations, the *WSIS Forum 2012* will focus on sustainable development trends and ICT initiatives in key MDG areas such as health, education, gender empowerment and the environment. The comprehensive programme[5] of the WSIS Forum 2012 features five High-level Dialogues, a Ministerial Round Table, the official WSIS +10 Review Kick-off Meeting, WSIS Action Line Facilitation Meetings, Interactive Sessions, Thematic & Country Workshops, Knowledge Exchanges and Exhibitions. A Ministerial Round Table on the first day will explore the post-2015 ICT ecosystem, the role of technology in tomorrow's development paradigm and strategies to track national progress more effectively, in order to set the development agenda beyond 2015. *World Telecommunication and Information Society Day (WTSID)* 2012 will be celebrated on Wednesday, 16 May, around the theme of *Women and Girls in ICT*.[6] Presentation of the WTISD awards is followed in the afternoon by a WSIS Forum High-Level Dialogue panel debate on how technology can help meet MDG 3: Promoting Gender Equality and Empowering Women.



The programme of the WSIS Forum each year is shaped by an extensive Open Consultation Process with a wide range of stakeholders. Submissions made during the open consultation process provide the framework for the forum's agenda, speakers and format. Naturally, this will have a direct impact on the outcome and success of the 2012 event, and we can proudly say that the WSIS Forum is evolving into a true stakeholder-driven platform that demonstrates our common desire and commitment to build a people-centric, inclusive and development-oriented Information Society.

The agenda includes interactive dialogues and information exchanges on a wide range of key topics such as rural development, multilingualism, environmental sustainability, education, health care, disability and innovation. ICTs for Sustainable Development, Advancing the Green Agenda, Women and Girls in ICT, ICTs for Post Conflict Reconstruction and Governance of Cyberspace and Cyberpeace are among the other hot issues that will be discussed during the High-Level Dialogues.

This year's WSIS Forum programme has been greatly enhanced through the strategic partnership and contribution of the United Arab Emirates (government) and Intel Corporation (private sector). The forum has also benefited from contributions from Belgium-Liège, Federal Democratic Republic of Ethiopia, Republic of Kazakhstan, Sultanate of Oman, Republic of Poland, Kingdom of Saudi Arabia, United Republic of Tanzania and Republic of Zimbabwe, as partners for Specific Activities.

Encouraged by the positive response received last year, ITU, as lead organizer, has further developed the new elements that were added to the WSIS Forum in 2011. The WSIS Forum Outcome Document will be commended by all WSIS stakeholders, and the WSIS team will be ready

[5] http://groups.itu.int/wsis-forum2012/Agenda.aspx

[6] www.itu.int/wtisd/index.html

with an outline of the *WSIS Forum 2012: Outcome Document* on the last day of the forum.[7]

Today, ICTs provide the opportunity for representation and inclusion of all stakeholders in the WSIS Forum by way of remote participation. In order to facilitate participation and inclusion of all WSIS stakeholders, remote participation was designed as an integral feature of the WSIS Forum 2012. Building on the success of e-participation facilities rolled out at WSIS Forum 2011, the organizers have worked towards integrating the most user-friendly and widely employed tools for encouraging remote participation at WSIS Forum 2012. These easy-to-use tools enabled two-way communication, allowing WSIS stakeholders to participate in the WSIS Forum at their own convenience and, at the same time, disemminate information about the different sessions and happenings at the forum.[8]

United Nations Group on the Information Society[9]

The *United Nations Group on the Information Society (UNGIS)* serves as an inter-agency mechanism to coordinate substantive policy issues facing the UN system's implementation of the Geneva Plan of Action and the Tunis Agenda for the Information Society adopted by WSIS, thereby contributing to improving policy coherence in the UN system, as requested by the 2005 phase of the Summit.

As the Chair of UNGIS for 2010-2012, ITU initiated several activities in close collaboration with the vice-chairs and the member agencies. An open consultation process was launched in regard to Overall Review of the Implementation of the WSIS Outcomes (WSIS+10) resulting in an action plan for the WSIS overall review. UNGIS submitted a joint input to the Rio+20 UN Conference on Sustainable Development, and launched a joint initiative on Mobile for Development (M4D), with the objective of identifying key policy initiatives and adding value to existing programmes and projects by facilitating synergies and joint efforts in order to maximize coordinated action, coherence and effectiveness towards implementing successful Mobile for Development Projects, the WSIS Stocktaking Platform provided good examples of such projects using mobile to achieve development in many areas. Substantive work on the UN Development Assistance Framework (UNDAF) has been undertaken, leading to a joint communication from ITU and UNDP to national coordinators underlining the importance of including an ICT component to make the most of the opportunities ICTs offer for accelerating progress towards the MDGs and other internationally agreed goals.

WSIS+10

The WSIS outcome documents and UN General Assembly Resolution 60/252 resolved to conduct an overall review of the implementation of the Summit outcomes in 2015. Resolution 172 (Guadalajara, 2010) of the ITU Plenipotentiary Conference on the Overall Review of the Implementation of the Outcomes of the WSIS; including the possibility of holding a high-level event in 2014/2015, requested the ITU Secretary-General to initiate the preparatory process at the UN Chief Executives Board (CEB). Accordingly, in 2011, CEB tasked UNGIS, under ITU's leadership, to prepare, on the basis of an open consultation, an Action Plan for the WSIS Overall Review (WSIS+10). The Board requested UNGIS to present the Action Plan at its spring 2012 session. The UN High-Level Committee on Programmes (HLCP) noted the plan and forwarded it to CEB for endorsement. During the spring session of CEB held at ITU headquarters in April 2012, the plan was approved.

The open consultation process thus formed the basis for elaboration of the Plan of Action, consisting of two components:

1) Proposed expected final outcomes of the Overall Review Process (WSIS+10)
2) Proposed preparatory process and meetings within the framework of the overall review up to 2015.

The final version of the *Plan of Action for the Overall Review of the Implementation of the WSIS Outcomes (WSIS+10)* that was endorsed by HLCP and CEB is attached in **Annex I**. The detailed report on the open consultation process and its outcomes is available at www.ungis.org .

In this context, the WSIS Forum 2012 has a very important role to play, insofar as it launches the implementation of

[7] http://groups.itu.int/wsis-forum2011/Agenda/OutcomeDocument.aspx

[8] http://groups.itu.int/wsis-forum2012/Information/RemoteParticipation.aspx

[9] www.ungis.org/forum

the Plan of Action leading towards the high-level meeting in 2014. It will look in particular to develop multistakeholder consensus on three items, namely:

- Preliminary indications for the scope of the possible forward-looking agreed outcome document, setting the agenda beyond 2015
- Templates for the reports of the lead facilitators on the Action Lines; Templates for the national self-evaluation reporting on the implementation of the WSIS outcomes.

The WSIS Stocktaking Platform will play a crucial role in implementing the Plan of Action, in particular for evaluation and assessment reports leading towards 2015. In this context, all stakeholders are invited to ensure that information on key initiatives and projects are reflected in this publicly accessible platform.

Partnership on Measuring ICT for Development[10]

The *Partnership on Measuring ICT for Development* is an international, multistakeholder initiative to improve the availability and quality of ICT data and indicators, particularly in developing countries. One of the key achievements of the Partnership has been the identification of a core list of indicators. This list of 50 indicators, which was agreed upon through a consultation process involving governments and international organizations, covers basic infrastructure and access indicators as well as ICTs in households, business and education. The list, which is revised regularly, was identified to help guide countries in measuring the information society.

Box 1: ITU Contribution to the Implementation of the WSIS Outcomes

ITU has initiated a series of annual publications that provide information on the key WSIS related initiatives and activities carried out by the three sectors of the Union (Standardization, Radiocommunication and the Development Sector) and the General Secretariat. The annual reports provide yearly updates on the tasks carried out by the ITU at the operational and policy level, covering all assigned mandates with reference to the WSIS Process, in particular:

- In its capacity as leading facilitator in coordinating the multi-stakeholder implementation of the Geneva Plan of Action. (para 109 of TAIS) and primary organizer and host of the annual event in May, i.e. the WSIS Forum
- Facilitator of Action Lines C2 (Information and communication infrastructure) and C5 (Building confidence and security in the use of ICTs); as well as C6 (Enabling Environment).
- Co-facilitator of Action Lines C1, C3, C4, C7, and C11
- Partner in Action Lines C8 and C9
- Rotating Chair and Vice Chair of the United Nations Group on Information Society (UNGIS) (Para 103 of TAIS)
- Lead of Partnership on the Measuring the ICT for Development (Para 114 of TAIS)
- Facilitator of the WSIS Stocktaking Process (Para 120 of TAIS)
- Organizer of World Telecommunication and Information Society Day (Para 121 of TAIS)
- Lead of the Connect the World Initiative (Para 98 of TAIS)
- Others

These annual reports will also be considered as the official submissions from ITU for different internal and external WSIS process related meetings like the WG-WSIS, Council, CSTD.

[10] www.itu.int/ITU-D/ict/partnership/

The Partnership's work is closely related to WSIS, which called upon countries and international organizations to develop appropriate indicators and produce official statistics to monitor the Information Society. The Tunis Agenda makes reference to the partnership[11], and invites the international community to strengthen the ICT-related statistical capacity of developing countries[12], which is also a key objective of the Partnership.

The Partnership, through its Task Group on Measuring the WSIS Targets (TG WSIS, which is lead by ITU), has also helped identify a concrete list of indicators to help track the ten WSIS targets – which range from connecting villages, schools and health centres to developing online content and providing people with ICT access – by producing a *statistical framework document* which will help guide countries in their data-collection efforts. The report is expected to become the main reference document for final review of achievements towards meeting the WSIS targets in 2015. As part of the WSIS+10 review process, TG-WSIS will organize a side event at the WSIS Forum 2012 to provide an update of the partnership's work on measuring the WSIS targets and present concrete examples of progress made towards monitoring the targets as well as highlighted gaps that still need to be addressed. TG-WSIS is also planning to publish a final report on achievement of the WSIS targets in 2014.

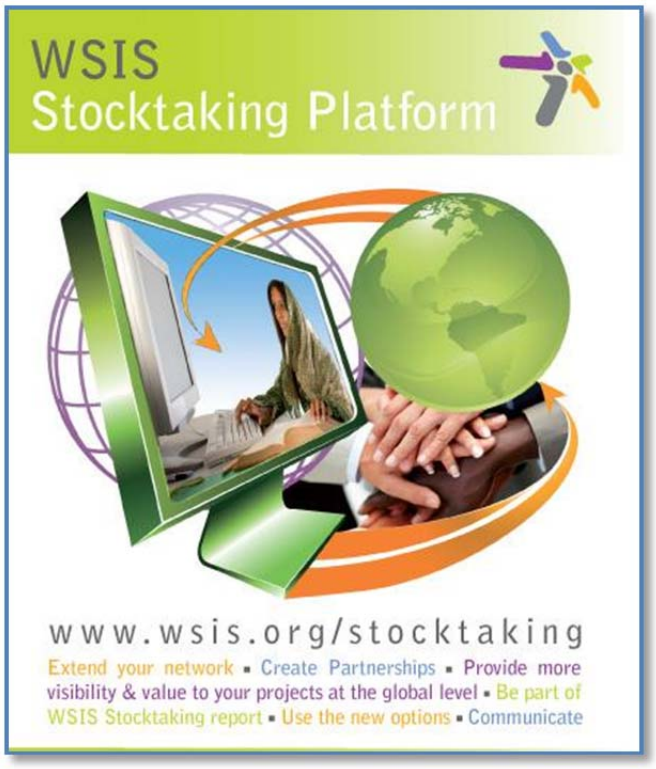
WSIS Stocktaking[13]

Pursuant to the Tunis Agenda (§ 120), ITU continues to work on the WSIS Stocktaking (www.wsis.org/stocktaking) as a valuable tool for assisting WSIS follow-up, beyond the conclusion of the Tunis phase of the Summit.

The WSIS Stocktaking process was initiated in 2004, during the Tunis phase of WSIS and, with time, it has become an effective tool for the exchange of information on projects and initiatives related to the implementation of the 11 Action Lines. In May 2012, over 6 000 entries have been registered in the WSIS Stocktaking Database, reflecting innovative activities including projects, programmes, WSIS thematic meetings, conferences, publications, training initiatives, guidelines and toolkits. As requested in § 120 of the Tunis Agenda, stakeholders are encouraged to continue to contribute information on their activities to this public database. All countries are invited to gather information at the national level with the involvement of all stakeholders, in order to contribute to the stocktaking process.

The total number of activities submitted to the WSIS Stocktaking Database exceeds 6000 entries, of which more than half came from governments and a further quarter from international organizations. The remaining activities were submitted by civil society (12%), business sector entities (6%) and miscellaneous submissions (2%). About 50% of the activities submitted were national in scope and 30% were international, with the remainder at the local and regional levels. Western Europe and North America accounted for a quarter of all submissions by origin (26%), which followed by the Asia-Pacific region (18%). See the box 2

Concerning the breakdown of activities by Action Line (AL), AL C4 (Capacity building) has received the most submissions representing 14% of all submitted projects, followed by C8 (Cultural diversity and identity, linguistic diversity and local content) representing 12%. See box 2

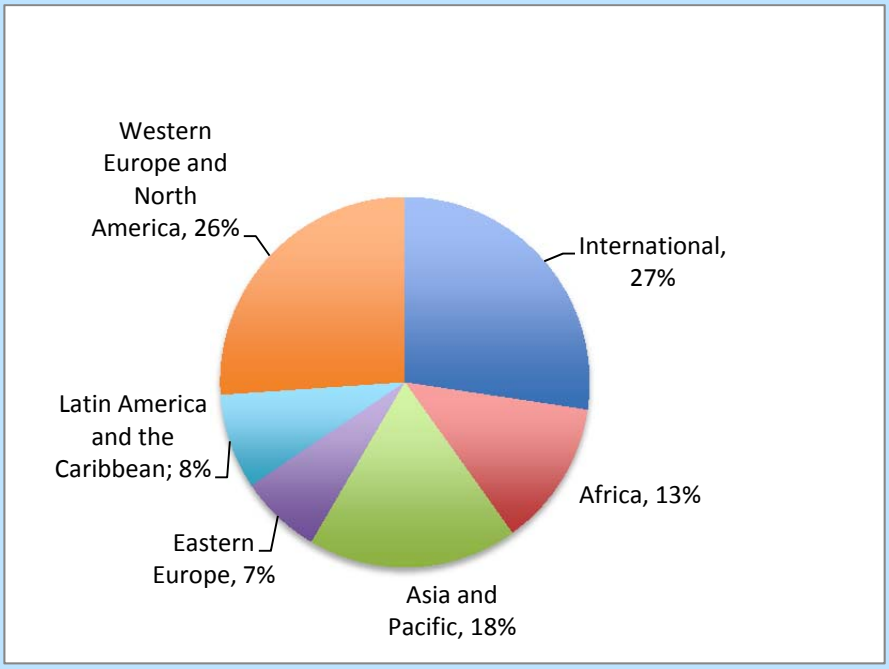


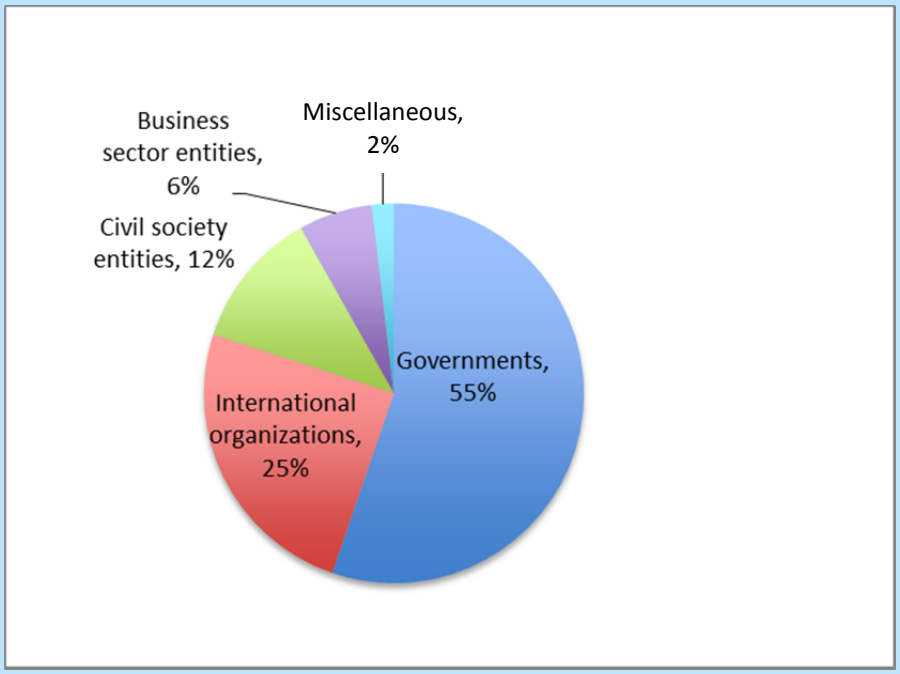
[11] Tunis Agenda, § 114.

[12] Tunis Agenda, § 118.

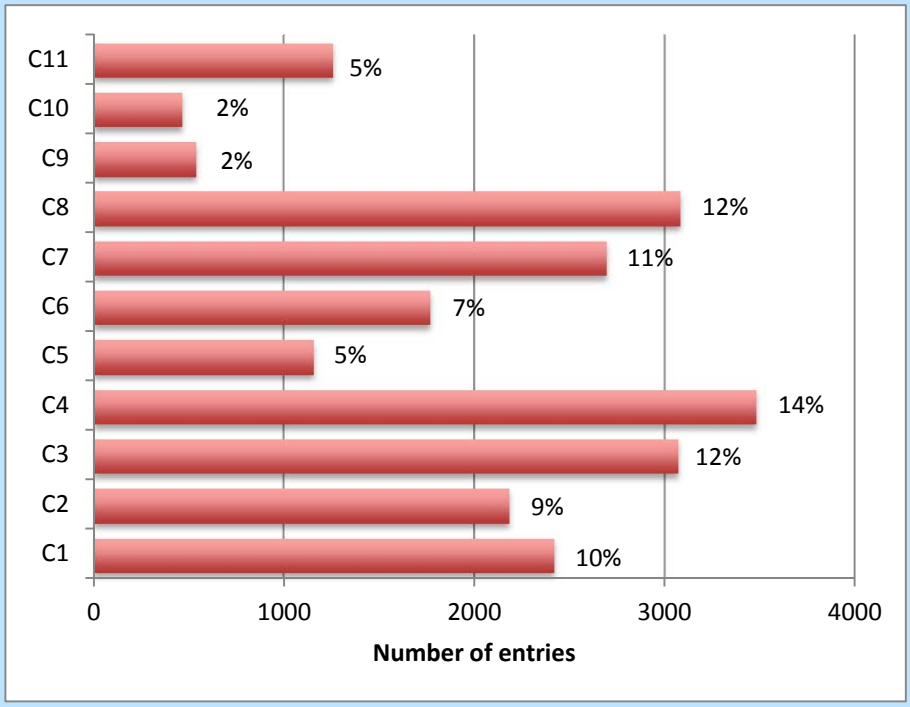
[13] www.wsis.org/stocktaking

Box 2 a): Overview of activities breakdown by geographical coverage and stakeholders





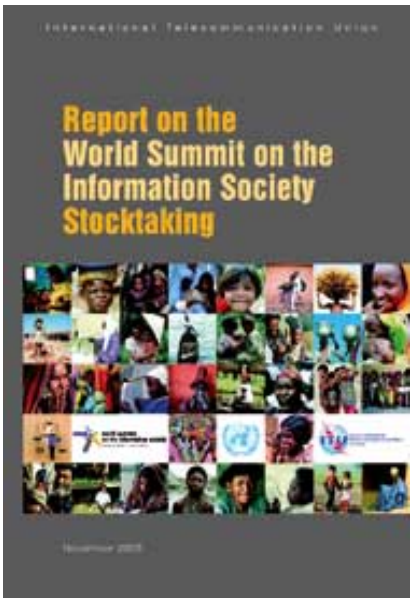
Box 2 b): Overview of activities breakdown by Action Line

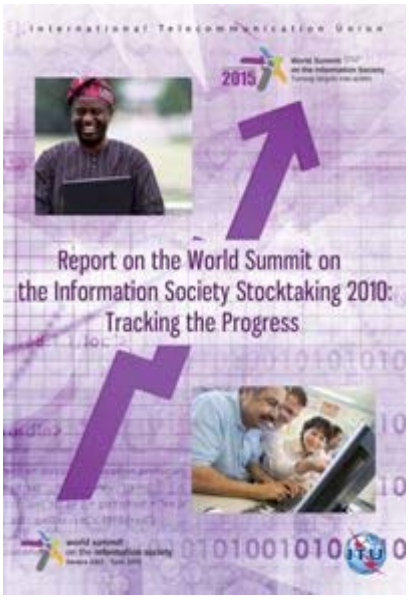


The *WSIS Stocktaking Platform*, launched in February 2010, transformed the static database into a unique portal to highlight ICT-related projects and initiatives in line with WSIS implementation. The platform offers stakeholders exciting and interactive networking opportunities via Web 2.0 applications. All types of stakeholders can benefit from the global events calendar, the global repository, case studies and other components that help extend networking and create partnerships in order to provide more visibility and add value to projects at the local, national, regional and international levels. As at May 2012, the WSIS Stocktaking Platform has attracted more than 6 300 members, and this number is rapidly growing.

WSIS Stocktaking reporting is the bi-annual exercise that was launched in 2005 in order to highlight stakeholders' progress in achieving the WSIS targets. The 2012 edition of the *WSIS Stocktaking Report* is the continuation of the WSIS Stocktaking Report series. (see previous editions 2005[14], 2008[15],2010[16]). Due to the extensive nature of project activities, one entry in the Stocktaking report may contain information on more than one project.

Following the recommendations of WSIS stakeholders, and with the aim of highlighting ICT-related projects and initiatives in context of WSIS implementation and follow-up, the WSIS Stocktaking: Success Stories[17] publication was launched during the WSIS Forum 2011. This publication is designed to provide examples of WSIS implementation projects and facilitate transfer of experience and knowledge at global level. It aggregates several voluntary contributions from around the world that are collected from active members of the WSIS Stocktaking Platform during each reporting period, and illustrates the key lessons drawn from the management of these projects. By sharing these case studies, stakeholders are seeking to facilitate transfer of knowledge, experience and models for project implementation. The WSIS stocktaking Success Stories 2011 also aims to encourage other stakeholders to share their experiences of WSIS implementation.





[14] www.itu.int/wsis/docs2/tunis/off/5.pdf

[15] www.itu.int/wsis/stocktaking/docs/2008/WSIS-Stocktaking2008-e.pdf

[16] http://groups.itu.int/LinkClick.aspx?fileticket=ecY3JFUoRoA%3D&tabid=740

[17] www.wsis.org/stocktaking

WSIS Project Prizes 2012

WSIS Project Prizes 2012 responds to requests from participants at the WSIS Forum 2011 for a mechanism to evaluate and reward individuals, governments, civil society, local, regional and international agencies, research institutions and private-sector companies for highly successful efforts in implementing development-oriented strategies that leverage the power of ICTs. ITU has launched a series of prizes recognizing excellence in the implementation of projects and initiatives which further the WSIS goals of improving connectivity to ICTs, particularly within underserved communities.[18] (www.wsis.org/stocktaking/prizes)

For the first time, during the prize ceremony at the WSIS Forum 2012, WSIS project prizes will be awarded to 18 outstanding initiatives that harness ICTs to drive social and economic development. An open online voting system was developed to ensure that the WSIS Project Prizes initiative is owned and nurtured by WSIS stakeholders themselves.

More than 170 candidate projects from 50 countries were put forward in the contest for WSIS Project Prizes 2012. The projects of the winning organizations are highlighted in the WSIS stocktaking: Success stories 2012 publication.

WSIS Project Prizes 2012 provide international visibility and recognition to the winners, with the possibility to showcase their projects at the WSIS Forum 2012. Two interactive sessions will be organized at which the 18 winners can present their projects to the public, share their success and describe the projects' impact towards achieving WSIS goals. WSIS Project Prizes have thus become an integral part of the WSIS stocktaking process established in 2004.

[18] www.wsis.org/stocktaking /prizes

WSIS beyond 2015

ICT for Sustainable development: WSIS beyond 2015

The 1992 Earth Summit: A paradigm shift to sustainable development

"Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature." – Principle 1 of the *Rio Declaration on Environment and Development*, adopted at the United Nations Conference on the Environment

The year 2012 marks the 20th anniversary of the 1992 United Nations Conference on Environment and Development (UNCED 1992, also known as the "Earth Summit"). The conference, which took place in Rio de Janeiro (Brazil), was unprecedented for a UN event in terms of successfully integrating the themes of environmental action with poverty reduction. In particular, it broadened the scope of global environmental diplomacy by adopting the notion of sustainable development.

Box 3: The role of ICTs in the outcomes of the 1992 Summit

Agenda 21 includes major references to the role of information and communication technologies (ICTs) and technology in general as a primary driving force in environmental change. Key references may be found in the following chapters of the document:

- *Chapter 34. Transfer of Environmentally Sound Technology, Cooperation and Capacity-Building*. This chapter highlights the need for favourable access to and transfer of ESTs, in particular to developing countries, through supportive measures that promote technology cooperation and that should enable transfer of necessary technological know-how as well as building up of economic, technical and managerial capabilities for the efficient use and further development of transferred technology.
- *Chapter 40. Information for Decision-Making.* This chapter highlights that, in sustainable development, everyone is a user and provider of information considered in the broad sense. That includes data, information, appropriately packaged experience and knowledge. The need for information arises at all levels, from senior decision-makers at the national and international levels to the grass-roots and individual levels. The chapter highlights the general lack of capacity, particularly in developing countries, and in many areas at the international level, for the collection and assessment of data, for their transformation into useful information and for their dissemination.
- *Chapter 31. Scientific and Technological Community*. Agenda 21 defines the scientific and technological community as one of the nine major groups for achieving sustainable development. According to this chapter, if an effective transition to sustainable development is to be achieved, the cooperative relationship existing between the scientific and technological community and the general public should be extended and deepened into a full partnership. On the one hand, it is important that the role of science and technology in human affairs be more widely known and better understood. On the other hand, improved communication and cooperation between the scientific and technological community and decision-makers will facilitate greater use of scientific and technical information and knowledge in policies and programme implementation.

At the 1992 Earth Summit, governments recognized the need to redirect international and national plans and policies so as to ensure that all economic decisions fully take into account any environmental impact, and to commit to a number of principles and mechanisms that make eco-efficiency a guiding principle for business and government alike. At the conference, the UN system also sought to help governments rethink economic development and find ways to halt the destruction of irreplaceable natural resources and pollution of the planet. No fewer than 172 governments participated in the conference, including 108 heads of state, making it one the largest gatherings of political leaders in history. Hundreds of thousands of people from many different types of organizations were engaged and participated in the preparatory process for the conference.

$The key outcomes of the conference included the adoption of three major agreements that promote environmental protection, sustainable development and reduced human impact on the environment, namely: *Agenda 21* (a plan of action adopted by over 178 governments to address human impacts on the environment at local, national and global levels); the *Rio Declaration on Environment and Development*; and the *Statement on Forest Principles*. Additionally, the summit opened for signature three legally binding UN Conventions, namely: The *United Nations Framework Convention on Climate Change* (UNFCCC); the *Convention on Biological Diversity (CBD)*; and the *United Nations Convention to Combat Desertification (UNCDDD)*. These Conventions are aimed at tackling the global challenges of combating climate change, protecting biological diversity and fighting desertification.

Twenty years on: Sustainability, climate and the environment

The lesson learned from implementation of the 1992 Rio outcomes is that the concept of sustainable development requires a deeper integration of economic development, social development and environmental protection, three pillars that have traditionally been seen as disconnected. Two decades after the conference, the world has changed significantly in geopolitical, economic, social and environmental terms. These changes have exacerbated some of the problems discussed in 1992, and introduced new and emerging challenges to be addressed by our global community.

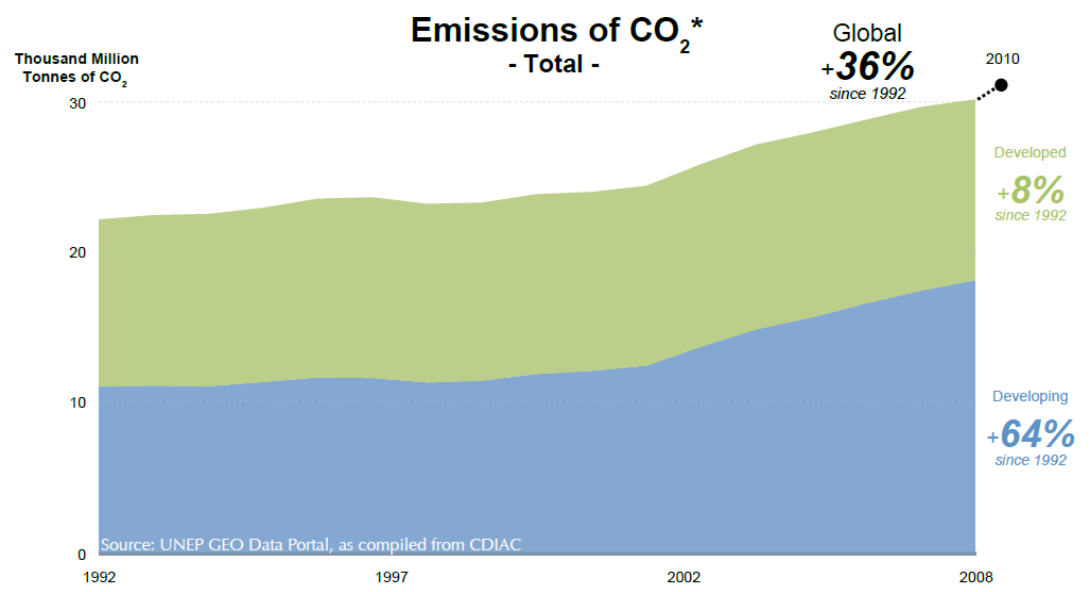
Greenhouse gases (GHG): The evidence accumulated over the past 20 years has made it clear that climate change is among the biggest challenges humankind has ever faced. Firstly, no country will remain untouched by its effects: some may experience severe drought, sea-level rise resulting in the loss of coast area, or a human and economic toll from natural disasters. Secondly, addressing the causes of climate change – the release of greenhouse gases (GHG) from human-related activities – would require a complete transformation in the way we live, work, travel and do business. It implies shifting our model of development to a greener, fairer and more sustainable one.

The work of the United Nations Intergovernmental Panel on Climate Change (IPCC) shows that global CO_2 emissions (one of the major drivers of GHG emissions) have risen by 36 per cent since 1992 (see Box 4). Average global trends in temperature show a similar trend, and 2000-2009 was the warmest decade on record worldwide. According to measurements by NASA, NOAA and the UK Meteorological Office, global mean temperature has increased by 0.4° C since 1992 (see Box 5). Increases in sea level are consistent and decreases in glaciers and ice caps are consistent with warming[19].

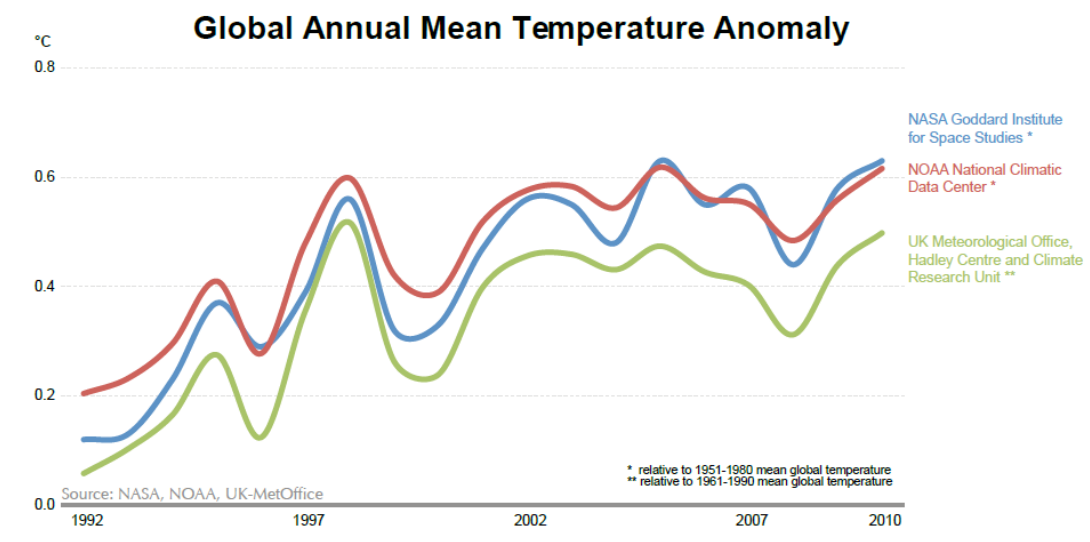
Global trends in deforestation and loss of biodiversity: Two other phenomena that have followed a continuous trend since 1992 are the continued decrease in forest area and the loss of biodiversity. According to UNEP, forests currently cover around 30 per cent of the Earth's land mass. Large areas of primary forest and other naturally regenerated forests have continued to decline over the last 20 years, due mainly to deforestation and to transformation of forest land into agricultural land and pasture (see Box 6). FAO has determined that forest area has decreased by 300 million ha since 1990, representing an area larger than Argentina. This results in loss of biodiversity, as well as in an acceleration of the causes of climate change, as forests are net absorbers of CO_2 gases.

[19] The Emissions Gap Report: Are the Copenhagen accord pledges sufficient to limit global warming to 2oC or 1.5oC , UNEP, 2010 www.unep.org/publications/ebooks/emissionsgapreport/pdfs/GAP_REPORT_SUNDAY_SINGLES_LOWRES.pdf

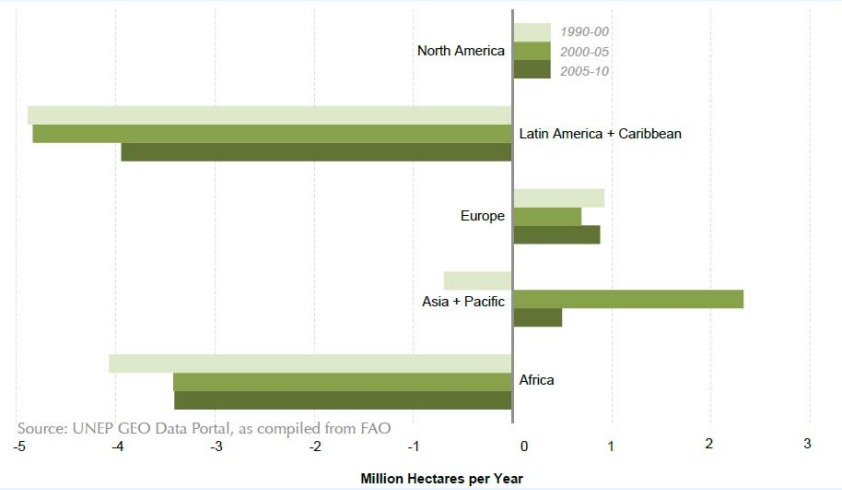
Box 4. Increase in CO_2 emissions since 1992



Box 5. Increase in global temperature since 1992



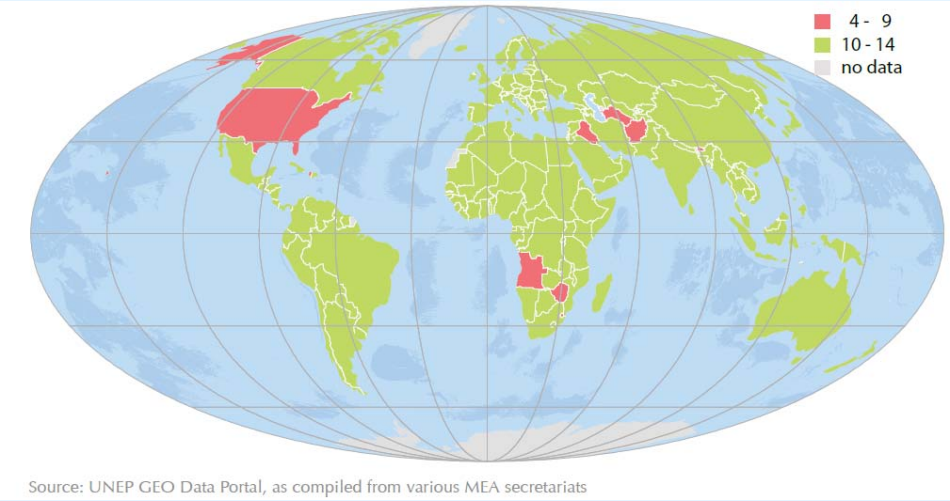
Box 6 Forest net change



According to WWF, the *Living Planet Index* – an index that reflects changes in the health of the Earth's ecosystems- has declined by 12 per cent at the global level and by 30 per cent in the tropics since 1992. The *Convention on Biological Diversity* identified that the population of wild vertebrate species fell by an average of nearly one-third (31 per cent) globally between 1970 and 2006, with the decline especially severe in the tropics (59 per cent) and in freshwater ecosystems (41 per cent). Similarly, 42 per cent of all amphibian species and 40 per cent of bird species are declining in population.

The good news: Not all the news is bad in the fight to preserve the livelihood of our planet. According to IUCN, 13 per cent of the world's land surface, 7 per cent of its coastal waters and 1.4 per cent of its oceans are now protected. This represents a 38 per cent increase since 1992, highlighting the increased awareness of policy-makers in regard to the importance of ensuring that the protection of natural areas is enforced by national law. Similarly, the number of environmental accidents, such as oil spills from tankers, has fallen significantly in the last 20 years. With regard to the governance of environmental agreements, today most countries have signed at least nine out of the 14 major multilateral environmental agreements (MEA), with 60 countries having signed all of them (see Box 7), highlighting the global commitment towards addressing environmental challenges through an international framework of collaboration.

Box 7 Number of MEAs signed



Rio+20: Moving forward

Two decades after the 1992 Earth Summit, the global community has agreed to come together at the same place to renew political commitment towards sustainable development. The 2012 United Nations Conference on Sustainable Development (UNCSD or Rio+20), to be held in Rio de Janeiro (Brazil) on 20-22 June 2012, will offer an opportunity for all stakeholders to reaffirm commitments made twenty years ago. The conference will provide a forum to assess the progress made to date and the remaining gaps in implementation of the outcomes of the major summits on sustainable development, and to address new and emerging challenges. Two themes will be discussed at the conference: a green economy in the context of sustainable development and poverty eradication, and the institutional framework for policy development. The conference will also provide an important policy opportunity in the near term for the United Nations system to make commitments to support countries in moving towards a balanced and inclusive green economy.

The challenges and opportunities can and must be addressed as part of the integrated development models that focus on poverty and human wellbeing. It is only through a unified approach based on cross-sectoral collaboration between governments, the private sector, international organizations and civil society that we can achieve the necessary conservation to usher in a sustainable "*green economy*". Top-down and bottom-up approaches have to be combined, renewing political will to turn discussions and negotiations into agreements and actions. Building from this principle, WSIS Forum 2012, assembled one month ahead of the celebration of the Rio+20 conference, will explore how the information society can contribute to the goals of the conference, in particular renewing political commitment towards the sustainable development agenda. Collectively, the eleven WSIS action lines frame the opportunities for using information and communication technologies (ICTs) as a vehicle for achieving sustainable development goals.

Box 8: Sustainability and environmental protection in the WSIS action lines

As the preparatory process for the Rio+20 conference progresses, the global community has been called on to bring forth concrete proposals to advance the transition towards a green economy and further integrate the three pillars of sustainable development (economic, social and environmental). A special call has been made to promote synergies between existing processes and mechanisms within the international community, such as the WSIS process. A prominent example of the contribution that WSIS can make to Rio+20 is the progress achieved in the implementation of Action line C7: E-environment. The goals for this action line, as defined in the Geneva Plan of Action, are as follows: [20]

a) Use and promote ICTs as an instrument for environmental protection and the sustainable use of natural resources;

b) Initiate actions and implement projects and programmes for sustainable production and consumption and the environmentally safe disposal and recycling of discarded hardware and components used in ICTs;

c) Establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and man-made disasters, particularly in developing countries, LDCs and small economies. There is no need for additional mining of raw materials.

The outcomes of the WSIS process provide an overall strategic framework for the deployment and use of ICTs as an enabler for sustainable development. They give vulnerable populations access to education, healthcare, information, finance and knowledge about protecting the environment, mitigating natural-disaster risk, ensuring sustainable use of natural resources and sustainable food production. These are all in line with internationally-agreed development goals, environmental protection and the sustainable use of natural resources, in particular those mentioned in the Rio Principles and Agenda 21[21].

[20] Geneva Plan of Action, § 20

[21] For further reference on the contribution of WSIS to the Rio+20 process, refer to the contribution made to the conference by the members of the United Nations Group on the Information Society (UNGIS). www.ungis.org/ThematicMeetingsActivities/JointContributiontotheRio20Process.aspx

Green Agenda and ICTs

The transition towards a green economy

Promoting the transition towards a *green economy* requires new approaches and coordinated global action. In a nutshell, a green economy is one that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities. Transformation to a green economy is key to addressing challenges such as climate change, deforestation or the loss of biodiversity. Incremental measures are not enough to achieve this.

Governments can accelerate the pace of transformation by integrating the use of ICTs with environmental policies in order to set their countries on a forward-looking course while working to meet national development and poverty-reduction goals. In the past, rising GDP per capita has tended to equate to greater consumption of resources — and therefore increased environmental impacts, such as higher CO_2 emissions (one of the major contributors to greenhouse gas (GHG) emissions). ICTs can help to decouple GDP from resource consumption and CO_2 emissions. For example, Sweden, which is considered to be the most digitally connected economy in the world, has effectively decoupled carbon emission rates from economic growth: between 1990 and 2008, the country reduced its carbon emissions by 12 per cent while the economy grew by 50 per cent, and much of this is attributed to connectivity. This article presents examples of the role that the information society can play to achieve a "greener" and more sustainable pattern of development.

Climate-change mitigation and adaptation

ICTs have the capacity to reduce GHG, as well as aiding in the mitigation of and adaptation to the effects of climate change. The *SMART 2020*[22] study showed that while the ICT sector's own contribution to carbon emissions is around 2 per cent, transformative ICT applications allow other sectors to significantly reduce the remaining 98 per cent of global emissions. Along the same lines, the report *Using ICTs to tackle climate change*[23], produced by ITU and the Global e-Sustainability Initiative (GeSI), highlighted several examples of how the use of ICTs can reduce emissions in other sectors, which include the following applications:

- *Smart motor systems* – through changes to the design of electric motors to allow them to run at speeds optimized to the task
- *Smart logistics* – through efficiencies in transport and storage
- *Smart buildings* – through better building design, management and automation
- *Smart grids* – which would be of most benefit to countries such as India, where reductions in emissions could be as high as 30 per cent.

In addition, smart work solutions have been shown to have a very positive effect on carbon emissions. For several years, the Swedish telecom operator TeliaSonera has used ICT-based smart work solutions such as teleworking, flexi-working, virtual or telepresence conferencing and flexi-office. Studies have indicated that these initiatives have reduced carbon dioxide equivalent (CO_2e) emissions by approximately 40 per cent (over 2.8 tons of CO_2e) per employee per year[24].

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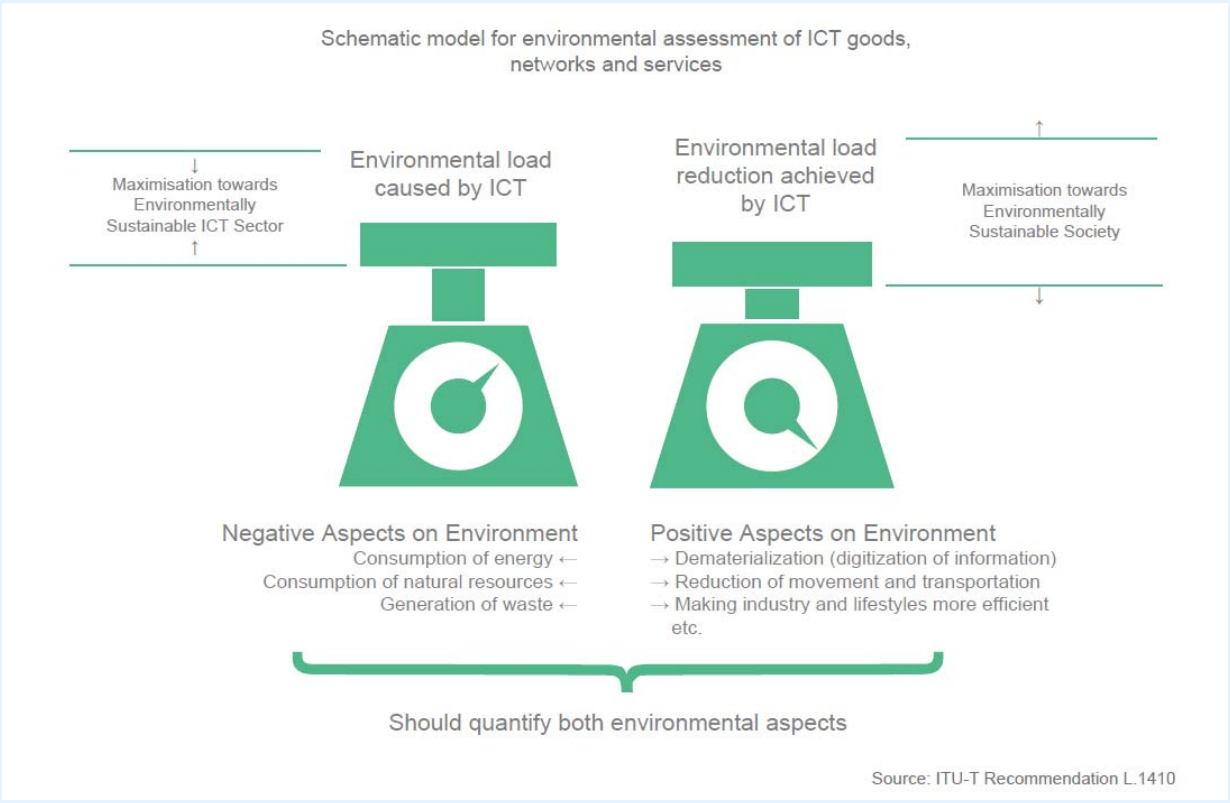
[22] Smart 2020: Enabling the low carbon economy in the information age, The Climate Group on behalf of the Global eSustainability Initiative (GeSI), 2008, www.gesi.org/LinkClick.aspx?fileticket=tbp5WRTHUoY%3d&tabid=60

[23] Using ICTs to tackle climate change (ITU, GeSI), 2010. www.itu.int/dms_pub/itu-t/oth/0B/11/T0B1100000A3301PDFE.pdf

[24] The Broadband Bridge, linking ICT with climate action for a low carbon economy, A report by the Broadband Commission for Digital Development, ITU and UNESCO, April, 2012, www.broadbandcommission.org



Although mitigation to prevent further impacts is essential, we currently find ourselves in a time where the impacts of climate change are already being felt and therefore adapting to these changes is also paramount. Climate adaptation will require smart planning and reliable access to real-time data for climate monitoring, as well as the implementation of early-warning systems.

ICT plays a critical role in disaster prediction, monitoring and detection. As the steward of the international spectrum, ITU allocates the necessary radio frequencies and orbit resources, as well as approving international standards for the interference-free operation of applications and radiocommunication systems (terrestrial and space) used for climate monitoring, weather forecasting, remote sensing and disaster prediction and detection. ICTs can save human lives through the timely dissemination of early-warning alerts. In the immediate aftermath of disasters, ICTs play an important role in coordinating search and rescue operations, in supplying food, medicine and other essential services, and in providing critical information to the victims of disasters.

Box 9: Closing the gap

It has been determined that in order to limit the average global temperature rise to 2°C, emissions need to be capped at approximately 44 Gt of carbon dioxide equivalent (Gt CO_2e) by 2020. If the lowest-ambition pledges made in Copenhagen at the 15th Conference of Parties to UNFCCC[25] are implemented, it is estimated that 2020 emissions would be in the region of 53 Gt CO_2e[26], leaving a significant emission gap of 9 Gt CO_2e. Studies have shown that ICT and broadband-enabled applications offer the potential to reduce global emissions by 7.8 Gt, therefore cutting the emissions gap to1.2Gt CO_2e (an 87 per cent reduction).

[25] Copenhagen Accord, UNFCCC, 2009, http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf

[26] The Emissions Gap Report, UNEP, 2010 www.unep.org/publications/ebooks/emissionsgapreport/pdfs/EMISSION_GAP_REPORT_LOWRES.pdf

Addressing e-waste

As a result of rapid advances made in the ICT industry, premature obsolescence and generation of waste has become a factor, and ICT waste is now the fastest growing waste stream in the industrialized world. It is growing at three times the rate of municipal waste globally[27]. Thus, while increased access to technology fuels innovation and digital opportunity, it has also led to corresponding increases in volumes of e-waste. Currently, only 13 per cent of e-waste is reported to be recycled with or without safety procedures.

In developing countries, high volumes of e-waste, coupled with a lack of or poor environmentally-sound management systems, have multiple impacts on the environment, local communities and the economic system. Environmentally-sound management of e-waste poses environmental and health-related challenges, but – when addressed properly – also provides opportunities to create green jobs as well as economic incentives for cutting costs and recovering value from redundant, excessive or end-of-life ICT.

Huge energy savings can be made by recycling ICT hardware, avoiding the need to extract raw materials, especially highly energy-intensive materials such as rare elements. Increased recycling and the safe disposal of ICT waste can therefore assist in reducing climate change and the release of GHG, and achieve sustainability of supply for the ICT industry.

A 'cradle-to-cradle' raw material and recycling approach keeps all the materials in circulation. Designs include easy disassembly, and obsolete products are returned to the factory. To achieve this, both industry and policy-makers have a key role to play, in developing new technological standards aimed at reducing e-waste and at simplifying recycling after end-of-use, and through the adoption of regulation, policies and international agreements – such as the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*[28] – that keep e-waste under control.

Two relevant examples of this are the recent approval of ITU Recommendation ITU-T L.1000, (*Universal power adapter and charger solution for mobile terminals and other ICT devices*), which dramatically reduces the production of and the waste produced by mobile chargers, and ITU–T L.1100, which details the procedures to be employed when recycling rare-metal components included in ICT equipment.

[27] Sinha, S. (2010), Sustainable E-waste Management, www.toxicslink.org/art-view.php?id=134 (Accessed on 29 July, 2011).

[28] Further information at www.basel.int

World Summit on the Information Society
Turning targets into action

Action line C1

The role of governments and all stakeholders in the promotion of ICTs for development

This chapter presents some examples illustrating the role of stakeholders in the promotion of ICTs for development.

UNDESA is the lead facilitator for Action line C 1: The role of governments and all stakeholders in the promotion of ICTs for development

During 2011, DESA and the Inter-Parliamentary Union (IPU) cooperated through the jointly established Global Centre for ICT in Parliament (the Centre) to strengthen the role of parliaments in advancing the Information Society and in contributing to the implementation of the outcomes of the WSIS, and to promote the use of ICT as a means to modernize parliamentary processes and improve inter-parliamentary cooperation.

The Centre organized the Fourth Parliamentary Forum on "The Triple Challenge of Cybersecurity: Information, Citizens and Infrastructure" in Geneva, Switzerland. The meeting addressed the particular challenges posed by the illicit use of ICT, such as the safeguarding of citizens in the connected environment; the protection of State information, data and infrastructures; and the transnational response to cybercrime.

The Centre provided technical assistance to a large number of parliaments, in particular in the Southern Africa and Caribbean regions. In November 2011, the Centre launched the third Global Survey of ICT in Parliaments in preparation for the release of the third issue of the World e-Parliament Report which will track emerging trends and practices on how ICT is being used by parliaments.

During 2011, the Centre coordinated its work with the activities of the Africa i-Parliaments Action Plan, the regional DESA-led initiative that supports the development of high-quality and sustainable parliamentary information systems to foster transparency and accountability, and support democratic participation in African parliaments.

C1.1 National e-strategies

According to the report *National e-Strategies for Development, Global Status and Perspectives, 2010*, as of April 2010 no fewer than 163 countries and territories, i.e. 85.3 per cent of all economies, already had some sort of a national e-strategy in place, while another 13 countries and territories (6.8 per cent) were on their way to formulating and adopting one.[29]

As highlighted in the *Tunis Agenda*, national e-strategies, including ICT strategies and sectoral e-strategies, as appropriate, constitute an integral part of national development plans and poverty-reduction strategies.[30]

Most governments are building national e-strategies on the basis of a multistakeholder approach taking into consideration local, regional and national needs and concerns.[31] In line with the WSIS outcome documents, the horizon for such strategies is often 2015; however, some countries are already planning their strategies beyond that time-frame, working for example towards the perspective of 2030. It is important to draw attention to the fact that ICTs are a key component of the economy and should thus be integrated in different governmental programmes.

In **Jordan,** the Ministry of Information and Communications Technology (MOICT) is developing the *National Information and Communications Strategy (2012-2016)*. The strategy is intended to harness the benefits promised by ICTs while maximizing the ability of the sector to contribute to Jordan's economy, both as an independent sector in its own right and as an enabler for other economic sectors by enhancing their competitiveness and productivity.

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[29] See : www.itu.int/ITU-D/cyb/app/docs/National_estrategies_for_development_2010.pdf

[30] Tunis Agenda for the Information Society, § 85

[31] Geneva Plan of Action, § 8c)

The strategy also aims to unify public- and private-sector efforts towards developing the ICT sector and overcoming any barriers that may impede its progress and growth.

In **Qatar,** the Supreme Council of Information and Communication (ictQATAR) has developed the country's *National ICT Plan 2015: Advancing the Digital Agenda*, which will guide efforts in this area through to the end of 2015. The plan is aligned with the Qatar's *National Vision 2030*, and its specific programmes are aligned with Qatar's *National Development Strategy 2011-2016*. The National ICT Plan 2015 is organized into five strategic thrusts, which are considered to be the critical components needed to create a sustainable digital future, namely:

- Improving connectivity – ensuring the deployment of an advanced, secure infrastructure
- Boosting capacity – enhancing digital literacy and developing skills to enable innovation
- Fostering economic development – creating an environment for an innovative and vibrant ICT industry
- Enhancing public service delivery – ensuring the use of innovative applications to improve the delivery of public services
- Advancing societal benefits – leveraging ICTs to improve the ways society and government provide education, healthcare and services to Qatar's people.

Each of the five thrusts is broken down into specific programmes, of which there are a total of 11 in the entire plan, namely: ICT infrastructure; Modernizing the legal and regulatory framework; Cybersafety and security; Digital inclusion; ICT human capital; Innovation and entrepreneurship; Digital content; Second-generation i-government; E-education; E-health; and Internet and society. The National ICT Plan builds on the first ICT master plan established in 2005, and takes into account research and analysis of Qatar's current ICT landscape, as well as regional and international benchmarks. The development of the plan, which includes inputs from key stakeholder groups across the country, was spearheaded by ictQATAR.

In **Mauritius,** the initial *National Information and Communication Technology Strategic Plan (NICTSP)*, NICTSP 2007-2011, has been reviewed in order to assess whether the country is on track to achieve the broader targets set out therein and the extent to which projects need to be reprioritized. This has led to the formulation of the new plan, *NICTSP 2011-2014: Towards i-Mauritius*, which has already been approved by the government and is currently being implemented. NICTSP 2011-2014 aims to accelerate growth by strengthening the ICT sector as a pillar of the economy. The strategic action areas are:

- Review of the regulatory, institutional and policy frameworks to attract investment in the ICT sector and to enhance the performance and optimization of IT services
- Positioning Mauritius as an excellent export destination and a regional ICT hub; Enhancing e-government services
- Providing a secure and reliable ICT environment for online transactions
- Investing in human capital development for ICT
- Elaboration and implementation of a broadband strategy.

In **Costa Rica,** the *National Telecommunication Development Plan* targets the introduction of public policies to underpin the infrastructural, economic, social and environmental actions that will lead to the integration of telecommunications in various economic and social sectors. The plan has set major goals for the 2009-2014 timeframe. During this period, the Vice-Ministry for Telecommunications within the Ministry for the Environment, Energy and Telecommunications (MINAET) has identified the accountability process as one of its primary objectives, guiding and evaluating the activities outlined in the *National Telecommunication Development Plan for 2009-2014*. The Ministry of Science and Technology has been assigned the responsibility of creating successful strategies that democratize secure and integral access to information in all demographic strata. The programme of the *Strategy for Digital Cultural and Information Security* attempts to systematize three main efforts, namely: the deployment of intelligent community centres (CECIs); a government-funded wireless network initiative that provides Internet access using the CECIs as distributing points

(*Costa Rica Wireless*); and a computer security incident response team that covers digital safety and security.

In the **United Arab Emirates**, the Abu Dhabi government's e-strategy has been developed and is maintained by the Abu Dhabi Information and Systems Centre (ADSIC). The *Abu Dhabi e-strategy* supports the e-government vision and accommodates and provides for the different dimensions of the *E-R-U Framework* – environment, readiness and usage implications. The strategy positions Abu Dhabi as a service-oriented government intent on providing high-class government services. The strategy has been developed in six different steps, namely: crafting the vision for a service-oriented government; formulating the service-oriented government strategy; adopting the service-oriented government strategy; assessing the current situation; defining strategic initiatives in the various sectors; and, finally, developing a comprehensive implementation plan.

In **Bhutan**, the *Bhutan ICT Policy and Strategy Process (BIPS)* has involved stakeholders from government, semi-government and the private sector. Five committees were formed along the lines of the Digital Opportunity Initiative, covering Policy; Infrastructure; Human capacity; Content and applications; and Enterprise. With inputs from open consultative workshops and previous ICT studies, the committees formulated strategies and activities designed to progress Bhutan's ICT development. Bhutan is a land-locked, mountainous kingdom with a small and scattered population. It has a rich cultural heritage rooted in Mahayana Buddhism, and a compact and competent government. ICT is a relatively recent phenomenon in Bhutan. Three overall policy objectives underpin the initiatives in the BIPS report, namely:

- to use ICT for good governance;
- to create a Bhutanese info-culture;
- to create a "high-tech habitat".

The initiatives are aggregated under five strategic and logical headings. The newly-established ICT units in each ministry will be utilized to monitor progress, with bi-annual progress reports to the Council of Cabinet Ministers.

In the **Czech Republic**, on 19 January 2011 by its Resolution 50, the government approved the *State policy for electronic communications – Digital Czech Republic*. A priority of this policy is to support access to the high-speed Internet for the country's citizens, with the main goal of reducing the so-called "digital divide" between rural areas and cities. The document is evaluating the current status of access to and development of electronic communications in the Czech Republic, identifying areas with the biggest potential for growth and suggesting the required tools to achieve goals that are feasible and would properly support the economic and social development of Czech society in the context of increasing globalization. The document was drawn up by the Ministry of Industry and Trade, and is based on viewpoints and subsequent comments from both the private and public sectors. *Digital Czech Republic* represents a framework document with the following objectives:

- Ensure, by 2013, high-speed Internet access in all populated localities of the Czech Republic with a minimum transmission speed of at least 2 Mbit/s (download) and at least 10 Mbit/s in cities
- Ensure, by 2015, high-speed Internet access in rural communities with a transmission speed of at least 50 per cent of the average transmission speed achieved in cities.

At the same time, 30 per cent of households and businesses in cities should have access to connections with transmission speeds of at least 30 Mbit/s.

In **Poland**, the *Strategy for the Development of the Information Society until 2013* implemented by the Ministry of Infrastructure was preceded by a series of extensive consultations with experts representing organizations and institutions that are most competent to express views on the issue of information society development. The strategy prepared by the Polish government is consistent with the key documents that delineate the strategic development directions for the country, namely the *National Development Strategy 2007-2015*, the *National Strategic Reference Framework 2007-2013*, and the *Strategic Governance Plan*. The strategy takes into account the priorities of the European information society policy stemming from the assumptions of the Lisbon Strategy and the initiatives *eEurope – An information society for all* and its successor *i2010 – A European information society for growth and employment*. The strategy is sectoral and, as such, defines the vision and mission for the development of the information society in Poland until 2013. Within each of its three areas – human, economy and State – it maps out strategic directions and determines the objectives that need to be met in order to achieve the desired level of development for the information society in Poland in 2013.

In **Cyprus,** the *National Digital Strategy* covers the period up to 2020. The strategy comprises the following elements:

- Connect Cyprus with high-speed Internet
- Provide efficient and effective public e-services accessible to all
- Strengthen human resources through education and training of all citizens, including vulnerable groups
- Promote the use of ICTs in the private sector

- Promote green culture where the use of ICTs will help reduce gas emissions and improve energy efficiency.

In the **Russian Federation,** the Ministry of Telecom and Mass Communications developed the State programme *Information Society: 2011-2020*, approved by the government on 20 October 2010 by Decree 1815-p. The programme pursues the following aims:

- Development of services to facilitate interaction between society and government through the use of ICTs
- Openness of government bodies' activities
- Development of economic and financial domains through the use of ICTs
- Guaranteeing security in the information society and combating the potential use of ICTs to threaten the national interests of the Russian Federation
- Offering the population opportunities to receive essential digital channels and mandatory public TV channels
- Development of fixed and mobile broadband
- Reducing digital disparity among the regions of the Russian Federation
- Development of digital content and preservation of cultural heritage.

Also in the **Russian Federation**, the *Electronic government* project has been implemented by the open joint-stock company Rostelecom and the government of Russia. The project is being carried out on an independent basis. Key objectives of the *E-government* project are:

- Improving interactions between the government and the public by enhancing accessibility of government-related information for citizens
- Faster provision of public government and municipal services
- Implementation of common standards of service delivery to the population
- Improving efficiency of interworking between State authorities, and streamlining internal operations of governmental agencies
- Improving efficiency of public administration
- Ensuring timely and complete control over activities of State authorities.

In order to implement the project, it is planned to create a technology platform, supported by the national carrier Rostelecom, for e-government infrastructure (telecommunication network, special server cluster sites, and a network of trusted certifying authorities to certify digital electronic signature).

C1.2 ICT for development in International Organizations

By 2005, relevant international organizations and financial institutions should develop their own strategies for the use of ICTs for sustainable development.

In accordance with the Geneva Plan of Action, international organizations should publish, in their areas of competence, including on their website, reliable information submitted by relevant stakeholders on successful experiences of mainstreaming ICTs.[32]

There are various platforms and portals maintained by international organizations for knowledge sharing and best practices, such as the *WSIS Stocktaking platform*[33], the *E-agriculture* platform[34], the *WSIS Knowledge communities*[35], the *Broadband Universe Portal*[36], the *Girls in ICT* portal[37], *IPv6 portals* & *blogs*[38], Website on Measuring ICT for Development hosted by UNCTAD among others.

C1.3 Public-private and multi-stakeholder partnerships in developing and implementing national e-strategies

In accordance with the Geneva Plan of Action, each country is encouraged to establish at least one functioning public/private partnership (PPP) or multisector partnership (MSP).[39] Stakeholders are encouraged to deliver a series of related measures, including, among other things: incubator schemes, venture capital investments (national and international), government investment funds (including microfinance for small, medium-sized and micro enterprises (SMMEs))[40] and others.

In the **United States**, the *Corporate Social Responsibility (CSR)* initiative of Harvard University's John F. Kennedy School of Government outlines the importance of public-private collaboration and highlights how companies play a role in expanding economic opportunity in communities around the world. Several ICT companies' initiatives are

32 Geneva Plan of Action, § 8h)

33 www.wsis.org/stocktaking

34 www.e-agriculture.org/

35 www.wsis-community.org/

36 www.itu.int/ITU-D/treg/broadband/

37 http://girlsinict.org/

38 www.itu.int/net/ITU-T/ipv6/dblogs.aspx

39 Geneva Plan of Action, § 8d)

40 Geneva Plan of Action, § 8i)

featured in a list of participants' initiatives, covering areas such as creating inclusive business models, developing human capital and building institutional capacity.[41]

In the **United Arab Emirates**, a fruitful partnership has evolved between Zayed University and *Internet 2.* Internet2 is an advanced U.S. networking consortium. Led by the research and education community since 1996, Internet2 provides both leading-edge network capabilities and unique partnership opportunities that together facilitate the development, deployment and use of revolutionary Internet technologies. By bringing researchers and academia together with technology leaders from the industry, government and international community, Internet 2 promotes collaboration and innovation that has a fundamental impact on the future of the Internet. Zayed University was one of the founding partners in the Internet2's regional counterpart called *ANKABUT*, enabling interaction with other Internet2 partners worldwide.

In **Morocco,** the project *ICT Applications in E-Parliament"*, through public/private partnerships (PPP), is based on research and development studies with universities, using open-source and free software, in order to increase and enhance democratic processes and citizen-oriented services. The project was able to be carried out thanks to the partnership involving the *Chambre des Conseillers* and the *Chambre des Représentants*. A technological partnership was signed between the Multimedia Content Network (MCN) and the two chambers of the Moroccan parliament.

In **Oman,** the Information Technology Authority (ITA) has announced the award of the Royal Grant in support of the *eOman* initiative, which will help move forward the transformation of Oman into a truly connected digital society. A key success factor in this project has been the contribution and dedication of the following partners: ITA, Omantel, Bahwan IT and especially the Ministry of Social Development.

E.oman & Omantel to Provide Free Internet to the Social Insurance Beneficiaries, Oman

In **Tanzania**, a project for local management of the <.tz> country-code top-level domain name (ccTLD) was launched in 2005. This PPP project was executed by tzNIC, and has two members – the Regulator, the Tanzania Communications Regulatory Authority (TCRA); and the Association of ISPs, the Tanzania Internet Service Providers Association (TISPA). Full management of the <.tz> ccTLD in Tanzania was achieved on 30 April 2010.

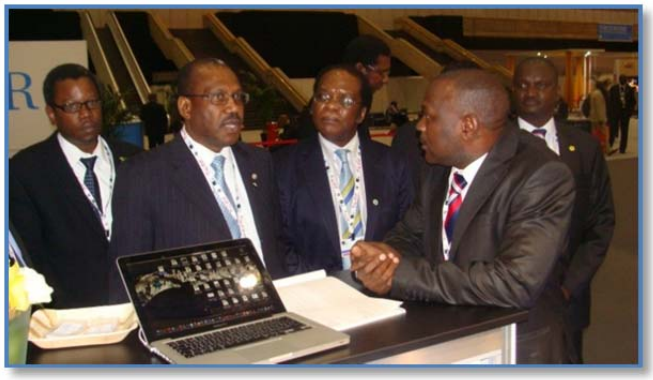

Image provided by tzNIC Tanzania

In **Saudi Arabia**, *Yesser* is the country's national e-government programme. Within the space of seven years, more than 750 e-services are now enabled by a government service bus to the national portal www.saudi.gov.sa , crossing gender, age and income barriers, and with a growth rate of 250 services a year. *Yesser* offers training programmes (7 000 in 2011), facilitates PPPs and develops the highly participatory *National e-Government Plan*.

[41] www.hks.harvard.edu/m-rcbg/CSRI/publications/report_29_Harvard%20EO%20Dialogue%20Summary%2020071018.pdf

National e-Government Plan, Saudi Arabia

Yesser, Saudi Arabia

In **Algeria**, the Ministry of Post, Information Technologies and Communication's *ICT Development Fund (FAUDTIC)*, with a budget of DZD 7 billion, created under the government strategy to support e-Algeria, is aimed at funding projects in whole or in part, on the basis of rigorous and transparent assessment. The fund is intended to support actions to develop projects, provide training and help young people create their microenterprises. In this context, a committee of experts and specialists in the field of ICT has been installed and is responsible for determining the terms and specifications for calls for expressions of interest.

In the **United Arab Emirates,** the *Sheikh Khalifa Fund* was established in response to the growing need to support small and medium-sized businesses in the country. The fund's objectives are to support and develop small and medium-sized enterprises (SMEs) in order to diversify main income streams and develop national human resources in Abu Dhabi. The ultimate objective is to transform Abu Dhabi into a major investment and development hub. The fund will work in parallel with Abu Dhabi's strategic economic development initiatives in the various sectors. It focuses on training and development of UAE nationals so as to equip them to manage their projects independently, through the provision of high-quality training courses and international expertise. The strategic objectives of this programme, by raising and supporting SMEs with a focus on ICT, will ultimately be reflected in greater opportunities for ICT business and investments as well as in the building of a knowledge economy.

C1.4 Other examples

Stakeholders effectively promote the use of ICTs for development through many different tools such as awards, events publications, to name but a few.

At the **global** level, *World Telecommunication and Information Society Day (WTISD),* celebrated each year on 17 May, marks the anniversary of the signature of the first International Telegraph Convention in 1865 which led to the creation of the International Telecommunication Union. To emphasize the importance of this event, ITU presents the annual *World Telecommunication and Information Society Award* to well-known personalities. Each year, WTISD has a specific topic. The theme in 2011, namely "Better life in rural communities with ICTs", sought to ensure that ICTs will contribute to a better future for rural populations. The theme of WTISD in 2012 is "Women and girls in ICT", aiming to ensure that this vulnerable female half of the world's population will march forward as equals.[42]

In **Oman**, a special ceremony of the *Sultan Qaboos Award for Excellence in E-government 2011* was organized by the Information Technology Authority (ITA) on 13 December 2011.

[42] www.itu.int/wtisd/

OMAN_ Winners announced for the Sultan Qaboos Award for Excellence in eGovernment 2011, Oman

In **Qatar**, the ICT sector is growing at a rapid pace, with the market expected to expand to USD 3.7 billion by 2013. To support the growing ICT market and further energize the industry in Qatar, the Supreme Council of Information and Communication Technology (ictQATAR) hosted the first *Qatar ICT Conference and Exhibition (QITCOM)* from 24 to 26 May 2011 at the Doha Exhibition Centre. QITCOM is an opportunity for ICT leaders in Qatar to engage with global industry leaders and see first-hand the latest offerings and advances from major ICT enterprises.

In **Oman**, the *COMEX 2011* exhibition was held to showcase world-class ICT solutions. The event offered a golden opportunity for all government organizations to highlight their latest programmes and electronic services, and provided its visitors in the Sultanate with an insight into the latest developments in the world of technology. For 20 years, COMEX has proven to be an international platform where state-of-the-art technologies, latest developments, cutting-edge innovations and new display categories are constantly being showcased and introduced. The event represents a powerful driver of growth across the regional industry and a perfect place to showcase to prospective buyers.

In **Nigeria**, the *WSIS Country Report 2012* is the document that captures ICT projects executed by agencies and parastatals under the ministry, as one of the tools for tracking national e-strategy implementation towards achievement of the WSIS 2015 targets. The report covers Action lines C1, C2, C4, C5, C6, C7 (e-government and e-business), C8, C9 and C11. It also encompasses Targets 1-10. More details are available in the document itself. The country report was prepared in partnership with national ICT associations: the Information Technology Association of Nigeria (ITAN), the Nigerian Computer Society (NCS), the Institute of Software Practitioners of Nigeria (ISPON) and the Association of Telecom Companies of Nigeria (ATCON).

Image provided by ITAN Nigeria

In the **United Arab Emirates**, the *National WSIS Report* spotlights the UAE's longstanding commitment to the work and objectives of WSIS.

Action line C2

Information and Communication Infrastructure: An Essential Foundation for the Information Society

As stated in the Geneva Plan of Action, ICT infrastructure plays an important role in achieving WSIS objectives. The construction and development of essential infrastructure within countries continue to contribute to progress towards WSIS targets such as digital inclusion, and encourage the creation of universal, sustainable and affordable access to ICTs for all. This chapter illustrates some of the initiatives relevant to this field.

ITU is the lead facilitator for Action line C2: Information and communication infrastructure. The Union's activities focus on six areas, namely:

- Promotion of national ICT strategies
- Harmonization of ICT policies in different regions
- Development of regional and large-scale national initiatives
- Launch of global thematic ICT infrastructure initiatives
- Development of a virtual financing platform
- Deployment of an online tool for assessing ICT development.

With the aim of mobilizing additional funds and new partnerships to attain the WSIS goals, including the development of infrastructure, ITU initiated the Connect series of summits in 2007.

Within the framework of the *Connect the World* initiative, the Union has launched several initiatives relevant to the WSIS Action line C2, including the *Wireless Broadband Partnership*, *Connecting Villages*, *Connect a School* and *Connect a Community*.

ITU has provided advice in developing national school connectivity plans to three Member States, namely Mauritania, Tanzania and Nicaragua (where the Union has also connected five model schools as community ICT centres; Nicaragua now plans to connect several hundred schools in 2011, including as school-based community ICT centres); and it is implementing projects, including in Ghana, Mauritania, Niger and Tanzania, funded through a EUR 500 000 donation by France, to equip and connect schools as community ICT centres. In addition, ITU is implementing a School Connectivity project worth CHF 1 million for Comoros, Lesotho, Sri Lanka, Sierra Leone and Tanzania. In order to facilitate building wireless broadband in the developing and least developed countries in the Asia-Pacific region, ITU has been implementing the *Master plan for wireless broadband in ASP* project since January 2011.

As a follow-up to the Connect Africa Summit, the ITU/Craig and Susan McCaw *Broadband Wireless Network* project for Africa is implementing broadband wireless networks and developing ICT applications to provide free or low-cost digital access for schools and hospitals and for underserved populations in rural and remote areas in selected countries.

The Union organized five ITU *Regional Development Forums* in 2010, one for each region, and developed training materials on bridging the standardization gap and fostering the implementation of next-generation networks and broadband networks in developing countries, as well as on addressing the transition from analogue to digital terrestrial television broadcasting in developing countries.

At the recently concluded *Radiocommunication Assembly* (RA-12) and *World Radiocommunication Conference* (WRC-12), the Union established global standards for the radio interfaces for the future International Mobile Telecommunications (IMT) family of systems capable of providing wireless broadband access, and provided for the future allocation of additional radio-frequency spectrum to meet the growing requirements and permit the timely deployment of mobile broadband networks.

C2.1 Infrastructure and Broadband

Governments and other stakeholders have made significant contributions to strengthening and developing national, regional and international ICT infrastructure. These efforts have been undertaken in order to ensure digital inclusion, enabling universal, sustainable, ubiquitous and affordable access to ICTs by all.

Significant advances in the field of broadband technology have been made through the use of fibre-optics or network speed measurement systems that help to provide high-speed connectivity and wireless capacity to even the most remote areas of a region or country. It is noteworthy that most national e-strategies and policies already include a section on broadband. Many countries are pursuing the replacement of copper-based wires with the optical fibres in order to provide better connectivity.

In **Slovakia**, several strategies have been implemented that focus on broadband, including the *National Policy for Electronic Communications 2009-2013* and the *Broadband Strategy*. The National Policy for Electronic Communications 2009-2013, which was adopted by the Slovak government on 13 May 2009, focuses on the development of electronic communication within the Slovak Republic, with identified priorities such as the digital dividend, broadband and new technology development (NGN). The Broadband Strategy, adopted by the Slovak government on 13 April 2005, is aimed at improving broadband infrastructure and broadband coverage in the Slovak Republic.

In **Costa Rica**, the *Broadband Strategy* was designed with the aim of increasing coverage and penetration of broadband services, in order to provide universal access to the people nationwide. One of the main goals of the strategy is to jump from the current penetration rate of 6.2 per cent to 21 per cent in 2016 (considering 2 Mbit/s as the minimum download speed). Moreover, at least 20 Mbit/s should be available to small and medium-sized enterprises. Along with this, Costa Rica's Broadband Strategy covers social aspects and sets solidarity goals seeking full coverage of vulnerable populations, following the objectives of the *Digital Social Agreement* government technology initiative which ensures connectivity in every school and smart community centre.

There are a host of informative papers, reports and studies on the role of broadband such as:

- Intensity of Internet use in Canada[43]
- Understanding different types of Users [44]
- America's broadband dilemma [45]
- An international look at high-speed broadband[46]
- Going mobile: technology and policy issues in the mobile Internet; [47]
- OECD: Network developments in support of innovation and user needs[48]
- World Bank: Building broadband: strategies and policies for the developing world [49]
- OECD: Broadband growth and policies in OECD countries[50]
- Next-generation connectivity**:** A review of broadband Internet transitions and policy from around the world [51]
- EU: Broadband gap [52]
- Akamai: Maps showing global broadband adoption [53]
- Broadband penetration and labour productivity growth: Preliminary findings
- The impact of broadband on growth and productivity [54]
- The impact of broadband in Eastern and Southeast Europe [55]
- India: The impact of broadband (ongoing studies)[56]

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[43] http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=88F0006XIE2010002#)=eng#formatdisp

[44] http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=88F0006XIE2010002#)=eng#formatdisp

[45] www.technologyreview.com/communications/25573/page2/

[46] www.brookings.edu/~/media/Files/rc/reports/2010/0223_broadband_west/0223_broadband_west.pdf

[47] www.itif.org/files/100302_GoingMobile.pdf

[48] www.oecd.org/document/58/0,3343,en_2649_34225_44245946_1_1_1_1,00.html

[49] http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1208273252769/Building_broadband.pdf

[50] www.oecd.org/dataoecd/32/57/40629067.pdf

[51] http://cyber.law.harvard.edu/sites/cyber.law.harvard.edu/files/Berkman_Center_Broadband_Final_Report_15Feb2010.pdf

[52] http://ec.europa.eu/information_society/activities/broadband/index_en.htm

[53] www.akamai.com/stateoftheinternet/index.html#dataviz

[54] http://ec.europa.eu/information_society/eeurope/i2010/docs/benchmarking/broadband_impact_2008.pdf

[55] www.telekomaustria.com/presse/news/2010/0512-broadband-bruessels.php

- Rwanda – Telecoms, mobile, broadband and forecasts[57]
- Where jobs come from: The role of innovation, investment, and infrastructure in economic and job growth [58]
- The Internet ecosystem: Employment impacts of national broadband policies [59]
- Net neutrality: Impact on the consumer and economic growth [60]
- National broadband initiative [61]
- Annual Report 2009[62]
- The economic impact of digital exclusion [63]
- The impact of broadband on jobs and the German economy: Future investment until 2020[64]
- The impact of mobile services in Nigeria: How mobile technologies are transforming economic and social activities [65]
- The broadband bonus: Estimating broadband Internet's economic value [66]
- The impact of taxation on the development of the mobile broadband sector[67]
- Connect Africa: Broadband set to boom in Africa [68]
- New projects, new hope
- Confronting the crisis: ICT stimulus plans for economic growth[69]
- Digital highways – The role of government in the 21st century[70]
- Mobile broadband for the masses [71]
- The economic impact of broadband [72]
- What role should governments play in broadband development? [73]
- Broadband Thailand 2012 [74]
- Research and action agenda for a national broadband initiative – Technological development[75]
- NLP-BBI: New legislative paradigms fostering development of broadband infrastructure [76]
- An evaluation of the socio-economic impact of a fibre network in Switzerland
- Universal broadband service in Andorra [77]
- Accelerating the digital revolution: Broadband for Latin America and the Caribbean.

In **Tanzania,** *ICT for Rural Development (ICT4RD)* is a research and development project with the objective of designing and validating a strategy for establishing sustainable broadband markets in rural areas and proposing a national connectivity programme based on this strategy.

In the **Islamic Republic of Iran**, the establishment of the *network speed measurement system* has made it possible

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56 www.icrier.org/page.asp?MenuID=5&SubCatId=173&SubSubCatId=724

57 www.researchandmarkets.com/research/e6c2db/rwanda_telecoms

58 www.dlc.org/documents/WhereJobsComeFrom.pdf

59 www.theamericanconsumer.org/wp-content/uploads/2010/01/aci-jobs-study-final1.pdf

60 http://internetinnovation.org/files/special-reports/Impact_of_Net_Neutrality_on_Consumers_and_Economic_Growth.pdf

61 www.skmm.gov.my/index.php?c=public&v=art_view&art_id=36

62 http://eng.kcc.go.kr/user/ehpMain.do

63 www.digitalimpactgroup.org/

64 www.polynomics.ch/dokumente/Polynomics_Broadband_Study_E

65 www.pyramidresearch.com/documents/IMPACTofMobileServicesInNIGERIA.pdf

66 www.kellogg.northwestern.edu/faculty/greenstein/images/htm/Research/WP/Broadband%20Bonus%20-%20GreensteinMcDevitt-4.pdf

67 www.gsma.com/documents/the-impact-of-taxation-on-the-development-of-the-mobile-broadband-sector/19669

68 www.itu.int/ITU-D/afr/ConnectAfrica/HD_ConnectAfrica_Vol3_E.pdf

69 www.itu.int/osg/csd/emerging_trends/crisis/confronting_the_crisis_2.pdf

70 www.booz.com/media/uploads/Digital_Highways_Role_of_Government.pdf

71 www.mckinsey.com/Client_Service/Telecommunications/Latest_thinking/Mobile_broadband_for_the_masses.aspx

72 www.intel.com/references/pdfs/The_Economic_Impact_of_Broadband.pdf

73 www.infodev.org/en/Document.732.pdf

74 www.stc.arts.chula.ac.th/MBR2.0-broadband-Thailand-2015.pdf

75 www.icrier.org/pdf/16apr10/Theme%202%20-%20Mr%20Ajay%20Ranjan%20Mishra%20-%20Presentation.pdf

76 www.itu.int/ITU-D/eur/NLP-BBI/

77 www.itu.int/ITU-D/asp/CMS/Events/2010/ABBMN/S1B_Mr_Jaume_Font.pdf

to offer several features for users and service providers related to network services. The main objectives are:

- Access to technical and scientific knowledge for continuous assessment and evaluation of communication networks in various parts of the country, as well as the software and hardware infrastructure needed to measure network speed
- Access to analysis strategies, use of the information gathered and decision-making based on the information
- Design of a targeted programme of experiments on various network measurements, measuring systems and network topology designs.

The **United Arab Emirates** has embarked on a number of ambitious projects to develop the *performance of the IT and telecommunication infrastructure* and ultimately facilitate connectivity by replacing copper-based wires with optical fibre. Abu Dhabi will soon be the first capital in the world to be entirely dependent on optical fires.

In **Qatar**, 90 per cent of households and businesses will have broadband access and an open-access fibre network by 2015. Over the next five years, ictQATAR is committed to installing a next-generation, high-speed broadband network. "Broadband provides immense opportunities for social and economic growth," says ictQATAR Secretary-General Dr Hessa Al-Jaber. In March 2011, ictQATAR announced the formation of the *Qatar National Broadband Network* company *(Q.NBN),* whose mandate is to accelerate the roll-out of a nationwide, open and accessible high-speed broadband fibre-to-the-home (FTTH) network. Q.NBN will focus solely on the deployment of a passive network infrastructure, efficiently leveraging existing and new infrastructure in Qatar. This government-led initiative was developed in consultation with existing network operators, Qtel and Vodafone, and will support the development of their broadband service offerings to government, businesses and consumers. Government support will help ensure rapid deployment and seamless access in a competitive manner. Q.NBN is a fully independent company operating within the existing laws and under licence conditions issued by ictQATAR. Furthermore, ictQATAR is planning a range of initiatives to drive demand and uptake for broadband in the country. One of them entails fostering a digital content ecosystem that encourages innovation and entrepreneurship, including national digitization and cloud computing for government, enterprises and individuals. Finally, ictQATAR is leading numerous government-wide ICT initiatives and promoting ICT adoption in education, healthcare and business, as well as implementing programmes to enhance e-skills and digital literacy in Qatar.

In **Rwanda,** the project *Protecting and taking care of optical fibre* aims to deal with the preservation of optical fibre infrastructures, especially international conduits, to take care of every pipe that contains optical fibre, and to rehabilitate optical fibre installations when necessary.

In **Bulgaria,** there are several initiatives dedicated to the deployment of a sustainable fibre infrastructure. The Ministry of Agriculture and Food has conducted a review of the situation in terms of broadband Internet in rural areas. This initiative included an analysis of the situation in regard to access to the broadband Internet for the population in rural areas, and the drawing of a detailed map of broadband Internet coverage. Moreover, Bulgaria has implemented the *National Strategy for Development of Broadband Access in the Republic of Bulgaria 2007-2013*. The strategy presents a unified approach for the development of broadband, with specified social and economic objectives (To facilitate fair and reasonable access to broadband and its benefits for all Bulgarian citizens; To strengthen social cohesion through better access to online services leading to enhanced communication between people, particularly in rural and remote regions; To increase trust in the Internet, by imposing norms for security and behaviour, complying with business standards; To facilitate the innovative use of broadband by business) and technological objectives relating to connectivity, networks and infrastructure. The strategy identified the following deliverables by 2013:

- In the main cities of country, the population should have access to broadband at speeds above 20 Mbit/s, and more than 80 per cent of households should have a connection to the fibre network
- in other cities, up to 90 per cent of the population should have access to broadband at speeds above 10 Mbit/s, and more than 80 per cent of households should have a connection to the fibre network
- n rural areas, up to 50 per cent of the population should have access to broadband.

The strategy emphasizes the goals for national and international connectivity. For national connectivity, there is need to create conditions for the deployment of sustainable fibre infrastructures, providing connectivity to the major and medium-sized cities and rural areas by 2013. For international connectivity, there is need to create conditions for Bulgaria to become a part of the European fibre infrastructures by 2013, with capacities equal to those of developed European countries. A framework programme for implementation of the strategy (*National Programme*) is currently under development.

In the **United Kingdom,** *Broadband for the Rural North (B4RN)* is a community initiative to provide world-class, hyperfast fibre broadband to a rural community in the uplands of Lancashire: Lune Valley and Forest of Bowland. It will provide a Gigabit connection to every home in the eight parishes selected in phase one, and thereafter will continue to expand into surrounding areas and bridge the digital divide.

Broadband for the Rural North (B4RN), United Kingdom

In **Jordan,** the *National Broadband Network (NBN)* programme is an open-access fibre network established by the government of Jordan to support technology diffusion. It aims to connect Jordanian citizens to ICTs in various sites: public schools, universities, colleges, knowledge stations, government and health service premises, thereby contributing to the development of Jordan's educational, social, economic and health systems. It has resulted in the connection of 633 public schools, 127 government entities, 88 organizations in the health sector, 23 colleges and knowledge stations and 8 universities around the kingdom. The next step will be to develop a study on how to utilize the network to support the business sector in Jordan.

The National Broadband Network (NBN), Jordan

In **Algeria,** the *National Fibre Programme (NFP)* is a planned project for a national optical fibre infrastructure over the new national highways. The objective of the project is, firstly, to develop fibre-optic broadband networks and, further, to ensure the security and reliability of services and infrastructure on the highways.

Stakeholders continue to develop and strengthen the national, regional and international broadband network infrastructure, including delivery by satellite and other systems that provide access to new ICT-based services and improve low-cost connectivity.

In **Nigeria,** the *Communication Satellite (NIGCOMSAT-1R)* was successfully launched, orbited and tested on 19 December 2011. The wholly Nigerian satellite will provide a robust ICT infrastructure for Nigeria and Africa as a whole, and help to raise Africa's digital opportunity and access indices. It will increase Internet penetration in Africa by making Internet readily available to the underserved and unserved parts of the continent. The satellite will provide broadband access for e-government services and access across diverse user bases in Nigeria and most of Africa. The satellite infrastructure is expected to provide a platform for telemedicine, e-learning and direct-to-home services as well as deeper Internet access across geographically dispersed locations in Nigeria.

In **Qatar**, *Es'Hail,* a new high-powered communications satellite, will increase regional broadband capacity and capabilities. The high-capacity satellite will bring Qatar and the surrounding Middle East and North African region enhanced availability and quality of communications services. This means more TV channel choices and cable provider options in Qatar, and improved military surveillance and radio communications for the country's armed forces. Together, ictQATAR and Eutelstat will build and operate Es'Hail, planned for launch in early 2013. This significant venture is the first of many planned investments in satellite technology by the newly-established Qatar Satellite Company. It will help to ensure Qatar's commitment to meeting the sophisticated broadband needs required to host the FIFA World Cup in 2022. Furthermore, the television market will especially benefit from the installed base of more than 13 million satellite homes already equipped for DTH reception in this region.

In **Algeria**, the *Algerian Space Agency* contributes, in collaboration with the Directorate- General of Forestry, to implementation of the action plan to combat desertification being carried out by the Ministry of Agriculture and Rural Development. This collaboration was formalized by the establishment of the desertification sensitivity map using satellite data and geographical information systems, covering the entire national territory.

A number of countries have already effected the switchover from analogue to digital broadcasting, and many are in the process of the transition.

In **Georgia**, in accordance with the relevant decisions adopted in ITU and in the EU, switchover from analogue to digital broadcasting should be carried out during the 2012-2015 time-frame, and completed by 2015.

In **Costa Rica**, the Vice-Ministry for Telecommunications within the Ministry for the Environment, Energy and Telecommunications (MINAET) is in the process of implementing the procedure and methodology for the transition to digital terrestrial television (ISDB-Tb). The Vice-Ministry has pursued a national-level strategy to achieve this change. The transition process is expected to last seven years and will culminate in the digital switchover.

In the **United Arab Emirates**, the Telecommunication Regulatory Authority (TRA) is pursuing the vision of making UAE a *digital society* in line with WSIS Action line C2: Information and communication infrastructure. TRA has made UAE one of the first countries in the Middle East to set a deadline for the digital TV switchover and analogue TV switch off by December 2013. It has drawn up a detailed plan that provides general guidelines and a timeframe for the digital TV switchover process, aimed at maximizing the benefits of the switchover and ensuring a smooth and seamless transition to digital TV. Residents will get a better picture, improved sound quality and enhanced multimedia transmission, and digital will also offer high spectrum efficiency.

A lot of countries have also reported strategies on transport, mainly focused on *intelligent transportation systems* (ITS). These systems include the application of advanced and emerging technologies (computers, sensors, control, communications and electronic devices) in transportation in order to save lives, time, money, energy and the environment[78]. In line with the development of infrastructure, transport strategies have been elaborated to increase affordable global connectivity, boost competitiveness within regions and facilitate improved access to ICTs for users.

In **Slovakia,** the Slovak government has adopted two strategies: the *National e-Transport Strategy* and the *National Transport Strategy 2020*. The former is focused on e-transport development within the Slovak Republic, aiming to improve the country's intelligent transport systems and services. The latter is focused on transport development within the Slovak Republic for the period 2010-2020, aiming to achieve a modern, integrated and high-quality transport infrastructure, competitive transport services and easily-available, environment-friendly, effective and secure transport for users.

At the **international level**, the United Nations Economic Commission for Europe (UNECE) has continued to work on the *Intelligent Transport Strategy (ITS)* package, concentrating on the most feasible actions to be undertaken to deploy ITS internationally and to develop regulations on inland transport of dangerous goods and the use of telematics to this end. In addition, UNECE has continued formulating provisions for advanced driver assistance systems (ADAS), lane departure warning systems (LDWS) and advanced emergency braking systems (AEBS). Its *Working Party on Noise (GRB)* is working on a draft regulation for sound-generating systems (e.g. broadband sound generators) to be installed on Quiet Road Transport Vehicles (QRTV). It is notable that the *Working Party in Inland Water Transport* is promoting the use of ICTs to increase the safety and reliability of inland navigation.

C2.2 ICT for all and Connectivity for Public Access Institutions

Global and regional connectivity is essential for facilitating access to ICTs. With the aim of promoting this, governments and other stakeholders are developing strategies aimed at increasing connectivity within regions, primarily through institutions and centres that are publicly accessible to the community.

In **Algeria,** the Ministry of Post, Information Technologies and Communications has introduced the *Internet for youth and culture* project**.** This project has helped to connect 1 339 houses and hostels as well as 100 public libraries, museums and cultural centres to the Internet, and to train young people in using the Internet and ICTs.

In **Malta,** the *Public Internet Access Point* project involves setting up free WiFi Internet points at locations frequented by the community. The project is intended to promote Internet access using portable devices such as laptops, netbooks and mobile phones away from home or the office desk. The WiFi points enable visitors in these public places to connect to the Internet at any time of the day. All the Internet points are filtered against inappropriate and unlawful content so as to offer a safer Internet environment, particularly for minors.

[78] www.itscanada.ca/english/aboutits.htm

In **Nigeria,** *Galaxy Backbone* became the first public-sector organization in the country to be ISO IEC 27001:2005 certified, thereby assuring security of public data and information and building confidence in the use of ICTs for critical processes by government. Galaxy Backbone has successfully deployed Internet connectivity to about 400 schools, 200 primary healthcare centres, 154 local governments for the MDG Conditional Grant Scheme, 341 locations for FRSC (drivers' licence scheme) and 51 locations for the Petroleum Equalization Fund Management Board (PEFMB), making a total of 1 146 locations all over the country.

In addition, the National Information Technology Development Agency (NITDA) has established 200 *Rural Information Technology Centres*. These centres are reliable vehicles for providing public access to ICTs and services in rural and underserved communities. They constitute a major means of fulfilling NITDA's mandate of enhancing Internet penetration and widespread deployment of ICTs, especially in the rural areas of Nigeria. Particular attention is paid to rural areas in order to bridge the digital divide that exists between urban and rural areas in the country. Following the de-orbiting of the first Pan-African communication satellite in 2007, the project for its replacement began.

Broadband Internet Program: Bassam, Saudi Arabia

In **Africa**, the *International Connectivity Programme* has been undertaken to improve bandwidth capacity and Internet connectivity. Two projects were implemented, known as the Eastern Africa Submarine System (EASSy), which is an undersea fibre-optic cable system connecting countries of eastern Africa to the rest of the world, and the West Africa Cable System (WACS), which is a submarine communications cable linking South Africa with the United Kingdom along the west coast of Africa under construction by Alcatel-Lucent. Botswana is a member of a consortium of 16 countries which have invested in the two projects to lay undersea cables from Europe to Africa.

In **Mongolia**, the *Universal Access / Universal Service Programme (UA/US)* launched by the Information, Communications Technology and Post Authority (ICTPA) is aimed at supporting information and communications infrastructure development in rural areas of the country**.** The programme has supported effective implementation of the Mongolian government's UA strategy and improved access to telephony and Internet services in rural areas.

In the **Russian Federation**, the concept for the targeted city programme *E-Moscow (2011-2013)* was developed in 2010 by Russia's Information Society Institute under a contract with the Moscow City Department of Informatization. The resulting concept for E-Moscow (2011-2013) is aimed primarily at increasing the quality of life of the city's population by broadening the use of modern ICTs in everyday life.

In **Argentina**, since 2008, San Luis province has been providing *free broadband connectivity* throughout its 76 748 km^2 land area. This service is guaranteed by Law I-0716-2010, and as from 2011 "digital inclusion" is recognized as a constitutional right. *Digital Inclusion* is also the name of a project in San Luis aimed at providing

access and connectivity for public schools. The objectives are to:

- include students, teachers and the community in general in the digital world of the knowledge society;
- improve students' learning skills, with reference to content specified by the Ministry of Education of the province;
- expand the use of ICTs at schools, with the purpose of promoting digital literacy through meaningful learning experiences, with a positive impact on daily school activities;
- evaluate the inclusion of technologies and new contents in all elementary schools of the province.

In **sub-Saharan Africa**, mobile connectivity is a key enabler in helping to fulfil the Millennium Development Goals. More than 500 000 people throughout 11 countries in sub-Saharan Africa benefit from mobile connectivity as a result of Ericsson's *Millennium Villages Project*.[79]

C2.3 Adequate and affordable ICT equipment and services

The following initiatives demonstrate the implementation of schemes that provide affordable ICT equipment and services in developed and developing countries. These projects ensure that all users have easy and affordable access to ICTs in response to their needs.

In **Nigeria**, under the IT *Infrastructure in tertiary institutions* programme, the National Information Technology Development Agency (NITDA) has deployed computers, servers and Internet access in 36 tertiary institutions. As a result, one institution per state benefited under this programme in 2010, and a further 36 in 2011. The idea is to equip tertiary institutions in Nigeria with basic IT tools and facilities to enhance the global competitiveness of graduates.

In **Georgia**, the Educational and Scientific Infrastructure Development Agency under the Ministry of Education and Science has implemented the President's programme *My First Computer* to support teaching and learning using ICTs. As a part of the programme for 2008-2011, computers were awarded to 13 500 successful tenth and eleventh graders. Based on the results of the pilot project implemented in 2010, the programme covered all first graders in 2011, when 46 000 students and 4 000 teachers received netbooks. Since then, budget increases have been secured and the programme is set to continue in future.

In **Oman**, the Information Technology Authority has been working with His Majesty Sultan Qaboos bin Said, who has issued a *Royal Grant* bestowing one free laptop for each family in receipt of social insurance benefit that has at least one child registered in the K-12 school system, and granting one free personal computer per student from such families presently enrolled in higher-education studies. The grant also includes subsidization of the cost of a personal computer for students of higher education enrolled in the first year of study in the Sultanate, in addition to teachers who are graduates of the Government IT Training and Certification (GITTC) project. With a value of more than OMR 20 million and expected to benefit approximately 113 000 Omani citizens, these grants were established in an effort to support citizens' ability to acquire personal computers and to promote their participation in the building of Oman's digital and knowledge-based society.

In **Montenegro**, the Ministry for Information Society and Telecommunications has launched a *National PC Programme* aimed at enhancing information technology literacy in the region. The primary objective was to donate computers to citizens or organizations and institutions that do not have the opportunity to purchase computers themselves. A total of 1 865 computers have been donated, and this project has fostered considerably greater use of computers. Special attention was devoted to vulnerable groups of the population (RAE population[80], older persons and people with disabilities). Computers were also donated to hospitals, media, cultural institutions and so forth.

In **Malta**, since the launch of *PC4NGO* by the Malta Communications Authority, 250 non-governmental organizations have currently benefited from the scheme, and a total of 1 500 refurbished computers have now been deployed in NGOs. Organizations benefiting from this scheme vary from youth organizations, such as the Boy Scouts, the Girl Guides and youth centres, to the more traditional community establishments such as village band clubs.

In **Botswana**, the *Rural Telecommunications Development Programme* is aimed at providing telecommunication services to 197 underserved communities in order to bridge the digital divide and to enhance socio-economic development in rural communities. This project embraces advocacy for universal access to services for ensuring easy and affordable communication for all through the extension of network infrastructure to all areas, particularly underserved areas.

[79] ICC contribution to WSIS, www.ericsson.com/thecompany/sustainability_corporateresponsibility/enabling_communication_for_all/millenium_villages

[80] Roma, Ashkaelia and Egyptians

In **Sudan,** the *Public Key Infrastructure* has been implemented by the *National Information Centre* to securely improve quality of life and eliminate inconvenient and costly processes. Public key infrastructure (PKI) technology offers the required security foundation to provide trusted electronic services which will integrate into daily life and will revolutionize the country's development.

In **Serbia**, the Ministry of Culture, Media and Information Society has created a *Digital School*. The main goal was to supply all primary schools with the equipment necessary for modern education. An EUR 13 million Digital School programme has enabled 2 910 primary schools in Serbia (95 per cent) to be equipped with computer hardware, with close to 30 000 PCs distributed for up to 30 students per lab. Software and computer connections have been provided in all primary school classrooms. Schools in remote areas have been equipped with laptops and projectors.

C2.4 International and Regional Cooperation

This subcategory includes efforts made by various stakeholders to promote international and regional cooperation through partnerships and collaboration in the field of ICTs.

PPgis.net is an open *Forum on Participatory Geographic Information Systems and Technologies*. It serves as a global vehicle for discussing issues, sharing experiences and distilling good practices related to community mapping, public participation GIS (PPGIS), participatory GIS (PGIS) and other geographic information technologies used to support integrated conservation and development, sustainable natural resource management and customary property rights in developing countries and among indigenous peoples worldwide.

In **sub-Saharan Africa**, through partnerships with non-governmental organizations, a Cisco initiative addresses issues of poverty alleviation in five sub-Saharan African countries and assists communities and individuals in joining the global marketplace. Affordable housing, community connectivity points, online content and tools and hands-on training are the solutions applied on the ground to achieve the objectives of sustainability, replicability and cost-effectiveness.[81]

In **Georgia**, the *Black Sea Interconnection (BSI)* project, a European Commission FP7 Project – Grant Agreement No. 223572 – has been commissioned by the Georgian Research and Educational Networking Association (GRENA). The project intends to bridge the digital divide that exists between the South Caucasus countries and Europe by establishing a regional research and education network in the South Caucasus and connecting it to the GÉANT pan-European data network. It involves developing strategies for interconnecting the existing infrastructures in the region, establishing the connections and supplying operational support for the established network. The existence of interconnections between the South Caucasus countries as well as connection to GÉANT with reasonable capacities will enable the introduction of new services in the region and will be an important step towards integration of the region's scientific potential with that of Europe.

In **Azerbaijan**, the *Trans-Eurasian Information Super Highway (TASIM)* is a major regional initiative for the creation of a transnational fibre-optic backbone, targeting primarily the countries of Eurasia from Western Europe to China. The project is recognized by the international community as important for both ICTs and wider socio-economic development of the region, as reflected in the adoption of UN General Assembly Resolution 64/186 in December 2009. On 13-14 July 2011, Azerbaijan hosted the first international seminar on TASIM, in Gebele. The operators agreed to establish a project secretariat and decided to work towards an MoU to be signed during *Bakutel Expo* (23-26 November, 2011). TASIM is a long-term initiative that will be implemented in stages. The countries of the region are very different in terms of their level of telecom sector development and market needs. In more advanced countries, issues such as low latency and advanced services in IP networks have become important. In less developed countries, basic connectivity and the price of accessing the international Internet backbone are more of a priority. Strategically, TASIM will be implemented in two major stages. In the first stage, key regional countries and operators will build major transit and transport infrastructure, connecting the east and the west. The transit infrastructure will allow TASIM to become commercially viable and address the rapidly growing market for international IP transit. TASIM will build its own active, centrally managed IP/MPLS network on top of passive infrastructure provided by participating operators. It will ensure end-to-end quality and reliability of the network. While initially most income will be generated by the Europe-Asia transit business, a small but growing part of the revenue will flow from advanced service exchange among operators. Therefore, TASIM will eventually become the nexus of regional telecom interconnectivity. The project aims to build a major new transit route Frankfurt-Hong Kong that will connect the biggest exchange point in Europe with the biggest exchange point in Asia. The transit route will pass through China, Kazakhstan, Azerbaijan, Georgia, Turkey and countries of Eastern Europe on the way to Germany. A redundancy northern route passing through Russia, Ukraine and Poland is also being considered. In the second stage, TASIM will leverage the transit

[81] ICC, www.cisco.com/web/about/citizenship/socioeconomic/specialprograms/docs/CiscoAfricaInitiativePreso.pdf

infrastructure to provide affordable connectivity to land-locked countries of Eurasia, particularly in Central Asia. New fibre-optic routes can be developed in coordination with national telecom infrastructure development plans, and the old routes can be upgraded technologically to allow integration into the TASIM network. It notable that the fibre-optic infrastructure in the region is already in place. The second stage will help TASIM deliver fully on its UN mandate.

The *Broadband Commission for Digital Development* was established in May 2010 by ITU and UNESCO to highlight the importance of broadband in helping boost achievement of the Millennium Development Goals. It is chaired jointly by President Paul Kagame of Rwanda and Mr Carlos Slim Hélu, Honorary Lifetime Chairman of Grupo Carso, with ITU Secretary-General Hamadoun Touré and UNESCO Director-General Irina Bokova as vice-chairs.[82]

In **South-East Europe**, the *South East European Research Area for E-Infrastructures (SEERA-EI)* is an ongoing initiative towards the creation of a joint regional vision and strategy, to foster collaboration and a joint-call approach for development of the e-infrastructures in the region that are crucial for supporting the development of e-science. The SEERA-EI initiative will reduce the fragmentation of national programmes, create a harmonized approach to national-level e-infrastructure initiatives, ensure local commitment, and pave the way for a common regional vision, strategy and sustainable cooperation which will give the region a common voice on the European and international stage and strengthen the ERA as a whole, enabling collaborative high-quality research across a spectrum of scientific fields.

In the **Arab region**, during ITU's *Connect Arab Summit*, which took place on 5-7 March 2012, industry and government leaders identified market opportunities worth over USD 46 billion for new regionally-focused projects designed to enhance ICT access, applications and services throughout the region. The summit was convened to forge regional consensus on new strategies to boost infrastructure deployment, extend access to marginalized populations and stimulate innovation and employment across the Arab region. It closed with a communiqué, endorsed by all participating governments from across the Arab region, which sets out four key development goals articulated around Access and infrastructure; Digital content; Cybersecurity; and Innovation.[83]

[82] www.itu.int/en/broadband/Pages/broadband-commission.aspx

[83] www.itu.int/net/pressoffice/press_releases/2012/14.aspx

Action line C3

Access to Information and Knowledge

In order to maximize the benefits of various knowledge bases, stakeholders have taken a variety of actions to increase access to information and knowledge. These include:

- developing policy guidelines for the promotion of public-domain information;
- establishing legislation on access to information and the preservation of public data;
- promoting research and development through public access points, digital public libraries and archive services;
- adapting ICT infrastructure, tools and applications to help facilitate unhindered access;
- opening archives, journals and books to ensure free and affordable access to all.

UNESCO is the lead facilitator for Action line C3, and is working on several activities in that connection. On 16 March, a regional dialogue on open access was organized in New Delhi – the *Open Learning Centre Initiative*. The use of open technologies and standards for ICT accessibility has been explored through assessments of best practices in five regions, and a global report – including recommendations – will be issued in 2012. Together with the Inclusive Design Institute and the Ontario Ministry of Social Services and Community (Canada), UNESCO has contributed to development of the *guidelines for inclusive access to digital office documents*. A further noteworthy UNESCO contribution is the *Open Training Platform (OTP)*, launched in November 2011.

C3.1 Policy and Legislation

According to Geneva Plan of Action, policy guidelines for the development and promotion of public-domain information is an important international instrument promoting public access to information.[84] Governments are encouraged to establish legislation on access to information and the preservation of public data, notably in the area of new technologies.[85]

In **Algeria**, The Ministry of Post, Information Technologies and Communication is in the process of connecting establishments under the Ministry of Culture to the Internet, under a convention established on 20 October 2010, with the aim of connecting all schools in the region; currently, 109 cultural centres and 1 381 youth centres have been connected.

In **Botswana**, the Department of Telecommunications and Postal Services has launched a *Universal Access and Service Policy*. The policy was formulated as a comprehensive and balanced approach to driving the objectives of accelerated infrastructure development and provision of affordable ICT services for all. The policy framework is designed to address the needs of all communication sectors: Internet, telecommunications, broadcasting and posts. The purpose of the policy is to increase coverage and widen access to communication services. The policy is in line with objectives of WSIS Action lines C2 and C3.

C3.2 Information Access

The activities reported below illustrate the work undertaken by governments and other stakeholders to provide adequate access to public official information through various communication resources, particularly the Internet. The websites and portals set up by governments are aimed at educating people and enabling them to access information and public services. In this subchapter, particular attention is given to persons with disabilities. More than one billion people live with some form of disability.[86] Stakeholders are working towards facilitating accessibility of ICTs for all, including disadvantaged, marginalized and vulnerable groups.

In **Algeria**, the aim of the *Cyber RIF* project, funded by the Ministry of Post, Information Technologies and Communi-

[84] Geneva Plan of Action, § 10a)

[85] Geneva Plan of Action, § 10b)

[86] www.itu.int/ITU-D/sis/PwDs/index.phtml

cation, is to equip buses and library vans with communication devices and equipment. It provides access to the Internet for people residing in disadvantaged and isolated areas, providing them with places to access the Internet and enabling children to learn about ICTs.

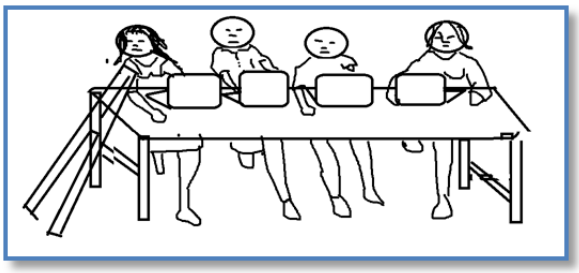
In the **Islamic Republic of Iran**, establishment of the *Internet penetration rate portal* has made it possible to collect, store by date, calculate, update and sort data on penetration rates, and generate information reports from the database.

In the **United States,** Chicago has introduced the *City of Chicago Digital Excellence Initiative.* The initiative is a USD 25 million programme aimed at ensuring that all Chicagoans have access to the necessary technological tools to compete and thrive in the 21st century.

In the **Russian Federation,** ICO Information for All has established an all-Russian network of centres for public access to public-domain information, referred to as the *Public Centre of Legal Information (PCLI)* programme.[87]

In **Algeria,** the Ministry Post, Information Technologies and Communication has launched an *e-citizen portal.* Planned as part of the National Strategy for Information Technology and Communication, launched in June 2010, the portal is one of the integrated components of the e-Algeria project, along with e-municipality and e-health. It is designed to be a single entry point, whose primary mission is to educate and inform citizens and to simplify their access to public services. In addition to several online services such as civil status, the site also includes sections on regulations, news of interest to citizens, a directory, forms and links to other reference sites.

In **Sierra Leone,** the B-Gifted Foundation has implemented an initiative called *Digital Hope*. The project exploits technologies to help the marginalized. It brings hope to amputee victims of war, enabling them to use their prosthetic limbs to access technology, and giving amputees a powerful voice in the mass media. The Digital Hope initiative provides amputees with the opportunity to use new ICTs as an extraordinary tool which they can leverage in order to bear witness to their plight, focus attention and bring hope and healing to those who are forgotten victims.



Digital hope initiatives, Sierra Leone

Integrated Approaches to Participatory Development (IAPAD) is a site aimed at sharing information and technical progress on, *inter alia*, community-based mapping and public participation geographic information systems (PPGIS). The website provides ample documentation on participatory 3D modelling (P3DM), and an efficient tool for merging indigenous technical knowledge and traditional spatial information. P3DM applications include community-based natural resources management, collaborative research and planning, resource use, control and tenure, and related conflict management.

In **South Africa,** *MoveeCom Mobile Internet Café* has been launched by MoveeCom Systems**.** This mobile Internet cafe (MIC) is less costly to roll out and maintain, and reduces information access constraints by making it easy for entrepreneurs to buy an MIC and earn revenue from servicing the market while helping the government deliver services. Furthermore, MIC will make it easier for governments and WSIS initiatives to roll out ICT access points more quickly, while having a greater impact on ordinary people.

In the **Islamic Republic of Iran,** *Ostan.ir is a* comprehensive system for connecting the provinces and an attempt to facilitate and increase ICT interaction in the region and in provinces across the country. The project's objectives include:

- Comprehensive collection of information
- Standardization of provinces' portals in accordance with the provincial pattern
- Project reports and electronic services .

In **Mauritius**, the Central Informatics Bureau under the Ministry of Information and Communication Technology has implemented the *Sankoré* project, whose objective is to facilitate the provision of education to children through innovative technological means. It involves equipping all schools with low-cost digital interactive equipment (projectors and laptops) as well as providing educational software, thereby furnishing an infinite variety of pedagogical tools for both teachers and students. This will make the

[87] www.pcpi.ru/manage/page/

teaching/learning process more creative and lively and have a positive impact on the performance of pupils, thus contributing massively to improvement of their education.

As stated above, a key target group for work on information access is *persons with disabilities*. A disability is a condition or function judged to be significantly impaired relative to the usual standard of an individual of their group. The term is often used to refer to individual functioning, including physical impairment, sensory impairment, cognitive impairment, intellectual impairment, mental illness, and various types of chronic disease. This usage has been described by some disabled people as being associated with a medical model of disability.[88]

In **Montenegro**, the Ministry for Information Society and Telecommunications has been involved in work to promote the information society among people with disabilities. In this connection, it has launched a project entitled *Portal for people with disabilities*, with the aim of fostering the inclusion of persons with disabilities in the information society. The aim of the web presentation is to enable organizations and associations to communicate fast, safely and simply, as well as to inform citizens about all aspects of life and work and all activities relating to people with disabilities in Montenegro.

Image provided by Ministry of Information Society and Telecommunications, Montenegro

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is currently supporting the establishment and development of *special tools and technology for people with disabilities*. This includes encouraging the use of special software and new technology that is able to convert voice to text and vice versa, especially in the Farsi language. This initiative has been introduced through digital media festivals, and will be distributed more widely in the near future.

In **Qatar**, in 2009 ictQATAR hosted a *Special Panel on Assistive Technologies in the Developing Countries*. The panel was attended by key local and international assistive technology experts, and focused on boosting research on assistive technologies in the developing world, best practices from other countries and potential for assistive technology commercialization in developing countries. In addition, ictQATAR has also established an independent *Centre for Assistive Technology* in Doha, dedicated to helping people with disabilities through information and communication technologies. The centre will serve as a catalyst for research and development in the field of ICT assistive technologies and create public awareness around best practices. It will also act as a vehicle for cooperation with industry partners and a platform for coordinating the efforts of existing institutions in Qatar and the region.

In **Oman**, the Information Technology Authority (ITA) has been holding *web accessibility workshops* to enhance disabled children's learning processes. One such workshop, organized in cooperation with the Association for Disabled Children, sought to disseminate information about web accessibility for children with disabilities. Attended by 16 volunteer teachers and trainers working at the Association for Disabled Children, the workshop allowed teachers to acquire knowledge on how to teach disabled children about information technology. Topics covered during the workshop included: the importance of accessibility programmes; how disabled children can use computers; and available software for disabled users. Through this cooperation, ITA is pursuing its efforts to make information technology accessible to all segments of society and to ensure everyone enjoys equal opportunities to participate in Oman's digital society and e-government initiative.

Training on Using Assistive Tools for ICT with Handicapped Children, Oman

In the **United Arab Emirates**, the Ministry of Education has launched an initiative entitled *Students with special needs in UAE***.** The Ministry of Education has adapted international standards to ensure that schools are prepared and equipped to train gifted and talented students. A modern curriculum is currently being developed to include special education in regular classrooms so that, by 2013, 62 per cent of UAE schools will become more effec-

[88] www.itu.int/ITU-D/sis/PwDs/index.phtml

tive in creating an environment in which learning for students with special needs will be integrated with the overall system.

Also in the **United Arab Emirates**, together with the Ministry of Education, TRA issued the general rules for special education programmes under the theme *School for All* in May 2010. The set of criteria adopted represents the main framework for dealing with students with special needs, students with disabilities and extraordinarily talented students. The initiative covers services and medical screening programmes for these groups, the roles of schools, teachers and specialists, the examinations system and educational considerations for each group. According to the ministry, the basics have been chalked out by teams of experts and professionals from the ministry and from universities, based on their review of practices and experiments in a number of countries in regard to the education of students with special needs.

Again in the **United Arab Emirates**, UAE Red Cresent Authority has created the *Mobile Lab* (*Computers and Internet for the Blind*). In response to directions by the UAE leadership to integrate people with special needs in the community, facilitate their lives and contribute to the planning of rehabilitation and training programmes that meet their needs, the Mobile Lab was launched as an idea in 1999 by the UAE Red Crescent. The laboratory provides the opportunity for the blind to access education, training and technical education using the Internet and e-government services, thereby integrating this segment of the population in the information society utilizing the technological advancements available in this new era.

In the **Russian Federation,** *Videomost*, supported by SPIRIT's Voice and Video Engines, enables video communication for the hearing or speech impaired. SPIRIT's Voice and Video Engine PC provides video-over-IP communications support to handicapped (deaf-mute) people in a project financed by the Korea Agency for Digital Opportunities and Promotion (KADO). KADO is devoted to providing disabled people with seamless and affordable access to information and communication services in order to significantly improve the quality of their everyday life.

C3.3 Research and Development

According to the Geneva Plan of Action, governments are encouraged to conduct research on the information society, including on innovative forms of networking, adaptation of ICT infrastructure, tools and applications in order to facilitate accessibility of ICTs for all, and disadvantaged groups in particular.[89]

In the **Russian Federation**, the Institute of the Information Society (IIS) has provided *expert advice for developing standardized ICT solutions for regional informatization***.** This resulted in the development of recommendations for implementing the regional informatization concept. A contest has also been run for the selection of pilot regions for implementation and testing of standard ICT solutions in 2008. Improvements were also made to methods of governing the development and adaptation of proposed technological solutions.

In the **United Arab Emirates**, the *National Centre for Documentation and Research* is involved in preserving millions of precious documents in paper or in electronic format, collected from various government entities and archived in special warehouses. The centre attracts more attention and focus on the different activities and events involved, thereby reaffirming its key role in serving UAE society and bridging the gap between the younger generations and history. It also deploys efforts to fulfil its national role by preserving historical documents. It provides access to such documents for decision-makers and the public in general, in order to promote a sense of belonging and valuing the national identity. The centre has instituted awards for young students, with the aim of strengthening ties between the new generation and its cultural heritage and deepening their sense of national identity, loyalty and belonging to the country. At the same time, the centre has been intensely active at the level of oral history, in an effort to document it as a complement to traditional sources.

Another relevant initiative in the **United Arab Emirates** is the *Emirates Institute for Advanced Science and Technology (EIAST).* Established by a Dubai government decree in 2006, EIAST is a UAE strategic initiative. It aims to inspire scientific innovation and foster technological advancement in the country. EIAST promises to be a springboard for promoting sustainable development and enhancing economic growth, both within UAE and beyond. The institution is well on its way to achieving its goal, with a series of significant projects in the pipeline. It plays in a key role in promoting effective means of using highly sophisticated technologies and accurate spatial information for a variety of applications. Its fourfold functional agenda includes:

- Promoting the culture of advanced scientific research and technology innovation in Dubai and UAE
- Creating an internationally competitive base for human skills development
- Positioning Dubai and UAE as a science and technology development hub among advanced nations
- Establishing international collaborative links and joint projects with industry and research organizations.

In **Algeria**, an *Academic Research Network (ARN)* has been set up by the Ministry of Post and Information Technology and Communication. The main purpose is to provide all

[89] Geneva Plan of Action, § 10g)

stakeholders in higher education and scientific research with a technological infrastructure and a set of tools to support all their communication and information needs for science and technology.

C3.4 Software and Open access

This subchapter contains information about the different software models – including proprietary, open-source and free software – that stakeholders develop and support in order to facilitate access to information. Optimal choice of appropriate software contributes to the achievement of development goals under local conditions.

In the **Islamic Republic of Iran**, the *export of software* has been supported by the Ministry of Culture and Islamic Guidance. The ministry, together with the Technology Cooperation Department of the Presidential Office, the Information Dissemination High Council and the Trade Development Organization, has been actively supporting software companies and helping them to attend international exhibition since 2008.

Image provided by ICNC Iran

Also in the **Islamic Republic of Iran,** the *optimal selection of software* and widespread application of *open-source software* has been supported by the Ministry of Culture and Islamic Guidance. In cooperation with UNESCO, the ministry is working to facilitate open-source software in the region.

In **Oman**, *free open-source software* has been launched at Sultan Qaboos University (SQU) by the Information Technology Authority. As part of the eOman strategy, the aim is to promote a spirit of cooperation and innovation among SQU students and within Omani society in general, and to spread awareness about free and open-source software.

In the **United Arab Emirates,** Red Crescent Authority has developed a software program which facilitates access to social records information. The *Social Records Search Program* saves time and effort in searching for data on recorded cases in the records department. The information contains social records for families which require assistance on a monthly and annual basis. This unique software helps eradicate poverty and improve the quality of life of underprivileged families. With such information, families in need will receive attention and their children can be re-enrolled in schools.

In the **Islamic Republic of Iran**, a d*esign portal for content sharing* has been introduced by the Iranian Consortium of National Content, with the purpose of making Iranian digital content easily accessible. Content providers can share their digital contents with users, or sell such content. Digital content may vary from books to articles, university theses, manuscripts or sound and images.

In **Tanzania**, the Tanzania Association of Managers and Owners of Non-Government Schools and Colleges (TAMONGSCO) has been involved in the development and updating of a *dynamic website*. The website is designed to enable quick and easy access for all members, particularly owners and managers of non-government educational institutions distributed all over Tanzania.

In **Mauritius**, the National Computer Board under the Ministry of Information and Communication Technology has introduced a *Community Empowerment Programme (CEP),* to empower the citizens of Mauritius in building an information society by enabling the creation and sharing of information and knowledge for community development. Initiatives include:

- Development of a community web portal – to empower people to use ICT for development, democratize access to information, facilitate networking and stimulate local content development and creativity on the Internet.
- Setting up of regional computer clubs (290 clubs in social welfare centres, community centres and day-care centres, of which 120 have been completed, enabling some 300 000 people to use the facilities).
- Establishment of 95 public Internet access points in post offices.

In **Germany**, the Gesellschaft für Internationale Zusammenarbeit (GIZ) gGmbH, on behalf of the Federal Ministry for Economic Cooperation and Development, has launched *ict@innovation – Creating business and learning opportunities with free and open-source software in Africa*.

The goal is to foster small and medium-sized enterprises (SME) in the field of free and open-source software (FOSS), through regional networking and by strengthening the consulting capacities of local ICT associations, ICT training institutions and other relevant change agents. In particular, the programme contributes to qualifying SMEs in the African ICT industry to provide localized and adapted applications and services to public administration and the private sector.

In **Bulgaria**, a *specialized software for optimizing agricultural land tenures* has been developed and introduced by the Ministry of Agriculture and Food. This involves development of applicable laws and regulations; improvement of terms, rules and procedures; establishment of a control system; and introduction of rules for the overall structure of agricultural areas, as a basis for implementing follow-up measures to develop agriculture.

Also in **Bulgaria**, an *ICT in Education* project funded under the Human Resources Development Operational Programme of the European Social Fund has been implemented by the Bulgarian Ministry of Education, Youth and Science. The programme provides free Internet, software and training to teachers, preparation of e-lessons and e-learning materials, development of e-learning platforms and certification of ICT skills. It also helps in the establishment of collaboration activities between schools, through a unified communication environment and the use of school management programmes – e-diaries, etc. The programme has also supported the establishment of free wireless (WiFi) zones in more than 130 schools, as well as pilot innovation labs for progressive technologies in education in three of the biggest Bulgarian universities.

For **sub-Saharan Africa**, the United Nations University Institute of Advanced Studies (UNU-IAS) in Japan has been involved in a project on the *Impact of Free and Open-Source Software for Sustainable Development in Sub-Saharan Africa (FOSSINA)*. Free and open-source software (FOSS) is having an impact on all aspects of ICT, ranging from supporting core ICT infrastructure to the development and deployment of e-learning, e-health, e-government and e-commerce applications. The technology has great potential for empowering individuals and communities and enabling diverse talents and cultures to collaborate with technology partners of their choice at an unprecedented rate. Developing countries are experiencing a gradual shift towards open-source technologies and services. The FOSSINA project aims to investigate the potential impact of FOSS for sustainable development in sub-Saharan Africa.

C3.5 Community Centres

In line with WSIS targets, stakeholders are encouraged to establish community public access points which could provide Internet access in libraries, public places, educational institutions and, in particular, in rural areas.[90]

In the **Dominican Republic**, the *Community Technology Centres (CTC)* programme is a strategic venture of the First Lady's Office working towards the aim of reducing the digital divide in the country. CTCs are places that provide access to information and communication technology (ICT) and to educational and cultural training programmes in rural and poor areas of the country, with the objective of democratizing access to information and knowledge, caring for people as from six years old and offering programmes and activities to everyone, without exception.

In the **United Arab Emirates**, the General Authority for Islamic Affairs and Awqaf has implemented an *Electronic System for Administering Quran Memorization Centres*. This system contains a wide range of information relating to Quran memorization centres: name, type, number, location, teachers' qualifications and experience. It also lists information on students, their education levels and their achievements at the centres, in addition to administrative information. The data collected enable the General Authority for Islamic Affairs and Endowments (GAIAE) to conduct studies and prepare reports aimed at improving the centres' performance. Quran memorization centres approved by GAIAE may access this electronic system via the GAIAE website.

In **Bangladesh**, the Institute of ICT in Development has opened a *Dhaka Resource Centre (DRC)* providing local support services for telecentres. A DRC is a district coordinating body located in a district headquarters, acting as a hub for the promotion of activities to build information and knowledge systems for all citizens. DRC is the official institution for promoting and supporting entrepreneurs and institutions in the establishment and operation of telecentres and other types of public access to information and knowledge through ICTs.

In **India**, the Network for Information and Computer Technology (NICT) Indore has introduced a *Common Service Centre (CSC)* project (Indore and Ujjain Division). CSC is a framework developed and implemented by multiple stakeholders offering an ICT-driven citizen support system which helps citizens in addressing various needs and ultimately developing a knowledge/networked society. CSC is an effort based on the model developed by NICT, coordinating various services available through an ICT-enabled

[90] Geneva Plan of Action, § 10d)

platform which can be provided through a telecentre, bringing about the blue revolution.

In **Bangladesh**, the NGOs Network for Radio and Communication (BNNRC) has launched an *Empowering communities* project, focused on strengthening and building community radio capacity in Bangladesh. The media are considered to be a tool for freedom, liberty and democracy, and for the first time the community and people of Bangladesh will have their own radio. The organization is planning to provide strong capacity-building support for effective launch of community radio stations in order to meet the overall goal of development for the poor and marginalized. The 14 initiators will become the role model for other new community radio stations in future and activities will be strengthened in a number of areas. They will help assess community needs and engage the community with local broadcasting activities, station management, news collection, etc.

In the **Islamic Republic of Iran**, the Ministry of ICT is providing *rural ICT centres*. During past five years, it has set up more than 10 000 rural ICT centres which are contributing to the establishment a sustainable ICT-based community in rural areas. The centres are equipped with four fundamental services (Internet, bank, post and telephone) and safety and anti-fire systems, and enable villagers to improve their livelihoods. Currently, some e-services such as e-assurance, e-agriculture and e-health have been offered in some centres. The government is going to offer all possible e-services in all rural ICT centres, and intends to increase the number of centres under the next five-year plan.

In **Sri Lanka**, telecentres in rural areas have been established by the Information and Communication Technology Agency. The major objective of *Nenasala*, a government-initiated telecentre project, is to create a user-friendly environment and state-of-the-art technology infrastructure throughout Sri Lanka enabling rural citizens to have ready access to information, modern communications, electronic services and content, thus improving their quality of life. Therefore, the project is geared to meeting infrastructure requirements in order to address the information and communication needs of rural areas in all parts of the country through the establishment of Nenasala telecentres and the provision of ICT-based services.

Nenasala-Telecentre, Sri Lanka

In the **Islamic Republic of Iran**, since 2010 a *National Culture Network Project* has been set up by the Ministry of Culture and Islamic Guidance, focusing on:

- Multipurpose community access points: 120 active points and 200 more to be established in 2012, especially in public libraries, universities and mosques, providing digital content and multimedia software free of charge
- Increasing ICT literacy: educational workshops tailor-made to the needs of users, held for free or at low prices
- Preparation for local content production: provision of technologies and tools to the public, for the production of digital media based on local culture produced – 28 multimedia productions in the past two years.

In **Tanzania**, Vision Traders Company has opened an *Internet café* to facilitate telecommunication services for the general public and speed up and simplify telecommunications with the rest of the world. It is also facilitating visa processing, which requires an electronic telecommunication interface, and assisting students at all levels with exam registration.

In **Sudan**, *Telecentres connecting the unconnected* is an initiative undertaken by the Gedaref Digital City Organization (GDCO).

Through cooperation between Gedaref, the Ministry of Education and other partners, a project was started for children and young people. The goal is to train children through e-learning and networks for two years, after which the child will be moved to class 4 in a government schools. The partners trained 25 teachers as trainers. A telecentre was established in Wad Almutshamir village, connected with a wireless network, curriculum was developed, and 25 laptops were provided by UNICEF. The project has been replicated in other states.

Kids in out of school project, Sudan

C3.6 Digital libraries and Archives

In line with the evolving information society, governments and stakeholders have been supporting and developing projects aimed at the creation and maintenance of digital public libraries and archives. This is a process that involves reviewing national library strategies and legislation, and fostering worldwide cooperation between libraries. Many of the following initiatives facilitate access to free and affordable journals, books and databases and open archives for scientific information.[91]

In **Mauritius**, the Central Informatics Bureau (under the Ministry of Information and Communication Technology) has implemented the *eArchives* project, and it is planned to make around 500 000 pages of historical documents available online. The eArchives project would provide long-term access to historical documents of national and cultural importance, not only for the current generation but for future generations as well. The public will be able to search and consult historical documents easily anytime and anywhere.

In **Romania**, IREX (United States) has been helping public libraries to bring e-government services to farmers. *Biblionet* is a five-year programme that helps Romanian libraries serve communities more effectively, through training and technology. In 2011, Biblionet partnered public libraries, together with the Ministry of Agriculture, to connect farmers with e-government services. At 400 public libraries, librarians helped 17 000 farmers complete online applications and receive subsidies totaling over EUR 15 million. Many more rural farmers across Romania can now benefit from this funding, taking advantage of Internet and assistance at libraries which ensure that people from remote areas can apply. In 2012, some 1 000 libraries will be included in the programme, and librarians will benefit from new standardized training on the application system.

In **Ukraine**, the *Bibliomist* programme put forward by IREX (United States) is a joint effort between civil society, librarians and government for the modernization Ukraine's public libraries to ensure all citizens have access to the information they need to improve their lives. In Ukraine, where only 17 per cent of the population has Internet access, since 2009 Bibliomist has equipped 986 libraries with public access computers and Internet, and updated thousands of librarians' skills in serving as community information guides. Most of those libraries offer e-

[91] Geneva Plan of Action, § 10h) and i)

government services. In November 2011, a total of 884 090 people visited a library offering e-government services thanks to Bibliomist.

In **Bulgaria**, an *information system for digital public archive services* has been initiated by the State Archives Agency, which will continue to be built up for the provision of digital public archive services adapted to the information society, including revision of the state archives strategy for open archives, relevant legislation and the Law for the National Archival Fund, in regard to digitization of the archive documents. The new information system for digital public archive services will in future allow people anywhere in the country and in Europe to access archived information and historical, economic, and other knowledge almost instantaneously.

In **Tanzania**, the Ministry of Education and Vocational Training (MoEVT) has implemented the *Teacher Development for 21st Century (TDev21)* pilot. The initiative is supported jointly by the World Bank and the Global E-Schools and Communities Initiative (GESCI). The broader objective of TDev21 is to build teacher capacity in sub-Saharan Africa for the effective use of technology, particularly ICT, in education. More specifically, the programme seeks to implement a globally-benchmarked competency framework for teachers at pre-service and in-service teacher training level. The framework used by this programme is the ICT Competency Framework for Teachers (ICT-CFT) developed under the auspices of UNESCO by educational and private-sector partners in 2008.

In **Qatar**, ictQatar has implemented *Website Archives***,** a website now accessible for the visually impaired. It announced on 3 December 2008 that the website had been enhanced to fully comply with the World Wide Web Consortium (W3C) level AA accessibility standard. The upgraded website, launched on the United Nations International Day of Persons with Disabilities, which celebrates the values of dignity and justice for all, is part of ictQATAR's ongoing effort to provide universal access to people with disabilities. The ictQATAR's aim is to offer a website that is accessible to the widest possible audience, regardless of visual, hearing, motor and cognitive impairments. The latest update will elevate ictQATAR's site from WAI "A" compliance to a minimum of WAI "AA" compliance according to W3C's Web Accessibility Initiative (WAI) guidelines.

In **Burundi,** the project *Digitization of libraries of 25 colleges in Burundi* seeks to address the major problem of access to documentation faced by teachers and students in countries of the southern Sahara in general and the African Great Lakes region in particular, for which there are two main reasons: poor management of libraries, and insufficient documentation in the libraries. The project will turn the libraries of selected high schools into genuine documentation and information access centres. An automatic management book will be made available through an open-source application, which will list the various books available upstream in each library and enable inputs and outputs to be managed more effectively.

In the **United Arab Emirates**, the *Al-Waraq* site is a comprehensive, free Arabic online digital library. The e-book library contains more than one thousand books on various subjects such as poetry, literature, history and language. As a cultural portal, Al-Waraq enables users to read, promotes books and inspires reading by providing visitors with hundreds of valuable books and literature. It also provides cultural audio material for the sight impaired. The *Arab Library* is a comprehensive Arabic book portal, as part of the Mohammed bin Rashid Al Maktoum Foundation's publishing strategy. The inclusive e-library comprises numerous books, poems, biographies, periodicals and articles that can be easily accessed by Arab users. This initiative responds to Arab researchers' needs, by providing them with easy access to resources. Additionally, the Arab Library contributes to the enrichment of online Arabic content, as it seeks to become the world's largest Arabic online library. The portal provides users with advanced electronic applications allowing them to communicate with the portal management team. These include polls, quizzes, the Oktub and Tarjem programmes and many other interactive services.

In Bulgaria, the National Statistical Institute put forward *Digital Library – Component II – Development of the library and dissemination* as a part of the Multiannual National PHARE Programme 2004-2006 – Europe Aid/121055/D/SV/BG. Several sustainable results were achieved:

- Integrated information library system
- Databases built up
- Internet and intranet library access
- Quick and effective automated services
- Environment for preservation of the library fund
- Integration and linkage with other libraries in the country and abroad.

During the project, 422 000 digital pages were compiled. The library has at its disposal integral technology for digitization of content and attachment of the full text files to the online catalogue. At present, the library possesses a database over 580 000 digital pages of Bulgarian national statistics since 1881.

Action line C4

Capacity Building

Information and communication technologies (ICTs) can help improve education systems and work practices through the development of skills that are particularly beneficial within the information society. Thus, the process of capacity building through delivery of education, training of teachers, lifelong-learning programmes and professional training is essential for the integration of ICT practices in these areas. This chapter cites examples of projects that reflect volunteering activities. If conducted in harmony with national policies and local cultures, volunteering can be a valuable asset for raising human capacity to make productive use of ICT tools and build a more inclusive information society.[92] Stakeholders are also working increasingly hard to remove the gender barriers to ICT education and train and promote equal training opportunities in ICT-related fields for women and girls.[93]

C4.1 ICT Literacy

The following projects are designed to eradicate ICT illiteracy and promote e-literacy skills at national, regional and international levels.[94]

In **Qatar**, in a first for the region, on 9 February 2010 ictQATAR partnered with the International Institute of Communications (IIC) to host the *Digital Communications Literacy Forum*, addressing an issue of prime concern for all, with significant implications for everyone. True digital literacy requires that people be empowered with information on how to best use digital communications to succeed both economically and socially. In what was an engaging forum, regional and international experts worked to develop a clear definition of digital communications literacy and highlight its importance in areas such as business, culture, education and creativity.

In **Georgia**, the Educational and Scientific Infrastructure Development Agency under the Ministry of Education and Science has facilitated the *development of information and communication infrastructure in secondary education*. The goal of the programme is to ensure the use of modern technologies in teaching/learning processes in Georgian secondary schools in order to create a contemporary educational environment. As a result, every student can access the Internet resource at school as well as at home. Education-cognitive games, electronic versions of textbooks and other literature are also available. In 2011, the computer-to-student ratio was 1:20 as compared with 1:200 in 2005.

In the **Dominican Republic**, the *Get ready to compete* programme targets youths and adults who cannot read and write. Under the programme, they can acquire skills and knowledge that will enable them to become literate, complete basic education and hence improve their living conditions. It also offers them the facility to track their distance studies through a digital portal.

In **Saudi Arabia**, the *Noor* programme implemented by the Ministry of Education is an educational management system that serves schools, students, teachers, parents and educational directorates, offering over 2 763 electronic services. The Noor system is a comprehensive and integrated educational process. Learning depends on very advanced technology in the field of educational administration, covering the ministry itself, its educational directorates and general departments, and all affiliated schools. The system will provide many online services for students, teachers and parents and school heads. It will also contribute to the preparation of statutory reports and provide information on the educational process, through a central database linked with other systems, present and future.

In **Tanzania**, Anster Company Ltd. has produced the *Tanzania Schools Directory,* containing information about all schools in all locations in Tanzania, including kindergarten, primary and secondary schools and higher learning institutions, and about companies offering products and services aimed at schools, in order to guide teachers, administrators, managers and parents on where to acquire scholastic services or products.

[92] Geneva Plan of Action, § 11o)

[93] Geneva Plan of Action, § 11g)

[94] Geneva Plan of Action, § 11b)

In **Malta**, *ICTforALL* is a scheme implemented by the Malta Communications Authority. The aim of the scheme is to encourage more adults from age 25 years to engage with ICT as part of their daily life. The course comprises 20 hours of training, introducing participants to a number of ICTs which will be useful in meeting their everyday needs and offer potential to enhance their employability. The course is delivered in a number of community technology learning centres (CTLCs) that have been established at different locations across Malta and Gozo, with the aim of improving access to ICT within the community. These centres are managed by NGOs or relevant competent public entities.

ICTfor all, Malta

In **India**, the Video Volunteers international community media organization has implemented the *Videoactive Girls* initiative. This initiative is focused on training participating adolescent girls in digital storytelling, video production and video-sharing skills, to cultivate greater self-confidence and self-empowerment through the learning process. A toolkit for teaching girls the craft of video, field production and ways to help implement videos for social change was designed, to enable NGOs to create and implement their own training projects that nurture, inspire and motivate adolescent girls to play a part in building their communities, and to help media literacy organizations, policy-makers, funding agencies, social-media scholars and so forth understand the ideas, concepts, implementation, logistics and assessment of media projects for girls.

In **Brazil**, the *Video Community Unit (VCU.br*) programme has been launched by Video Volunteers. This is a pilot community media livelihood programme in Sao Paolo, with a focus on building entrepreneurial skills of Brazilian youth from slums by training them in how to make a living through videos and helping them develop a one-year career plan enabling them to create meaningful documentaries in a way that would financially support them. They are not just taught how to shoot or write a script, but are also given access to mentors, advanced training workshops, support in marketing videos to distribution platforms and advice on how to pitch story ideas to the TV industry and other clients. The goal is to develop sustainable careers.

In **Argentina**, education is one of the six foundations of the *San Luis Digital Agenda* implemented by the University of La Punta. San Luis is working hard in the development of ICT facilities for society as a whole. No less than 24.39 per cent of the government's overall budget is invested in education. Well-being can only be achieved through a judicious partnership between education and ICTs, and different plans in all sectors and classes highlight the necessity of ICT training for the entire population. The activities implemented in the education sector are reported in the book entitled *Initiatives of the Digital Agenda of San Luis*.

In **India**, the Network of Information and Computer Technology (NICT) Indore has implemented *NICT – Haryana Free Computer Education*. Under this project, integrated information and communication technical labs are established in rural/urban higher secondary schools, in order to build ICT literacy in the new generation in Haryana. In total, 3 million students have been empowered by this ICT literacy project, and 20 000 teachers in various rural/urban schools have received ICT training, equipping them to use ICT as one of their teaching aids. As well as empowering rural students, the project also builds ICT capacity among local women, as they are given the opportunity to teach computing in local areas and support their

families economically. A total of 8 000 females have been trained and placed under the project

In **Mauritius**, the National Computer Board (NCB) under the Ministry of Information and Communication Technology has launched *Cybercaravan*. This project aims to make ICT facilities available to the community, especially in remote areas, targeting people who cannot afford a computer. The Board presently operates three cybercaravans equipped with PCs and broadband Internet connection. The main objectives of the project are:

- To raise the level of knowledge about ICT and the level of competence in using personal computers and common computer applications
- To promote and encourage ICT literacy
- To enhance the employability of all people, enabling them to be part of the global information society.

More than 114 000 persons have been trained in ICT awareness and Internet and Core Computing Certification (IC3) courses.

Also in **Mauritius**, the National Computer Board (NCB) has introduced the *Universal ICT Education Programme (Phase I) – Digital Literacy*, with the aim of providing basic ICT training for all. The programme is based on the internationally acknowledged IC3 course, of 45 hours duration, comprising three core modules: Computing fundamentals; Key applications (word processing/spreadsheet/slide presentation); and Living online. Training is delivered in state secondary school computer labs during weekends and after school hours on weekdays, thus putting available resources to optimum use. The course is offered at a substantially reduced price, following an agreement signed between NCB and the CyberLearning Foundation (United States). Some 140 000 trainees have completed the training programme.

In **Tanzania**, African Benedictines of Hanga has organized a project called *CONFERENCE*, aimed at enabling students to value and understand the importance of education. Through this project, the community education secretary hopes to increase local coverage and implement change by inviting people who will share their ideas in order to motivate students.

In **Saudi Arabia**, *e-training caravans* have been created by the Ministry of Communications and Information Technology. The objective of the initiative is to increase computer and Internet literacy by focusing on rural areas and low-income persons and providing free basic training on the use of ICT for individuals in all regions. This is achieved by:

- Introducing the target groups to the importance of telecommunications and information technology in society
- Identifying the multiple uses of communications and information technology
- Conducting training for the target groups to equip them with basic computer and Internet skills
- Providing an appropriate training environment for learning basic computer skills in areas where institutes and training centres are not available
- Facilitating access to government and commercial services by introducing people to government and commercial e-services projects in the kingdom
- Encouraging people in rural areas, villages and hamlets to learn to use computers and the Internet, by giving them basic skills in this area.

In the **Republic of Korea**, the Asia-Pacific Women's Information Network Centre has introduced an Asia-Pacific Economic Cooperation (APEC) training programme of *Preventive education on ICT misuse*. As a joint project between the Telecommunication Working Group (TELWG) and the Human Resources Development Working Group (HRDWG), the project was designed and approved in 2009, leading to the implementation of training for preventive education on ICT misuse based on the educational contents previously developed in 2008 by the APEC Education Foundation (AEF, Korea) and the KT Cultural Foundation. The training consists of seven different electronic booklets and 16 different flash animations translated in to six languages. There are high expectations that the establishment of a training programme under this project will contribute to maximizing preventive education on ICT misuse, as well as generating evaluations and feedback on the educational materials from APEC member economies, who will thus in turn share the benefits in the form of revised materials which they can put to full use.

In **Haiti**, *Global Vision Over Haiti Today (GVOHT)* is a private, non-profit Christian and humanitarian organization founded on 15 April 2006, whose mission is to provide consistent help and support to deprived people and earthquake victims living in diverse rural and urban communal areas of Haiti. Specifically, GVOHT has been encouraging and offering Christian training programmes, providing free education to adults and children (orphans), providing foods and supplies in order to reduce starvation, creating shelters and supporting the homeless.

In **Mauritius**, *education through ICT* is promoted by the Central Informatics Bureau, under the aegis of the Ministry of Information and Communication Technology. Several initiatives are under way to optimize the use of ICT in the education sector. The government has embarked on an e-education plan, envisaging e-education projects such as, for example, the e-education portal and school administration systems.

In **Pakistan**, the Ministry of Information Technology has set up the *ICT Labs in government schools* project, which

aims to provide IT laboratories and computer science facilities in government schools and colleges at provincial and federal level. Moreover, the project also helps and encourages students in rural areas to obtain IT education, as well as providing employment opportunities for IT graduates in the country.

In **French-speaking African countries**, the UNCTAD training course on the *production of statistics on access and use of ICT by households and enterprises* was introduced in October 2010. The training course was organized jointly with UNECA and ITU in Addis Ababa. The UNCTAD component focused on measurement of the information economy, and 17 statistician experts benefited, thereby placing French-speaking African countries in a better position to produce internationally comparable ICT data, in line with the international standards set by the Partnership on Measuring ICT for Development.

In **Qatar**, the *Qatar Assistive Technology Centre (MADA)* was opened by ictQATAR. The centre's goal is connecting people with disabilities to technologies that can improve their lives. Thus, people living with disabilities in Qatar now have access to a valuable new and innovative centre that strives to connect them to the ICTs capable of empowering them to excel in all aspects of their life. MADA, a non-profit organization, includes an interactive resource centre that showcases the latest assistive technologies (AT) and offers personal consultations for people with disabilities to identify the AT solutions that can best fit their needs, as well as training on how to use the various technologies. MADA, which also features an accessible library, is designed to be a barrier-free space for people with a wide range of disabilities.

In **Sudan**, the Gedaref Digital City Organization (GDCO) has set up an *e-learning project for out-of-school children* to develop ICT skills in out-of-school (illiterate) children who form part of a marginalized community. GDCO developed the initiative with many partners, through curricula and training modules. Each child is given a laptop and two years of training. At 8 – 12 years old, the children will be settled in classrooms in the normal Sudanese education system. GDCO will also replicate the project in rural areas, for nomadic children and the deaf community. On account of poverty and climate change, during the rainy seasons nomadic children are obliged to move with their families looking for pastures and grazing areas for their animals, in places where there are no schools, and they therefore miss classes. The project is targeting 100 000 children all over Sudan.

In the **United Arab Emirates**, the *Be'tha* programme was implemented by the Telecommunication Regulatory Authority (TRA) to provide scholarships for students specializing in the ICT sector. This capacity-building programme stems from TRA's strategy to develop human resources specializing in ICT. The initiative aims to enhance the status and role of the national education sector by supporting and sponsoring scientifically distinguished students, in order to boost the education process in UAE in all scientific majors that are geared to the country's needs. It came about as a by-product of the growing demand for UAE national specialized human resources in the telecom sector and related fields. TRA, through Be'tha, has signed a memorandum of understanding (MoU) with colleges and universities in the country to handle the selection of students and supervise them during their study periods. It has also signed another MoU with the Scholarship Coordination Office (SCO) of the Ministry of Presidential Affairs.

In **Germany**, the Gesellschaft für Internationale Zusammenarbeit (GIZ) set up the *GC21 E-Academy for Sustainable Development* on behalf of the Federal Ministry for Economic Cooperation and Development. The GC21 E-Academy is an emerging system of courses and smaller course units developed and maintained by GIZ, covering a growing range of subjects of broad interest to professionals engaged in sustainable development. Courses are regularly offered by E-Academy staff as standalone courses for individual enrolment, and they can be integrated into training programmes for specific target groups by programme divisions and other interested parties.

In the **United States**, Global Development Enterprise LLC offers an *online training and capacity-building programme for* NGOs active in intergovernmental engagement at the United Nations. It delivers in-depth training about the UN, its organs, functions, decision-making, advocacy, communications, the UN missions, protocol, working with UN documents, how to use the online document system, and so forth. The training is priced very modestly so as to be affordable for NGO representatives, interns and volunteers from developing as well as developed nations.

In **India**, the goal of the project *Creating model e-villages in north-east India* is to provide literacy programmes in villages. The project is structured as follows:

- The project is to be implemented in ten selected remote tribal villages (where agriculture is the main activity) in East Siang district of Arunachal Pradesh state in north-east India
- The selected villages should be located at the centre of the rural area, so that people from surrounding villages will have an access to the IT infrastructure
- One project facilitator will be chosen from the selected or a nearby village to act as a facilitator and trainer in the village ICT centre
- The project facilitator and a group of selected village council members will be responsible for conducting regular e-awareness and e-literacy programmes
- Regular computer training classes will be conducted for children, village youth and others

- The project facilitators will also experiment IT applications geared to local needs in agriculture, health, education, governance and other areas
- Training will be provided on the utilization of relevant products and services developed through the India Development Gateway (InDG) project, particularly for farmers and other community members.

In **Germany**, the Deutsche Telekom AG initiative *Yes, I can!* targets the acquisition of personal skills by children and young people. These skills include, among others, media competence and conflict resolution and, more generally, the initiative seeks to improve the technological and social skills of children and young people from disadvantaged environments. To date, this initiative has reached over 30 000 children and young people through 140 projects.[95]

In **India**, Video Volunteers has created *Videoshala Education Community video units* with partner NGOs on the basis of a sustainable community model. It has produced videos as classroom tools to enrich education, address hotspots, and empower the community by inculcating values of diversity and inclusion in schools. Producers are trained in video film making, editing, scriptwriting, shooting, storytelling, creating creative content, instructional design, educational pedagogy and more. Classroom facilitators are trained in classroom facilitation and teaching techniques, how children learn, administering worksheets, carrying out student activities and involving teachers in the video screening process. The films are screened in 200 schools throughout the state of Gujarat, India.

JEI's Public-Private-Partnership Model is project implemented by **Jordan** Education Initiative (JEI). The JEI focuses on enriching the students with new experiences to deal with the 21st century challenges and requirements, and bring in 21st century teaching and learning for teachers, principals and students. Also, JEI brings new innovative solutions in education, such as Interactive White Boards, 1:1 Technology and web e-learning resources; and new partnerships have been introduced. 80000 students, 3000 teachers in 100 public schools in Jordan called Discovery schools, have benefited from the work done by the JEI in addition to many partners and partnerships that have been emerged among global partners, local partners and the government.

Discovery Schools as a Technology HubJEI, Jordan

By virtue of its dynamic partnerships with the government of **Jordan** and the global and local private sector, JEI was able to leverage grassroots expertise to develop a comprehensive school-based educational and technology model that is being implemented in 182 public schools in Jordan. The model aims at transforming teaching strategies from didactical teacher centric to student lead and spurring innovation, creativity and leadership in the minds of students. This model is built on five major pillars; Technical Infrastructure, E-Resources, Professional Development, Change Management and Sustainability. JEI continues to introduce innovative technologies in remote and less fortunate public schools.

C4.2 National policies

National educational and capacity-building projects serve to eradicate illiteracy and to ensure young people are equipped with the knowledge and skills necessary to use ICTs effectively and participate actively in the information society[96].

In **Sudan**, an *Authorized Training Centre in IPv6* has been set up by the National Telecommunication Corporation as an essential part of the national IPv6 migration plan (2011-2015). The National Telecommunication Corporation (regulatory authority) signed an MoU with The University Sains Malaysia National Advanced IPv6 Centre (USM-NAv6) (Malaysia) to establish an authorized training centre to deliver CNE6 Level 1, 2, and 3. Eight participants from various institutions in Sudan attended train-the-trainer courses at NAv6 in March 2011. The team established the Authorized Training Centre in IPv6 and set up a virtual testing lab for IPv6. The participation is free of charge, so as to reach a wide range of ICT stakeholders in Sudan. In the first year (2011), 12 sessions were attended

[95] ICC contribution www.telekom.com/dtag/cms/content/dt/en/676024

[96] Geneva Plan of Action, § 11d)

by a total of 347 participants, 182 of whom obtained certification.

In **Poland**, *Lighthouse Keepers* is a national digital literacy programme created in partnership with the Ministry of Administration and Digitization, relying on the recruitment of 2 600 local community leaders (so-called "lighthouse keepers). Lighthouse keepers (one in each municipality) are helping at least 54 000 adults aged 45+ to get online through informal training approaches. All lighthouse keepers will receive certified training, tools useful in their work, including a social portal, and will be supported by a promotional campaign and social research team. Some 200 lighthouse keepers will receive grants for educational projects in their communities.

In the **Islamic Republic of Iran**, the Ministry of Education has created *ICT Garden*, a five-year plan to incorporate ICT in all educational processes in the country. This project has provided a national blueprint for the use of ICT in all schools, with the aim of creating an ICT-enriched school environment. Its goals are to:

- Develop domestic policies
- Develop programmes to eradicate illiteracy using ICT
- Promote e-literacy skills
- Train creative students.

The steps involved are:

- Connect 75 000 schools to a national educational Intranet
- Install computer equipment in 310 000 classrooms
- Develop a national portal linking many web applications (virtual laboratories, digital libraries…)
- Train teachers
- Develop curricula.

ICT Garden, Islamic Republic of Iran

In **Oman**, the *National IT Training and Awareness Framework Initiative (NITTA)* is a government, nationwide e-Oman initiative aimed at developing ICT skills capability and increasing ICT awareness within the government and the community. Launched by the Information Technology Authority, NITTA consists of *Government IT Training and Certification (GITC)*, *Community Knowledge Centres (CKCs)*, *Women's Community Knowledge Centres (WCKCs)* and *Community IT Training (CITT)*. Across the country, there are currently ten CKCs (14 000 citizens trained) and nine WCKCs (2 000 women trained). The total number of citizens trained so far stands at about 70 000. Continuous training efforts and plans are in place to equip all citizens with ICT skills.

Education Portal, Oman

Furthermore, the Information Technology Authority has also created an *Educational Portal* as a one-stop shop for teachers, parents, students and administrators in **Oman** , The online portal, which was established by the Ministry of Education with a vision of adapting Oman's international ICT strategy and leveraging its impact on education, functions as a communication tool between the users – parents, students, teachers and administrators – through learning applications, discussion platforms, social media, sms services, archiving, finance models and other user facilities. It ensures transparency, accuracy, rapidity, availability and cost reduction. Currently, some 14 046 teachers, 1 052 administrators, 180 991 students in 300 schools and 111 892 parents are using the system to carry out daily transactions. The future plan is to connect every single school and user in the country.

In **Nigeria,** a *Special Session on the Advancement and Empowerment of Women through ICTs* was organized in March 2011 by Jidaw.com**.** This special session celebrated the achievements of women in ICT, in order to inform and encourage women and men, having regard to the impact women have in ICT. The session was also an opportunity to sensitize the public and create awareness about policies, practices and actions that are needed for the advancement and empowerment of women through ICTs.

In **Pakistan,** a *literacy centre for women* has been set up by the Better Education for All (BEFA) foundation in Rawalpindi as part of literacy promotion in the region.

In the **Dominican Republic**, *Women on the Net* is aimed at obtaining equal access to higher-level training opportunities in the ICT industry for young Dominican poor, in the different domains such as telecommunication networks, programming and multimedia. This programme contributes to reducing the digital, social and gender divides. On completion of the training, students receive CISCO Networking Associate or Cisco Certified Networking Associate certification.

In the **United Arab Emirates**, the *Education Strategy* is a new education strategy for 2010-2020, announced by the Ministry of Education and the Telecommunication Regulatory Authority (TRA), that identifies a "suitable environment for students" as a key pillar of focus. The ministry has addressed current challenges and identified solutions to equip students with life skills and relevant knowledge in order to raise a well-educated generation. The strategy aims at producing school graduates who are trained to inquire, think critically, analyse and communicate effectively, and are thereby prepared for the challenges of the future job market, armed with professionalism and commitment.

In **Georgia**, the Ministry of Education and Science's Educational and Scientific Infrastructure Development Agency has been working to facilitate the holding of *certificate exams online*. In 2010-2011, the ministry developed a system for conducting certificate exams online simultaneously in all secondary schools. The first exams were held in summer 2011. Students took the exams in their own school, using computers. Certificate exams were organized in computer adaptive testing (CAT) format. The CAT system is adapted to the ability of each student. Exams were held in eight subjects under centralized management and control, the exams in each subject being organized online on the same day in several sessions in all general educational institutions. The programme individually evaluates the knowledge of each student, and candidates receive the results straight after finishing the test. The results are compiled in the central database.

C4.3 ICT for professionals and experts

These initiatives are undertaken by governments, private-sector enterprises and other stakeholders to train employees and develop ICT skills. The aim is to create an increasing number of qualified and skilled ICT professionals and experts.[97]

In **Mauritius**, the National Computer Board (under the Ministry of Information and Communication Technology) has launched the *Universal ICT Education Programme (UIEP) – Phase II*. This initiative is in line with the WSIS action line advocating e-learning for capacity building, offering more than 2 700 online professional IT and non–IT courses at very affordable prices to all those who have a recognized certificate in IT. The main objectives of the programme are to:

- Democratize access to quality content online
- Create an adequate pool of IT professionals to drive the growth of the IT industry
- Promote e-learning.

In **Bulgaria**, the Bulgarian Institute of Metrology launched Project BG 2005/017-353.02.02 on the *Further development of a national conformity assessment system and metrology infrastructure: Component 1: Fundamental metrology technical assistance for the Directorate-General "National Centre of Metrology" (DG-NCM)*. The project aims to support capacity building for maintaining an efficient knowledge-management system, which can be applied by experts in their work, thereby adding value by leveaging the national metrology institute's intellectual and knowledge-based assets.

In the **Russian Federation**, the Institute of the Information Society (IIS) is developing *ICT training programmes for employees of government authorities,* on the basis of a

[97] Geneva Plan of Action, § 11e)

state contract between the Federal Education Agency and IIS. In 2007, three documents were produced as part of the Electronic Russia 2002-2010 initiative. These documents included the Concept of ICT training for government officials, the Package of standardized programmes for government ICT training, and a set of methodological recommendations for the training process. The general principles of the distance-learning approach were determined taking into account the differences in personnel requirements and in levels of Internet access in the various categories of organizations and target audiences. The skills and knowledge sets necessary for each segment of the target audience were also identified. As a result of activities carried out in 2008, a complete set of training materials, instructions and electronic versions of study modules were developed for government employees.

In **Kenya**, *Digital Villages (Pasha centres)* has been launched by Global Exim Ltd in order to empower local entrepreneurs with capacities to enable them to provide ICT facilities.

In **Bangladesh**, *community radio training* in line with the WSIS Action Plan is being offered by the Bangladesh NGOs Network for Radio and Communication. The aims are to:

- develop a dynamic community drama programme on issues of transparency and anti-corruption
- develop training modules and associated materials for community radio (CR) practitioners
- provide training for CR practitioners (50 journalists on each issue)
- facilitate seven community radio/government dialogue forums in each division, with 75 government officials, CR practitioners and members of advisory committees in each forum, discussing roles and responsibilities for implementing CR
- conduct six regional workshops, with 75 participants in each workshop (representatives of the comptroller and Auditor-General and the Anti-Corruption Commission and CR practitioners) to discuss the role of CR in reducing corruption.

In **Tanzania**, *Ingénieurs du Monde* has created a brief presentation of the *Kilimanjaro International Institute for Telecommunications, Electronics and Computers (KIITEC)*. This technical institute aims to equip students with entry-level skills in Internet, telecommunications, electronics and computers related to maintenance and development of cellphones, TV sets and personal computers.

The Technical Centre for Agricultural and Rural Cooperation (CTA) has developed a *Training Kit on Participatory Spatial Information Management and Communication*. Co-published by CTA and International Fund for Agricultural Development (IFAD), this training kit is a unique product that can be tailored to meet business needs, ensuring that employees get the best training available on participatory spatial information management and communication. The training kit contains 15 modules, each presented through a series of units. Modules cover the entire spectrum of good developmental practice – from mobilizing communities to developing a communication strategy based on the outcome of participatory mapping activities. The modules touch on topics such as the fundamentals of training, ethics and community groundwork and processes, as well as the more technical low-, mid- and high-tech participatory mapping methods.

In **Nigeria**, *ICT usability training* was introduced by the Ministry of Communication Technology. The ministry, through Galaxy Backbone Plc and the National Information Technology Development Agency (NITDA), has organized ICT usability training for more than 5 000 civil servants. The training covers government officials in the three arms of government, including directorate cadre officials of federal government ministries, departments and agencies, members of the National Assembly and the judiciary.

In **Sudan**, *Capacity Building in IPv6* was launched by the National Telecomunication Corporation (NTC). Eight participants from various government institutions in Sudan attended professional training and certification at NAv6 in March 2011. As a result, NTC was able to establish an *Authorized Training Centre in IPv6* in Sudan and train, nurture and develop local expertise in IPv6.

In **India**, the *Rural Technology and Business Incubator (RTBI)* enables capacity building for people at the bottom of the social pyramid and in underserved areas, by supporting socially and rurally inclusive startups. Prior experience is not always available in these segments of the population, so in order to foster rural/social inclusion RTBI also undertakes various exploratory trials, pre-incubation experiments and business and field trials, as well as technology innovation work in the areas of agriculture, financial inclusion, healthcare, energy, and such like. Development and prototyping of relevant, low-cost technologies is a core value that RTBI brings to its companies.

Initiated and coordinated by ICVolunteers, the *E-TIC.net* project aims to provide tools and training components to make small farmers, herders and fishermen better able to sell their products. Through the creation of this portal and a series of training courses for field connectors (youth, women, community radio journalists), the E-TIC project aims to provide relevant knowledge for efficient and effective farm management.

Image submitted by RTBI

In **Bulgaria**, the Ministry of Physical Education and Sports has implemented *Modern Practices and Innovative Services in the Field of Youth Development and Sport*. The aim of the project is to enhance the quality of the process of providing administrative services to users and achieve higher public satisfaction through:

- improvement of traditional channels for the provision of services through integration, diversification and introduction of new technologies
- development of mechanisms for consultations with users about the quality of services provided.

The project targets both individuals and business, as well as employees within the administration of the Ministry of Physical Education and Sport.

In **Ukraine**, the National Commission for Communications Regulation (NCCR) has implemented *electronic communications regulatory training* dispensed by the European Bank for Reconstruction and Development (EBRD). The main training objective is to demonstrate leading European experience in the field of electronic communications regulation, with the aim of identifying the necessary changes to develop a favourable environment for investment in the electronic communications sector in Ukraine, which will in turn promote increased investment. The training comprises eight modules, ranging from an overview of the sector to modules on scarce resources and regulatory effectiveness.

C4.4 Distance Learning

Stakeholders continue to work on developing distance learning as part of capacity-building programmes[98] as it enables ICT users to learn and work without the restrictions of time or distance. Projects in this category are designed and implemented by governments, international organizations and enterprises to meet the customized needs of employees and citizens.

Also in **Qatar**, ictQATAR has launched the *Qatar National e-Learning Portal* that offers more than 2 500 online courses to government employees, on a variety of topics, including: business, IT, computer skills, human resources, marketing, personal development and management. The Qatar National e-Learning Portal offers certified courses that will help citizens advance their careers. The new portal allows for a more personalized approach to learning, and can help employees set goals and track progress more effectively. It has an individually designed page for each government ministry and entity, allowing for customized learning to meet the needs of their specific employees.

In the **United Arab Emirates**, Zayed University have set up multiple facilities at the new campus in Abu Dhabi in order to support *distance-learning programmes* on a larger scale. In addition, there are plans to establish similar facilities at the Dubai campus during the 2011-12 academic year. The library budget has earmarked increased spending on e-resources, from 49.39 per cent in 2007 to 52.35 per cent in 2010, reflecting Zayed University's commitment to making the library resources as accessible as possible, which will greatly facilitate distance learning at the university.

In the **Russian Federation,** *VideoMost.com* for distance education and socialization of disabled children has been launched by Videomost**.** SPIRIT DSP[99] provides the Moscow state centre of distance education for disabled children with its innovative VideoMost.com videoconferencing software. Disabled children studying remotely at the Moscow state educational centre use Mac computers, webcams, scanners and special equipment.

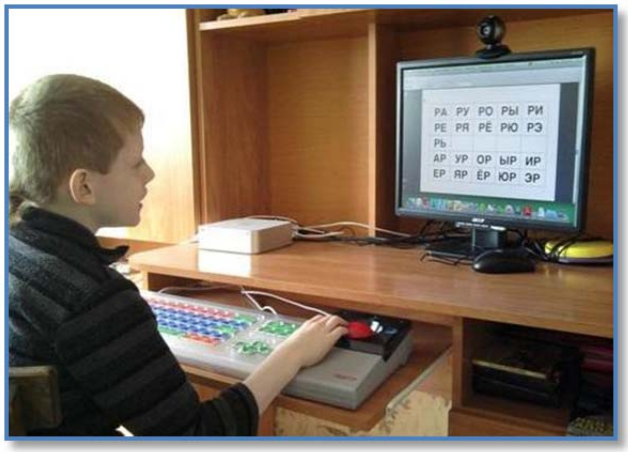
The children are also provided with Internet connections within the framework of the *Development of an informational educational environment for disabled children* carried out by the Moscow Department of Education. The VideoMost videoconferencing software has the capability to support individual and group e-lessons, lectures and seminars with up to 30 participants, thereby providing

[98] Geneva Plan of Action, § 11l)

[99] www.spiritdsp.com/company/about-spirit/

more efficient education. Group sessions are very important both for education and socialization.

Korea_SPIRIT's Voice and Video Engine for deaf-mute people video communication, Videomost.com, Russian Federation



Distance education and socialization of disabled children,VideoMost.com, Russian Federation

C4.5 International and Regional Cooperation

Initiatives are designed to promote international and regional cooperation in the field of capacity building. This includes projects developed by the United Nations, its specialized agencies and other organizations.[100]

For **Central Asia**, the United Nations Economic Commission for Europe has implemented a technical cooperation project *Capacity-building for ICT Policy-making* to support five central Asian countries plus Azerbaijan in developing national e-strategies. In 2009, it organized a conference on *Technological Readiness for Innovation-based Competitiveness: Promoting an Enabling Information and Communication Technology Policy and Regulatory Framework*. It worked jointly on the project *Knowledge Networks through ICT Access Points for Disadvantaged Communities* in Central Asia, which facilitated the creation of the Eurasian Telecentre Network. The main activities are carried out in the framework of the UN Special Programme for the Economies of Central Asia (SPECA), supported by the Project Working Group on ICT for Development and the Project Working Group on Knowledge-based Development, and include organizing a wealth of capacity-building activities on ICT policy development.

The **global** initiative *Telecentre Women Digital Literacy Campaign,* initiated by the Telecentre.org Foundation, is aimed at helping to empower disadvantaged women and women from underserved communities through knowledge of ICTs, for personal growth and expanded opportunities for better lives. This initiative's target is to reach out to one million women who are as yet unaware or deprived of ICTs, and also help them acquire digital literacy via telecentres and telecentre networks throughout the world. As at December 2011, over 100 000 grassroots women have already been trained in ICTs.

The World IT Forum (WITFOR) has put in place an *International Federation for Information Processing (IFIP).* The overall goal of WITFOR is to assist developing countries in developing and implementing sustainable strategies for the application of ICT, and to share experiences that will help to bridge the digital divide and improve quality of life. Its specific objectives are:

- To share and discuss experiences in drafting and implementing ICT policies
- To share and discuss experiences in initiating and implementing ICT projects
- To present and discuss research concerning the overall goal.

WITFOR examines different initiatives on effective, context-sensitive development and use of ICT applications, access to high-quality relevant information and the development of "fair use principles".

The Gesellschaft für Internationale Zusammenarbeit (GIZ) gGmbH, on behalf of the Federal Ministry for Economic Cooperation and Development of **Germany**, has implemented *regional capacity building for e-learning*. The programme consists of three components:

- E-Skills training: Modularized training courses for employees and decision-makers from educational and vocational institutions
- E-institution building: Individual training approach closely related to institution building, supporting the establishment of e-learning competence centres
- E-network building: GIZ has actively initiated and supported communities of practice and networks in the field of e-learning in the Southern Africa Devel-

[100] Geneva Plan of Action, § 11m)

opment Community (SADC), the East African Community (EAC), Latin America, South-east Asia, Central Asia and the Caucasus.

In **Kenya**, a *Technical Industrial Vocational Education and Training (TIVET) Baseline Survey* has been launched by the GESCI (Kenya). GESCI, in collaboration with the Ministry of Higher Education Science and Technology (MoHEST), carried out a TIVET ICT baseline survey in 38 public TIVET institutions (88 per cent). The baseline survey looked at policy, curricula, pedagogy, infrastructure, management, and so forth in TIVET, and provided a starting point for the strategy development process that has now been initiated and will be concluded during 2012.

Image provided by ALICIT

In addition, GESCI is developing an *African Leadership in ICT (ALICT)* course that will help build leadership skills for social and economic development in Africa. ALICT is an African Union initiative, supported by Finland and implemented by GESCI (founded by the UN ICT Task Force). The course vision is to work with future African leaders in ministries and organizations to advance the knowledge society across Africa. Course objectives are to equip future African leaders with a commanding understanding of the key elements in the development of knowledge societies, and build future leaders' capacities to be agents of change in their ministries, organizations and regions for the development of the knowledge society.

TVET Baseline Survey, Kenya

In the United **Arab Emitares**, the Dubai School of Government (DSG) is a research and teaching institution focusing on public policy in the Arab world, established in 2005 under the patronage of HH Sheikh Mohammed bin Rashid Al Maktoum, Vice-President, Prime Minister of UAE and Ruler of Dubai, in cooperation with the Harvard Kennedy School. DSG aims to promote good governance by enhancing the region's capacity for effective public policy. The school collaborates with regional and global institutions in its research and training programmes. In addition, it organizes policy forums and international conferences to facilitate the exchange of ideas and promote critical debate on public policy in the Arab world. DSG is committed to the creation of knowledge, the dissemination of best practices and the training of policy-makers in the Arab world.

Kidsmart Guide to Early Learning and Technology is an IBM initiative that involves partnerships with early-learning organizations and ministries of education to establish learning centres, making IBM computer hardware and educational software available to 3-6 year old children from low-income families, in the United States, Europe, the Middle East and Africa. The goal is to address social needs and reduce the digital divide between such children and their peers, by offering greater opportunities, as well as providing high-quality training for teachers and involving parents.[101]

The *European Alliance on Skills for Employability* was launched by Microsoft, Cisco and CompTia, in partnership with the European E-Skills Commission, to provide IT, technical and other employable skills for people from disadvantaged groups, thus contributing to employability and inclusion in Europe.[102]

Connect To Learn is a collaborative effort between Ericsson, the Earth Institute and Millennium Promise that leverages the power of ICT to bring a high-quality education to students everywhere.[103]

The *Graduate scholarship programme in the field of ICTs* was submitted by the Ministry of Industry, Tourism and Trade of **Spain**. The project, managed by ITU, aims to provide graduate scholarships in ICTs to students with a high level of knowledge of Spanish.

In **Latin America**, UNCTAD delivers training in *Legal Aspects of E-commerce* in Latin America. In **Latin America and the Caribbean**, activities continued to be conducted in partnership with UNCTAD's *TrainForTrade* programme. A face-to-face *Workshop on the legal aspects of e-commerce* was organized February 2011 in La Paz, Bolivia, on means of further harmonization in the region, following the delivery of a distance-learning training course on the same subject for 210 participants from 19 SELA (Latin American and the Caribbean Economic System) member countries in November 2010. A new edition of the distance-learning course on legal aspects of e-commerce was delivered in October-November 2011, for another 192 participants from 17 countries, with the cooperation of SELA and the support of the government of Spain

[101] ICC contribution www-05.ibm.com/dk/ibm/ibmgives/pdf/kidsmartEvalueringsreferat.pdf

[102] ICC contribution www.employabilityalliance.eu/upload/polish_factsheet.pdf

[103] ICC contribution www.ericsson.com/thecompany/sustainability_corporateresponsibility/enabling_communication_for_all/connect_to_learn

World Summit on the Information Society
Turning targets into action

Action line C5

Building confidence and security in the use of ICTs

Confidence and security play an essential role in the information society. Governments, in cooperation with the private sector, are working to prevent, detect and respond to cybercrime and misuse of ICTs by: developing guidelines that take into account ongoing efforts in these areas; considering legislation that allows for effective investigation and prosecution of misuse; promoting effective mutual assistance efforts; strengthening institutional support at the international level for preventing, detecting and recovering from such incidents; and encouraging education and raising awareness.[104] Thus, the projects reported on in this chapter showcase how stakeholders are contributing on an ongoing basis to building confidence and security in the use of ICTs, based on the following work areas: legal measures, technical and procedural measures, organizational structure, capacity building and international cooperation.[105]

Being the lead facilitator for Action line C5 (Building confidence and security in the use of ICTs), ITU has made available to the international community a global platform for dialogue, coordination and cooperation. During the 2011 WSIS Forum, ITU organized a *Facilitation Meeting* on Action line C5 and a *High-Level Panel on Cybersecurity*. Moreover, in collaboration with the United Nations Department of Economic and Social Affairs (UNDESA) and the Inter-Parliamentary Union (IPU), the Union organized the fourth *Parliamentary Forum,* on t*he Triple Challenge of CyberSecurity: Information, Citizens and Infrastructure*.

The ITU *Global Cybersecurity Agenda (GCA)* provides the framework within which the international response to the growing challenges to cybersecurity can be coordinated and addressed. Within this framework, the Union has continued play a key role in the global community, through partnerships and initiatives. *ITU IMPACT* has provided cybersecurity services and capabilities to 140 countries and, together with the United Nations Office on Drugs and Crime (UNODC), ITU is assisting Member States in properly addressing cybercrime.

Within the framework of the GCA, the *Child Online Protection (COP)* initiative brings together partners from all sectors of the global community to ensure a safe and secure online experience for children everywhere. In 2010, ITU COP, under the patronage of the President of Costa Rica, H.E. Laura Chinchilla, launched the *COP Global Initiative* with high-level deliverables to implement the COP guidelines.

C5.1 Legal Measures

As part of *ITU-D Programme 2: Cybersecurity, ICT applications and IP-based network-related issues,* ITU is assisting Member States in understanding the legal aspects of cybersecurity in order to harmonize their legal frameworks.

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is working on cooperation for compilation of the *Law on Cybercrimes*. The law should specifically assert the security and confidentiality of private information in the digital environment, and consider as a crime any sort of unauthorized access to private individuals' information or the publication, distortion, omission and use thereof. Security and confidentiality of information in the digital space will thus be underpinned by a solid legal foundation.

In the **United Arab Emirates,** there are a number of *cyber-related laws* that are essential in order to create an ethical and safe environment for the development of society. The following cyberlaws and related legislation have a direct or indirect impact on the cyberenvironment:

- Federal Law No. 7 of 2002, on copyrights and neighboring rights
- Federal Law No. 2 of 2006, on the prevention of information technology crimes
- Federal Law No. 1 of 2006, on electronic transactions and commerce
- Data Protection Law of 2007.

This set of laws covers aspects ranging from protection of online digital content and prevention of cybercrimes to

[104] Geneva Plan of Action, § 12b)

[105] http://groups.itu.int/cybersecurity-gateway/HOME.aspx

setting frameworks for online transactions and rules for data protection.

The **United Arab Emirates** has also been working on a policy for *Spam*. The regulatory policy entitled *Unsolicited Electronic Communications Regulatory Policy* was published in July. It is designed to minimize promotion and advertising messages sent without consent (Spam) to consumers, with a current focus on mobile SMS messages. The policy includes obligations for licensees and instructions requiring them to take appropriate measures to fight spam and to give their consumers the choice to receive or not to receive marketing messages. By the policy's date of entry into force, all consumers should have received messages from their respective service providers requesting their permission in regard to the latter's marketing messages. The policy has been built around the consent model, which requires the approval of the recipient for the receipt of any marketing messages.

In 2010, technical assistance activities carried out by UNCTAD included activities aimed at facilitating increased *regional harmonization of cyberlegislation*, with projects in Africa, Asia and Latin America.

In **East Africa**, UNCTAD is following up on *capacity building on ICT and law reform* provided to the East African Community (EAC) states. As part of the programme for the harmonization of cyberlegislation in the five EAC states, three events were organized in 2011 by UNCTAD in cooperation with the EAC secretariat. Two regional meetings of the *EAC Task Force on Cyberlaws* (in Kenya and Tanzania) took stock of progress made in the implementation of Phase I of the EAC Legal Framework for Cyberlaws and discussed and endorsed Phase II, covering issues such as competition, intellectual property rights, taxation and information security.

Kenya mobile money, UNCTAD

In **Central America**, the *Study on Prospects for Harmonizing Cyberlaws in Central America and the Caribbean* (November 2010) looks at seven countries in the region. The study describes the current state of cyberlegislation, focusing on online transactions and electronic signatures, consumer protection, protection of privacy and personal data, cybercrime, intellectual property and domain names. It not only describes each national regulatory framework, but also allows for comparison across the region. The *Study on Prospects for Harmonizing Cyberlegislation in Latin America*, published in Spanish in 2009, has been also released in English**.**

In **Algeria**, the Ministry of Post, Information Technologies and Communication conducted a study of implementation of the *national map of desertification sensitivity* through the use of satellite data and geographic information systems. This is a valuable tool for supporting decisions in regard to the implementation of a plan of action against desertification under the five-year programme from 2010 to 2014.

C5.2 Technical and Procedural Measures

In order to identify cyberthreats and countermeasures to mitigate risks, ITU has developed an overview of security requirements, guidelines for protocol authors and specifications for IP-based systems.

The **Islamic Republic of Iran** is working on *migration to IPv6***.** As the number of IPv4 addresses continues to shrink, the Internet engineering community decided to work on developing a new protocol with a larger number of available addresses to take over from IPv4. The purpose of this project is to prepare and make practical arrangements for the transition from IPv4 to IPv6. Sponsors are called upon to carry out in-depth research and studies for the migration and to disseminate practical experience and scenarios, for practical implementation in the network in cooperation with the information and technology company.

In **Nigeria**, the *Galaxy Backbone* went through 18 months of ISO 27001:2005 certification and was certified in September 2011. The certification requires adherence to strict *information security management system (ISMS)* standards and regulations. The initiative therefore ensures confidence in the use of Galaxy data and infrastructure services by government agencies and the Internet community in Nigeria. Galaxy became the first public institution in Nigeria to be so certified.

In **Bulgaria**, the Commission for Personal Data Protection (CPDP) ensures the protection of individuals in regard to access to and processing of their personal data. CPDP recently launched the *E-RALD online electronic system*. Pursuant to Article 10, §2 of the *Law for the Protection of Personal Data*, the commission has the legal obligation to maintain a database of all personal data controllers on the territory of Bulgaria. For this purpose, an online electronic database system was introduced, which allows personal data controllers to notify and send the required data to the commission online, thus saving time and effort. This

implementation of ICT technologies is in line with the national e-government strategy.

In **Mauritius,** the government is developing an *Information Security Risk Assessment Approach for Government* based on latest ISO/IEC 27000 series international standards. The project consisted in developing an information security risk assessment approach for the government in the context of implementation of the information security management system (ISMS) under ISO/IEC 27001. The approach makes use of additional standards, namely ISO/IEC 27002 (code of practice) and the more recently developed ISO/IEC 27005 (risk management). The innovative aspect of this approach is that it makes use of an integrated combination of both qualitative and quantitative methods applicable to organizations in any business sector. The approach is valid for any ministry/department, and has been tested at a specific site which achieved successful certification in 2011.

In **Argentina**, after implementing the *public key infrastructure (PKI)*, the San Luis government launched a plan to provide all citizens with an identity document that guarantees their digital identity and allows them to digitally sign any electronic document (www.cipe.sanluis.gov.ar). In order to track all administrative records, San Luis implemented an extensive digitally-signed document management system (www.docu.sanluis.gov.ar), thereby saving paper and printing resources. The portal www.puntano.net allows inhabitants to carry out transactions with the administration using their digital document.

In **Qatar,** *Qatar-specific Arabic domain names* became available starting in March 2011, with government entities and registered trademark holders being given priority during the registration launch phases. Qatar's domain names will be managed by the Supreme Council of Information and Communication Technology (ictQATAR) through the *Qatar Domain Names Registry (QDR)*, which was officially launched and unveiled to the public on 2 March 2011. Qatar-specific domains are a valuable asset for businesses and individuals looking to establish their online identity. A number of websites (including ictQATAR and Hukoomi) were used as pilots for accessing and using the new Arabic-language domain names. By the end of August 2011, the Qatar-specific domain names were to be made publicly available, with QDR offering most domain names to the public through accredited registrars, except for specialized domain names for government, military, not-for-profit organizations and educational institutions, which will require registration from ictQATAR. In addition, ictQATAR also led Qatar's application process for the internationalized domain names (IDN) for the country code top-level domain (ccTLD).

In **Qatar**, ictQATAR is leading efforts to establish an official *Creative Commons* affiliate in the country, working with organizations and individuals to promote greater sharing of creative works online using flexible content rights licences. Creative Commons is a non-profit organization that provides expertise and resources to encourage digital creativity, along with the sharing of ideas and innovation online. The group also issues licences directly to those who want to share and protect their digital content online. These licences can be applied to almost every realm of society, including music, science, technology, art, government and medicine. These licences will help promote the creation of original digital content in the Arab world, while protecting the rights of the content creators.

In the **United Arab Emirates**, the *TRUSTae* initiative is designed to enhance security and confidence in online business by placing a TRUSTae label on websites, which enforces strict guidance and methods to protect people's rights. TRUSTae creates reliable electronic transactions and communications for businesses and individuals.

In **Ukraine**, the A.S. Popov Odessa National Academy of Telecommunications is working on a system for *restricting access to inappropriate Internet content*. The basic principle of the system is the establishment of specific content-filtering solutions (based on different technologies: dns, proxy, etc.) with a database of inappropriate resources in each educational institution. For the purpose of continuous updating, the processing of log-files for the solutions is centralized in servers based in the information centre, with subsequent periodic editing of an updated version of the banned resources database (over 1 million records) and automatic sending to all servers (more than 100 at present).

Building safer internet for educational institutions, Ukraine

C5.3 Organizational Structure

The absence of institutional structures to deal with cyber-incidents and attacks which result in fraud, the destruction of information and/or the dissemination of inappropriate content is a genuine problem in responding to cyberthreats. ITU is working with Member States to provide concrete assistance in addressing this global menace.

In the **United Arab Emirates**, *the UAE Computer Emergency Response Team (aeCERT)* is the country's cybersecurity coordination centre, established in order to facilitate the detection and prevention of and response to cybersecurity incidents on the Internet, and to meet the ever-growing need for a safer online culture for government and business. The aeCERT centre was tasked with coordinating efforts in the region to combat the broader set of cybersecurity threats. It has been engaged in several projects, such as the *HoneyNet Project*, which is considered as an early-warning system for detecting attacks and studying behavioural attacks and computer infection sources. In this connection, aeCERT set up the first UAE HoneyNet chapter in August 2009. The mid- to long-term objective of the project is to strengthen bilateral and regional HoneyNet collaboration, with a view to initiating and developing projects that focus on special purposes or on specific regional needs. Moreover, aeCERT was successful in attracting one of the top security conferences (*Black Hat*) to Abu Dhabi in November 2010. Since cybersecurity is increasingly seen as a top priority across the globe, the Black Hat conference gathered some of the foremost leaders in the IT security consulting and research fields, which brought a wealth of experience to UAE.

Also in the **United Arab Emirates,** the *Emirates Identity Authority (EIDA)* is an independent federal authority established by virtue of the Federal Decree No. 2 of 2004. The decree vested EIDA with ultimate powers required for the execution of the *population register* and the *ID card programme*. The authority is also responsible for issuing electronic identity cards for the whole population in the country, nationals and residents, in order to verify and confirm each individual's identity through a personal number and a smart card related to his/her biological features. The authority has put forward a new initiative aimed at developing a range of integrated programs related to the identity card, enabling the government and private agencies to handle the card and read the content of the chip. The software will be available in several languages and compatible with several types of smart-card readers.

In **Mauritius**, the *Mauritian Computer Emergency Response Team (CERT-MU)* has been set up to respond to and manage cybersecurity incidents reported at the national and international level, assist local organizations in implementing secure measures to safeguard their assets, and raise awareness on information security issues. Several initiatives have been undertaken in order to build confidence and security in the use of ICTs at the national level, such as:

- Some 16 technology workshops, including *Safer Internet Day* and *Computer Security Day*, organized in past three years, with a total of 2 000 participants
- Implementation of a *Child Safety Online Action Plan*
- Assistance to implement ISO 27001 information security management system (ISMS)
- Implementation of an *Anti-Spam Action Plan*
- CERT-MU publications (30 000): security guidelines, brochures and e-security newsletter.

In **Bulgaria**, the government is developing and introducing measures for *transparency* in the work of the Energy Efficiency Agency (EEA). The objectives are to:

- Increase publicity and access to information about the administrative activities and the services provided by EEA for citizens and business representatives
- Increase protection against possible opportunities for corruption in EEA
- Increase public confidence in EEA and encourage active participation of the public in decision-making and control processes in matters related to energy efficiency.

Some results have already been achieved, such as :

- Creation of registers and databases of information about the status of energy efficiency in the country
- Redesign/expansion of the EEA Internet site
- Public part of the registers accessible to citizens, businesses and the administration via the Internet portal
- Creation of an online form for contact with the administration, four discussion forums, and online informational bulletins
- Information system for monitoring and management of the status of energy efficiency in Bulgaria comprising the requisite hardware and basic and application software.

C5.4 Capacity Building

ITU facilitates the implementation and deployment of cybersecurity capabilities necessary to combat cyberthreats.

In **Qatar**, ictQATAR recently launched its *Keep Them Safe, Keep Them Curious* campaign to begin raising awareness about the need for parents to be involved in their children's online safety and to give some basic tips on how to

help them become more cybersmart. In a newly launched commercial airing in cinemas, and on television and radio, a typical Qatari family is seen taking easy, smart steps to help keep their children safe online – all without dampening their curiosity. In addition, ictQATAR has a series of advertisements on Doha's streets and various billboards to help raise awareness.

To help parents and teachers keep children safe online, ictQATAR has also launched *SafeSpace.qa*, a website filled with valuable information and resources on cybersafety. The Secretary General of ictQATAR, Dr Hessa Al-Jaber, first announced the site on Safer Internet Day 2010.

In **Africa**, the *African Children Cyber Safety Initiative (ACCSI)* was created at the 2009 *Children and Young People Online Protection Forum* organized by the African Information Security Association (AISA), with a mandate to advance the cause of safe online culture for children and young people in Africa. ACCSI aims to stem the tide of dangers to which children and young people are exposed online.

In **Oman,** the *Child Online Protection (COP)* initiative at the Oman National CERT (OCERT) seeks to protect children online by educating children and parents about the information security risks faced by children online, and equipping them with preventive knowledge and tools. It addresses legal, technical and procedural measures, and capacity building. In order to provide kids and parents with important security information, educational materials, advice and lessons, school visits were arranged and a dedicated COP portal was launched. Vast numbers of children have been reached through social-awareness sessions and school visits. The future plan is to reach every child and parent in the country.

Oman Kids Portal, Oman

In **Malta**, the *BeSmartOnline!* project converges the efforts of national stakeholders working towards safer use of the Internet by children and youths. The initiative aims to:

- Raise awareness and educate minors, carers and educators on safe use of the Internet
- Establish, operate and promote a hotline for reporting illegal activities committed via the Internet
- Support the public with any difficulties they may have, through a helpline.

The BeSmartOnline! project will lead to the creation of a Maltese *Safer Internet Centre*. The project is co-funded by the European Commission's Safer Internet Programme.

Be Smart Online Project, Malta

Be Smart Online Project, Malta

In the **Dominican Republic**, the *Healthy Internet Programme* is an initiative to help ensure that children and adolescents in the Dominican Republic operate safely in cyberspace, developing responsible and ethical use of Internet as a tool for building a real knowledge culture, creativity and innovation.

In the **United Kingdom**, eWorldwide Group has launched a youth-led *Global Cyber Ambassadors for Peace* initiative that empowers young digital citizens across the world, promoting understanding, respect, peace and harmony, transcending faith, gender, race, culture and class. This creates a 'global conversation', innovatively using cyberspace as a living network, enabling constructive, practical and interactive discussions, and thus organically creating a bridge of trust. The network operates across schools and universities, building a global conversation with digital natives who jointly create interactive guidebooks, checklists and toolkits for cyberspace. The goal of the initiative is to influence the development of effective policies in the context of international cyberspace security.

GCAP

Respect Peace Harmony Understanding

In **Qatar**, ictQATAR has commissioned a comprehensive *ICT and Youth* study to understand how Qatari youth are affected by and use ICTs in their daily lives. A committee of academics, researchers, policy-makers, youth advocates and young people will contribute to a groundbreaking analysis, using data from 1 200 young Qataris between the ages of 11 and 29. By exploring how youths in this group accesses online content and communicate with each other, the findings will provide insight into how ICT shapes their identity in relation to their peers and the world at large. On the basis of these findings, ictQATAR will be able to make policy recommendations on how best to harness the power of ICT to help young people realize their full potential, and develop a framework to assess the impact of ICT on youth, which can then be replicated in other Arab countries.

In **Oman**, the Information Technology Authority (ITA) is undertaking a project to develop a specialized *Oman Kids Portal***.** This portal will help children become more aware of how to utilize technology and become e-citizens, thus opening up opportunities for them to aspire to a better life and a successful future in the knowledge society. As part of the project, ITA recently held a small workshop for children in cooperation with the Early Childhood Department of Sultan Qaboos University (SQU). The workshop was designed to elicit creative ideas for the portal (design and content) and identify children's expectations.

In **Qatar,** ictQATAR hosted a workshop on *internationalized domain names* in 2011. The workshop – entitled *IDNs: Implementation, Challenges and Opportunities* – presented the current status of IDN implementation, shared IDN top-level domain operators' best practices and experiences and identified the key challenges facing IDN adoption worldwide.

Also in **Qatar**, ictQATAR's Q-CERT is enhancing *cyberpreparedness in critical sectors* through training. In partnership with the SANS Institute, Q-CERT is working to deliver specialized information security training courses to IT professionals in Qatar. As part of its annual plan, Q-CERT has programmed this series of regular information security training courses so as to equip local organizations with technical know-how for facing cyberthreats and intrusions. The training courses are focused on developing the technical skills of four broad categories of IT professionals, namely those involved in system administration, secure development, cyberincident management and intrusion analysis. Some of the topics of the specialized courses include hacker techniques; exploits and incident handling; securing Linux/Unix secure coding in Java/JEE; secure coding in .NET; securing Windows; computer forensic investigations; perimeter protection; and intrusion detection. Three training courses have already been conducted by Q-CERT, with a total of 72 IT professional attendees, including members from CERTs of Gulf Cooperation Council (GCC) countries. Upon successful completion of the course, participants may take an online examination to receive a Global International Security Certification (GIAC) from SANS.

In **Serbia,** the *Klikni Bezbedno* ("Click Safely") campaign was launched, with the aim of preventing online problems

and educating children on how to surf safely. It includes school visits, an interactive website and a media campaign, comprising awareness-raising videos, games, quizzes and awards. The campaign targets the education of both teachers and parents. In 2011, numerous educational forums were organized in Serbia. The website as well as Facebook and Twitter profiles were used to interact with kids and help them solve their problems.

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is working on the *protection of children against unethical, harmful and obscene content* in the cyberenvironment. The growing use of communication devices and the pervasive diffusion of ICT in society have made children vulnerable to harmful and corrupt content. This is especially true in cases where parents are less well-informed about the issue and are not familiar with the prevailing threats. Despite the government's efforts to counter websites and other products releasing and propagating such kinds of content, more and more corrupt content is being put at the disposal of children daily over the Internet and mobile phones.

In the **United Arab Emirates**, the UAE Computer Emergency Response Team (aeCERT) launched its information security awareness campaign – *Towards a safe cyberculture* – with the help of "SALIM", a cybersecurity adviser. The SALIM campaign aims at spreading a safe cyberculture by giving simple and easy-to-use tips and advice. The goal is to build a promising generation that has integrated knowledge about information security, and thereby disseminate this knowledge to the entire community.

C5.5 International Cooperation

The ITU *Global Cybersecurity Agenda (GCA)* is founded on international cooperation, and strives to engage all relevant stakeholders in a concerted effort to build confidence and security in the information society.

In the **CIS countries**, the Regional Commonwealth in the field of Communications (RCC) is working on the establishment of a *transboundary Internet trust space*. The purpose of the project is to create a unified platform for the provision of transboundary electronic services. The most significant information interaction problem is outstanding legal, organizational and technological issues in regard to assurance of the validity of e-documents. The project comprehensively solves this problem by forming the transboundary trust space (TTS). TTS ensures system interoperability via a single secure infrastructure with unified interfaces. Several variants of key infrastructure elements are provided according to the required level of security.

The advantages of TTS are:

- Establishment of a unified platform, ensuring interaction between state bodies, organizations and citizens
- Can be used in e-trade, telemedicine, distance education, etc.
- Can be implemented with existing technical means.

On 17 November 2010, the *Child Online Protection (COP) Global Initiative* was launched in San José, by the ITU Secretary-General, Dr Hamadoun Touré, together with the new Patron of COP, H.E. Laura Chinchilla, President of Costa Rica. The COP Global Initiative aims to transform the COP guidelines, developed by ITU and partners from industry, civil society, governments, UN agencies and other stakeholders, into concrete activities by leveraging the active support of COP members. Through this COP Global Initiative, ITU is taking the next steps towards developing a cybersecurity strategy for child online safety, in order to deliver significant national benefits by creating a more secure and safer online experience for children worldwide.

In the **United Arab Emirates**, the Institute of Training and Judicial Studies and the General Directorate of Abu Dhabi Police, in cooperation with the Telecommunication Regulatory Authority and Microsoft, organized the third *International Conference on Cyber Crimes* (procedural aspects) in December 2009 in Abu Dhabi.

Action line C6

Enabling environment

Integration in the information society can yield many social, economic and environmental benefits. In order to facilitate this process, governments and other agencies recognize the importance of creating an enabling environment with transparent and non-discriminatory policy and regulation.[106]

Acknowledging the strong commitment of ITU's work towards bridging the digital divide in the area of the enabling environment, UNDP officially handed over the lead facilitation role on WSIS Action line C6 to ITU in May 2008. Since then, ITU has been acting as the sole facilitator for this action line, building upon its regular work carried out within the framework of I*TU-D Programme 3: Enabling environment*, in close collaboration with *ITU-D Programme 2: Cybersecurity, ICT applications and IP-based network-related issues*. The Union organized the sixth meeting on WSIS Action line C6 on 16 May 2011, during the WSIS Forum.

ITU has undertaken numerous activities that foster the development of an enabling environment worldwide, including information sharing, the creation of tools for effective regulation, national and regional assistance, and the creation of training materials and opportunities. Examples of these ongoing activities include:

- The tenth (2009) edition of Trends in Telecommunications Reform: Hands–on or hands-off?
- Stimulating growth through effective ICT regulation, published in 2010.
- The eleventh (2010/11) edition of Trends in Telecommunication Reform: Enabling Tomorrow's Digital World, published in March 2011
- The ICT Regulation Toolkit, developed by ITU in partnership with the World Bank/InfoDev
- The tenth Global Symposium for Regulators (GSR), held from 10 to 12 November 2010 in Dakar, Senegal
- The eleventh Global Symposium for Regulators (GSR), held from 21 to 23 September 2011 in Armenia City, Colombia
- The eleventh Forum on Telecommunication/ICT Regulation and Partnership in Africa (FTRA-10), held in Banjul, Gambia, from 12 to 14 July 2010
- The twelfth Forum on Telecommunication/ICT Regulation and Partnership in Africa (FTRA-11), held in Kigali, Rwanda, from 13 to 15 June 2011, under the theme of Cloud computing, new development of ICTs
- A series of regional regulatory and financial meetings, workshops, training events and direct assistance activities, organized in 2010 and 2011.

(more information is available at www.itu.int/itu-wsis/docs/WSIS2011-ITU_Contribution.pdf)

ITU also assists its members in developing policies and regulatory measures for accessible ICTs in line with Article 9 of the *United Nations Convention on the Rights of Persons with Disabilities (CRPD)*. Together with its partner G3ict, the Union has launched an online toolkit to share best practices with policy-makers and regulators on promoting accessible ICTs for persons with disabilities (www.e-accessibilitytoolkit.org/).

C6.1 Policy, regulatory and legal reforms

The implementation of a coherent, supportive and transparent legal framework through legal and regulatory regulation, reforms and public policy is important for creating an enabling environment for ICTs. The following ICT-related activities are examples of how such an environment can be created.[107]

In the **Russian Federation,** the Institute of the Information Society (IIS) has been working on *proposals for improvement, optimization and unification of the structure and*

[106] Geneva Plan of Action, § 13

[107] Geneva Plan of Action, § 13a)

content of indexes in federal statistical monitoring forms in the sphere of communications. IIS has analysed communications laws and regulations with a view to introducing changes in the forms used for federal statistical monitoring to make them more effective. It has proposed lists of forms that need to be revised or abolished and sets of statistical indexes to be covered in federal statistical monitoring forms, taking into account changes in relevant legislation as well as emerging technologies and services. The work was completed in 2009 under a state contract with the Russian Ministry of Communications.

Institute of the Information Society, Russia

Also in the **Russian Federation,** the Institute of the Information Society (IIS) has conducted an analysis of *main trends in ICT development* for the period to 2030. The work was completed in 2009, at the request of the Ministry of Communications. Long-term problems and challenges as well as major factors in the development of the communications and IT sectors in Russia and in leading industrial countries were identified. IIS experts outlined a list of the most important goals and objectives for the innovative development of the sector in the medium and long run. A technological roadmap for the sector's development in the Russian Federation to 2030 was also drawn up.

In **Mauritius**, the contribution of the *information and communication technology/business process outsourcing (ICT/BPO)* sector to GDP reached 6.4 per cent in 2010, and the sector has positioned itself as the third pillar of the country's economy. It is forecast that this share of GDP will increase to 8 per cent in 2012. The government is devising various initiatives to support the growth of the sector, such as development of policies to build an investor-friendly environment and review of the existing legal framework governing the ICT sector to ensure competition and competitive pricing of services.

In **Botswana,** several policies and regulations have been developed in order to contribute to the enabling environment. The *Botswana National Postal Policy*was drafted to form a regulatory framework that will ensure an enabling environment to promote access to efficient and affordable postal services for both the urban and rural communities. As the global postal sector evolves, the domestic postal system has to be reformed. The policy is in line with the objectives of the WSIS action line. The Department of Telecommunications and Postal Services has introduced the *Botswana Communications Regulatory Authority Bill*. The Bill was drafted to establish a converged regulatory authority that will regulate the telecommunication, broadcasting and postal subsectors and information and communication technology as a whole. Monitoring the activities of these subsectors in a concerted manner is expected to bring optimal regulation and convergence of services. The different subsectors were hitherto regulated by different entities and as a result there was some compartmentalization in the provision of services.

In Gabon, the *Cybercity of Mandji Island (CMI)* is the ultimate ecosystem for the development and promotion of the digital economy through the installation of international ICT companies within the Mandji Island free trade zone. CMI offers the following advantages:

- free taxes during the first ten years and ten per cent tax rate on profits as from the eleventh year;
- easy and fast registration of ICT companies via a one-stop shop;
- no restriction on funds transfer;
- cybersecurity (personal data protection, fight against cybercrime);
- protection of intellectual property activities;
- software development;
- cloud computing;
- business consultancy ;
- e-commerce ;
- call centres;
- telemedicine;
- tele-education and e-learning.

In the **Russian Federation**, the Institute of the Information Society (IIC) has been providing *expert advice for developing standardized ICT solutions for regional informatization in the Russian Federation*. In 2007, a needs assessment of regional standardized ICT solutions was conducted as part of the federal *e-Russia* programme (2002-2010), at the request of the Federal Agency on Information Technologies. This work resulted in the drafting of recommendations for implementing the *Concept for regional informatization in the Russian Federation* and organization of a contest to select pilot regions for implementation and

testing of standard ICT solutions in 2008. In addition, IIS specialists worked on improving methods of managing the development and adaptation process for the proposed technological solutions based on an architectural approach to building information systems.

The Institute of the Information Society (IIS) has also conducted an *analysis of ICT impact on long-term scientific and technological development* of key sectors of the Russian economy for the period to 2030.

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is working on establishing a *dynamic environment to produce content and products based on local culture and identity*.

In **Qatar**, to chronicle its accomplishments and highlight key milestones, ictQATAR released its inaugural *Annual Report*. This comprehensive document takes readers through ictQATAR's journey and showcases how real people are beginning to experience the benefits of technology in their lives and how Qatar is making true the promise of e-everything. A key feature of the report is the liberalization of telecommunications: ictQATAR has directed the opening of Qatar's telecom market to competition, officially awarding a second mobile licence in 2007, and beginning work on the process to award a second fixed licence. Other highlights include integrated, online government, cybersecurity, e-learning and e-health.

In the **United Arab Emirates**, the telecom market has grown from AED 30 billion to AED 50 billion since 2005, with a 20 per cent annual rate of growth. The *UAE Telecommunication Regulatory Framework* has enabled such growth year after year. The Telecommunication Regulatory Authority (TRA) issued several regulations to cater for the changes in the telecommunication regulatory landscape and to foster advances in the ICT sector. In respect of communications licences, in February 2010 TRA licensed satellite services to *Yahsat* to install, operate and manage satellite and ground networks in UAE. In July 2010, it granted *Star Satellite Communications Company (Star)* a ten-year satellite and broadcasting service licence. These developments were aimed at establishing UAE as a premier telecommunication hub by offering world-class satellite services.

In the **Pacific** region, the *Framework for Action on ICT for Development in the Pacific (FAIDP)* outlines a new approach to developing and improving ICT services in order to support development, strengthen governance and improve the livelihoods of communities in the region. It acknowledges that national ICT policies and plans implemented through integrated and well-coordinated approaches provide the principal means for ICT to contribute meaningfully to sustainable development. It promotes a 'whole sector' approach, based on the concept of 'many partners, one team'. This approach recognizes that numerous stakeholders contribute to ICT development in the region and accepts them as equal partners.

In **Bulgaria**, the National Statistical Institute (NSI) has implemented a survey to gather community statistics on income and living conditions. *The Survey on income and living conditions in Bulgaria (SILC)* is an annual survey implemented by NSI to obtain information on the incomes and living conditions of different types of households, and has been given high priority as a tool used by the European Union to combat poverty and social exclusion.

Also in **Bulgaria**, the *Demography* information system created by NSI is a statistical survey of the population, its structures and demographic processes in the country. The system covers the whole process of data gathering, editing, processing and storage and the use of statistical data on population and demographic processes.

Again in **Bulgaria**, the *National Electronic Communications Policy of the Republic of Bulgaria* launched by the Ministry of Transport, Information Technology and Communications reflects the changes in the 2009 EU Regulatory Framework for Electronic Communications. Furthermore, it outlines trends and priorities for sustainable development of the electronic communication sector, as well as the government's anti-crisis measures in the ICT sector, with special emphasis on those measures which have to be completed in the short term (by 2012), medium term (by 2015) and long term (beyond 2015). The objective of the National Electronic Communications Policy is to establish prerequisites for streamlining access for people and business to contemporary, effective, efficient, reliable and secure services of high quality, as well as enabling appropriate conditions for sector development, promoting investment policy and introducing technological innovations.

In **Ukraine**, the National Commission for Communications Regulation (NCCR) has set up an international scientific conference on *Current regulatory issues in the area of telecommunications and radio-frequency resource usage*, which took place on 18-20 May 2010 in Kyiv, Ukraine. The aim of the international scientific conference is to develop positions for solving current problems in the sphere of communications and to determine ways of increasing the level of telecom market regulation. The conference included seven sections:

1. Access to telecommunication markets and carrying out state supervision
2. Telecommunication services quality control and measurement parameters; Convergence; NGN development and networking
3. Efficient use of the radio-frequency resource and introduction of modern radio technologies
4. Regulation of numbering resources and interconnection

5. Areas of tariff policy and regulation
6. Regulatory and methodical aspects of market analysis
7. Implementation of informational and analytical systems in the area of communications regulation.

In **Mauritius**, the *eJudiciary* programme has been initiated by the Central Informatics Bureau under the Ministry of Information and Communication Technology in order to upgrade the country's existing court management system, which dates back to 1994. A new *Electronic Filing System (EFS)* will allow:

- computerization of the daily activities of the judiciary, such as case registration, court scheduling and document servicing;
- electronic submission and exchange of documents by attorneys with the judiciary – attorneys will thus be able to lodge cases electronically and follow up cases with the judiciary;
- online access to case-related information.

In the **United Arab Emirates**, in keeping with its efforts to provide excellent judicial and legal services for the legal community and the general public, the UAE Ministry of Justice, in collaboration with SADER Legal Publishing and the Ministry of Finance, has launched the *UAE Legal Portal***,** which will provide access to the following:

- UAE legislation (in Arabic)
- UAE laws in English
- UAE High Court case decisions (civil, criminal)
- consultations of the Department of Consultations (Fatwa) and legislation from the Ministry of Justice
- the international treaties signed and ratified by UAE, classified by country and subject.

In **Bulgaria**, the Communications Regulation Commission (CRC) is responsible for the development of an information system – *CRC Licensing and Registers* – involving the design of software for notifications, permissions, licensing and registrations, aimed at providing complex electronic administrative services to citizens and business. The project is financed by the Operational Programme Administrative Capacity (OPAC) through the European Social Fund. The services are related CRC's powers under the Electronic Communications Act, the Postal Services Act and the Electronic Document and Electronic Signature Act. The web-based system facilitates access to CRC's public registers for citizens and businesses, as well as the submission of notifications and applications and the issuing of permits and licences. The system will be part of Bulgaria's e-government scheme.

In **Nigeria,** the Ministry of Communication Technology is working hard to combine the IT and communication policy documents into one single *ICT Policy* document. The ministry is working with parliamentarians to enact appropriate ICT laws in order to create the desired enabling environment for ICT in growth and development.

In **Argentina**, the University of La Punta has developed a *Legal Frame for the Digital Agenda of San Luis*, containing laws that guarantee new rights for the population in regard to ICT.

At the **international level,** the *Commission on the Digital Economy (formerly "EBITT" Commission)* of the International Chamber of Commerce (ICC) has produced several policy and practice recommendations outlining the most effective enabling policy and regulatory frameworks for implementing many of the WSIS goals and action lines:

- *EBITT inventory (1998-2011)*
- *Discussion paper on the adverse effects of discriminatory taxes on telecommunication services (2010)*
- *Policy statement: Global business recommendations and best practices for lawful intercept requirements (2010)*
- *ICC comments on EU Directive 95/46/EC (2011)*
- *Discussion paper: Internet backbone interconnection agreements (2011)*
- *Discussion paper: Approaching shortages of mobile broadband spectrum threaten to limit broadband deployment and economic growth (2011).*

The first *ICT Policy Review* prepared by UNCTAD was presented in October 2011 to delegates from over 35 UN Member States, private-sector representatives and international organizations. The review was prepared in cooperation with the Ministry of Communications and Information Technology of **Egypt** and the UNDP Office in Cairo. It evaluates the main achievements and remaining challenges in the areas of ICT infrastructure; skills developments for the ICT sector; ICT use in the educational system; e-content development in Arabic; and the promotion of an export-oriented ICT sector. It proposes valuable inputs as the ministry prepares the next national ICT strategy, including best practices from other countries such as Brazil, Malaysia and India, to help the government identify its medium-to long-term strategic ICT objectives and options available to achieve them.

C6.2 Internet-related law and governance

It is important to ensure public policy issues relevant to Internet governance are properly addressed. All stakeholders are encouraged to develop laws that facilitate

access to ICT and reflect a common understanding among stakeholders in this process.[108]

In the **United Arab Emirates**, an *e-voting system* for UAE's first elections has been implemented by the Federal National Council (FNC). In 2006, UAE established an electoral college system, whereby half of the FNC's 40 seats were chosen by designated electors. In line with UAE's commitment to expand political participation among citizens in a measured and sustainable way, the size of UAE's Electoral College greatly increased for the 2011 election. In 2011, there are 129 274 electors nationwide, compared to 6 689 in the 2006 contest. In 2011, 46 per cent of all electors are women and 35 per cent of all electors are between ages of 21 and 30. Elections are conducted via secret ballot at e-voting machines in 13 polling centres

Internet exchange points (IXPs) are one of the most important critical parts of the Internet infrastructure. IXPs interconnect with other networks to successfully provide Internet services, an IXP being any place where Internet service providers (ISPs) come together to connect their networks and exchange traffic.[109] Recently, projects have been launched to optimize connectivity among major information networks by encouraging the creation and development of regional Internet exchange points. These exchange points help reduce interconnection costs and broaden network access.

In **Sudan,** the *Sudanese Internet exchange point (SIXP)* was set up in August 2010 by the National Information Centre to allow members to exchange traffic destined to each other. It encourages the use of local resources and reduces the load on the global Internet. Each member connects to the peering point and then agrees to allow other members to transfer to and from their local network. SIXP started with only four ISPs (Sudatel, Zain, Canar, Vision Valley), connected via fast Ethernet. SIXP's mission is to connect all ISPs in Sudan in order to exchange local traffic inside Sudan and economize their international bandwidth.

At the subregional level in **Africa**, the establishment of interconnection points (IXPs) in Portuguese- and Spanish-speaking African countries aims to install IXPs in the countries so as to improve connectivity and Internet access at affordable prices.

In the **United Arab Emirates**, the UAE's *Internet exchange point (IXP)* project aims at creating an International Internet hub in the country. The IXP will serve as a platform for ISPs, network operators, content providers, content delivery networks and large networks to exchange Internet traffic. It will also facilitate and support the distribution of regional content to the Internet. The main objectives of the projects are to:

- Enhance the performance of the regional IP network, which will result in improved Internet usage
- Reduce the overall cost of IP infrastructure and services in the region, which will be the benefit to the end users
- Increase localized digital content
- Ensure reliable IP services in the UAE and the region
- Allow the optimal use of available infrastructures and capacities
- Enhance the Economic status of the participating countries through large-scale use of Internet, facilitating e-business, growth in e-learning, the emergence of Arabs as leading IT professionals, better e-governance facilities and telecommunication vibrancy
- Attract cable providers and content providers.

A typical IXP requires a collaborative effort between all stakeholders to enable "localization" of Internet traffic. This could be achieved through establishing "peering" sessions between participants on a high-speed switching fabric, or using other technologies on a settlement-free basis. The project is currently being executed by the Telecommunication Regulatory Authority (TRA) with the collaboration of many stakeholders such as local telecom operators, major Internet companies and major content players. TRA will ensure that the IXP will follow best international practices in terms of neutrality, policies, practices, operations, technology and requirements. The target date for project launch is end 2011.

C6.3 Small and Medium-Sized Enterprises

Small and medium-sized enterprises (SMEs) are driving forces of market development. SMEs should be assisted in increasing their competitiveness by facilitating their access to capital and enhancing their capacity to participate in ICT-related projects.[110]

In **Bulgaria**, the National Statistical Institute (NSI) has implemented a project on *ICT usage and e-commerce in enterprises* (European Commission grant). This project aims to measure ICT usage and e-commerce in enterprises, and

[108] Geneva Plan of Action, § 13b)

[109] Internet Exchange – ITU-NTC-ASP-COE Training Workshop, accessed at www.itu.int/ITU-D/asp/CMS/ASP-CoE/2010/InfraSharing/S6.pdf

[110] Geneva Plan of Action, § 13m)

NSI provides data to Eurostat on a wide range of information society indicators. The data on ICT usage and e-commerce in enterprises are based on a sample survey which is part of the European Community Statistical Programme. The methodology and the statistical tools are completely harmonized to Eurostat requirements and Regulation 808/2004 of the European Parliament and the Council.

In **Gabon**, the Ministry of Communication, Post and Digital Economy has set up the *Gabonese Observatory of Digital Economy (OGEN)*. The observatory will aim to reflect the opinion of ICT business managers from the angle of activity forecasts, staff trends and profitability for the next quarter.

C6.4 Consumer-related policy and dispute resolution

Governments have been actively working on developing and updating consumer-related domestic and national policies to respond to continuous developments and new requirements of the information society.[111]

In **Qatar**, the first comprehensive *e-Transactions and e-Commerce Law* was enacted by Emiri Decree on Thursday, 19 August 2010. The law covers e-commerce and e-transactions in the State of Qatar, and is an important step forward in fostering business usage of e-commerce and e-transactions. The e-Commerce Law includes provisions on areas such as e-signatures, e-documents and authentication. It covers e-commerce transactions in Qatar, including e-government services. The law was modeled on the UN and EU models and directives on e-commerce and electronic signature, and other international practices. The law does not apply to documents relating to family and personal status, documents that by law must be notarized and negotiable instruments.

In the **United Arab Emirates**, Dubai eGovernment has introduced *public participation and engagement for improved e-services*. Dubai eGovernment, in cooperation with several government departments, has successfully utilized customer engagement and participation mechanisms for implementing its e-services. Dubai eGovernment has provided various tools for online policy-making. The constituent engagement included e-service pre- and post-implementation activities. Customer feedback assisted in identifying customer expectations and bridging any gaps, so as to increase customer satisfaction, trust and quality of e-services. More than 560 electronic surveys were carried out between 2006 and 2009 by various Dubai government departments to improve their services, eliciting more than 45 000 customer responses, and leading to enhancements in services rendered to the public and businesses.

Also in the **United Arab Emirates**, the *eNotary* application enables the Ministry of Justice to provide end-to-end paperless notary application and processing, giving public users easy access to the notary service through user-friendly applications, allowing payment and notification of application status, and enabling the ministry to digitally process and maintain notary records.

Again in the **United Arab Emirates**, *Tawajdi* is an electronic service through which UAE nationals are advised to register with the Ministry of Foreign Affairs before travelling abroad in order for UAE embassies in the destination countries to be in contact with them for any emergency or assistance. The service is open and accessible on the Ministry of Foreign Affairs official website. It allows travellers to indicate and add multiple destinations, along with travel duration and the number of companions for each trip

In **Bulgaria**, the Commission for Consumer Protection (CPC) has launched *modern and integrated administrative services*, for the purpose of enhancing the protection of consumer and business rights by providing modernized and integrated administrative services. On the basis of the conclusions and the recommendations of the analysis conducted, an optimized model of the processes for providing CRC's administrative services will be developed. The resulting optimized model shall be consistent with the regulations of the Law on electronic governance.

In **Latin America and the Caribbean**, activities continued to be conducted in partnership with UNCTAD's *TrainForTrade* programme. A face-to-face *Workshop on the legal aspects of e-commerce* was organized February 2011 in La Paz, Bolivia, on means of further harmonization in the region, following the delivery of a distance-learning training course on the same subject for 210 participants from 19 SELA (Latin American and the Caribbean Economic System) member countries in November 2010. A new edition of the distance-learning course on legal aspects of e-commerce was delivered in October-November 2011, for another 192 participants from 17 countries, with the cooperation of SELA and the support of the government of Spain.

UNCTAD was invited by the United Nations Commission on International Trade Law (UNCITRAL) to be associated with the work on *online dispute resolution mechanisms*. Following UNCTAD's participation in the Organization for Economic Cooperation and Development (OECD) Conference on Empowering E-Consumers organized in 2009, UNCTAD continued to participate in the revision process to relay the concerns developing countries face in some of these areas.

[111] Geneva Plan of Action, § 13e)

Action line C7

ICT Applications: Benefits in all aspects of life

ICT applications can support sustainable development in different sectors such as public administration, business, education and training, health, employment, environment, agriculture and science, within the framework of national e-strategies.[112] This chapter illustrates how ICT applications can maximize social and economic benefits for the society.

C7.1 E-Government

This subchapter includes information on e-government strategies, initiatives and other activities focusing on applications aimed at innovating and promoting transparency in public administrations and democratic processes, improving efficiency and strengthening relations with citizens.[113]

The United Nations Department of Economic and Social Affairs (UNDESA), as the main facilitator for Action line C7: E-government (in addition to Action lines C1 and C11), has focused efforts and activities on fostering a comprehensive exchange of views, information and experience, and on promoting policy dialogue and advocacy for implementation of the WSIS outcomes. In support of Member States' efforts to improve performance in public administration, development management and e-governance, UNDESA published the 2012 edition of the *United Nations E-Government Survey: E-Government for the People*, the sixth in the series. This world report on e-government also provides inputs into the recently developed *United Nations Public Administration Country Studies (UNPACS)*, to underpin the importance of public-sector reform initiatives.

Since 2006, DESA has been publishing the Compendium of Innovative E-government Practices. This publication contains a compilation of case studies of innovative e-government solutions, services and applications with elements of transferability and adaptability. In developing this Compendium, DESA aims to provide a venue for promotion and sharing of cost-effective, value-added innovative solutions, to hasten innovation and creating public value for the citizenry and to enable South-South and North-South information-sharing. Volumes I-III of the Compendium has come in three volumes and includes over 300 cases and Volume IV is finalized at the end of 2011. The cases of all volumes are available and searchable through the online database established within the UNPAN.

UNDESA has organized several *international and regional workshops* focusing on capacity development in the context of e-government, e-governance and e-participation, and undertaken more than 25 *advisory and technical assistance missions* to support governments from developing countries in the implementation of their respective e-government polices and strategies. In addition, it organized a *consultation* and an *expert group meeting* on e-procurement, drawing on inputs from the World Bank, the Asian Development Bank and experts from Member States, resulting in the decision to build a *Knowledge Guide on E-Procurement* that will assist Member States in improving transparency and accountability.

UNDESA has continued to strengthen its *partnerships* with international institutions and the stakeholder community, so as to develop a coherent *e-government support mechanism*, including with the government of **Colombia** on e-government development in **Latin America**, and with academic institutions for the training of senior e-government officials from the developing world. METER, the *Measurement and Evaluation Tool for E-Government Readiness*, was further developed by UNDESA, in cooperation with Microsoft Corporation. The report *M-Government: Mobile Technologies for Responsive Governments and Connected Societies* was prepared in collaboration with ITU and OECD.

UNDESA has also continued to develop the *United Nations Public Administration Network (UNPAN) Online Training Centre*, which offers 11 interactive online capacity-building courses and 15 sets of pdf-based learning materi-

[112] Geneva Plan of Action, § 14

[113] Geneva Plan of Action, § 15a)

als on various topics in public administration and e-government in a multi-language environment.

In **South Africa**, under the *Mogalakwena HP i-Community* project, through public-private partnerships between Hewlett-Packard (HP) and national, provincial and municipal governments in South Africa, a rural region was transformed into a thriving community that is economically and environmentally sustainable thanks to information technology.[114]

Box 10: provided by IIS

Open government

The information society changes views on social institutions and their accountability. *Open government* has become a dominant trend in public administration in a number of countries in recent years. It is supposed to co-create public value together with business, civil society and citizens. This political paradigm is based on the principles of transparency, collaboration and partnership. The future government has to be flatter, agile, streamlined and tech-enabled (report: *Future of Government*[115])

One large-scale global initiative was the creation of the *Open Government Partnership*[116] in 2011. Governments of 52 countries committed to promoting transparency, fighting corruption and engaging citizens in policy-making. Widespread use of ICT provides new opportunities for free access to information, opening government data, using the power of network communities, and much more.

In **Pakistan**, the *E-Office suite* of the Ministry of Information Technology (MOIT) falls in the category of ICT applications benefiting in all aspects of life under the WSIS action line. Its objective is to automate the core functions of the federal ministries/divisions so as to improve the working efficiency of offices and minimize the time taken by different processes through the use of ICTs. It also serves to automate the government's back office.

In **Latin America,** *public-private partnerships for technology access* are being set up between Microsoft and governments, with the aim of providing relevant and affordable solutions to advance major public policy objectives. Examples include empowering small businesses to bid for government contracts online and digitize their operations in **Chile**; modernized teacher training in **Guatemala** through computers and educational software; and facilitated pension delivery for seniors in **Argentina**.[117]

Box 11: provided by IIS

Russian Regions e-Readiness Index

Monitoring and evaluating ICT use for development has proven to be an effective tool for the adoption and implementation of national e-strategies. Since the Tunis phase of WSIS, the *Partnership on Measuring ICT for Development*[118] has provided a systematic approach for monitoring development of the information society. Benchmarking has proven to be an effective lever for improving activities at different levels – from small enterprises to whole countries or regions – as a result of comparison and learning from the best practices of others.

In the **Russian Federation**, the composite *Russian Regions e-Readiness Index*[119] comprises more than 70 indicators characterizing e-development factors (human capital, business climate, ICT infrastructure) and use of ICTs in different areas (e-government, e-education, e-culture, e-health, e-business, households). The framework for the index in terms of development of the information society includes indicators recommended by the Partnership on Measuring ICT for Development and others, thus making the index compatible with other well-known benchmarking activities (Network Readiness Index, Global e-Government Survey, ICT Development Index, etc.).

The index has been published on a yearly basis since 2005 by the Institute of the Information Society and has become an important information and analytical tool for formulating and implementing e-development policies, strategies and action plans at the regional and national level. The index helps to assess the digital divide between Russian regions, and to identify barriers to e-development in the regions. Many government authorities use the index to assess ICT4D use in a region and for comparisons with other regions and countries.

114 ICC- contribution www.wbcsd.org/web/publications/case/hp_mogalakwena_icommunity_full_case_web.pdf

115 www.weforum.org/reports/future-government/.

116 www.opengovpartnership.org/

117 ICC contribution www.ungis.org/LinkClick.aspx?fileticket=PDUatTYv3qA%3D&tabid=621

118 www.itu.int/ITU-D/ict/partnership/

119 www.eRegion.ru

Box 12

In **Egypt,** the Ministry of State for Administrative Development (MSAD) is working on providing *government services through different mobile channels* (WAP, SMS, IVR, etc...), mainly targeting citizens who are on the go and need information on the fly. *M-services* will not be limited to public services, but will also include services provided by the private sector. Service selection criteria will be based on those relevant to the target segment, as well as input and output size (screen-size limitation). MSAD has also launched a *digital signature* for its government portal. In partnership with the Information Technology Industry Development Agency (ITIDA), the ministry is working on facilitating transaction services online, especially for those which call for authentication and validation. This will be accomplished through a number of steps that include definition of services that require authentication; application of a digital signature for selected services; and integration between mobile digital signatures and WAP services.

In **India,** the government has developed plans to take ICT to rural areas through *common service centres (CSCs).* CSCs are part of the *National e-Governance Plan (NeGP),* with the following purposes:

- CSCs are envisioned as the front-end delivery points for government, private-sector and social-sector services to rural citizens of India.
- The idea is to develop a platform that can enable government, private-sector and social-sector organizations to integrate their social and commercial goals for the benefit of rural populations in the remotest corners of the country, through a combination of IT as well as non-IT services.
- The CSC concept is a strategic cornerstone of the NeGP, approved by the government in May 2006, as part of its commitment under the National Common Minimum Programme to introduce e-governance on a massive scale.
- CSCs would provide high-quality and cost-effective video, voice and data content and services, in the areas of e-governance, education, health, telemedicine and entertainment, as well as other private services.

A highlight of CSCs is that they will offer web-enabled e-governance services in rural areas, including application forms, certificates and utility payments such as electricity, telephone and water bills, etc. The government of Karnataka's vision for the CSC project is that the IT-enabled government services should be accessible to the common citizen in his/her village, through efficient, transparent, reliable and affordable means.

In **Mauritius,** the *Crime Occurrence Tracking System (COTS)* is being implemented in the phases. COTS Phase 1 will be used for close monitoring of crime occurrences. This will make crime statistics available in real time. The system will contribute towards an enhanced customer-centered service for peace, security and order in the entire country. COTS will cater for the end-to-end automation of all processes, from the electronic lodging of complaints at the police station to determination in a court of law, with the possibility of electronic tracking of intermediate phases. Data captured at police stations would be cross-checked and validated against other databases such as: passenger travel information, vehicle information database and citizen details.

In the **Russian Federation,** the Institute of the Information Society (IIS) has addressed the development of *e-government services and standards in Tver region***.** This project was completed in August 2007 as part of the state contract between IIS and the Department of Transport and Communications of the Tver region. The work included carrying out an e-readiness assessment; working out informatization standards for the Tver region in order to determine the region's e-government architecture; and drafting a regional target programme for ICT development and use in Tver region (*Electronic Tver Region*).

Also in the **Russian Federation,** IIS has developed *forecast indicators for information society development* based on state statistics and administrative reports**.** The project was completed in 2008 under the state contract between the Federal Education Agency and ISS as part of implementation of the Electronic Russia 2002-2010 programme. The institute developed a system of indicators describing the key directions and factors of information society development at the federal and regional levels, and a methodology and tools for collecting the primary data required for calculating them. It tested the methods and tools during the final stages of the project using the 2007 data, and also prepared an annual forecast of the key information society development indicators up to 2015.

ICO, Russian Federation

Again in the **Russian Federation,** a Moscow City social sphere branch node within the *e-government interoperability (e-GIF)* framework was implemented in 2010. The following tasks were carried out in the course of the work: development of the technical project; design engineering and preparation for commissioning of e-GIF for the *e-Moscow metasystem* for the social sphere of Moscow; and formulation of a legislative and regulatory framework for operation of the e-Moscow metasystem.

Several e-government initiatives have been undertaken in the **United Arab Emirates**. (See Box 13)

Box 13: United Arab Emirates

The UAE Telecommunication Regulatory Authority (TRA) has initiated *public participation and engagement for improved e-services.* The Dubai eGovernment, in cooperation with several government departments, has successfully utilized customer engagement and participation mechanisms for implementing its e-services. Dubai eGovernment has provided various tools for online policy-making. The constituent engagement included e-service pre- and post-implementation activities. Customer feedback assisted in identifying customer expectations and bridging any gaps, so as to increase customer satisfaction, trust and quality of the e-services. More than 560 electronic surveys were carried out between 2006 and 2009 by various Dubai government departments to improve their services, eliciting more than 45 000 customer responses, and leading to enhancements in services rendered to the public and businesses.

The new enhanced *UAE E-Government Portal* was launched on the first day of GITEX 2010 in Dubai. The portal is part of the federal e-government programme that combines all government services offered to individuals and businesses. The combined UAE government portal is an important step towards achieving the *UAE Vision 2021*. The unified portal is in line with the UAE Government's *Strategy for 2011-2013*, which promotes an accountable, lean, innovative and forward-looking government. It is a practical embodiment of the promise that the seven emirates are "united in knowledge", as stated in the UAE Vision 2021. The new federal e-government portal adopts many Web 2.0 features, providing a variety of interactive channels between the government and the public. Users can participate in various opinion polls and rate different existing and suggested services, facilities or policies using the "rate by pearls" feature. In addition, users can evaluate individual services and voice their opinions and concerns directly to decision-makers in order to help improve the services. In its effort to promote transparency, the UAE government portal provides a "government index" which includes federal entities, local entities and government officials. This latter component displays the names, e-mails and photos of different government officials and even links to their social network pages.

The *My Government* initiative was launched in a move to bring customers of government services closer to the decision-makers in the federal government entities. The initiative aims at developing services that would enhance the federal government's operational and service efficiency, which is one of the main pillars of the 2011-2013 strategy. It also seeks to improve the quality of life of UAE nationals and expatriates in line with UAE Vision 2021.

The *Sheikh Khalifa Government Excellence Programme* aims to achieve the vision of H.H. Sheikh Khalifa bin Zayed Al Nahyan and H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice-President, Prime Minister and Ruler of Dubai, to enable the government sector to achieve and sustain excellence in terms of government services, performance, operations and outcomes. The programme, which was established by Resolution 165/22 of 6 December 2006, encourages government authorities to use a universal model of excellence and to adopt a variety of initiatives in order to promote a culture of creativity, loyalty and excellence among all public-sector employees.

The *Egov Portal* introduced by the UAE government (www.government.ae) won the Best Federal Portal award at the Gulf Cooperation Council (GCC) e-Government Awards 2011.

In **Oman,** the Ministry of Tourism has become the first government department to introduce *electronic tendering (e-tendering),* a system affiliated to the Tender Board expected to be launched shortly. The move comes in reaffirmation of the ministry's modernization of its services to keep pace with the Sultanate's e-governance strategy. The Information Technology Authority (ITA) announced that the *Oman e-Government Architecture Framework (OeGAF)* took first place in the prestigious Enterprise Architecture Excellence Awards in 2010, organized by Open Group Arabia. The awards for 2010 recognized organizations, teams and leaders who have adopted enterprise architecture as a platform for business transformation in the pursuit of organizational excellence. OeGAF was based on the Open Group Architecture Framework (TOGAF) which was developed by the Open Group's Architecture Forum. It sets out the principles, strategies and building blocks to support the goals of government. The architecture guides the selection, use and operation of technologies needed to support government business requirements and delivery of services. OeGAF was the first government-wide initiative, whereby 72 government agencies were profiled and mapped onto 24 lines of business. The future plan is to continue the awareness and alignment programme and capture data in the form of agencies' OeGAF compliance scores.

In **Iraq**, a *conference for building E-Iraq* has been set up in Iraq by the Ministry of Science and Technology. The training courses in e-government include:

- E-government
- E-strategy
- E-planning
- E-application
- E-change management in government for key staff in the Iraqi government.

Also in **Iraq**, a *Workshop on e-governing in Erbil* has been organized by the Ministry of Science and Technology in order to showcase e-governance development in Iraq and to introduce new and successful practices via regional and global case studies. This event is designed to be a key entry point for approaches and solutions to delivering electronic services in Iraq.

In the **Republic of Korea**, the National Information Society Agency (NIA) has launched a project for *improving the quality of e-government services and the efficiency of ICT investment***.** This project aims to provide a standardized set of software tools – named *eGovframe* – for developing and running e-government applications, in order to enhance the efficiency of ICT investment and the quality of e-government services. It focuses on improving the reusability and interoperability of e-government applications by setting a standard framework for developing e-government software, ensuring independence from IT companies by adopting open and neutral software tools, and enhancing the competitiveness of IT SMEs by sharing the tools openly through various channels.

Several e-government initiatives have been undertaken in **Bulgaria**. (see Box 14)

Box 14: Bulgaria

The Bulgarian Ministry of Agriculture and Food is developing an *interface* between the Governing body and the Direct Payments Agency, with a contract of up to three years. The service is aimed at surveying the rural development programme from 2007 to 2013

The e-governance strategy which has been formulated includes two projects in the framework of the Operational Programme on "Administrative Capacity", co-financed under the European Social Fund.

Electronic Communication Networks and Information Systems have set up an *Executive Agency for e-guidance and e-government services (eGOS)*. The project is designed to improve employability and guide practitioners' capacity building, through the activities of a prototype service that will enable the delivery of educational and vocational e-guidance services, including cross-border mobility. This eGOS system will enable decision-makers responsible for education, training and employment policies to also reach those citizens who, for different reasons, would not be able to benefit from traditional guidance services. In the long run, the system will allow decision-makers to reduce management costs and streamline procedures (i.e. less human resources required, fewer clients for the traditional services, etc.). E-guidance practitioners will be trained during the project to manage the system and to deliver "traditional" educational and vocational actions through the use of ICT tools hosted on a multichannel open-source platform (WISP – Web-based Integrated Services Platform). End users will be able to access eGOS e-guidance services over the Internet from their home PC, from EG-kiosks located in their areas and from EG-stations on the premises of the tester partners or any associated organization.

The Bulgarian government is establishing an *integrated information system* for the Ministry of Labour and Social Policy (MLSP) with the objective of improving MLSP's services and hence optimizing cost-effectiveness for citizens.

Box 15 a): Submitted by Sub-group facilitator on "eGovernment for sustainable development" of the Action Line C7. ICT applications -eGovernment.

eGovernment is still young in Romania. 2001 was the first year when a Ministry of Communications and Information Technology has been appointed and the first projects were started. Until then, there were developed only some strictly localised solutions, mostly enterprise client-server kind of projects. The first eGovernment solution, the national eProcurement system, has been launched in 2002 and further developed in 2005-2006. In the same time period, there were started some local eTax systems. 2009 marks a cornerstone in the development of eGovernment. It was the first time when a national strategy, called ***eRomania***, was adopted by governmental decision and it addressed the key levers in eGovernment development as well as the major barriers raised in the previous years. The key elements were:

i) ***interoperability*** – between 2001 and 2009 almost all the systems were developed in an isolated manner, without reusing existing solutions and without sharing a common set of databases; this blocked the possibilities to put in place cross-organisational systems, allowed for inconsistencies in databases and increased the overall cost;
ii) ***stakeholder involvement*** – critical for ensuring the acceptance of the solution and to maximise the benefits for central/local government and for the clients (citizens/companies);
iii) ***reusability of data*** – any system should consider the existing databases and connect to these in order to reuse the information and to eliminate the inconsistencies;
iv) ***broadband infrastructure*** – a national strategy has been adopted allowing for a coordinated and sustainable development of the broadband infrastructure and making possible to bridge the gap between developed and less developed areas in the country;
v) **identity infrastructure** – a key element in eGovernment solutions, ensuring secure authentication, non-repudiation and data integrity.

Results followed very quickly, while the number of applications for eGovernment solutions funded by structural instruments increased several times in less then 6 month.

In order to ensure for a sustainable development of eGovernment systems and solutions, to the benefit of all stakeholders, these 5 key levers should be continuously be enforced by disallowing the implementation of new isolated, cost consuming and non-interconnected projects.

In **Oman,** the Ministry of the Interior, in cooperation with other stakeholders, has developed the *electronic ID card voting* (new e-voting) system, which was used for the first time in 2011 for the elections of Shura Council members. It is based on an electronic fingerprint embedded in national ID cards, and electronically transfers the recorded votes to the ministry's headquarters. Around 521 206 citizens registered to vote for 1 133 candidates representing their respective cities, with the 84 winning candidates representing different cities across the country. E-voting made the voting process smooth and professional, saved time, eliminated duplication and promoted transparency. It is planned in future to integrate the system with the national portal in order to enable voting over the Internet.

In the **Russian Federation,** the *E-Government* project within the framework of the *Electronic Russia* federal programme was launched by the Rostelecom open joint-stock company. Infrastructure has been established to ensure access to electronic services for Russian Federation citizens throughout the country. Electronic services are provided to residents by means of the unified governmental and municipal services portal.

In the **Islamic Republic of Iran**, the *Iran Portal* has been launched by the Information Technology Organization of Iran. The portal's services include a list (directory) of a wide range of sites, and new suggestions to enrich the collection are constantly being evaluated and added, thereby offering users the possibility to search among Persian-language sites. Having regard to the needs of users, directory and portal sites have been classified into three categories – subjective, organizational and provincial.

In **Mauritius,** the National Computer Board under the auspices of the Ministry of Information and Communication Technology has implemented *Government Online eServices* in order to promote government-to-citizen interactions. The government web portal enables the citizens of Mauritius to access a number of government applications (63) without having to physically travel. The e-services on the citizen's subportal are very comprehensive and user-friendly, and meet, *inter alia*, the following objectives:

- Making government information and services available round the clock
- Bringing government closer to the people
- Facilitating information sharing and collaboration among government institutions
- Enhancing productivity and efficiency
- Creating a digital community
- Reducing costs (e-filing was used by over 60 per cent of taxpayers to file their tax returns in 2011).

In **Sudan,** the *State Information System (SISP)* has been launched by the National Information Centre. The aim of SISP is to create a unified repository for information and a data design system (DDS) in the country, to foster better and more accurate decision-making and planning at different levels of governance and in a range of sectors (agriculture and animal resources, human affairs, education, youth and sport, local governance, physical planning, culture and media, finance and economy, health). SISP provides graphical user interfaces (GUIs) for different operations according to users' privileges, and provides required reports, statistics and KPIs in different formats. Objectives include securing information and gathering and updating it accurately and effectively from sources. Decision-makers will thus be in a position to allocate resources correctly, in addition to reducing the resources required to collect, update and analyse the information traditionally collected.

C7.2 E-Business

Stakeholders continue to undertake efforts to promote the benefits of international trade and the use of e-business, and promote the use of e-business models in developing countries and countries with economies in transition.[120] E-business models are aimed at increasing economic growth, stimulating trade and boosting job creation in countries.

The United Nations Conference on Trade and Development (UNCTAD), as the main facilitator for the e-business component of Action line C7, has assumed the leading role in a number activities related to e-business.

During the 2010 WSIS Forum in May 2010, UNCTAD, the United Nations Food and Agricultural Organization (FAO) and the International Trade Centre (ITC) organized a *joint session* on two aspects of Action Line C7, namely e-business and e-agriculture. The interactive debate focused on how ICTs can enable rural enterprises to become vehicles of poverty reduction and sustainable rural development. It also addressed how international organizations, the private sector and civil society can contribute, and how government policies can become more effective in creating an enabling environment. Partnerships can contribute to promoting the sustainable use of ICTs in rural enterprises, including by helping to reduce transaction costs and improving decision-making in rural value chains. By joining forces, it was possible to bring two constituencies (e-business and e-agriculture) together.[121]

During the 2011 WSIS Forum**,** UNCTAD jointly organized, with ITU and other members of the Partnership on Measuring ICT for Development, an interactive session dedicated to *measurement of the ICT-producing sector and its importance for policy analysis***.** Participants were encouraged to engage in a discussion with the panellists on the role of ICT statistics and indicators in policy-making, and on the lessons that can be drawn to further develop the ICT sector in particular, and national economies in general. UNCTAD was also involved in the organization of a second session on *measuring ICT for development* (in cooperation with other members of the Partnership).[122]

One of UNCTAD's contributions to the work of the Partnership on Measuring ICT for Development is a *programme to enhance the availability of business ICT data for policy-makers*. UNCTAD collects annual data from national statistical offices (NSOs) from around the world on core business ICT indicators, covering: (i) trade in ICT goods, (ii) the use of ICT in enterprises, and (iii) the ICT-producing sector. In 2011, six countries collected and shared their ICT data with UNCTAD for the first time: Cameroun, Costa Rica, Ecuador, El Salvador, Moldova and Senegal. Also for the first time, UNCTAD released data on the information economy online through *UNCTADStat*.[123]

On 30 May – 9 June 2011, UNCTAD organized, in conjunction with ITU and the UN Economic and Social Commission for Western Asia (ESCWA), UNCTAD organized a *training course on the production of statistics on access to and use of ICTs by households and enterprises* for the Arab countries, in Amman, **Jordan**. The UNCTAD component, from which 17 statistician experts benefited, focused on the measurement of the information economy. NSOs of Arab countries will thus be in a better position to produce internationally comparable ICT data, in line with the international standards set by the Partnership on Measuring ICT for Development.[124]

In **Kenya**, *Digital Villages (PaSha)* is aimed at empowering local entrepreneurs with capacities to enable them to provide ICT facilities.

In **Bulgaria**, a whole series of activities have been undertaken in the area of e-business. (See Box 16).

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[120] Geneva Plan of Action, § 16a)

[121] http://groups.itu.int/wsis-forum2011/Agenda/ActionLineFacilitationMeetings.aspx

[122] http://groups.itu.int/wsis-forum2011/Agenda/InteractiveSessions.aspx

[123] http://unctadstat.unctad.org

[124] http://new.unctad.org/templates/Event 969.aspx

Box 15 b): Bulgaria

The Bulgarian Commission for Consumer Protection has set up *modern and integrated administrative services*. The purpose is to develop an optimized business process model for the provision of the commission's administrative services. The optimized model developed shall be consistent with the regulations of the Law on electronic governance.

The national *public procurement portal* is vitally important for affording all tenderers access to the information they need during the bid and award process in strict accordance with the principle of equality. The portal provides access to the *public procurement register (PPR)*, which is the main tool for publicity. The PPR is a vast database containing information on all public procurement.

The Bulgarian government is developing a *licensing and registers* information system designed to furnish electronic administrative services to citizens and business. This system is an outcome of the Communications Regulation Commission (CRC) *Licensing & registers* project, entirely funded (BGN 741 588) by the Operational Programme (OP) "Administrative capacity", co-financed by the EU through the European Social Fund (ESF)[1] with the objective of improving the quality of administrative services in compliance with European Union's e-government policies. The system is certified for information security and operational interoperability pursuant to the Bulgarian Law on e-governance. Since September 2011, CRC, in accordance with its powers under the Law on e-communications, the Law on postal services and the Law on e-document and e-signature, has been providing 39 e-services to citizens and businesses (*Portal for e-services*).

Project No BG051PO002/10/3.1-04 – *Optimizing the process of delivering services of the Bulgarian Institute of Metrology (BIM)* – is being implemented with the financial support of the Operational Programme (OP) "Administrative Capacity", co-financed by the European Union through the ESF. The main goals of this project are:

- Improve the services provided by BIM for citizens and business through the design, development and implementation of an integrated information system for administrative processes that supports electronic submission and processing of applications, notices and all kinds of feedback from users
- Strengthen BIM's administrative capacity to handle a larger volume of services, enhancing information capability in order to save time, respectively cut the cost of providing services, and effective implementation of the "one-stop shop"
- Build modern and sustainable revenue administration by developing an optimized administrative process model, supporting electronic services in respect of testing for type-approval of measuring instruments (MI), initial and subsequent verification of MI, MI calibration, conformity assessment of MI, testing and validation of metrological software, information from the state registry, control of gaming machines and fiscal devices and testing products under the EMC Directive.

In 2011, the National Statistical Institute and National Revenue Agency will have a *single entry point* for submitting annual tax declarations and annual activity reports. Citizens will be able to file their tax declaration and annual activity report in the territorial structures of the National Revenue Agency, under the Order determining the procedure, means and deadlines for respondents filing their annual report on activities.

In **Bangladesh**, the Institute of ICT in Development (BIID) has launched *Shikor*, an initiative to support access to business information and wider markets for micro, small and medium-sized enterprises (MSMEs). BIID has introduced a web-based interface designed to provide rural MSMEs with information and services about markets for their products. MSMEs in rural areas are constrained, *inter alia*, by limited information and access for selling their products. Entrepreneurship skills lie at the heart of business activities in the modern world. There is a need for business support services to help MSMEs with a wide variety of non-financial services such as information on access to finance, market linkages, counselling, marketing and other information and advisory services.

In May 2008, the United Nations Industrial Development Organization (UNIDO) and Hewlett-Packard (HP) joined hands to implement the *Learning Initiative for Entrepreneurs (HP LIFE)* programme. This entrepreneurship and IT training programme is accessible online and offline. So far, the partnership has set up 33 LIFE training centres in 11 countries, certified 143 trainers and trained more than 18 000 students. UNIDO and HP are working together to promote innovative uses of ICT to support entrepreneurship, help encourage economic development and create

new business opportunities. The United Nations Centre for Trade Facilitation and Electronic Business (CEFACT) has developed and continues to maintain the *United Nations Electronic Data Interchange Standard (EDIFACT)*, which facilitates exchange of information in many areas. UN-CEFACT has issued and continues to develop a host of data codes for exchange of information – the *United Nations Location Code (LOCODE)*; the *United Nations Layout Key for Trade Documents*; the *Single Window* to enhance efficient exchange of information between trade and government; and a *Core Component Library (CCL)* and related products. Priority work areas in 2010 included capacity building and increasing participation of economies in transition.

In **Latvia**, the *Information Society Development Guidelines 2006 – 2013* have been drawn up to ensure economic development of the country and provide equal opportunities to all of society in this regard. Implementation of these guidelines will increase Latvia's competitiveness, contributing to well-balanced development of the information society, which will in turn lead to a society that will know how to acquire and use the relevant information and know-how in the quest to achieve higher living standards.

In **Oman,** the Central Bank of Oman (CBO) has announced the complete launch of *electronic cheque clearing (ECC)* throughout the Sultanate in 2011, enabling bank customers to enjoy the benefits of system efficiency and security resulting in faster collection of cheque proceeds. This project is a milestone in establishing international standard payment systems infrastructure in the country. The technology partners of the ECC project – Industrial Management Technology and Contracting (IMTAC) and ProgressSoft – have provided excellent services and support to the entire banking sector to make this achievement possible. The banks and their customers are experiencing the impact in terms of saved cost and efforts and increased efficiency levels, providing immediate settlement of funds instead of the seven days it used to take under the traditional clearing process in the past.

In February 2011, UNCTAD published the latest available data on the core ICT sector indicators in its *Statistical Portal (UNCTADstat)*. The data tables refer to the ICT sector workforce and value-added as a proportion of the total business sector, and to ICT goods imports and exports as a percentage of total imports and exports

With the help of UNCTAD, progress was made in discussions to finalize e-*commerce laws* for **Cambodia** and **Lao P.D.R.** Further to the revision of their draft cyberlaws in 2007, advances have been made in both countries with regard to discussion and approval of the draft e-commerce laws, and the draft cyberlaws are expected to be adopted by 2012.

In **Latin America and the Caribbean**, UNCTAD delivered a course on *Legal Aspects of E-Commerce* in November 2010. The six-week distance-learning course was delivered to 210 participants from 19 member countries of the Latin American and Caribbean Economic System (SELA).

In the **United Arab Emirates**, several activities have been implemented to improve the business environment, including, *inter alia*, the collection and management of data; creation of new e-business services; facilitation of procurement activities; and control of goods. (See Box 16)

In **Indonesia,** the common *Platform for Electronic Commerce in Indonesia* is an e-commerce platform with common properties describing transaction functions for relevant stakeholders, notably e-catalogue, e-order, e-supply chain and e-payment.

In **Qatar**, ictQATAR is enhancing its consumer affairs function by creating a *Consumer Protection Department* within the regulatory authority. The department is tasked with ensuring that telecom consumers are heard and made aware of their rights, as well as service provider obligations in respect of telecommunication products and services. The Consumer Protection Department will set up a dedicated call centre to handle telecom customer inquiries and complaints, and will also conduct programmes to increase awareness of consumer rights. In regulating Qatar's telecommunication markets, ictQATAR balances the interests of licensed service providers with the rights of consumers. In addition to the call centre, it will also publish regular reports on the quality of services provided by licensed telecommunication operators, including network quality, signal strength and consumer relations. Going forward, ictQATAR will continue monitoring the pricing of services provided in order to preclude any anti-competitive practices that could harm the rights of the consumer. The government is working closely with the licensed operators to ensure that they meet a high level of quality of services offered and advertised.

In **Ghana**, a *Mobile Transaction System (M-Transact)* will enable customers/clients of such institutions such as microfinance agencies, banks and utility companies to make savings deposits, repay loans and effect balance enquires on their accounts through their mobile phone by sending an SMS to a universal short code. The system will help customers to deposit money into their accounts from the comfort of their precinct through their cellphones, and use top-up vendors across Ghana and West Africa.

Box 16: United Arab Emirates

The UAE National Bureau of Statistics (NBS) disseminates a monthly consumer price index (CPI), which is an average measure of the price of consumer goods and services over time. The UAE statistics centre has implemented world-class scientific statistical methodologies for generating UAE statistics. The centre is establishing a nationwide database for various society statistics. In October 2010, NBS signed an MoU with the UAE Federal National Council (FNC) to establish a database which will serve the decision-making process, foster cooperation and help in collecting, managing and using data.

E-transactions enablement has been launched as part of the *Dubai Government Electronic Transactions and Commerce Legislation*. From the outset, Dubai eGovernment embarked on the process of transforming traditional paper-based government commercial and legal transactions into an electronic system (*eEnablement*). Thus, in 2002 Dubai Government enacted Law No. 2 on Electronic transactions and commerce. The law makes electronic transactions and electronic commerce legally valid in Dubai, paving the way for e-business and e-governance in the future. Subsequently, in 2006 the UAE federal government also issued Federal Law No. 1 on Electronic commerce and transactions and Federal Law No. 2 on Cybercrime, thereby providing a solid legal foundation for electronic commerce and related services at the national level.

In 2010, the UAE Ministry of Economy reviewed its full range of services and systems to facilitate and contribute to the business environment in the country. All such services and systems are sophisticated electronic systems that provide flexible solutions to the business community in the country. The most notable among them is the *Electronic Goods Control System*, which contributes to enhancing the performance of consumer markets and ensures inventory control of goods in the market, including limiting monopoly and price increases and ensuring availability of goods on a regular basis in the market. The ministry has completed processing of the necessary infrastructure for this system in cooperation with the Federal Customs Authority. It works through an electronic link between the major trading centres and ports, and the country's customs and excise. The system monitors the quantities and prices of about 200 essential items on a daily basis.

The *Made in UAE* initiative was launched at GITEX 2010 in Dubai. It is an interactive platform to promote national industries and bring them up to world standards, in line with the ministry's strategy to develop the industrial sector in the state, and national industries in particular. It represents a major engine for this vital sector. The site provides a *Made in UAE* tool which each factory can use to introduce its products, using pictures and a full review of the specifications and features of the product displayed, with the aim of promoting UAE national products.

Dubai government departments have been using *Tejari.com* to carry out *e-procurement* activities. Tejari.com was established as a marketplace for conducting B2B (business-to-business) and B2G (business-to-government) electronic procurement by electronically bringing together buyers and suppliers in UAE and in Dubai in particular. The entire procurement cycle has been automated, from requisitioning to tendering, vendor selection, ordering, invoicing and settlement. Necessary integrations have been implemented between the government departments' back-office information systems (namely the government resources planning – GRP – system) and Tejari.com.

The Ministry of Foreign Trade maintains a *database for the foreign trade sector*, which dynamically provides information on the country's trade (non-oil exports, re-exports and imports). The objective of having such a database is to develop the foreign trade sector, promote UAE in foreign markets and assist decision-makers in accessing critical information for the country's trade policy. In line with the objectives of exploiting best practices in the management of financial resources throughout the UAE's federal authorities, the Oracle system will serve to increase transparency as well as accuracy of accounting and to improve financial and administrative work within the federal government.

UAE's new *eXtensible Business Reporting (XBRL)* system[1] allows investors and financial analysts to quickly and accurately analyse data, thanks to its ability to arrange and categorize financial data in a way that facilitates comparison vertically and horizontally, leading to high-quality and accurate in-depth analysis. It is a milestone achievement which will help implement international standards of financial reporting.

In **Oman,** the *One-Stop Shop (OSS)* is an initiative of the Ministry of Commerce and Industry (MoCI) offering a quicker and smoother business registration process for investors, based on a paperless environment. The MoCI's OSS provides more than 60 fully automated e-services for investors in Oman, covering the commercial, industrial and mining sectors, handling an average of 20 000 transactions per month. It promotes transparency and efficiency. It has reduced processing times from 10 days to less than a day for some applications. Plans are in place and work is under way to improve and enhance management of the OSS application and fine-tune it.

In **Tunisia,** *Mobi-Dinar* is a new mobile payment service that was launched in 2010 by Tunisian Post in partnership with two telecom operators (Tunisie Telecom (TT)[125] and Tunisiana). It offers many opportunities for Tunisian Post to implement new means of payment and give citizens easy access to services in mobile mode. This service contributes to improving the quality of services and offers customers value-added mobile services (e.g. information services via SMS, mobile payment services). It enables holders of smartcards to pay for several services via their mobile phone (financial transactions, bills, refilling a fixed or mobile phone, checking balances, blocking their account).

In **India**, the *Samadhan* project was initiated in order to introduce new capabilities in local district administration in association with the Network of Information and Computer Technology (NICT)[126] (implementing agency). The project aims to bring in ICT-based organizational change, establishing the accountability of authorities under the Public Service Delivery Act. This is an example of excellent e-government implementation whereby ICT is used effectively to reduce the time lags between citizens' applications and their receipt by government authorities.

In **Mauritius,** the *E-Payment* project aims to facilitate transactions made at government counters and to encourage the adoption of government e-services. The project comprises two different phases:

- Phase A – *E-Point of Sale (E-POS),* which serves as an electronic means of making payments to the government by using debit/credit cards over the counter; implementation has been completed in four departments
- Phase B – *On-line Payments,* which provides a mode of payment whereby customers can use credit cards or Internet banking to effect payment to the government online.

In **Malta**, the Malta Communications Authority has recently revised the existing *trustmark* currently available in the country, in order to increase online traders' commitment to it. This entailed reviewing and streamlining the existing documentation that regulates the trustmark. A new *e-shop trustmark* was launched to serve as an electronic shopping trustmark for consumers and retailers. The e-shop trustmark embodies a harmonized set of electronic shopping principles designed to support e-commerce and increase online sales. It reassures consumers that they will receive reliable and trustworthy services from e-shop verified traders. Granting of the trustmark is subject to compliance with the Code of Conduct issued by the authority, which specifies minimum quality standards for online shops offering e-commerce services.

In **Peru**, the *Banco de la Nación* (Nation Bank) has 536 branches all over the country, 326 of which are the "only bank offering", i.e. there is no other bank in that location. In the interests of banking, Nation Bank has signed agreements with microfinance institutions that have no budget to build an office of their own. Nation Bank offers them a place in their branches, furniture and lines of credit to serve their own customers. Once a microfinance institution becomes strong enough, it will then build its own branch, and Nation Bank can offer the vacated facilities to another. This will foster the growth of microfinance.

In **Algeria**, the *fuel payment magnetic card* was developed by the Ministry of Post, Information Technologies and Communication in order to modernize payment and offer security to customers, especially for:

- Payment of fuel and services at petrol stations
- Settlement of all undelivered fuel available at service stations.

C7.3 E-Health

Stakeholders continue to work in order to create reliable, timely, high-quality and affordable healthcare and health information systems.[127] Medical training, education and research through the use of ICTs help strengthen international health standards and healthcare. This sub-chapter reports ICT-related activities that reflect efforts undertaken by stakeholders to improve healthcare. ICTs serve to

[125] Tunisie Telecom (TT) www.africanmanager.com/site_eng/detail_article.php?art_id=12292

[126] www.nict.co.in/, Network of Information & Computer Technology

[127] Geneva Plan of Action, § 18a)

alert to, monitor and control the spread of communicable diseases.[128]

The World Health Organization (WHO), as the main facilitator for the e-health component of Action line C7, has been working on a range of activities.

WHO's *Global Observatory for eHealth* monitors countries' progress on *World Health Assembly Resolution* 58/28 and the WSIS agenda. Established by WHO in 2005, the observatory is charged with monitoring, analysing and reporting developments and trends in e-health worldwide. Since the first global survey in 2005, countries have continued to make progress in building the foundation policies, strategies and infrastructure for e-health. Thematic reports assessing progress in 2011 included reports on *online safety*, *m-health* (mobile health) and *legal frameworks for e-health.*

The *HINARI Access to Research in Health* programme set up by WHO together with major publishers enables developing countries to gain access to one of the world's largest collections of biomedical and health literature. More than 8 000 information resources in 30 languages are now available to health institutions in 105 countries, areas and territories, benefiting many thousands of health workers and researchers. Recently, the *Research4Life* partnership, comprising WHO, FAO and UNEP, was joined by WIPO, making its *Access to Research for Development and Innovation* programme the fourth in the partnership.

WHO's multilingual initiatives to make health knowledge available include the *Global Health Library*, which brings together national and regional initiatives to increase access to information and scientific evidence on health, as well as to provide the support necessary to increase the visibility of scientific and health information produced in developing regions. Through a network of librarians, the initiative connects local, national, regional and international information on health.[129]

Public health reporting is formally addressed through the revised *International Health Regulations (IHR).* These regulations commit all countries to collectively apply agreed rules for preventing and managing public health risks. Country preparedness includes developing eight core capacities, as well as capacities at points of entry and capacities in relation to four relevant hazards (zoonotic, food-safety, chemical and radiological and nuclear); a monitoring tool shows progress in development of these national capacities.[130]

Both WHO and ITU have recognized the importance of collaboration for e-health in their global resolutions, which encourage countries to develop national e-health strategies. To that end, both organizations have collaborated in the development of a *National E-Health Strategy Toolkit* as a comprehensive, practical guide that all governments, ministries, departments and agencies can adapt to suit their own circumstances, vision and goals.

ITU TELECOM World 2011, held in Geneva, was a unique opportunity to highlight the contribution of ICT to health, through a joint WHO/ ITU event. The *e-health pavilion*, side-talks and a workshop provided a place for networking, discussion and demonstration of innovative solutions for countries. Above all, it was an opportunity to showcase local solutions and applications to meet the need for low-cost, high-impact e-health programmes towards achieving the UN Millennium Development Goals. Exhibitors included NGOs, governments, academic and research institutes, WHO programmes and partnerships, and the private sector.

The launch of the WHO/ITU *national e-health strategy programme* represents an important new commitment. Additional ongoing priorities include addressing common concerns related to the legal and regulatory landscape as well as improving systems for monitoring disaster and emergency response, which requires collaboration between countries, effective and durable public-private partnerships, and investment across sectors.[131]

In **Lesotho,** the *Stop TB Partnership* is working on investing in *m-health and horses* in order to find and treat people with TB. Funded by the Stop TB Partnership, *FIND* has been working with the Ministry of Health and Social Welfare to improve TB case detection in hard-to-reach communities using a novel combination of mobile phone technology and traditional horse riders. The riders work with village health workers who screen patients for TB at health centres and in communities and use a novel text message system to track patients' results. In the first six months, thousands of TB suspects have already been registered using this system. Monthly facility reports available via a web interface are automatically generated to track results.

In **Moldova,** an exceptional situation was declared in 2003 in Vorniceni, where 75 cases of Hepatitis A were identified at the lyceum. This led to the creation of the *Moldovan Network of Rural Volunteering Centres for Water (MNRVCW)* by the NGO Terra-1530.

In **Pakistan,** the *Health Management Information System (HMIS)* was implemented to enhance the current hospital infrastructure through the provision of hardware, the de-

[128] Geneva Plan of Action, § 18c)

[129] www.globalhealthlibrary.net

[130] www.who.int/ihr/

[131] WHO contribution

ployment of LANs and automation of patient-care services. This automation is designed to facilitate speedy delivery of services to patients, improve internal communications and ensure efficiency and transparency in all the hospital activities.

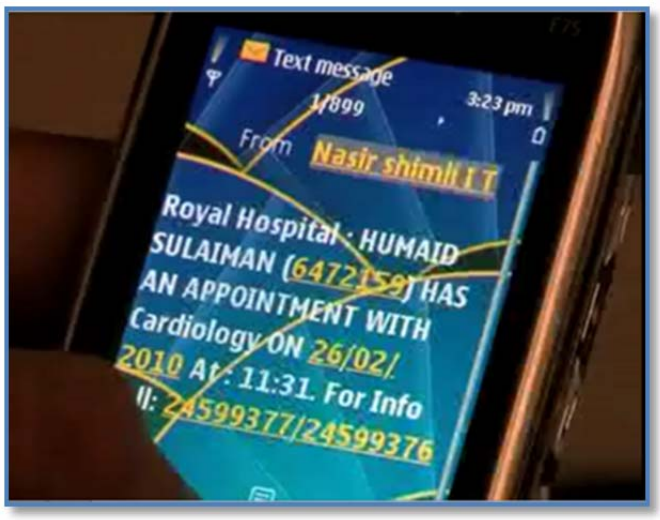
Also in **Pakistan**, the Indus Hospital in Karachi has reported a dramatic improvement in case detection (300 per cent increase in case detection and 500 per cent increase in pediatric notifications) through a Stop TB Partnership supported programme that uses *mobile-phone technology and financial incentives to track down people with tuberculosis (TB).* The incentive system operates using mobile-banking facilities. Doctors report their activities using their mobile phones on the hospital's mobile data-collection system and receive a text message telling them how many cases they have helped to detect. These data are used to calculate monthly incentives, which are transferred to their mobile-banking account.

In **Jordan**, Electronic Health Solutions (EHS) has implemented *Hakeem*, which is one of EHS's programmes and the first national initiative to computerize the health sector in Jordan. Hakeem will enable care providers to migrate from paper-based health records to a system storing health information electronically employing a computer-aided decision support system. The system utilizes open-source software and benefits from unified system implementation across Jordan. It will increase efficiency, promote evidence-based medicine and enforce international best practice in providing care, which will jumpstart the quality of medical services. More job opportunities will be created, along with the possibility of exporting the system to neighbouring countries.

Hakeem, Jordan

In **Tanzania**, a Tanzanian *health information strategy* has been initiated by the Health Management Information Foundation. The *Health Management Information System (HMIS)* is considered to be the single biggest routine data system under the ministry. It collects information from more than 5 400 health facilities. The *health policy* provides for a dispensary in each village, a health centre for each ward and a hospital for each district, and it is anticipated that in ten years' time the number of current health facilities will have doubled. The data cover more than 10 000 villages in the country. HMIS indicators take the form of rates, ratios and absolute numbers, which are compared with threshold and target values for the purpose of assessing performance.

In **Oman,** the *e-Health application Al-Shifa* is an in-house system designed and owned by the Ministry of Health (MoH). It also involves collaboration between MoH developers and end-users (medical staff), and complies with international standards. Services include patient sms, e-mail, appointment management, search, laboratory and equipment interfacing, diagnostic tests, billing modules and drug-expiry management. Currently, 80 per cent of government healthcare institutions are using it (238 institutions), with over 3 million records. Al-Shifa has improved accountability and transparency and achieved a 60 per cent time saving. MoH is currently focusing on establishing a connected, consistent and cohesive set of national e-health records.



e-Health application (Al-Shifa), Oman

In **Georgia**, in 2011, the Ministry of Labour, Health and Social Affairs **(**MoLHSA) will implement a new and innovative programme to interconnect the information needs of the ministry, insurers, providers and patients. *Healthy Georgia, Connected to You* will be a comprehensive health management information system (HMIS) that will draw on lessons learned around the world, and will be built upon existing international standards. In addition, it will also be uniquely designed to meet the current and future requirements of the citizens of Georgia and the country's healthcare delivery system.

In the **Russian Federation,** LLC Epidinfocom has set up a *telemedicine consultation information portal (IP TMC)* that aims to provide the country's population with high-quality telemedicine consultation (TMC) services. To benefit from a TMC, it is enough for the patient to have a computer (including mobile devices such as laptop, communicator, smartphone, tablet PC, etc.) with Internet connection and a webcam. The advantages of IP TMC are:

- Patient consultation irrespective of the doctor's location
- Relevant legally valid medical reports issued with doctor's digital signature
- Storage of electronic medical history
- Ensuring an adequate level of information security of personal medical data.

Mobile Telemedicine Unit in Ural Region, Russian Federation

In **Tanzania,** telephone or web *remote data collection and reporting* of diseases of public- health and international concern that require prompt/immediate action has been a priority for the Ministry of Health and Social Welfare**.** *TAHADHARI* is a tool for data reporting via telephone and for web and data analysis developed to strengthen and improve Tanzania's *integrated disease surveillance and response*[132] *(IDSR)* programme. The main functions of the system are to collect, store and analyse information on cases of diseases requiring immediate reporting, to alert health managers to suspected or potential outbreaks of disease and maternal deaths, to provide a snapshot of the epidemiological landscape at any point in time and, lastly, to provide remote health workers with important information and updates on standard case definitions, outbreaks and other developments related to IDSR.

In **Mauritius,** an *e-business plan (2009-2015)* has been prepared to harness *ICT in public health services***.** The prime objective of the recommendations outlined in the plan is to improve the healthcare provided to all citizens through the definition of an appropriate ICT strategy that will enhance the work processes of the Ministry of Health and Quality of Life, its departments and health agencies. The e-business plan has been published and was adopted by the Mauritian government in January 2009. The plan is currently being implemented, with a draft report submitted prior to implementation of the solution.

Ruhanga (real-time remote health monitoring) developed by Cognizant Technology Solutions is a healthcare application leveraging the power of cloud computing and wireless technologies. It is targeted to providing simple and inexpensive primary healthcare solutions with minimal infrastructure to people living in deep rural as well as remote areas across the globe. Remote monitoring of terminally ill patients who cannot leave their rooms is also a benefit that could be leveraged through Ruhanga.

[132] www.cdc.gov/idsr/resources.htm

Ruhanga consists of patient report system, a physician's system, a central intelligent processing system and a live videostreaming system, which enable live interaction between the patient and the physician via mobile phone.

In **Bangladesh,** the *Amader Gram Breast Cancer e-Health* programme initiated by the Bangladesh Friendship Education Society (BFES) is aimed at reducing morbidity and mortality from breast cancer and other breast diseases for the women of Bangladesh, by means of a sustainable and innovative social business model which includes:

- Community activation and empowerment partnership
- Trained family welfare visitors (FWVs) and health assistants (HAs) in breast health, using cellphone technology with a telemedicine call-in consultation service
- A breast problem telephone helpline service
- Telemedicine consultations
- Breast cancer registry and web-based data management through AG EMR software.

In the **United Arab Emirates, the** Dubai Health Authority (DHA) is seeking to provide an accessible, effective and integrated healthcare system, protect public health and improve quality of life within the emirate. This is a direct translation of the objectives of the Dubai Strategic Plan 2015 launched by H.H. Sheikh Mohammed bin Rashid Al Maktoum. Having regard to the strategic plan, DHA's mission is to ensure access to health services, maintain and improve the quality of health services, improve the health status of nationals, residents and visitors, and oversee a dynamic, efficient and innovative health sector.

In **Algeria,** the *CHIFA social security card* was introduced primarily to enable people to pay without having to file an application or complete and submit a care sheet. The insured person – or one of his/her successors – must also present the card at any step involving the payment centre, such as, for example, to obtain reimbursement. In addition, the card contains personal information on the insured person (health, medical care, drug coverage and medical examinations).

In **Bulgaria**, several systems have been implemented in order to ensure that the health sector is equipped with the latest ICTs to facilitate the exchange, collection and monitoring of information. Examples are given in Box 17:

Box 17: Bulgaria

The *Vetis* animal identification integrated system has been launched for the registration, identification, traceability and control of animals' health status, and for the registration of stock-breeding holdings.

An *automated information system for laboratory analysis of infectious animal diseases* has been set up to speed up processes for the collection of information generated in laboratories and its automatic transfer to the VetIS integrated animal identification system.

The *automated information system for monitoring, laboratory analysis and control of quality and food safety* is an initiative taken to ensure the collection of information on inspections carried out and laboratory analysis of food.

The fifth *National Programme for prevention and control of TB* is a Bulgarian government commitment with a view to reducing the burden of tuberculosis. Bulgaria has applied an integrated and balanced approach to implement its national response, including prevention, treatment, care and support to people affected with the disease, and special focus on poor and vulnerable groups. Two programmes financed by the Global Fund to Fight Aids, Tuberculosis and Malaria[133] (GFATM) have been implemented in all 28 municipalities in the country as an integral part of the national programme. With the support of GFATM, a computerized information system on TB patients was developed for TB health facilities and the national TB register, and a web-based database for programmatic monitoring of the activities implemented by NGOs was also introduced.

The *National Programme for prevention and control of HIV and STIs in Bulgaria 2008-2015* was launched to reduce the number of new HIV infections and improve quality of life for people living with the disease. Since 2004, the *Prevention and Control of HIV/AIDS* programme has been implemented with a grant from GFATM, as an integral part of the national programme. Bulgaria was successful in significantly scaling-up access to and coverage of services for HIV prevention among the groups most at risk, as well as care and support for PLHIV. Under the programme a national database on programmatic implementation of HIV prevention and control activities was successfully developed, and an information system for monitoring HIV patients registered in HIV treatment sectors for follow-up and provision of ART is also functioning.

[133] http://portfolio.theglobalfund.org/en/Country/Index/BUL

In **Slovakia,** the *National E-Health Strategy* is a government strategy document focusing on e-health development within the Slovak Republic. The strategy covers regulatory, legal and project activities undertaken by the Ministry of Health aimed at improving the country's healthcare infrastructure and services, with the following targets:

- legal and guiding e-health framework
- secure e-health infrastructure
- IT investment support for processes and services from public resources
- support for new processes and services for healthcare.

In **Bangladesh,** *E-Clinic: Bringing quality health service in rural areas* has been launched by the Bangladesh Institute of ICT in Development (BIID). The E-Clinic project will cover awareness-building initiatives on healthcare among rural communities, and will use video consultations and other ICT-based tools to offer basic primary healthcare services in rural settings. Rural underprivileged communities, and particularly women and children, will be provided with the quality healthcare facilities that are lacking most. In the pilot phase, there will be a central management unit located in Dhaka, equipped with state-of-the-art technologies and qualified health professionals, and ten service delivery points in different parts of the country, equipped with basic ICT infrastructure. Rural communities will be served in a sustainable manner by offering e-health facilities with the support of existing health-service providers, including health professionals working in rural areas. Continuing medical education (CME) will also be introduced through the E-Clinic network.

In **Europe**, the project on the *socio-economic impact of interoperable electronic health record (EHR) and e-prescribing systems in Europe and beyond* has been introduced by Empirica Communication and Technology Research, EHR Impact. (Germany). The core of the project is a detailed qualitative analysis of eleven good practice cases in Europe, the United States and Israel. Nine of these also underwent a quantitative evaluation of their socio-economic impacts. The European Commission EHR Impact study (EHRI) investigates the socio-economic impact of interoperable electronic health record (EHR) and e-prescribing systems in Europe and beyond. The two measures of performance, namely socio-economic return (SER) and a proxy return on investment (RoI), show different results. A general finding is that EHRs and e-prescribing are beneficial societal investments for better healthcare, but, except in very specific circumstances, need net cash injections

In the **United States**, by supporting the mission of *national institutes of health (NIH),* the Foundation for National Institutes of Health draws together the world's foremost researchers and resources, pushing back the frontiers to advance critical discoveries.

In the **United Arab Emirates,** *Wareed* is a project implemented by the Ministry of Health (MoH) that aims to revolutionize the healthcare system and develop healthcare services with a fully integrated health information system. This initiative stemmed out of recognition by MoH that information technology is a key driver for improving quality, safety and efficiency of services provided by MoH hospitals, clinics and medical centres. Wareed was initiated to ensure that appropriate systems and infrastructures are put in place to support the ministry's strategic objective and to enable improved information management through the consolidation and rationalization of infrastructure and services. The project will integrate 15 MoH hospitals, 68 affiliated clinics and 18 other facilities in Dubai and northern UAE. Wareed is based on a technological platform that will virtually link all public-sector medical facilities across the six emirates and automate all healthcare processes.

The WHO *Tobacco Free* initiative was initiated to exploit mobile health technology in order to advance tobacco control. The WHO Tobacco Free initiative is looking to work with interested governments and public/private organizations (e.g. IT companies, telcos, academic institutions, etc.) to develop cost-effective interventions in the area of tobacco control and mobile health.

In **Europe,** the *European Health Interview Survey (EHIS)* implemented with *EuroStat* grant support has been initiated by the National Statistical Institute in Bulgaria. The expected results of the action were:

- Implementation of the national HIS based on EHIS modules
- Preparation of an interim report (with, in annex, the final version of the EHIS questionnaire in Bulgarian)
- Preparation of a final technical report with a general description of the implementation of the modules.

The following outcomes were prepared:

- Instructions for the interviewers in Bulgarian
- The codification scheme used
- Description of the data-file structure
- Frequency tables at national level
- Description of the survey(s) hosting the EHIS modules according to the EHIS quality categories and criteria

In the **Russian Federation,** the *telemedicine system* was created based on ICTs and use of mobile telemedicine units (MTU). The system consists of two parts: a network of stationary telemedicine points, established in foremost clinics and special medical institutions of the country; and,

connected to them by ICTs, a network of MTUs in various destinations. MTUs comprise a set of medical diagnostic equipment and communication facilities, including satellite equipment, mounted on an off-road chassis. MTUs are fully equipped for independent operation with the necessary autonomy to enable medical investigations of populations in rural areas and remote regions and districts that are hard to access.

C7.4 E-Employment

The activities reflected in this subchapter illustrate best practices in terms of how stakeholders are promoting new ways of organizing work and business with the aim of raising productivity, growth and well-being through investment in ICTs and human resources[134].

According to the Geneva Plan of Action, teleworking serves to allow citizens, particularly in the developing countries, LDCs and small economies, to live in their societies and work anywhere, and to increase employment opportunities for women, and for those with disabilities.[135]

In **Egypt**, the *Online government recruitment system* was launched to combat the challenge of unemployment and foster better job opportunities and a better labour environment in Egypt. The Ministry of State for Administrative Development (MSAD) works on publicizing government job vacancies online through the *Government recruitment portal*, thereby enabling job seekers to apply for jobs online. Selection results will also be published online, to assure transparency of the procedures.

In **Malta,** the *EPITOME (Empowerment Programme for IT use: Outreach for Micro Entrepreneurship)* project [European Social Fund project code ESF 2.72] aims to ensure that micro-industry employers/employees acquire ICT skills that are applicable in business and entrepreneurship, which will enable them to become more flexible so as to meet the needs of the economy. The training programme aims to re-train, re-skill and adapt the labour force, and hence it make it more responsive to the continuous challenges of market opening and the ongoing introduction of new technologies. Ultimately, the project will contribute to reducing unemployment levels.

In **Qatar**, ictQATAR and Qtel are working on a pilot project aimed at enabling women to work from home. In today's fast-paced world, women frequently face challenges in balancing the often-competing demands of professional aspirations and family life. As part of a new initiative, *Women Working from Home*, ictQATAR and Qtel are partnering on a pilot project to help ensure women can remain fully committed to their family obligations while still being an effective part of Qatar's vibrant workforce. The partners signed an agreement on Thursday, 1 April 2010 to officially launch the project.

In the **United Arab Emirates,** the *International Dubai Knowledge Village* was established in 2003 as part of TECOM[136] investments. It seeks to position itself as the regional pole for human resources management providers, offering unique opportunities for networking and business initiatives. In addition, it offers human resources management, consultancy, training and personal development programmes. It hosts more than 220 HR development institutes, 70 consultancy institutes, 20 research and development organizations and more than 100 freelancers in one cluster at one place. The Knowledge Village is working on developing the region's talent pool to support UAE's vision of a knowledge-based economy.

Also in the **United Arab Emirates,,** the *National Human Resources Development and Employment Authority (TANMIA)* is an independent federal government authority with the following main objectives:

- To create job opportunities for the UAE national workforce
- To reduce the unemployment ratio
- To enhance the skills and productivity of the national workforce
- To recommend relevant policies to the UAE federal government.

TANMIA services are designed for individual UAE national job seekers, employers, students, career counsellors, training institutes and government bodies.

In **Bulgaria**, the mission of the *National Tourism Advertisement Programme* is to process and analyse statistical data for the development of the country`s tourism sector**.** This progamme assists in:

- Maintaining the system for tourist information as integrated e-data
- Gathering, processing and storing data, and making it relevant for the integrated tourism information system
- Participating in the preparation of the official Bulgarian tourism website on the Internet, advertising the site and making it popular
- Connecting with mass media and organizing meetings and interviews for the representatives of the press

[134] Geneva Plan of Action, § 19b)

[135] Geneva Plan of Action, § 19c)

[136] www.tecom.ae/dubai-knowledge-village/

- Organizing and carrying out periodic and specialized meetings and news conferences to discuss and publicize the results of the activity.

In **Saudi Arabia**, the Ministry of Labour has turned to ICT, integrating three ministries' data in *Nitaqat,* which rates the private sector on its performance in "saudization", on a four-tier scale (red/yellow/green/platinum). The system gives entities and incentive to recruit Saudi nationals. After implementation of the system, Saudis work in the private sector increased from 11 per cent to 11.5 per cent in less than three months. It is forecast that 1.12 million new jobs will be created by 2014, possibly achieving an annual growth rate of 5.3 per cent .

Also in **Saudi Arabia**, the *National Unemployment Assistance Programme (Hafiz)* was set up to address the critical need to support job seekers while they are looking for employment. This effort was designed to further develop the nation's information society, and its commitment to gender equity and youth empowerment. Saudi Arabia has invested significant budgetary resources in the Hafiz e-employment assistance programme, to match qualified people through an online system. Hafiz supports more than 2 million Saudis with technology tools to enable them to apply electronically to the Human Resource Development Fund, with around 700 000 qualified Saudi women against 200 000 Saudi men. Under its rules, the Hafiz system gives priority to disabled job seekers.

In **Oman,** the Ministry of Civil Service is responsible for recruiting nationals for government entities. The proposed *national recruitment system* is SMS-based, relying on the country's high mobile penetration (over 170 per cent), and is linked to national manpower records. Job seekers can apply for vacancies and receive confirmations for exams or interview appointments. The system has interview records, a random examination module, data validation and records, and brings enhanced efficiency, accuracy and transparency. With currently 62 274 subscribers, it reduces travelling costs and waiting time for applicants, and yields an estimated annual government saving of USD 3 million, excluding sms revenue.

C7.5 E-Learning

ICTs can contribute to universal education through the delivery of education and training. The activities listed in this subchapter reflect efforts deployed by stakeholders to promote e-literacy skills for all.

UNESCO, as the lead facilitator for the e-learning component of Action line C7, has implemented a series of actions, reported below.

In cooperation with experts from **Jordan**, **Namibia**, **Rwanda**, **Singapore** and **Uruguay**, UNESCO published case studies on e-learning policies entitled *Transforming Education*: *The Power of ICT Policies,* in order to facilitate North-South knowledge sharing on e-learning policy development.

Based on this publication, and in cooperation with the government of Uruguay, UNESCO convened an *International Workshop on ICT Policies for Policy-Makers*. In response to requests from member states, UNESCO organized national workshops on the development of *National ICT in Education Policies* for 30 ministry of education (MoE) officials from **Antigua and Barbuda**, **Maldives** and **Trinidad and Tobago**.

In cooperation with the World Bank, two regional learning events on *ICT in education* were organized for the ten English-speaking **Caribbean** countries. Sector-wide ICT in education policies were either developed or updated. In cooperation with Intel, the second *Asia-Pacific Regional Ministerial Forum on ICT in Education* was convened, bringing together some 10 (ministers and vice-ministers of education and another 30 MoE officials to discuss how to make e-learning effective and safe for students.

On 31 October 2011, UNESCO launched the *ICT Competency Framework for Teachers (ICT-CFT) Version 2.0*, which aims to support national teacher ICT competency policies and standards. ICT-CFT was developed in partnership with civil society and private-sector companies. This is part of UNESCO's overall strategy to support teachers in becoming qualified e-learning facilitators.

In cooperation with the Talal Abu-Ghazaleh Organization (TAGorg), UNESCO has undertaken a study of *ICT Indicators for Education* in the Arab States region, in **Bahrain**, **Egypt**, **Jordan**, **Oman**, the **Palestinian Authority**, **Qatar** and the **United Arab Emirates**.

UNESCO launched the *UNESCO Open Educational Resources (OER)* platform and the *UNESCO/COL OER Guidelines for Higher Education* at the 36th UNESCO General Conference. These tools aim to facilitate and mainstream the use of OER by the education community.

Working with Nokia and the United States government, UNESCO has launched three mobile learning projects: Mobile Technologies for Literacy Education, the Development of Policy Guidelines on Mobile Learning, and Using Mobile Technologies to Support Teaching and Teachers Development.

In **Qatar**, ictQATAR hosted the fourth *Exploring ICT in Education* conference, where regional and international experts gave lectures and conducted interactive workshops

on a range of topics addressing how technology can help improve education.[137]

In **Saudi Arabia,** the *Noor* programme is an educational management system that serves schools, students, teachers, parents and educational directorates, providing them with more than 2 700 electronic services. The Noor system is a comprehensive and integrated educational process, and learning depends on highly advanced technology in the field of educational administration.

Under the *World Ahead Programme***,** Intel collaborates with governments, telecommunication providers and technology companies, financial institutions, healthcare institutions and other organizations to speed up technology access and market development. The result is comprehensive, long-term approaches that enable citizens to acquire 21st century skills and participate in the global economy. For instance, Intel's holistic blend of technology, software and resources helps prepare students from kindergarten to college for a brighter future. Intel has worked with governments and other organizations to create effective e-learning programmes. These combine technology, connectivity, teacher development and digital content to help students learn more effectively. *Intel Teach* has taught over 7 million teachers in 50 countries how to successfully integrate technology into classrooms in order to improve learning. Moreover, Intel's *ICT for Education* programme is donating 100 000 PCs worldwide to help promote classroom learning.[138]

In **Qatar,** the *Qatar National e-Learning Portal (QNEP)* provides online courses, covering a range of topics in information technology and business. It offers more than 4 000 different online courses, and allows for flexible learning. Built up over the past three years, there are now over 60 organizations actively using QNEP courses. The programme has introduced web-based training courses to thousands of working professionals across Qatar through its digital learning system and library. Since 2009, some 37 000 online courses have been accessed by 8 000 learners (data at 8 February 2012).[139]

Connect To Learn is a collaborative effort between Ericsson, the Earth Institute and Millennium Promise that leverages the power of ICT to bring a high-quality education to students everywhere.[140]

In the **United Arab Emirates**, Etisalat and Huawei Technologies Co. announced the launch of the *e-Books Store/e-Library* pilot project at Khalifa University of Science, Technology and Research (KUSTAR). The pilot project is a partnership between the Etisalat-Huawei Application Innovation Centre (AIC) and the Etisalat-BT Innovation Centre (EBTIC). The e-Books Store/e-Library trial was targeted to begin at the end of December 2010. During the trial, students and faculty members of Khalifa University were planned to have the opportunity to access, experience and enjoy hundreds of titles free of charge. These include both written and audio books. Students would also be able to access their lecture notes, laboratory notes and other e-resources from their smart devices like PCs and mobile clients. In addition, users will be able to bookmark pages, search for keywords within the e-book that they are reading, add and combine notes and change settings as per their preference, using these clients. Etisalat will extend the pilot project to other universities in UAE and to publishing houses located within and outside UAE in order to help them upload their books to the e-Books Store/e-Library service, ultimately providing a comprehensive service that will serve both universities and consumers.

In **Slovakia,** the Ministry of Finance has put forth a *Regional e-Education System* strategy. The government's strategic document focused on e-education development for primary and secondary education systems within the Slovak Republic. The strategy is founded on three main pillars: content, people and infrastructure. An action plan has also been elaborated as an integral part of the strategy.

[137] www.qatarictconference.org

[138] ICC contribution, www.intel.com/content/dam/doc/article/world-ahead-program-brochure.pdf

[139] www.ictqatar.qa/en/news-events/news/ictqatar-recognizes-outstanding-achievement-adopting-e-learning

[140] ICC contribution www.ericsson.com/thecompany/sustainability_corporateresponsibility/enabling_communication_for_all/connect_to_learn

The *Telecentre.org community learning programme* set up by the Telecentre.org Foundation helps to facilitate the sharing of ideas, resources, learning and best practices among members of the telecentre community through the following tools:

- Community sites in multiple languages (English, Spanish, French, Arabic, Russian): Through these sites, member interaction is encouraged via blogs, forums, discussion groups, sharing of photos, videos, etc. and through online events (e.g. quarterly webinars, photo contests, etc.) for the community
- Online library: A free repository of multimedia resources on telecentre and ICT4D issues and practices in multiple languages
- Global telecentre map: A database of telecentres and telecentre networks across the globe.

Image provided by Telecentre.org Fountation, Philippines

Box 18: Germany

In **Germany**, the Gesellschaft für Internationale Zusammenarbeit (GIZ) gGmbH, on behalf of the Federal Ministry for Economic Cooperation and Development, has introduced *Global Campus 21®*, which provides a platform for international advanced training and cooperation on the Internet. Since it was created in 2000, more than 60 000 participants have used GC21® (data at 2010)[1] for learning, sharing information and experience and working on joint projects unrestricted by time and space. The learning management system on which Global Campus 21® is based supports the quick and flexible construction of virtual workrooms with freely structured learning content. In addition, the *GC21 E-Academy for Sustainable Development* was set up to provide an emerging system of courses and smaller course units developed and maintained by GIZ, covering a growing range of subjects of broad interest to professionals engaged in sustainable development. Courses are regularly offered by E-Academy staff as standalone courses for individual enrolment, and they can be integrated into target-group specific training programmes by the academy's programme divisions and other interested parties.

Also in Germany, the *Regional Capacity Building for e-Learning* programme was launched by the Gesellschaft für Internationale Zusammenarbeit (GIZ) gGmbH on behalf of the Federal Ministry for Economic Cooperation and Development. The programme consists of three components:

- *E-skills training*: Modularized training courses for employees and decision-makers from educational and vocational institutions. The content covers: e-learning strategy and management, course development and implementation, instructional design and interactivity, e-learning technologies and support and tutoring of virtual communities.
- *E-institution building*: The individual training approach is closely related to institution building. GIZ always encourages and supports efforts within the trainee's institutional context so as to disseminate their skills and establish (local, national and regional) e-learning competence centres.
- *E-network building*: Until now, GIZ has actively initiated and supported communities of practice and networks in the field of e-learning in the Southern African Development Community (SADC), the East African Community (EAC), Latin America, Southeast Asia, Central Asia and the Caucasus.

One outstanding initiative undertaken by GIZ and others is *Open ECBCheck* (www.ecb-check.org). This is a new accreditation and quality improvement scheme for e-learning programmes and institutions in international capacity development which supports capacity-building organizations in measuring how successful their e-learning programmes are and allows for continuous improvement though peer collaboration and benchlearning.

Again in Germany, an e-learning course on *economic and financial reporting* has been created by Gesellschaft für Internationale Zusammenarbeit (GIZ) gGmbH, on behalf of the Federal Ministry for Economic Cooperation and Development, to encourage knowledge transfer and skills training in economic reporting through e-learning.

In **Georgia**, the development of *information communication infrastructure for secondary education* has been initiated in order to use modern technologies in the teaching/learning process in secondary schools in Georgia and to create a contemporary educational environment. During the first stage, in 2005-2009, within the framework of the "Deer Leap" programme, Georgian schools were granted around 26 500 computers and other special technical equipment. During the second stage in 2010-2011, all schools in Georgia (around 2 500) were equipped with Internet. The use of computers and other technologies has become an essential part of the school curriculum. The Ministry of Education and Science created the new Internet portal *Buki.ge*. Every student can access this Internet resource at school as well as at home. Education-cognitive games, electronic versions of textbooks and other literature are posted on this website. In 2011, the computer-to-student ratio stood at 1:20 as compared to 1:200 in 2005.

In **Tunisia**, the Tunisian Post *distance training school* has been set up to serve as distance-learning platform via Internet developed by Tunisian Post, aimed at enhancing the skills of postal staff. It is an integrated, multifunctional platform that offers courses delivered in Arabic, French and English on several topics related to postal and financial services. This platform hosts the *Trainpost programme*[141], created in partnership with the Universal Postal Union (UPU) in 2004 (more than 4 500 employees from 168 countries in 2010), and the African and Arab distance-training school, created in 2011 in partnership with the Pan-African Postal Union (PAPU) (offering African and Arab postal administration staff the possibility to pursue distance-training cycles).

In **Tanzania**, universal access for university students across Tanzania – *ePopote* – was launched by *UhuruOne.* This project will help ensure that young Tanzanians have access to world-class education and technology, whilst generating revenues that make the endeavour self-sustaining. Services and products include:

- Brand new laptop
- Unlimited Internet on and off campus
- Student e-mail account
- Student-to-student VoIP calling
- Media streaming
- Access to on-campus learning centres
- Online material and courses

[141] www.upu-trainpost.com/eng/trainpost_index.htm

- Access to a wealth of e-learning materials and training
- Access to low-cost technology for students, teaching staff and administration.

The ePopote initiative aims to empower youth through knowledge, and is scalable to address various needs, sectors and communities.

ePopote, Tanzania

In **Argentina**, the University of La Punta has created a *platform for education* – the *TSakai platform*. This tool is aimed at supporting teaching and learning for children, adults and teachers. It is also used as a platform for the *Knowledge Olympics* in 13 areas (www.olimpics.edu.ar) and for the education of adults who are finishing primary or secondary levels. Different groups of coordinators upload the learning and practice material. Evaluation is carried out within the platform in order to ensure that all the inhabitants in the region improve their knowledge and skills.

In **Bulgaria,** several activities have been implemented in the framework of e-learning, including:

- An *ICT in Education* project was set up to provide free Internet, software and training to teachers, preparation of e-lessons and e-learning materials, development of e-learning platforms and certification of ICT skills. It also helps establish collaboration activities between schools, through the use of a unified com-

munication environment and school management software – e-diaries etc. The programme also supported the establishment of free wireless (WiFi) zones in more than 130 schools, as well as pilot innovation labs for progressive technologies in education in three of the biggest Bulgarian universities.

- A national *ICT in school* programme was set up to provide high-speed connectivity, Internet access and centralized monitoring of the school network. It also supports the interconnection of Bulgarian schools and universities to the PAN-European research backbone GÉANT[142].

C7.6 E-Agriculture

This subchapter covers the activities related to e-agriculture, which is the sector that involves the use of ICTs to improve agriculture, animal husbandry, fisheries, forestry and food, in order to provide ready access to comprehensive, up-to-date and detailed knowledge and information, particularly in rural areas.[143]. Work focuses particularly on providing easy access to comprehensive and up-to-date information within these industries.

Activities relating to the e-agriculture component of Action line C7 are underpinned by the global *e-Agriculture Community*. Conceived in 2006, and established in 2007 by a multistakeholder group of organizations[144] that believe in the critical role of ICT in agricultural development, the e-Agriculture Community, which is facilitated by FAO, acts as a catalyst for knowledge sharing about the role of ICT in sustainable agriculture and rural development. It now has over 8 000 registered members from 160 countries who have shared over 1 600 information resources and 2 000 news items and events, as well as expressing their viewpoints through blogs. Some 16 online forums on important topics identified by the community have brought together 16 000 participants, who have made some 3 000 discussion posts, producing 19 trilingual policy briefs. Online activities, which reach tens of thousands of individuals every year, are complemented with face-to-face events. Partnerships and collaborations come from both the private sector and development organizations.

In 2011, the global e-Agriculture Community continued to examine the role of gender in the ICT and agriculture domain. Topics also prioritized during the year were enhancing agricultural markets and creating sustainable and scalable information advisory services with ICT. Last but not least, the challenges of capturing the impact of ICTs in agricultural initiatives were addressed. Key partners included the Technical Centre for Agricultural and Rural Cooperation (CTA)[145], the GSM Association (GSMA), mFarmer and Katalyst. The World Bank and the community have begun collaboration to further develop resources for the recently launched *ICT in Agriculture* sourcebook.

As a special campaign for the *International Year of Youth*, the Young Professionals Platform for Agricultural Research for Development (YPARD) and e-Agriculture published a series of articles written by young people about ICT, agriculture and youth. Giving a voice to the "digital generation" in the agricultural sector is essential for the future of rural development and food security.

Critical issues are and will continue to be addressed through discussion forums, policy briefs and case studies.

Considerable work in the area of e-agriculture has been undertaken in **Bulgaria**. (See Box 19)

[142] www.geant.net/pages/home.aspx

[143] Geneva Plan of Action, § 21a)

[144] Information on the "founding partners" is available at www.e-agriculture.org/founding-partners

[145] www.cta.int/

Box 19: Bulgaria

The Bulgarian Ministry of Agriculture and Food has been developing a *survey and reading software*. This includes the creation and updating of an interface between the governing body and the Direct Payments Agency for the purpose of surveying the rural development programme from 2007 to 2013.

The Executive Agency for Fisheries and Aquaculture (EAFA) under the Ministry of Agriculture and Food has set up the *EAFA registers,* along with supporting information systems. Regulated by the Fisheries and Aquaculture Law, the registers include:

- Register of ships in the fishery fleet of the Republic Bulgaria
- Register of permits for commercial fishing
- Register for tickets for amateur fishing
- Register of individuals breeding and cultivating fish and other water organisms
- Register of markets for first-time sale of fishery products
- Register of organizations of producers and their branches
- Register of buyers
- Register of organizations fishing for scientific purposes
- Register of draughts and sales of fish.

The Bulgarian Agricultural Academy has been improving the feasibility and focus of *research in the agriculture and food sectors*. Research conducted relates to the actual needs of Bulgarian agriculture and the accelerated transfer of scientific knowledge and innovation for the stabilization and development of agricultural production in the country. The research is geared to:

- Maintaining and creating new varieties, hybrids and crop lines and new technologies for conventional and organic production
- Maintaining and creating new livestock lines and breeds and new technologies for conventional and organic production
- Developing efficient technologies in crop and livestock production
- Improving the range, quality and safety of food
- Developing strategic documents for action on mitigation of climate change
- Using public-private partnerships in research as well as partnerships for the implementation of best practices and innovations in Bulgarian agriculture
- Creating technology centres for technology transfer
- Patenting and certifying new scientific products
- Modernizing the Agricultural Academy's research infrastructure, including (a) inventory of existing research infrastructure; (b) construction of new complex research infrastructures; (c) increasing the efficiency of scientific infrastructure.

The Bulgarian Ministry of Agriculture and Food has also been carrying out continuous monitoring and inventory review of *genetic resources*, e.g.:

- Inventory review and monitoring of genetic resources in crop and livestock production
- Conservation, preservation and development of genetic resources
- Updating and maintenance of farm production and marketing of pure-bred and hybrid breeding material.

The Bulgarian Ministry of Agriculture and Food has introduced *integrated production systems*, increasing the share of *organic production* with low inputs and improving the *conservation of natural resources*, *biodiversity* and *human health*.

The Bulgarian Ministry of Agriculture and Food has been maintaining an effective and efficient *system of official controls*, consistent with the general principles of compliance with and enforcement of EU legislation on transparency and flexibility and on the elimination of corrupt practices, conflict of interest and duplication of activities. The purpose of the system is to achieve flexibility, transparency and public awareness of quality and food safety. It entails:

- Establishing and keeping a register of sites for extraction, processing, storage and marketing of food and fodder
- Merging the existing system of Ministry of Agriculture and Food and Ministry of Health registers, and migration to a single authority structure for the official control of food and fodder.

The Bulgarian Ministry of Agriculture and Food has overseen the implementation of a new *information system for agricultural management and monitoring* under the European Commission (EC) Information System for Agricultural Market Management (ISAMM), covering market developments within the Common Agricultural Policy (CAP). The objectives of ISAMM are as follows:

- Define and build a flexible IT application framework for the creation and evolution of advanced IT systems to support CAP business processes
- Enlarge the number of CAP processes supported by an IT system
- Technically support data transparency of CAP processes
- Technically support/automate data collection
- Simplification for all actors.

The expected benefits of ISAMM are:

- Technical support for the management of various CAP markets and direct support through more efficient support for CAP business processes
- Effective, controlled and secure electronic exchange of data with member states for all relevant CAP processes
- IT functions opened up to member states' administrations
- An IT system capable of growing to accommodate future business needs
- Technical transparency of both processes and data
- Automation of the collection of historical data for impact analysis and support to CAP decision process
- Improved effectiveness of advice in agriculture and applied research in the agricultural sector through an improved research/agricultural advice/agricultural business linkage.

The Bulgarian Ministry of Agriculture and Food is improving the agricultural advisory system – the *Pologne, Hongrie Assistance pour la Restructuration Economique (PHARE)* project – aimed at:

- Establishing common rules for direct support schemes for farmers under the CAP and establishing support schemes for farmers
- Adopting changes in regulations governing the agricultural advisory system
- Building a coordination centre as part of the structure of the agricultural advisory system
- Creating a database of consultancy organizations providing agricultural advice
- Including vocational agricultural schools in the agricultural advisory system, in order to expand the advisory network
- Improving the quality of agricultural advice through training, monitoring, control and evaluation of the activities of advisory organizations
- Organizing specializations, courses and training seminars for experts from advisory bodies
- Conducting monitoring, control and evaluation of the activities of advisory organizations.

An *Agrostatistical Network System (ASNS)* has been launched in Bulgaria in order to institute an effective and comprehensive database organization and storage methodology. The database is populated with statistical information already collected by the relevant department. The system has to support subsequent manipulation of the data and the generation of representative references, publications and a variety of extracts founded on research conducted.

The *Farm Accountancy Data Network (FADN)* has been launched by the Bulgarian Ministry of Agriculture and Food, with a view to providing objective, consistent and comparable information on the development of the industry. Statistical surveys conducted under the national statistical research programme include: employment and land use, production of major crops and vegetables, vines, fruit trees, livestock and livestock products, structure of agricultural holdings.

The Bulgarian Ministry of Agriculture and Food is building a system of ex officio protection of agricultural products with geographical designations/designations of origin protected as intellectual property rights. This involves preparing and adopting amendments to the regulations of the different administrative structures, in order to create the legal conditions for the establishment of an official initiative for the protection of agricultural products and foods with geographical designations protected as intellectual property rights; and developing guidelines for the work of the teams of employees who will carry out field checks and employees who will carry out supervisory functions. In this connection, the ministry has also been working on the construction of records/databases of producers of agricultural products and foodstuffs with protected geographical designations of traditional and specific character and of controlling persons. A system for weekly reporting of prices to the European Commission has been introduced by the ministry.

The Bulgarian Ministry of Agriculture and Food has created the *FERMA* information systems, which support:

- Dynamic registry data for agricultural land, forests and forest lands
- Register of property owners
- Register for the use of agricultural land, information on benefits to those eligible under the Law on the Ownership and Utilization of Farmland (ZSPZZ), and land for landless and poor citizens.

The *Bulgarian National Grain and Feed Service (NGFS)* is a unified information system that holds information about issued, renewed and withdrawn licences, public grain warehouses and grain certificates, as well as information on deposit contracts and warehouse receipts issued by type, quantity and quality of grain. The unified information system maintains dating details from public warehouses and granaries.

The State Agriculture Fund in Bulgaria has created an *integrated system for administration and control (ISAC)*, making available a number of authorized modules, registers and functionalities, such as:

- Direct payment per scheme and region
- Commercial mechanisms
- "Bad debts" module
- Registries for animals, bee-gardens, agriculture techniques, etc.

The Technical Control Inspectorate's (TCI) *unified information system* has been created to automate TCI's work on market-approval, registration and technical safety control of agricultural and forestry machinery and equipment for earth works. The system provides information on:

- Registered, re-registered and withdrawn agricultural and forestry machinery by machine type, owner and location
- Annual technical inspections
- Certificates of competency issued by entities, and categories thereof
- Registration certificates issued.

In Bulgaria, an information system called Akstur Popeye has been set up by the Executive Agency for Fisheries and Aquaculture (EAFA) under the Ministry of Agriculture and Food. The Akstur Popeye information system is developed to manage European projects covering the needs of EAFA. It handles a number of functions, such as: registration of petitions/applications for territorial units, submission of projects by EAFA employees to the main administration (board), extraction from the standard register, and preparation of different inquiries about the submissions and projects of authorized employees.

In **Bangladesh**, the Institute of ICT in Development has introduced *E-Krishok*, an initiative aimed at empowering farmers and advancing towards e-agriculture, so as to bring the benefits of ICT to the farmers of rural Bangladesh. ICTs can be used to deliver information and advisory services to farmers in rural and remote locations at very low cost, bringing them benefits to which they would otherwise not have access. With access to such information and advisory services, farmers can improve their livelihoods and boost their incomes, and hence plan for the future in a more secure frame of mind.

The World Food Programme (WFP) has created *web portals for knowledge management and partner collaboration* to support the fight against hunger and malnutrition. With the support of governments and donors, WFP facilitates forums or information and knowledge exchange throughout WFP and among partners. Often, such forums are supported through interactive web portals. One example of such a portal is *NUTRINET.org,* a forum for **Latin America and the Caribbean**. Convened by WFP and supported by the governments of the region, this portal hosts information, expertise, knowledge databases, discussions and contacts in a joint effort to manage knowledge in order strengthen the capacity of countries to design and implement effective programmes to combat hunger and malnutrition in the countries of the region. The portal has become a vibrant community of food security practitioners in Latin America and the Caribbean, and is now being replicated elsewhere in the world.

In 2010, UNCTAD, FAO and ITC organized a *joint session* on the e-business and e-agriculture components of Action line C7.[146]

In **India,** Central Agricultural University has implemented the *e-Arik* project, a round-the-clock query resolution and expert consultation mechanism for farmers, established using several methods and media: computer-based Internet, e-mail, webcam, websites, offline CDs, digital library, TV, radio and face-to-face personal communication. Project facilitators (agricultural professionals, computer instructors and farmer facilitators) were appointed at the project centre to assist farmers in gaining access to farm information using ICTs.

e-Arik, India

in **Ghana**, a project to promote the *use of ICT in ensuring food security* has been implemented by the University of Maryland Eastern Shore (UMES) (United States).[147]

In **India,** *e-Agri Kiosk* has created a touchscreen kiosk for farm technology transfer among tribal farmers in the north-east Indian state of Arunachal Pradesh. The project's mission is to disseminate advanced technologies and information in agriculture and allied sectors through touchscreen kiosks. The proposed touchscreen kiosk provides a flexible means of supplying information on various farming practices, including crops, commodities and enterprises. It makes technical agricultural information accessible without disrupting the routine work of farmers in their daily farm activities.

In **Tanzania**, the Dar es Salaam Institute of Technology has installed a *high-performance computing (HPC)* facility to provide applications that will alleviate poverty and advance science. The project offers HPC number-crunching capability and various applications that can be utilized in soil analysis for agriculture, weather research and forecasting in climate-change studies, bioinformatics in DNA forensic and drug discovery, finite element analysis (FEA), computational fluid dynamics, seismic applications in mining, cryptography analysis and materials modelling. The project will foster regional collaborations in cutting-edge research in the area of poverty eradication and economic development.

[146] More information about this cross-cutting activity may be found in the subchapter on e-business

[147] https://www.umes.edu/assets/0/232/528/3672/38772c97-2f99-4774-bac7-29ca6c957d7f.pdf

In **Tanzania**, the Ministry of Agriculture, Food Security and Cooperatives has been updating an online agricultural time-series database to collect agricultural data from local government authorities, line-ministry departments and agencies, and analysing and updating the data in the www.countrystat.org website for access by all stakeholders

Also in **Tanzania**, *Mutual learning and community memory: networked communication tools for* farmers in Bagamoyo has been created by *Sauti ya wakulima* (Spain). It seeks to strengthen the value of indigenous knowledge. A group of farmers has gathered audiovisual evidence of their practices, using smartphones to publish images and voice recordings on the Internet. Through weekly meetings, they discuss their postings and share the smartphones, which are equipped with a special application. The farmers have shared their knowledge and documented their environment, and have also interviewed others, thus expanding their social network. By communicating their observations to extension officers and scientific researchers through the Internet, farmers can contribute to the design of new strategies for adaptation to climate change.

SautiYaWakulima, Tanzania

In **Egypt,** the National Research Centre has set up a project for the *development of bioproducts as biofungicides for controlling major plant foliage diseases* affecting some economic horticultural crops.

In **Zambia**, since 2006 the National Farmers Union (ZNFU) has operated the *ZNFU4455 commodity pricing platform*[148], an SMS service offering smallholder producers in Zambia a brighter future by responding to the evolving needs of Zambian smallholder producers and traders. The demand-driven service was created to enable farmers and traders to stay connected with and informed about market demands and changing consumer preferences. ZNFU4455 is a market-information service open to all smallholder producers and traders. It provides accurate and up-to-date agriculture and market information covering the entire value chain. It allows smallholder producers to make informed decisions about what to grow, volumes required, storage, processing, marketing and investment opportunities. The market pricing platform was designed and implemented with the assistance of the International Fund for Agricultural Development (IFAD), a specialized agency of the United Nations.

C7.7 E-Environment

The impact of human activities on the environment and the climate is one of the greatest challenges facing our planet. At the same time, information and communication technologies (ICTs) are one of the most powerful tools in human history, and are rapidly being deployed around the world to protect our lands and oceans, through monitoring and information sharing, and to mitigate and adapt to climate change, through the use of smart technologies and early-warning systems. E-environment activities reflect the diverse ways in which organizations are implementing ICTs as a mechanism to ensure environmental protection and a sustainable future. To better understand these projects, in this subchapter they have been categorized in line with the Geneva Plan of Action, which defined the following goals for Action line C7: E-environment:[149]

A. ***Environment and natural resources***: Use and promote ICT as an instrument for environmental protection and the sustainable use of natural resources

B. ***ICT sector***: Initiate actions and implement projects and programmes for sustainable projection and consumption and the environmentally safe disposal and recycling of discarded hardware and components used in ICTs

C. ***Natural disasters***: Establish monitoring systems, using ICTs, to forecast and monitor the impact of natural and manmade disasters, particularly in developing countries, LDCs and small economies.

The major activities being conducted by the facilitators of this action line are reported in Box 20.

A. Environment and natural resources

ICTs are utilized in two ways for the advancement of long-term decision-making by improving knowledge and assessment of impacts on the environment and natural resources:

1. Collecting real-time data to make informed decisions on a sound scientific and technical basis

[148] https://smsinaction.crowdmap.com/reports/view/168

[149] Geneva Plan of Action, § 20

2. Educating and improving access to information by centralizing and disseminating information to governments, citizens and institutions.

Activities that employ ICTs for real-time data collection have been applied in respect of a diverse set of ecosystems, such as deserts, forests and fisheries. These activities include mapping, monitoring changes in weather, climate and development, and identifying vulnerabilities of sensitive areas so as to promote sound management practices and decision-making. Websites, databases, information systems and initiatives have also been set up to enhance access to information, educate the public, promote public participation and promote sound policy- and decision-making.

chakraborty sudipto, IC Volunteers

In **Bulgaria**, the Forest Agency under the Ministry of Agriculture and Food has created an *Information system of geographical zoning of forests in Bulgaria.* The project produces digital geographical zoning models of the country's forests, including vegetation cover, expected future species composition, soil resources and forest road construction.

In **Algeria**, the Ministry of Post, Information Technologies and Communication[150] is working on the prevention and management of forest fires through the implementation of a *geographic information system (GIS)* developed by the Algerian Space Agency (ASAL)[151]. Pilot areas include Ghazaouet (Tlemcen) and some districts of the provinces of Saida and Sidi Bel-Abbes. The system is dedicated to the production of forest fire risk maps.

Also in **Algeria**, the Ministry of Post, Information Technology and Communication has implemented the project *Pest control: analysis of ecological conditions in the regions of desert locust breeding in the region of Tamanrasset.* As part of locust control, the Algerian Space Agency provides the National Institute of Plant Protection (INPV) with a situation map from Alsat-1 images in order to identify areas of chlorophyll activity, which are breeding grounds for the desert locust. Alsat-1 images uploaded at the end of July 2009 were processed and interpreted to assess chlorophyll activity.

In **Bulgaria**, the Ministry of Agriculture and Food is responsible for renovation and regular updating of the country's *digital orthophoto map* and for building a specialized *Land Parcel Identification System (LPIS)* database providing direct data exchange. The project uses birds' eye photography of the territory to develop a new orthophoto map, with updated layers of areas eligible for support. Construction of a specialized LPIS database allows for direct data exchange between the Ministry of Agriculture and Food and the Agriculture State Fund.

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[150] Ministre de la Poste et des Technologies de l'Information et de la Communication, www.mptic.dz/fr/?-Le-Ministre-

[151] Agence Spatiale Algérienne, www.un-spider.org/network/regional-support-offices/regional-center-mapping-resources-development-rcmrd

Box 20: Activities led by facilitators for Action line C7: E-environment

The *International Telecommunication Union (ITU)* has continued to make progress in its activities to promote the use of ICTs to address climate change, reinforce environmental protection and promote sustainability within the ICT sector. Key deliverables achieved in the last two years include continuation of the series of *ITU symposia on ICTs, the environment and climate change*; the approval of new *green ICT standards* by ITU-T Study Group 5; organization of the ITU *Green ICT Application Challenge*; and the release of new publications *on e-waste*, *green ICT regulation*, *climate monitoring* and *smart water management*, among others. At the country level, ITU has worked over the past years in the implementation of *early-warning systems*, and to provide support in the *restoration of communications* in areas affected by natural disasters.[152]

The *Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* has made progress in the implementation of the mandate handed down by its Conference of Parties in the area of *e-waste*. Key activities include implementation of the *Programme of activities for the environmentally sound management of e-waste* in the **Asia-Pacific region** and of the *Programme of activities for the environmentally sound management of e-waste* in **Africa** and establishment of the *Partnership for Action on Computing Equipment (PACE)*. In 2011, *technical guidelines* were adopted on environmentally sound management of used and end-of-life mobile phones and computing equipment. The Secretariat of the Basel Convention and ITU signed an agreement in 2012 to facilitate collaboration to further their shared objectives in support of environmentally sound management of electronic waste.[153]

The *World Meteorological Organization (WMO)* has continued advancing in the implementation of the *Global Framework for Climate Services (GFCS)*. The main goal of GFCS is to enable better management of the risks of climate variability and change and adaptation to climate change, through the development of science-based climate information and prediction and its incorporation into planning, policy and practice on a global, regional and national scale. WMO and its partners are working on a detailed implementation plan and governance structure designed to maximize the full potential of the framework.[154]

In the **United Arab Emirates**, at the *Eye on Earth* Abu Dhabi Summit in 2011, the Environment Agency of Abu Dhabi (EAD) launched the *Environmental Atlas of Abu Dhabi Emirate*. The summit is a global meeting held at the Abu Dhabi National Exhibitions Centre, focusing on the critical issue of greater access to environmental and societal information for policy-making. It is organized under the patronage of H.H. Sheikh Khalifa Bin Zayed Al Nahyan, President of the United Arab Emirates, hosted by EAD, facilitated by the Abu Dhabi Global Environmental Data Initiative (AGEDI) and held in partnership with the United Nations Environment Programme (UNEP).

In the **United States**, the *Ark Earth Foundation* has set up the *Innovative system for the knowledge economy: Intelligent agent*. The innovative system is made up of technology, value theory and models. The Ontology Wizard desktop software is used to create axiological resource descriptive frameworks (ARDF). Qaaba allows for layering ARDFs by asymptotic background, and disseminating values through ontology landscapes. The ARDF disseminates content via ontology-based and aramaic-based domain repositories, and has a drag-and-drop object-driven interface. The ARDF imports into the Qaaba, completing the application. Ontology landscapes serve as a modelling tool to virtually landscape distributed intelligence and systems, creating a unified working method among research centres, institutions, universities, think tanks and firms.

In **Argentina**, the University of La Punta has created the *Automatic Meteorological Stations Network.* In recent decades, significant climate patterns have been recorded, which can arguably be linked with global climate change. Since the 1960s precipitation has increased notably, reaching much higher annual average levels than those registered before. In San Luis, as a result of these changes, agricultural areas have been expanded and significant improvements in livestock fields have been made, but adverse changes such as a rise in river levels and flooding have increased the vulnerability of communities and agricultural activity. The data are used by scientists, farmers or stockholders.

In **Bulgaria,** the Forest Agency under the Ministry of Agriculture and Food set up the *forest fund information system.* The web-based information system includes data related to the wood industry: storage, trading of wood materials, forest activities, fires, forestry sector revenue and expenditure, and employees working in the sector (e.g. phone numbers).

In **Georgia**, the Ministry of Environmental Protection has created the *National biomonitoring online database.*[155] Implemented in 2009, and ongoing, the bilingual (English/Georgian) biomonitoring online database publicly

[152] For further information, refer to www.itu.int/climate

[153] For further information, refer to www.basel.int

[154] For further information, refer to www.wmo.int

[155] http://biomonitoring.moe.gov.ge/

disseminates information about important biodiversity indicators, selected based on scientific work. The project was financed by the government of Germany and implemented in Georgia with the support of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).[156] The Ministry of Environmental Protection of Georgia also financed development of the *national environmental project database*, a web-based database accessible for the whole of society.[157] This publically available bilingual (English/Georgian) database is intended to assist government officials and other environmental stakeholders to improve decision-making, by providing a clearer overview of all the activities carried out in the environmental field. Benefits include avoiding duplication of projects, improving future planning and developing a well-organized directory of environmental projects, reports and data.

In the **United Arab Emirates**, the National Statistics Centre (NSC) and the Ministry of Environment signed an MoU to develop a common *UAE environmental database*. The MoU aims at identifying areas of cooperation between the centre and the ministry to collect, manage and analyse environmental data in order to form a national integrated database on the environment and link it with NSC's original database. The agreement will help build a strategic partnership to create a statistical database that will enable policy-makers to make correct decisions pertaining to the environment. The database will also be valuable for regional and international organizations in assessing UAE's sustainable development initiatives. In accordance with the agreement, experiences will be exchanged in order to build an integrated environment database and to coordinate the design of forms and applications to be used in collecting data and statistical information about the environment.

In **Bulgaria**, the National Statistical Institute has launched a project to develop and implement a *methodology and data collection* in priority areas of environment statistics under Eurostat's development programmes (water statistics; environmental accounts; waste statistics).

The United Nations Industrial Development Organization (UNIDO) initiated the *Renewable Energy Powered Business Information Centres (REBICs)* project. Based on the significant expertise accumulated in the area of private-sector development and renewable energy solutions, the project links renewable energy solutions for productive capacities in rural areas. UNIDO has initiated the establishment of REBICs in **Uganda**, by linking UNIDO's business information centre methodology, which provides entrepreneurship skill services and ICT training to rural communities, with sustainable and reliable energy solutions. Based on renewable sources of energy such as solar, biomass, wind and small hydropower technologies, UNIDO will offer an innovative solution for providing reliable energy access and productive capacities for SMEs in rural areas.

In **Argentina**, the University of La Punta has implemented *Zero Balance*, an environmental digital plan among primary schools to combat climate change. Children are divided into groups with computers and use the online "efficient house" software[158] to ascertain the quantity of carbon dioxide released into the atmosphere. Once the amount is calculated, children work out the number of trees that need to be planted to achieve a balance between CO_2 emissions and forest capture through the Zero Balance calculator. The government then gives children and communities the trees to be planted.

ICVolunteers has launched *GreenVoice.info* to raise awareness about environmental issues. The GreenVoice programme involves journalists, volunteer photographers and reporters who provide their own perspective on the environment, citizenship and volunteerism. Material is collected through ICTs, with contributions and photographs from 75 countries and five continents, ranging from the Philippines and Colombia to India, Lithuania and Mali. GreenVoice organizes a training programme for young people, showing them concrete ways to protect our planet. The images were collected through the worldwide volunteering network *ICVolunteers.org*. ICV works with a network of over 10 000 volunteers and professionals from 179 countries.

[156] www.giz.de/en/SID-0D294129-443242BA/worldwide/359.html

[157] www.moe.gov.ge

[158] www.balancecero.gov.ar

Also in **Georgia**, the Legal Entity of Public Law Financial Analytical Service (LEPL)[159] launched the *Corporate Content and Task Management System,* an office product that enables paperless document exchange and makes it possible to monitor the progress of various tasks. As the product is designed to serve local needs, the interface is offered only in Georgian.

In **Algeria,** the Ministry of Post, Information Technology and Communication implemented the *Integrated management of water resources* programme. The programme is aimed at improving the management of all the water resources, notably:

- Reducing the water requirements of industry, agriculture and households
- Ensuring the compatibility of water management with town and country planning policies and environmental protection.

It also encouraging the introduction of an integrated and participatory water resources management model tailored to rural areas. The support consists of process and technical advice from international, regional and local experts, as well as material contributions and training measures.[160]

In **Georgia**, the Ministry of Environmental Protection has implemented the *Bilingual website of the National Environmental Agency,* which provides Georgian and foreign customers with current, accurate information on short- and long-term weather forecasts for 18 cities in Georgia[161].

The information is set out in an operational mode from artificial meteorological Earth satellites. Customers are able to receive information about weather, seawater temperature and snow cover in resort towns, as well as video comments by weather forecasters, with support from Météo France. Information about the danger of natural disasters and avalanches, preliminary warnings on hydrological, geological and weather events, natural background radiation at 13 observation stations in the country and monthly bulletins on water quality are also accessible.

Integrated Approaches to Participatory Development has created *PPgis.net – an Open Forum on Participatory Geographic Information Systems and Technologies.* PPgis.net serves as a global vehicle for discussing issues, sharing experiences and distilling good practices related to community mapping, public participation GIS (PPGIS), participatory GIS (PGIS) and other geographic information technologies used to support integrated conservation and development, sustainable natural resource management and customary property rights in developing countries and among indigenous peoples worldwide. Members of the network are able to share information and lessons learned, post questions and announcements, and upload and download relevant resource documents.

Metis Global Awareness Network has created the *Global Climate Change Crisis and Sustainability Panorama Public Awareness Platform***.** The platform, which focuses on creating public awareness, is a unique web-based clearing house that shares "big audience", holistic information regarding the environmental crisis and climate change. Active citizens can find information to form a comprehensive, global picture of the planet's situation – a *sine qua non* prerequisite for consent or decline; researchers, journalists, educators and students can locate reliable data and resources for briefings, research or homework; the 'climate crisis era' public servant can spot cute ideas and

159 www.fas.ge/default.aspx?sec_id=1340&lang=2

160 www.gtz.de/en/themen/7594.htm

161 www.meteo.gov.ge

solutions on urgent problems; environmentally aware consumers can identify genuine eco-products and services; and hotshot private-sector executives can be pointed in the direction of substantial social responsibility opportunities.

B. Greening the ICT sector

As ICT devices become more ubiquitous and applications and services based on ICTs continue to grow, managing associated environmental impacts is a necessity for ICT policy and projects. The ICT sector is responsible for 2 per cent of global carbon emissions, and even if efficient technology developments are implemented, this figure is expected to grow at 6 per cent each year until 2020.[162] Additionally, sharp increases in e-waste are expected, especially in developing countries that do not have the infrastructure and capacity to manage the toxic materials used to manufacture ICT goods. Increases in emissions and improper management of e-waste are contributing to climate change and to adverse effects on environmental systems and human health.

Six projects were submitted that target environmentally safe management and minimization of e-waste. These projects seek to build capacity of local communities through education and training and sharing of best practices, to promote international cooperation and agreement on transboundary hazardous waste, to implement concrete projects for sound waste collection and end-of-life solutions and to promote the adoption of green ICTs.

The UNEP Secretariat of the Basel Convention has set up a *Programme of activities for the environmentally sound management of e-waste* in the **Asia-Pacific region**. Following the ninth meeting of the Conference of the Parties, two projects were completed under the programme in 2009. In the same year, the Ministry of Environment of Japan kindly supported the secretariat, in cooperation with Basel Convention Regional Centre for South-East Asia in Indonesia (BCRC SEA), the Basel Convention Regional Centre for the Asia and Pacific Region in China (BCRC China) and the Government of Viet Nam, in conducting a regional training workshop aimed at building capacity of the parties and of BCRCs in the Asia-Pacific region in developing projects on the environmentally sound management (ESM) of e-waste. Following on from the workshop, the Japanese ministry has provided further funding for continued implementation of the programme in the region during its second phase. The second phase of the programme emphasizes more concrete implementation projects in regard to the environmentally sound collection and dismantling of e-waste, while promoting potential public-private partnerships as pilots.

The UNEP Secretariat of the Basel Convention has implemented the *Programme of activities for the environmentally sound management of e-waste* in **Africa**. This has been implemented in the framework of the e-waste Africa project, which is a comprehensive programme aimed at enhancing the environmental governance of e-waste and creating favourable social and economic conditions for partnerships and small businesses in the recycling sector in Africa. Financial support for the project was provided by the European Commission, Norway, the United Kingdom and the Dutch Recyclers Association (NVMP). The project is implemented by the Basel Convention Coordinating Centre based in Nigeria and the Basel Convention Regional Centre based in Senegal, in cooperation with partners. This project has the overall objective of enhancing the capacity of African countries to be able to tackle the growing problem of e-waste imports coming from the industrialized world and thereby protect the health of citizens, particularly children, while providing economic opportunities in the recipient countries.

The UNEP Secretariat of the Basel Convention has created the *Partnership for Action on Computing Equipment (PACE).* PACE is a multistakeholder partnership established to address the environmentally sound management of used and end-of-life computing equipment. The multistakeholder Working Group, comprising representatives of personal computer manufacturers, recyclers, international organizations, academia, environmental groups and governments, developed the proposed scope of work, terms of reference, financial arrangements and structure of PACE. The partnership was launched at the ninth meeting of the Conference of the Parties to the Basel Convention, which took place in Bali, Indonesia in June 2008.

UNIDO and Microsoft launched UNIDO's *Refurbished Computer and Electronic Waste* programme. The main goal of the programme is to provide consumers at the bottom of the economic pyramid and entrepreneurs with access to affordable quality hardware, and to take care of the entire life-cycle of used computers in an environmentally safe way. The project contains a full life-cycle solution, which includes the local disassembly of PCs at the end of their useful life into reusable components, which are either resold, locally recycled or exported back to partners in Europe. Based on the successful pilot project in **Uganda**, in 2009 computer refurbishment projects commenced in **Tanzania** and **Trinidad and Tobago**, too.

In the **United States**, Maravedis has produced an *analysis of how government, social and commercial entities can stimulate green use of 4G/ICT WBB*. The analysis includes the study of literature, more in-depth analysis and seasoned extrapolations, as briefly itemized:

- Tabulation of mobile programs used on popular devices, basic use, and connection to leveraged segments of society

[162] Smart 2020.

- Tallying of leading companies involved in enabling industries and the basic role they may be encouraged to continue and expand through government endorsement, education, and, if highly valued, selective catalyst funding
- Providing guidelines, reference library, contacts and some suggestions for attractive undertakings, with a focus on commercial as well as social leverage.

United Nations Environment Programme (UNEP) representatives at the Cartagena international conference adopted a package of *strategic decisions on waste avoidance and management in the 21st century*. UNEP representatives of 118 members of the Basel Convention, the global treaty on waste management, reached an historic agreement unblocking an amendment that will ban the export of hazardous wastes from OECD to non-OECD countries, known as the *Ban Amendment*. The groundbreaking decision, containing a set of measures aimed at strengthening international control of transboundary movements of hazardous wastes, including electrical and electronic waste containing hazardous components, was adopted on 21 October, the closing day of the 10th meeting of the Parties to the Convention (COP10), in Cartagena de Indias, Colombia.

C. Natural disasters

ICTs are reducing the economic and human impact of natural disasters through the detection, forecasting and early warning of severe weather phenomena such as local storms, tornadoes, hurricanes or extra-tropical and tropical cyclones. The activities submitted emphasize the value of ICTs as a mechanism for reducing risk and responding to natural disasters. These activities promote the use of ICTs in local planning in order to ensure sound development that considers vulnerability to natural disasters. ICTs are used to enhance scientific and technical data, improve access to information and build regional networks and cooperation.

In **Slovakia**, the Ministry of Finance created an *eEnvironment projects packet*, with several legal and project activities focusing on environmental protection and national infrastructure for spatial information. The main project activities include: *POVAPSYS* (flooding forecast information system), *Enviroportal* (central website for environment areas), *EnviroInfo* (meta-information system of the Ministry of Environment), *NIPI* (national infrastructure for spatial information), and implementation of the *INSPIRE* directive.

In **Africa**, the African Union, with technical and managerial assistance from the UN World Food Programme, is working towards the creation of *Africa RiskView,* an African-owned, standalone financial entity, which provides contingency funding to AU member states. The facility would guarantee participating African governments timely and rapid access to pre-defined funds in the event of a severe drought, flood or cyclone in their country in order to implement response plans. Africa RiskView is a platform that aims to quantify weather-related food security risk in dollar terms, and monitor this risk in Africa. It allows users to see how the rainfall season is evolving in the countries or regions of interest, observe weather impacts on agriculture and rangeland, and estimate how many people could potentially be affected and in need of food assistance as a result. In addition to providing the basic infrastructure required to support schemes such as the African Risk Capacity (ARC), the information from Africa RiskView could also help to target early food security assessments in specific geographic areas.

ernjak lina, IC Volunteers

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) launched the *Asia-Pacific Gateway for Disaster Risk Reduction and Development (Gateway).* Gateway[163] promotes mainstreaming of disaster risk reduction (DRR) into development planning. It is an Internet-based portal which provides users with a platform for sharing information, building networks, accessing technical services and promoting regional cooperation among partners working on mainstreaming DRR in **Asia and the Pacific**. It intends to enhance regional access to information on good practices, policy options, methods and tools and DRR programmes, whilst serving as a regional hub offering quick and easy access to networks and organizations working in disaster management. Gateway identifies disaster-management services available to governments in the region, and facilitates value-added regional level analysis.

In the **United Arab Emirates**, the UAE National Centre of Meteorology and Seismology has launched the *Gulf Seismic Forum (GSF).* The forum intends to promote scientific and technical cooperation in the Arabian Gulf region be-

[163] www.drrgateway.net

tween seismologists, engineers and government organizations, with a view to reducing the devastating effects of earthquakes and encouraging research and contributions to seismology and earthquake engineering in the region.

C7.8 E-Science

E-science programmes and other initiatives help in enhancing and optimizing the utilization of resources and in maximizing the quality and efficiency of learning processes, systems and activities. There is much focus on peer-to-peer sharing of technology and the establishment of partnerships and cooperation. Stakeholders continue to work on initiatives to make scientific information affordable and accessible in all countries on an equitable basis.[164]

UNESCO is the lead facilitator for the e-science component of Action line C7. In its respective area, UNESCO has implemented a number of activities in order to assist countries in establishing normative, strategic and operational frameworks for e-science.

The UNESCO Institute of Statistics is implementing a worldwide consultation on *science, technology and innovation (STI) statistics and indicators*. The extent of use and promotion of ICTs in science is one of the key indicators considered.

Science policy support in **Africa** and in **Latin America** (especially in the MERCOSUR region) promotes ICT use for the creation of scientific knowledge and to enrich teaching and learning experiences in science. The project, initiated through complementary efforts of the African Union Commission, the European Union and UNESCO, continues to use ICTs to create science awareness and to train teachers of science, engineering and technology.

In the **Arab States**, including the **Islamic Republic of Iran**, the *Avicenna Virtual Campus* is strengthening teaching capabilities of science teachers. An extension of this e-learning initiative, the *African Virtual Campus,* has been launched in **West Africa**.

Strengthening knowledge creation and the *dissemination of key accumulated experience* is another major area of e-science operations. UNESCO has partnered with the Secretariat of the Convention on Biological Diversity, the Secretariat of the UN Permanent Forum on Indigenous Issues and the Office of the High Commissioner for Human Rights to create a *Climate Frontline* initiative, which provides a moderated, multilingual online forum on climate change adaptation for small island communities and indigenous peoples.

UNESCO's *International Oceanographic Commission* supports member states in assessing tsunami risk, implementing tsunami early-warning systems (EWS) and educating communities at risk about preparedness measures.

Within the framework of the International Hydrological Programme (IHP)[165] *Global Network on water and development information for arid lands (G-WADI)*, the *Geoserver* system has been developed with several online data access and visualization tools. G-WADI geoserver data was used to analyse floods in **Namibia**.

In the **United Arab Emirates,** the *UAE National Astronomical Telescope* (Emirates Telescope) is sponsored by the Telecommunication Regulatory Authority (TRA) in partnership with the Emirates Institution for Advanced Science and Technology (EIAST). With a keen desire to further develop the field of astronomical sciences in the country, TRA has taken a lead role in supporting national astronomical initiatives by signing an MoU with EIAST. Under this cooperation framework, EIAST is entrusted with conducting feasibility and scientific studies, along with an overall geographical survey, with two main objectives:

- Finding the best location to establish and assemble the Emirates Telescope
- Establishing a solid vision for the most effective implementation of the project, including determining the optimal telescope size in relation to the country's needs and aspirations.

[164] Geneva Plan of Action, § 22

[165] www.unesco.org/new/en/natural-sciences/environment/water/ihp/

World Summit on the Information Society
Turning targets into action

Action line C8

Cultural diversity and identity, linguistic diversity and local content

According to Geneva Plan of Action, cultural and linguistic diversity is essential to the development of an information society.[166] Stakeholders continue to work on creating the policies that support the respect, preservation, promotion and enhancement of cultural and linguistic diversity and cultural heritage within the information society.[167]

UNESCO is the lead facilitator for Action line C8: Cultural diversity. This chapter outlines recent activities implemented by UNESCO and other stakeholders during the period 2010-2012.

UNESCO continues to work on the following activities:

- The *Convention for the Protection and Promotion of the Diversity of Cultural Expressions* entered its operational phase, with the launch of 48 projects financed by its International Fund for Cultural Diversity. UNESCO's online *Atlas of the World's Languages in Danger* was updated, and the printed version was published in English, French and Spanish.
- In the **Solomon Islands**, UNESCO has collaborated with teachers and local communities in the Marovo Lagoon, the Solomon Islands Ministry of Education and Bergen University (Norway) in order to strengthen the *transmission of local indigenous knowledge through the use of ICTs*. A locally-accessible Wiki-based online educational resource was developed in the Marovo language, based on UNESCO's *Reef and Rainforest Encyclopaedia* of indigenous knowledge.
- UNESCO, together with OECD and ISOC, conducted a study on *The economic aspects of local content creation and local Internet infrastructure*. The study analyses whether the promotion of local content creation and the development of local Internet infrastructure has an impact on the price of Internet access for local users.

Qatar has received approval to have its *Internet domains in Arabic*, becoming one of the first countries in the world to receive approval to use non-Latin language scripts in domain names. This step will make the Internet more accessible to Arabic speakers in the country.

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance has prepared the *National Culture Network Plan* for multipurpose community public access points. The project will be implemented over five years to 2015, at 5 000 digital culture sites and complexes, which will serve as multipurpose community public access points throughout the country, especially in such public centres as libraries and mosques. In these cultural centres, people will be provided free of charge with services such as a collection of Internet websites and Iranian media software. Moreover, cultural digital works will be put on sale at special discount prices thanks to cultural subsidies.

National Culture Network Plan, Iran

The *International Federation of Translators (FIT) XIXth World Congress — Bridging Cultures* will bring together translators, interpreters, terminologists and other professionals from all over the world to discuss topical issues. Over 75 educational sessions will be offered in a variety of categories. Events and activities will allow for opportunities to network, mingle and socialize.

[166] Geneva Plan of Action, § 23

[167] Geneva Plan of Action, § 23a)

Initiated and coordinated by ICVolunteers, *MigraLingua.org* is a programme designed to accompany migrants arriving in a country where they do not master the local language. It assists migrants in their daily tasks, in particular those linked to school and education. The programme has three main strands: networking of actors involved in migration, training of community interpreters, and linguistic support for families. Online tools and the MigraLingua web portal are essential levers for this activity. MigraLingua is affiliated with the World Network for Linguistic Diversity (Maaya).

The *World Network for Linguistic Diversity (Maaya)* is a multilateral network created to contribute to the enhancement and promotion of linguistic diversity in the world. Maaya serves as a platform for exchanging and pooling shared knowledge. Technology offers great potential for languages, but also constitutes a risk for them, as to date only a very small number of languages of the 6 000 spoken in the world are available in cyberspace. The Maaya network, which was initiated by the African Academy of Languages (ACALAN), under the auspices of the African Union, was founded in the context of WSIS, which identified linguistic and cultural diversity in cyberspace as a priority area. However, it also includes organizations not concerned solely with cyber-related issues. It is a multi-stakeholder network, involving all actors including civil society, governments and international organizations. Its mission is to value and promote linguistic diversity as a basis for the unity of human communication.

In the **United Arab Emirates**, several activities have been undertaken in regard to cultural diversity (see Box 21)

Box 21: United Arab Emirates

In the context of citizens' involvement and participation, the UAE Ministry of State for Federal National Council Affairs publishes *Empowerment*, an electronic periodical publication serving the National Programme through the dissemination of political culture and instilling the values of true participation and consultation in UAE. *Empowerment* is a quarterly publication aimed at promoting a culture of political development and increasing awareness of the nature of parliamentary life in the country. It is sent out via e-mail, making it easier for the reader to browse and enabling the reader to invite others to register and receive the information.

Kalima is an ambitious, non-profit initiative in UAE which finances the translation, publication and distribution of high-quality works of classic and contemporary writing from other languages into Arabic. Kalima is funded by a grant from the Abu Dhabi Authority for Culture and Heritage.

The *Zayed Institute for Islamic World Studies* has been set up in UAE. The institute will be a world centre dedicated to supporting the capacity of Islamic communities to adapt their discourses to rapidly changing social, cultural and economic conditions as well as also to facilitating dialogue between Islamic civilization and other civilizations. It will bring together distinguished scholars, university faculties, students and leaders in government and civil society from across the Islamic world. The Institute will become a hub for knowledge-based consensus building, conflict alleviation and cross-cultural understanding.

The UAE Ministry of Culture, Youth and Community Development has published the *National Cultural Encyclopedia* which is a reference document that records UAE's culture, past and present.

The **same** ministry has also launched the official *website of the UAE flag (www.uaeflag.net)*, a key source of information pertaining to the nation's flag and an interactive tool for UAE citizens and residents to express their feelings and to value the flag as part of the country's culture and heritage. The website offers many e-services related, for example, to registration for the competition on ideas, innovation and photography of UAE attractions.

The *Dubai Culture and Arts Authority (Dubai Culture)* was launched in March 2008, as part of the vision of H.H. Sheikh Mohammed bin Rashid Al Maktoum, Vice-President, Prime Minister of UAE and Ruler of Dubai. It constitutes a key element of the Dubai Strategic Plan 2015. Dubai Culture is committed to nurturing and enhancing the unique cultural blend of over 200 different nationalities living in the city, by promoting intercultural exchange and understanding. It has formulated policies to preserve and foster Dubai's Islamic heritage and its traditional elements and assets by offering incentives to engage the private sector in this effort. By attracting the best artistic talent from the region and the world, Dubai Culture exposes talented Emiratis to new ideas and inspires them to express themselves in new and innovative ways. It also strives to initiate dialogue with other global art centres by developing a *Dubai Culture and Arts blueprint* and spreading it across the region and the world through the establishment of partnerships to enhance the diffusion of cultural knowledge, thereby adding to the world's culture and arts dialogue in the 21st century. Dubai Culture's initiatives include, among others, the Outdoor Arts Project and the Dubai Festival for Youth Theatre.

In **Bangladesh**, the objective of *Global Language-Culture Industry Development* is to overcome the language barrier on the World Wide Web, promote the local creative scene and adopt the UNESCO Universal Declaration on Cultural Diversity (2001): The common heritage of humanity. The initiative aims to:

- Promote the Global Alliance for Linguistic Diversity through the use of ICTs – "UNLized Movement".
- Promote the Global Alliance for Cultural Diversity through the cultural diversity initiative – "The Creative Cities Network".

In the **Islamic Republic of Iran**, a booklet on *Achievements towards WSIS action lines* has been produced by the Information Technology and Digital Media Development Centre (ITDMDC)**.** This booklet describes the country's contribution to the information society. In particular, it covers measures, plans and achievements of the Ministry of Culture and Islamic Guidance based on the WSIS action lines. Nearly all the subjects which are described in the booklet are related to the activities of ITDMDC.

In **Bulgaria**, there are a number of activities being carried out in favour of cultural diversity (see Box 22).

Box 22: Bulgaria

The Ministry of Culture (MoC) has implemented *Cultural Contact Point,* an information office for the *Culture Programme 2007-2013*, responsible for promotion of the programme at the national level and dissemination and exchange of information related to the programme's implementation. The information office also provides assistance in searching for partner organizations and offers technical support for users.

In connection with the *European Year of Volunteering (EYV) 2011*, MoC was appointed as national coordinating body for Bulgaria. An inter-institutional EYV working group was established. On the basis of broad consultation with all stakeholders (government institutions, agencies, NGOs, experts, etc.), the *National Strategic Document* and *National Work Programme* were developed. MoC has specific departments dealing with cultural policy and maintains the country's largest network of local cultural clubs called *chitalishta*, which hold significant potential to act as the driving force for civic participation and volunteer work.

Two key projects undertaken in Bulgaria are the *Digitization of Immovable Cultural Heritage Registers* and elaboration of the *Immovable Cultural Heritage Digital Information System*. Existing information, which includes registered cultural property dossiers, textual and graphic materials counted as inventories, lists of monuments, scale drawings, schemes, directive plans and designs, cadastral plans, and such like, is in process of being updated and prepared for digitization. The system is to be linked to the operational *Archaeological Map of Bulgaria* managed by the National Archaeology Institute and Museum at the Bulgarian Academy of Sciences.

MoC has been developing an information system to underpin the objectives and functioning of *Cultural Community Centres* in Bulgaria, called *chitalishta***.** Chitalishta are traditional Bulgarian cultural-educational associations in urban and rural areas, which perform public cultural and educational tasks. Their activities are open to all individuals regardless of age and gender, political and religious beliefs and ethnic identity. The information system will encompass the basic functions and activities carried out of by the chitalishta community centres, such as:

- Establishment and maintenance of libraries, reading rooms, photo, phono, film and video collections, as well as the creation and maintenance of electronic information networks
- Developingand supporting amateur arts
- Organizing schools, workshops, courses, clubs, cinema and video exhibitions, celebrations, concerts and youth activities
- Collection and dissemination of knowledge about the homeland
- Creation and preservation of museum collections in accordance with the Cultural Heritage Act
- Provision of computer and Internet services.

Community centres may develop additional business related to their main activity, in accordance with current legislation, and use the proceeds therefrom to achieve the objectives laid down in their statutes. Community centres do not distribute profits.

In **India,** *mobile voice-based social media and information services* have been launched by *Awaaz.De.* Awaaz.De (which means “Give Voice") connects people to information using voice applications over mobile phones, targeting rural, remote and/or marginalized people who have low incomes, lack Internet access, speak local languages and lack literacy skills. People access Awaaz.De applications by dialing phone numbers to create, browse and share voice content through automated voice interfaces.

In **south-eastern Europe**, in regard to intangible cultural heritage (ICH), the establishment of an information system to support its objectives and functioning is an important initiative of the *Regional Centre for safeguarding of the intangible cultural heritage of South-Eastern Europe***.** The information system will encompass:

- Promotion/contribution activities related to implementation of the UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage and contributing to its implementation in the south-eastern European subregion
- Activities to involve communities, groups and individuals in safeguarding ICH in south-eastern European countries
- Activities to build the capacity of the south-eastern European Member States of UNESCO to safeguard ICH
- Activities to enhance international, regional and subregional cooperation through networking with institutions active in the field of ICH, notably those established under the auspices of UNESCO (category 2), in order to coordinate activities, exchange information and knowledge concerning the safeguarding of ICH and promote good practices
- Coordination, exchange and dissemination of information regarding the safeguarding of ICH in the subregion.

In **Nigeria,** the Ministry of Communication Technology has initiated incubation programmes and grants for *local content research* under the auspices of the National; Information Technology Agency (NITDA). The programmes relate to cultural diversity and identity, linguistic diversity and local content.

Action line C9

Media

The media have an essential role in the development of the information society[168]. In this chapter, recent activities are reflected to demonstrate the role that media — print and broadcast, as well as new media – are indeed playing. Of late, stakeholders have stepped up their efforts to encourage the development of domestic legislation related to the media[169]; taken appropriate measures — consistent with freedom of expression — to combat illegal and harmful media content[170]; and encouraged traditional media to bridge the knowledge divide[171]. UNESCO, as the lead facilitator for Action line C9: Media, has continued to work on a whole range of activities.

UNESCO has striven to enhance *freedom of expression* and *freedom of information*, organizing the International Symposium on Freedom of Expression at UNESCO headquarters on 26 January 2011, and the celebration of World Press Freedom Day on the theme *21st Century Media: New Frontiers, New Barriers*" in Washington, D.C. on 2-3 May 2011, as well as other activities in more than 100 countries.

In May 2011, in order to foster *freedom of expression* on the Internet and address related issues, UNESCO officially launched the publication *Freedom of Connection – Freedom of Expression: The Changing Legal and Regulatory Ecology Shaping the Internet*. This study explores the complex situation of freedom of expression on the Internet.

To address the challenge of *safety of journalists*, UNESCO initiated a joint strategy for the United Nations and professional stakeholders, through a UN Inter-Agency meeting on the Safety of Journalists and the Issue of Impunity, held at UNESCO headquarters in September 2011.

The *International Programme for the Development of Communication (IPDC)* has continued to play a prominent role in UNESCO's efforts to develop free, independent and pluralistic media through 93 projects in more than 70 developing countries, with an allocation of some USD 2.3 million in 2011.

In response to the social upheavals in **Egypt** and in **Tunisia**, UNESCO, in collaboration with the European Broadcasting Union and *France Télévisions*, organized an *International Conference in Support of Tunisian and Egyptian Broadcast Media* at UNESCO headquarters on 31 May 2011, and carried out two rapid assessments of their respective national media landscapes based on UNESCO's *media development indicators (MDIs)*, aimed at identifying the immediate needs of the media in the two countries.

UNESCO's widely-acknowledged *model curricula for journalism education*, available in eight languages, have been adapted by 63 journalism schools in 51 countries.

UNESCO has been instrumental in fostering *media and information literacy (MIL)*, launching the model MIL curriculum for teacher trainers and setting up an international network of universities on MIL.

In **Bangladesh**, several activities have been implemented by the Bangladesh NGOs Network for Radio and Communication (BNNRC) in order to promote media. (See Box 23)

In the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is responsible for establishment of the *Information Technology and Digital Media Development Centre*. The centre has been operating under the ministry since 2006. It has the following missions:

- Promoting and supporting digital media activities, including digital cultural institutions and works
- Developing ICT applications in cultural activities
- Preparing and amending plans, regulations and laws in relevant fields
- Creating a culture of digital media usage and development and maintenance of ICT services at the ministry.

[168] Geneva Plan of Action, § 24

[169] Geneva Plan of Action, § 24b)

[170] Geneva Plan of Action, § 24c)

[171] Geneva Plan of Action, § 24g)

Box 23: Bangladesh

Under the *Youth Employability and Enterprise Skills* Radio programme, Equal Access Nepal (EAN) will train radio producers to produce and broadcast eight episodes of a youth-focused radio programme in Bengali, which will raise awareness of enterprise skills and connect youth to technical and vocational education and training opportunities. The Bangladesh NGOs Network for Radio and Communication (BNNRC) organization in Bangladesh will be the implementing partner which will carry out and oversee this task including all deliverables. EAN will work with BNNRC to develop feedback monitoring mechanisms that will accurately track and measure programme impact and reintegrate feedback into programme design. Ongoing mentoring for the production teams in Bangladesh will also ensure the quality of programming and messaging.

The *Promoting Community Radio* initiative aims to advocate the use of radio for the grass-roots population. Its purpose is to:

- Set up effective and efficient monitoring and feedback mechanisms
- Develop effective and timely community news collection and dissemination methods
- Develop strategies for building supporters and volunteers for community radio
- Create awareness and linkage with local authorities and service providers.

In line with these understandings, BNNRC and UNICEF-Bangladesh have agreed to design a project for making community radio initiatives in Bangladesh a strong and quality communication sector for true community empowerment and development.

The vision of the *Community Broadcasting for Development* project is to establish an effective, efficient and sustainable community radio environment in Bangladesh that will truly empower rural communities, with special emphasis on children and women, so that they can participate in the development process, make their voice heard and access key protective and life-saving messages for their wellbeing.

Also in the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance continuously supports and promotes *digital media activities*. Since 2007, the ministry has been holding the *national digital media festival* to select and introduce top digital works, which are then supported through the allocation of targeted cultural subsidies. This practice has helped to promote the application of digital media by people from various walks of life, especially theological and university students and pupils.

Also in the **Islamic Republic of Iran**, the Ministry of Culture and Islamic Guidance is involved in safeguarding *digital media intellectual ownership rights*. Despite efforts made to improve digital media activities, extensive violation of intellectual property in the field is one of the most important challenges facing this booming occupation and qualified content and software production in Iran. Hence, practical steps are being taken to direct talent towards profit-making domains such as network security in the field of content production and software.

Again in the **Islamic Republic of Iran**, the *amendment to the Press Law* was promulgated in January 2010 to improve electronic news agencies and promote their activities. The Ministry of Culture and Islamic Guidance has used the amended document as a basis for its work to enhance the activities of electronic news agencies. Presently, there are 16 electronic news agencies in operation, eight of which deal with specialized domains, such as the *Women's News Agency (IWNA).*

In **India**, Video Volunteers, in collaboration with the Indian Institute of Management (IIM), has introduced a *sustainable community media research programme*. The programme is aimed at developing a business model which can be followed by various community video units (CVUs) in order to attain financial sustainability. IIM's Centre for Innovation, Incubation and Entrepreneurship (CIIE) and Video Volunteers are working to create business models, explore methods and design plans to help community media reach high levels of sustainability. The programme also aims to explore the possibility of generating revenue through the mainstream media, collaboration with other NGOs, and how such community video businesses can be supported by micro credit lending.

Image provided by Video Volunteers

The **United Arab Emirates** has recently launched radio *e-services*, which is an enhanced state-of-the-art version of its online automated spectrum management system, enabling e-processing and online authorization of applications for radio services. Applicants for licences or authorizations for radio services can register via the Telecommunication Regulatory Authority (TRA) website to obtain a username and password, allowing them to fill in the necessary application form and submit it online with all the required documents as attachments. TRA customers can then follow up and track the status of their application, pay spectrum fees, and renew, modify or cancel their licences — all online. The system is considered to be the first automated system of its kind in the Arab world and the second globally in handling and processing online applications for all radio services[172]. It has greatly helped improve customer satisfaction, quality of service and transparency, which are major objectives of the UAE government's e-initiatives.

Also in the **United Arab Emirates**, *Kitab.ae* was established in 2007 as a joint venture between the Abu Dhabi Authority for Culture and Heritage and the Frankfurt Book Fair, one of the most successful publishing industry fairs worldwide. Kitab was established in order to raise the bar in the publishing industry in the Middle East and North Africa (MENA) region and ensure improved professional standards while working towards positioning Abu Dhabi as the publishing hub of the region, through initiatives such as promotional reading campaigns, better distribution and tackling issues such as piracy and copyright. Kitab's objective is to develop the book and publishing industry and promote reading in Abu Dhabi and the other emirates. Kitab will focus on making the Abu Dhabi International Book Fair truly international and developing a long-term networking opportunity for the Arab and international publishing communities.

[172] www.tra.gov.ae/news_Telecommunications_Regulatory_Authority_obtained_ISO_9001%3A2008_certifications-159-1.php

In **Qatar**, in a newly released white paper – *ictQATAR: Creating a Strategic Presence in Social Media* – ictQATAR presents its social media journey and details its eight-stage strategy for enhancing its social media efforts, as well as twelve tips for creating an effective social media strategy. The paper includes specific case studies on social media usage by ictQATAR across a variety of social media, including Facebook, Twitter, YouTube, Qatar Living and Qatar Shares. It is meant to serve as an example for other organizations, specifically government bodies, on how they can effectively use social media to engage their key audiences.

In the **Russian Federation** several portals have been introduced to promote media. These include:

- The *Information Literacy and Media Education Portal*, created by ICO Information for All. This portal was developed at the initiative of the Information Resources Committee of the Governor's Administration of the Khanty-Mansiysk Autonomous Region, by a consortium of ICO Information for All, the Russian Association for Film and Media Education and the Taganrog State Pedagogical Institute. The portal's management system (based on a third party's content-management system) was developed by Advecon Co., Ltd.
- The *Russian Association for Film and Media Education Portal*, introduced by the Russian Association for Film and Media Education. This portal is the Association's website for the development of media education literacy. The site includes an open free media education library and information about media education history, media education technologies, the problems of children and media violence, etc. The audience can read books, articles, PhD dissertations and teaching programmes about media literacy, media competence, media studies, ICT in schools, universities, etc.

In **Bulgaria**, the *Council for Electronic Media (CEM)* is an independent authority which regulates media services according to the procedures laid down in the Radio and Television Act. CEM consists of five members, of whom three are elected by the National Assembly and two are appointed by the President of the Republic. The council is guided by the public interest, protecting freedom and pluralism of speech and information and the independence of media service providers, adhering to the following principles:

- Guaranteed right to freedom of expression of opinion
- Guaranteed right to information
- Protection of confidential sources of information
- Protection of citizens' personal inviolability
- Inadmissibility of programmes inciting intolerance among citizens

- Inadmissibility of programmes which are contrary to good morals, especially if they involve pornography, extol or condone brutality or violence, or incite hatred on grounds of race, sex, religion or nationality
- Guaranteed right of reply in programme services
- Guaranteed copyright and neighbouring rights in programmes and programme services
- Safeguarding the purity of the Bulgarian language.

In **Qatar**, the report *Digital Media Landscape* in Qatar, produced by ictQatar, outlines Qatar's diverse digital media ecosystem and profiles digital media users in the country. The report is an in-depth review of the digital media ecosystem in Qatar, measuring the impact of the Internet on individuals and businesses, and identifying trends in usage, attitudes and preferences associated with digital content in the country. In the report, digital media is defined as any content including text, graphics, audio and video that can be transmitted over the Internet or through computer networks. It is viewed as a complement to more traditional media, such as newspapers, radio and television. The digital media report gives an overview of the digital media ecosystem, describes usage across segments, addresses how digital content is generated in Qatar and identifies the growth drivers in the digital media sector.

ECBIZNET[173], Inc. initiated *Media, Telecom Ventures, Web and Wireless*, a monthly publication serving both the community of consumers and service providers. The publication focuses on key information about all things relating to business media, telecom ventures, web and wireless in the marketplace.

In **Nigeria**, the *Freedom of Information Act 2011*, introduced by the Ministry of Communication Technology, has engendered new and diverse media activities and thus promoted unfettered information exchanges.

In **Barbados**, a *Technology TV project* created by Awesome Entertainment Group seeks to educate and entertain viewers and enhance their awareness, skills and knowledge of the technological environment by exposing them to products and services using a technology- based platform.

The World Association for Christian Communication (WACC) has been building and recognizing *communication rights*. From 2006 to 2011, WACC has focused on working with some 90 partner organizations in the global South to strengthen communication rights and their relevance to political, social and gender justice. In late 2011, WACC initiated a two-year project, co-funded by the Canadian International Development Agency (CIDA), to formulate a *communication rights index* in **Bolivia** that will be used by indigenous and disability groups to measure and monitor access to rights and entitlements in the area of health, education, housing and employment.

The *Global Media Monitoring Project (GMMP)* is a longitudinal research and advocacy initiative on gender representation and portrayal in the world's news media. The research is undertaken by volunteer monitors worldwide in five-year cycles, starting in 1995. The GMMP studies have consistently revealed that women are grossly underrepresented in news coverage in comparison with men. The GMMP is globally coordinated by the World Association for Christian Communication (WACC).

Bolivia, WACC

International Global Media Monitoring Project, WACC

In **Moldova**, *local mass media and community development* has been introduced by the NGO Terra-1530.

[173] www.ecbiznet.org/

Action line C10

Ethical dimensions of the Information Society

According to the Geneva Plan of Action, the information society should be subject to universally held values and promote the common good, and prevent abusive uses of ICTs[174]. Stakeholders are working to promote respect for peace and to uphold the fundamental values of freedom, equality, solidarity, tolerance, shared responsibility and respect for nature[175]. A number of entities in the information society continue to take appropriate actions and preventive measures, as determined by law, against abusive uses of ICTs such as illegal and other acts motivated by racism, racial discrimination, xenophobia and related intolerance, hatred, violence, all forms of child abuse, including paedophilia and child pornography, and trafficking in, and exploitation of, human beings[176].

UNESCO, as the lead facilitator for Action line C10: Ethical dimensions for the information society, is working in a range of areas.

UNESCO continues to collaborate with other stakeholders from civil society, IGOs, academia and international networks of practitioners working in this field, including the Internet Society (ISOC), the Council of Europe (CoE), the UNESCO Chair in computer and information ethics and the International Centre for Information Ethics (ICIE).

At the WSIS Forum, UNESCO organized an event on the *Ethical dimensions of the information society*, on the theme of *Cyber and information ethics: Freedom and security, privacy, malice and harm, property*. The session generated a rich debate on the ways in which evolutions in the field of technology are contributing to dynamic societal changes that are not yet well understood. The resulting interactions are changing perceptions and relationships between people and technology in far-reaching and complex ways.

Information ethics are crucial for building information and knowledge societies driven by critical reflection on values.

Excellent progress continues to be made by UNESCO in its efforts to support capacity building in the area of information ethics for tertiary education institutions in **Africa**. An *academic workshop on information ethics* took place on 4-5 July 2011 at the University of Pretoria in South Africa. The workshop was organized by the Africa Network for Information Ethics (ANIE), with the support of UNESCO, the University of Pretoria, the University of Wisconsin Milwaukee and the South African Department of Communications.

UNESCO's General Conference took note of the *Code of Ethics of the Information Society*, which was developed in the framework of the intergovernmental programme *Information for All (IFAP).*

In **Bangladesh**, the Institute of ICT in Development (BIID) introduced the E-*Complain* initiative in order to provide citizens with a platform to voice their complaints and concerns. E-Complain is an ICT-enabled web portal for citizens to raise issues and concerns as well as to learn about their rights as citizens of Bangladesh. It is through this mechanism that citizens are able to lodge a complaint about a specific issue in various categories, namely consumer rights, women's rights and children's rights, environmental protection and migration. Recently, BIID developed partnerships with appropriate rights-based organizations that are empowered to look into specific areas of rights violations. The institute is already supporting the Consumers Association of Bangladesh in addressing consumers' complaints submitted via the E-Complain portal.

In the **Islamic Republic of Iran**, the *Pure Computer and Network* project has been set up by the Ministry of Culture and Islamic Guidance. With a view to addressing the need to empower people, especially families, to prevent access to harmful and obscene information in the digital environment, especially on the web, a comprehensive project is under preparation to provide all users with capabilities for monitoring information received and preventing access to harmful information such as pornography. A noteable component of the project is parental control, with the capability to process images and texts, thus helping parents provide their children with a safe and reliable haven in the digital environment.

[174] Geneva Plan of Action, § 25

[175] Geneva Plan of Action, § 25a)

[176] Geneva Plan of Action, § 25c)

In **India**, the *Unheard Community News* service was introduced by Video Volunteers. This is a community news service comprising a network of community correspondents spread across 24 Indian states and representing India's most marginalized perspectives, including Dalits and tribal people, as well as religious, language and sexual minorities. The correspondents receive training in all manner of documentation, compelling storytelling and video journalism. The subtitled video reports are posted online on the India Unheard web platform, distributed through social media sites such as Facebook, YouTube, and Blip TV, and even featured on national TV through India's NewsX 24-hour English-language news channel, thereby bringing content produced by marginalized communities from across India into the mainstream media.

In **Indonesia**, the programme for a *Healthy and Safe Internet* through *TRUST+ positif* has been initiated by the Directorate-General of Informatics Applications under the Ministry of Communications and Information. It is essential to ensure that the Internet is a healthy and safe environment for societies for ethics and business.

In **India**, *Ability* is a mobile-based application, developed by Willanger, which converts typed text or chat messages to voice and sign language and vice versa. The purpose of Ability is to provide self-learning and communication platform through mobile device for specially able(hearing, speech and visual problem), to bridge the scarcity of sign language teacher and to increase the interaction with society through mobile device.

Image provided by Willanger, India

The Asia-Pacific Women's Information Network Centre located in the **Republic of Korea** has created *Innovative Strategies for Peruvian Women's Participation in the Digital Economy: Pilot Programme for Women Entrepreneurs*. The programme consists of three different components, divided into several subactivities:

- Capacity-development programme: Training of trainers, local training in Peru
- Institutional strengthening: Legal review, presentation of findings
- Monitoring and evaluation: Gender evaluation specialist review, Latin-America/Peru.

Under the first subactivity above, twenty Peruvian women entrepreneurs came to Korea to obtain intensive training of trainers (ToT), where they not only attended class lectures on various topics like e-biz, e-government, social media and entrepreneurship, but also obtained valuable field experience by visiting Korean e-Biz application and social enterprises and learning their best practices. Local training in Peru was also organized in twelve different parts of the country.

In **Ghana**, the *Bring Information Technology* project, initiated by the West Africa ICT Society (WAIS), aims to bringing youths in West Africa together, in order to produce vibrant unity, peace and knowledge-sharing in the field of ICT development in West Africa. The idea came up during the 2010 West Africa ICT students' assembly organized by the Technology Students' Association (TESA), Ghana, and the Nigerian Association of Computer Science Students (NACOSS), Nigeria, at the Ghana Telecom University College, Tesano, Accra, Ghana, in November 2010.

In **Argentina**, the *Alézeia Strategy Project* ("Truth" in Greek) was introduced by the *Fundación Argentina a las Naciones Camino a la Vredad (FANCV).*

In **Sudan**, *telecentres connecting the unconnected* are public places where people can access computers, the Internet and other digital technologies that enable them to gather information, create and communicate with oth-

ers and develop essential digital skills. The Gedaref Digital City Organization (GDCO), with the support of its partners, uses these telecentres to enable marginalized, disadvantaged and underserved communities to access ICTs, in order to connect the unconnected and bridge the digital divide in easy and replicable ways.

In **Belgium**, the Destree Institute launched *Millennia2015 "Women actors of development for the global challenges"*, a foresight research process in the context of the information society and solidarity. Millennia2015 examines future issues that will have a strong influence on women's life in the knowledge society in every country, alongside men, and women's responsibilities in regard to their evolution at a global level towards the time-frame 2025. As part of the WSIS process, Millennia2015 is preparing the 2012 international conference on an *action plan for women's empowerment*, under the patronage of UNESCO. Millennia2015 counts 3 000 members in 105 countries.

Belgium The Destree Institute – Millennia2015

In the **Islamic Republic of Iran**, *Analysis of ICT for Youth* is one of the successful research projects in the Middle East in the field of ICT and youth. The situation of ICTs in Iran until 2008 was examined across many different environments in which young people function, such as schools, families, cities and rural areas. The project concluded by implementing mechanisms to bring sustainable development for youth in developing countries like Iran.

In **Latin America**, Telefonica S.A. undertook a business initiative – *Proniño Programme Telefonica* – to eradicate child labour through the creation of programmes which facilitate access to quality education for children and adolescents in Latin America. Collaborative-learning and social networks are installed in areas with high rates of child labour, to provide Internet access to students, as well as a space for exchanging best practices, advice and training for educators and social agents assisting the local children[177].

Microsoft recently launched its *Digital Citizenship initiative*, an awareness and education effort focused on responsible and appropriate use of technology by people of all ages. The company's Trustworthy Computing Online Safety Team has created a multitude of resources and materials designed to help individuals and families across the globe stay safer and more secure online. All materials are available free of charge, and can be downloaded from the website, which receives more than 5.2 million unique visitors per month: www.microsoft.com/security (click on "Resources.")[178] .

[177] ICC contribution, www.rcysostenibilidad.telefonica.com/rcysost2010/Telefonica_RC10_En.pdf, (pp. 27-29; 136-138).

[178] ICC contribution,

World Summit on the Information Society
Turning targets into action

Action line C11

International and Regional Cooperation

International cooperation among all stakeholders is vital for implementation of the WSIS outcomes. This chapter describes ICT projects that have been carried out in response to requests for international cooperation and assistance from developed countries and international financial organizations for infrastructure development projects.

In recent years, ICTs have consistently been included in the work programmes of many international and regional organizations in order to promote universal access and bridge the digital divide.

The United Nations Department of Economic and Social Affairs (UNDESA) is the main facilitator of Action line C11: International and regional cooperation.

UNDESA has organized several *international and regional workshops* focusing on capacity development in the context of e-government, e-governance and e-participation, and undertaken more than 25 *advisory and technical assistance missions* to support governments from developing countries in the implementation of their respective e-government polices and strategies. In addition, it organized a *consultation* and an *expert group meeting* on e-procurement, drawing on inputs from the World Bank, the Asian Development Bank and experts from Member States, resulting in the decision to build a *Knowledge Guide on E-Procurement* that will assist Member States in improving transparency and accountability.

As in the past, besides organizing the Sixth Facilitation Meeting of Lines C1, C7eGovernment and C11 of the Geneva Plan of Action and the Tunis Agenda (on 20 May 2011), a Workshop on "Greater Government Transparency and Citizen Engagement to Promote Effectiveness and Accountability in Public Service Delivery" was organized by DESA in Geneva on 19 May 2011, during the 2011 WSIS Forum in cooperation with ITU. Both events served as an enabling platform of WSIS outcomes, for an international and multidisciplinary (including public officials, academia, civil society and private sector stakeholders) group of experts and national practitioners, to share their experiences and exchange practices including the area of e-government and mobile government, together with strategies for designing, implementing, and evaluating government services.

The *WSIS Forum* is an event built upon the tradition of WSIS meetings held in May of each year. Since 2009, its format and agenda have been established on the basis of open consultations with all the WSIS stakeholders – governments, international organizations, the private sector and civil society. In 2011, ITU, UNESCO, UNCTAD and UNDP welcomed all WSIS stakeholders to a new Web2.0 portal. The *WSIS Forum 2011 Portal* provides information, but also the capability to communicate with other stakeholders through social networking media such as *iMeetyouatWSIS* and *iWriteForWSIS* during the WSIS Forum, Twitter and Facebook accounts, as well as a blog on the WSIS Stocktaking platform.

During the period 2010-2012, ITU produced a series of publications within the framework of WSIS: the *WSIS+5 Report* [179], the *ITU contribution to WSIS* [180], *WSIS action line roadmaps* [181], the *WSIS Stocktaking Report 2010* [182], *WSIS stocktaking: Success stories 2011* [183], the *WSIS Stocktaking Report 2012* [184] and *WSIS stocktaking: Success stories 2012*.

It is important to draw attention to the *Partnership on Measuring ICT for Development* as an effective mechanism for monitoring WSIS targets. The Partnership is an international, multistakeholder initiative to improve the

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179 www.itu.int/itu-wsis/docs/WSIS+5.pdf

180 www.itu.int/itu-wsis/docs/WSIS2011-ITU_Contribution.pdf

181 www.itu.int/itu-wsis/docs/WSIS-AL-Roadmap_E.pdf

182 http://groups.itu.int/LinkClick.aspx?fileticket=D8yimiKIxVs%3d&tabid=750

183 http://groups.itu.int/Portals/30/documents/WSIS/WSIS_ST_Success_Stories_2011_E.pdf

184 www.itu.int/wsis/stocktaking/docs/flyer-final-stocktaking-report-A5.pdf

availability and quality of ICT data and indicators, particularly in developing countries. [185]

A whole range of other activities have been implemented during the period 2010-2012 in the area of international and regional cooperation.

The analysis made in the *World Telecommunication/ICT Development Report 2010: Monitoring the WSIS Targets, A mid-term review* showed that considerable advances have been achieved in terms of global dissemination of ICT since WSIS. In particular, mobile telephony has spread worldwide, making it likely that half the world's population will be using mobile phones by 2015. Similarly, access to basic radio and TV services is widely available.[186]

A new *Task Group on Measuring the WSIS Targets* was launched during the WSIS Forum 2010. Under the leadership of ITU, at the WSIS Forum in May 2011, the task group developed and published *Measuring the WSIS Targets: A Statistical Framework*. The framework includes a concrete list of indicators to monitor the ten WSIS targets, which range from connecting villages, schools and health centres to developing online content and providing people with ICT access. It is the first comprehensive framework for a set of measurable indicators for each of the ten WSIS targets, and serves as a practical tool for policy-makers and data producers in developing countries to monitor and assess information society developments, especially with a view to the overall WSIS review in 2014.

During the WSIS Forum 2011, the Partnership on Measuring ICT for Development organized two sessions on *Measuring the ICT sector for policy analysis*, presenting case studies from five countries (Brazil, Cameroon, Egypt, India and Malaysia).

The Partnership contributed to a paper on *Measuring ICT Impact* submitted to the UN Commission on Science and Technology for Development (CSTD) in 2010-11. The resulting CSTD resolution on WSIS implementation and follow-up, which was adopted by the UN Economic and Social Council (ECOSOC) in July 2011, endorses the work of the Partnership and calls on it to further its work on measuring the impact of ICT.

In November 2011, ITU launched its new *Handbook for the Collection of Administrative Data on Telecommunications/ICT*. The handbook includes updated definitions and standards for more than 80 indicators on telecommunications/ICT, including the Partnership core indicators on ICT infrastructure and access, as well as examples of national experiences in regard to the collection of these indicators.

On the first day of ITU's *World Telecommunication/ICT Indicators* meeting in Port Louis, Mauritius, held in December 2011, it was announced that the Partnership on Measuring ICT for Development is expanding to embrace a new member: the *UNEP Secretariat of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal***.**

At the same meeting, a core set of *indicators on e-government* was finalized. The indicators will be added to the Partnership core list of ICT indicators developed in 2005 and regularly updated.

A revised and extended *core list of indicators* was presented by the Partnership to the UN Statistical Commission (UNSC) in March 2012, at its forty-third session. UNSC fully endorsed the list of indicators, and asked that it be circulated widely so that it can be used as a reference. The commission also agreed with the recommendations made by the Partnership on approaches to enhance ICT statistics, asked the Partnership to continue reviewing the indicators in light of rapid technological advances and widespread use of ICT technology, recognized the importance of capacity-building activities, welcomed the activities of some development partners in this area and urged other development partners to provide assistance in this regard.

The *UNCTAD website on Measuring ICT for Development*[187] provides information on the development of ICT statistics and indicators worldwide, in order to support ICT policies and the information economies in developing countries. The website is a useful tool for tracking progress in ICT measurement, particularly by national statistical offices (NSOs) and international organizations, and promoting dialogue between practitioners of ICT statistical work on best practices, experiences and methodology. It contributes to WSIS follow-up and implementation, and supports the work of UNCTAD on measuring the information economy as well as the work of the Partnership on Measuring ICT for Development.

One of UNCTAD's contributions to the work of the Partnership on Measuring ICT for Development is a programme to enhance the availability of *business ICT data for policy-makers.* UNCTAD collects data annually from NSOs around the world on core business ICT indicators. The first data table available online includes statistics on the ICT-producing sector; the proportion (percentage) of total business sector workforce involved in the ICT sector; and value-added in the ICT sector as a percentage of total business sector value-added.

The *UNCTAD Information Economy Report 2011* focuses on the role of ICTs in the development of the private sec-

[185] More information in the chapter: Introduction to WSIS

[186] www.itu.int/ITU-D/ict/publications/wtdr_10/material/WTDR2010_e.pdf

[187] http://measuring-ict.unctad.org

tor. The report includes studies/articles on how governments and other stakeholders are utilizing ICT applications to support the creation or growth of enterprises in developing countries.[188]

An international conference was held in Geneva in October 2011 and adopted package of strategic decisions on waste avoidance and management. The conference, which assembled representatives of 118 members of the Basel Convention, the global treaty on waste management, reached an historic agreement unblocking an amendment that will ban the export of hazardous wastes from OECD to non-OECD countries, known as the *Ban Amendment*. The groundbreaking decision, containing a set of measures aimed at strengthening international control of transboundary movements of hazardous wastes, including electrical and electronic wastes containing hazardous components, was adopted on 21 October, the closing day of the tenth meeting of the Parties to the Convention (COP10), in Cartagena de Indias, Colombia.

The United Nations Group on the Information Society (UNGIS) continues to serve as an inter-agency mechanism to coordinate substantive policy issues facing the UN system's implementation of the Geneva Plan of Action and Tunis Agenda for the Information Society adopted by WSIS, thereby contributing to improving policy coherence in the UN system, as requested by the Summit in 2005.[189]

The *Urban Gateway* – www.urbangateway.org – created by United Nations Human Settlements Programme (UN-HABITAT) serves as a web platform for UN-HABITAT and its external partners to network, exchange knowledge, discuss issues and share opportunities related to sustainable urbanization worldwide. It aids substantially in fulfilling UN-HABITAT's core mandate as a facilitator of knowledge exchange within the field of sustainable urbanization, providing the ideal tool to leverage the energy and resources of the entire global urban development community. The platform responds to demands from several HABITAT partners for a central hub of practical knowledge, and a permanent focal point for the networking activities of the professional community. It brings management of the sustainable urbanization field into the era of social media opened up by platforms like LinkedIn and Google Maps, increasing the flow of useful knowledge within the field, and allowing that knowledge to radiate into the wider professional consciousness.

The Secretariat of the Basel Convention (SBC) and ITU signed an agreement aimed at protecting the environment from the adverse effects of *e-waste*. The rapid spread of electrical and electronic equipment (EEE) has raised public awareness and focused attention on the negative effects of inadequate disposal and waste management. The collaboration between ITU and SBC seeks to collect and recycle hazardous materials by introducing safeguards in the management of waste electrical and electronic equipment (WEEE), or e-waste. Developing countries are expecting a surge in e-waste, with mobile-phone waste in particular expected to grow exponentially. Sharp increases of e-waste have until now not been matched with policy and regulatory mechanisms, nor with infrastructure to cope with the influx of e-waste in developing countries. Currently, only 13 per cent of e-waste is reported to be recycled, with or without safety procedures.

During the period 2010-2012, UNEP and the Basel Convention have continued to work on the following activities:

- The *Partnership for Action on Computing Equipment (PACE)* is a multistakeholder partnership established to address the environmentally sound management of used and end-of-life computing equipment.
- *Online Access to Research in the Environment (OARE)*, an international public-private consortium led by the United Nations Environment Programme (UNEP) in partnership with Yale University and leading science and technology publishers, enables developing countries to gain access to one of the world's largest collections of environmental science research. Over 3 000 journal titles are now available to environmental institutions in 109 countries.
- The *Programme of activities for the environmentally sound management of e-waste in Africa* is being implemented in the framework of the *e-waste Africa* project, which is a comprehensive programme aiming to enhance the environmental governance of e-waste and to create favourable social and economic conditions for partnerships and small businesses in the recycling sector in Africa. The time-frame of the project runs from November 2008 to March 2012, in cooperation with many partners. The project has the overall objective of enhancing the capacity of African countries to tackle the growing problem of e-waste imports from the industrialized world and thereby protect the health of citizens, particularly children, while providing economic opportunities in the recipient countries.
- Under the *Programme of activities for the environmentally sound management of e-waste in the Asia-Pacific region*, following the ninth meeting of the Conference of the Parties, two projects were completed in 2009. Thanks to a multistakeholder approach, a regional training workshop was organized aimed at building the capacity of the parties and of Basel Convention coordinating centres (BCRCs) in the

[188] www.unctad.org/en/docs/ier2011_embargo_en.pdf

[189] More information is available in the chapter: Introduction to WSIS

Asia-Pacific region to develop projects on the environmentally sound management (ESM) of e-waste.

Recognizing the development opportunities offered by digital technologies and the need for developing countries and developed countries to collaborate so as to exploit such opportunities, the International Federation for Information Processing (IFIP) undertakes a number of activities under the umbrella of the *World Information Technology Forum (WITFOR).* The overall goal of WITFOR is to assist developing countries in developing and implementing sustainable strategies for the application of ICT and to share experiences that will help to bridge the digital divide and improve quality of life. The specific objectives are:

- To share and discuss experiences in drafting and implementing ICT policies
- To share and discuss experiences in initiating and implementing ICT projects
- To present and discuss research concerning the overall goal.

The forum will address issues critical to developing countries, such as the application of ICT in fighting HIV/Aids and other health issues, poverty, access to education, empowerment, environment, as well as social, ethical and legal consequences of IT. It will also showcase leading-edge ICT solutions for economic development, as well as best-practice projects from around the world.

The International Electrotechnical Commission (IEC) is the world's leading organization for the preparation and publication of *international standards* for all electrical, electronic and related technologies – known collectively as *electrotechnology*. IEC also supports all forms of conformity assessment in relation to its standards, and administers three third-party conformity assessment systems. Its membership comprises 81 national committees that represent government, industry and other stakeholders in their respective countries. In addition, IEC runs a free programme, the *Affiliate Country Programme*, currently comprising 81 countries. Launched in 2001, the IEC Affiliate Country Programme is aimed at enhancing the participation of developing countries in IEC international standardization activities. The programme has three principal aims:

- To encourage greater awareness and use of IEC international standards in developing countries
- To help those countries understand and participate in the work of IEC
- To facilitate the adoption of IEC international standards as national standards.

A *Hyper-Local Social Meeting Place* and a *Global Collaborative Innovation Framework* were introduced by *MobileMonday* in Finland. MobileMonday is the passionate meeting point of mobile professionals, enthusiasts and influencers in over 130 regions around the world. It has inspired participants to create new knowledge production for local needs and global success stories, supported and benchmarked by peers. MobileMonday has persistently attracted mobile professionals and influencers to exchange ideas on developments and news in regard to the evolution of mobile. It is an open community for all parties in the mobile field, with the goal of gathering together developers, policy-makers, researchers and sponsors through monthly events, international summits, web communities and news services. It registers 150 000 participants in almost 1 000 events annually.

UNIDO's *Business Information Centres* programme is an impact-oriented, pro-poor initiative that caters to the needs of rural entrepreneurs. The business information centres (BICs) provide ICT-based information, training and Internet access to micro, small and medium-sized enterprises (MSMEs) on a commercial basis. Other major benefits for rural entrepreneurs are ICT support, entrepreneurial advice and unprecedented access to new markets, technologies and services. With the support of UNIDO, BICs sign cooperation agreements with institutions that provide information content. As a pilot project, eight BICs have been successfully launched in rural **Uganda**. Numerous countries have since requested UNIDO's assistance in replicating and tailoring such centres to their local needs. The programme received the *Africa Investor Award 2007* in the category of best SME development initiative.

The African Union (AU), with technical and managerial assistance from the UN World Food Programme, is working towards the creation of *African Risk Capacity (ARC),* an African-owned, standalone financial entity which could provide contingency funding to AU member states. Such a facility would guarantee participating African governments timely and rapid access to pre-defined funds in the event of a severe drought, flood or cyclone in their country to enable them to implement response plans. The first step to establishing such a facility is understanding – in dollar terms – Africa's weather-related food security risk. *Africa RiskView* is a platform that aims to quantify and monitor this risk in Africa, allowing users to see how the rainfall season is evolving in the countries or regions of interest, observe weather impacts on agriculture and rangeland and estimate how many people could potentially be affected and in need of food assistance as a result. In addition to providing the basic infrastructure required to support an entity such as ARC, the information from Africa RiskView could also help to target early food security assessments in specific geographic areas.

Collaboration of ICT youths, associations and societies across countries and continents for the development of ICT has been initiated by the West Africa ICT Youth Society in **Ghana.** On 29 November 2010, students from

22 West African universities gathered at the Ghana Telecom University College in Accra, Ghana, for the first *West Africa ICT Student Assembly (WAISA-2010)*. At the end, two committees were inaugurated to develop a planned document and constitution for the *West Africa ICT Youth Society (WAIYS)* which is to operate under the ECOWAS Commission. The objectives of this body are to bring together ICT students and graduates in all West African countries and collectively identify their relevance and importance in ensuring that all West African countries move to the next level of modern development through ICT, to smoothen transborder relations between West African countries, to pool and combine knowledge and to formulate reasoned conclusions on how, as ICT personal and experts, to make the future brighter and foster knowledge sharing and access to information.

One important objective pursued by ITU is to inform and educate the public about the power of ICTs and ITU's role in helping to connect the world. Establishing a visitors' centre – *ICT discovery* – at ITU headquarters in Geneva contributes to achieving this objective. The agreement on funding for the construction of such a centre was signed with the Telecommunication Regulatory Authority of the **United Arab Emirates** in November 2009.[190]

ITU TELECOM World 2011 brought heads of state, government and international organizations together with company CEOs, mayors of top cities, thought leaders, innovators, researchers and more**.** It provided a platform to network, share knowledge, seek solutions to global challenges and design a manifesto for a connected world on how connected technologies can make global citizens happier, healthier, safer and smarter. ITU TELECOM World 2011 was held in Geneva, Switzerland, and celebrated TELECOM's 40th anniversary. *ITU Telecom World 2012* will be held from 14 to 18 October in Dubai, UAE.[191]

ITU continues to organize the series of *Connect Summits*. The *Connect Arab Summit* was held from 5 to 7 March 2012 in Doha, Qatar.[192] The summit welcomed some 540 participants from 26 countries, including seven heads of state or government, 26 ministers, representatives from 18 international and regional organizations and 99 private-sector companies and other stakeholders. It was convened to forge a regional consensus on new strategies to boost infrastructure deployment, extend access to marginalized populations and stimulate innovation and employment across the Arab region.

The Connect Arab Summit closed with a *communiqué* endorsed by all participating governments from across the Arab region, which set out four key development goals centered on Access and infrastructure; Digital content; Cybersecurity; and Innovation. Connectivity commitments and partnerships announced during the event included:

- A project between ITU and the League of Arab States to establish a *dot Arab* domain name. UAE announced that it would host this important new domain name
- An *Arab Women's Literacy* project involving ITU, ALESCO and UAE designed to empower women in the region with ICT skills in Arabic
- A project between ITU and the Linux Professional Institute to promote *open-source software training and certification*
- A *broadband toolkit* to be developed by the World Bank, along with a *regional broadband connectivity study* to support additional infrastructure investment and an *employment study* focusing on the West Bank/Gaza.

The next summit in the Connect series will be *Connect Americas,* to be held in Panama City, Panama, from 17 to 19 July 2012.

The *Meridian International Conference 2011* took place in **Qatar**. Founded in 2005, the Meridian International Conference is an annual policy forum for governmental policy-makers and international organizations to exchange insights on issues related to critical information infrastructure protection (CIIP). More than 30 countries participated in the conference hosted by Q-CERT in October 2011.

Partnership Algeria – Niger was created by the Ministry of Posts, Information Technologies and Communications in Algeria. The partnership plan includes institutional support in the field of ICT and the implementation of a fibre-optic link between **Algeria** and **Niger**.

The ITU *Regional Workshop on Bridging the Standardization Gap (BSG)* for the Arab and Africa regions took place in Algiers, **Algeria**, on 26-28 September 2011. The workshop was organized in association with Algerian Post and Telecommunication Regulatory Authority (ARPT), and was generously supported by Nokia Siemens Networks and Microsoft. The overarching goal of ITU's BSG programme is to facilitate increased participation of developing countries in standardization, to ensure that developing countries experience the economic benefits of the associated technological development, and to better reflect the requirements and interests of developing countries in the standards-development process. One specific objective of this project is to gain an understanding of the issues inhib-

190 www.itu.int/ictdiscovery/about.html

191 www.itu.int/ITUTELECOM/index.html

192 www.itu.int/ITU-D/connect/arabstates/communique.asp

iting the capacities of developing countries to develop, implement and use standards.[193]

The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) continues to work towards achieving the WSIS targets in Asia and the Pacific trough regional cooperation. Activities include:

- *Subregional workshop on strengthening ICT policies and applications to achieve MDGs and WSIS goals in Asia and the Pacific*. This project, funded by the **Republic of Korea**, aims to raise awareness among ICT policy- and decision-makers by means of policy analysis and recommendations, and develop a concerted strategy for a possible regional cooperation and framework for following up on the timely implementation of the relevant WSIS action line. The project will focus on least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing states (SIDS), while ensuring the sharing of experience, good practices and lessons learned from other countries, such as the Republic of Korea, China and India, and exploring possible avenues of regional cooperation.
- The fourth *Joint Project Team Meeting for Sentinel Asia STEP-2* was co-organized by ESCAP in partnership with the Ministry of Science and Technology and Innovation of Malaysia (MOSTI), the Malaysian National Security Council (MKN), the Malaysian Space Agency (ANGKASA) and the Japan Aerospace Exploration Agency (JAXA), in Putrajaya, **Malaysia**, from 12 to 14 July 2011. It showcased and reported on the progress of field and experimental projects based on space applications that are being explored in the region, particularly in the area of disaster risk reduction and management. The meeting, organized annually, was attended by 89 experts from 62 organizations, including space agencies, universities and other non-governmental organizations from the Asia-Pacific region. With the objective of increasing the resilience to natural disasters and other shocks of the people and communities of the region, ESCAP promotes the use of imagery and data from space-based platforms for inclusive and sustainable social and economic development.
- The second session of the *Committee on Information and Communications Technology (CICT)* was held from 24 to 26 November 2010 at the United Nations Conference Centre (UNCC) in Bangkok, Thailand. It was organized by the Information and Communications Technology and Disaster Risk Reduction Division (IDD) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). The committee highlighted the importance of ICT as a fundamental enabler in achieving the MDGs and the WSIS targets, as well as in implementing the Hyogo Framework for Action and enhancing economic development and poverty-reduction efforts across all sectors and economies of Asia and the Pacific. It stressed the important role of broadband technologies in socio-economic development in the region, while acknowledging the need to bridge the emerging digital divide in broadband access.
- ESCAP organized the *Expert Group meeting on emerging ICT developments and opportunities for enhancing cooperation in achieving regional connectivity*, from 22 to 24 November 2010, at UNCC, in Bangkok. The meeting achieved the following objectives:
  - Review of the latest regional developments on ICT connectivity
  - Review of ICT regulations
  - Consideration of policies to capitalize on emerging ICT applications in key socio-economic sectors
  - Identification of areas in which regional cooperation can strengthen ICT for development.

At the meeting, experts exchanged ideas and shared good practices and strategies for expanding ICT connectivity and introducing new ICT applications. In addition, the meeting discussed a framework for possible regional cooperation.

The *Global Forum on Telecentres* was created by the Telecentre.org Foundation in the Philippines. The third Global Forum, held in **Chile** on 5-7 April 2011, was attended by a total of 281 participants (telecentre network leaders, activists, academics and community members) from over 37 countries. It focused on the theme *Employability, productivity, and empowerment at the grassroots*. The forum aimed to demonstrate the achievements and the current role of telecentre networks as prime movers for local growth, facilitating the distribution of services, the organization of communities and the best use of ICTs. It also aimed to highlight regional and global strategies for the creation of jobs, productivity gains and integral community empowerment.

In the **Russian Federation**, the fifth *Forum of the Arts and Science Intelligentsia of the CIS Member States* was organized by the Institute of the Information Society (IIS)**.** The

[193] More information is available at www.itu.int/ITU-T/newslog/ITU+Regional+Workshop+On+Bridging+The+Standardization+Gap+For+Arab+And+Africa+Regions+Interactive+Training+Session+And+Academia+Session.aspx

institute acted as co-organizer of the forum, which was held on 14-15 October 2010 at the Moscow State Institute for International Relations. The event, which was attended by Dmitry Medvedev, the President of the Russian Federation, brought together more than 1 000 participants, including around 200 delegates from all CIS countries and around 200 representatives of creative youth. The forum was attended by well-known scientists, cultural and educational workers, representatives of intergovernmental organizations, national authorities and international organizations. Within the framework of the forum, IIS organized a panel discussion on *Information society for all: Humanitarian aspects of modernization*. The *Regional Development Forum (RDF)* should provide an opportunity for high-level dialogue between ITU and its Member States as well as Sector Members on key challenges and actions related to spectrum management and the digital dividend, to better assess strategic orientations that may have an impact on ITUs regional work plan in the period between world telecommunication development conferences.

The *Creative Commons Global Summit*, which took place on 16-18 September 2011, in Warsaw, **Poland**, brought together volunteers, activists, practitioners and industry leaders from nearly 70 countries to discuss ways to advance the Creative Commons' mission, build a vibrant global CC community and share best practices across sectors. Of the many issues covered over the three-day summit, perhaps the most interesting were the plans for version 4.0 of the *Creative Commons Licence* suite.[194]

In **Spain**, the *Symposium of Technologies for Social Action and Citizen Empowerment (e-STAS)* was set up by the Cybervolunteers Foundation (*Fundación Cibervoluntarios*).[195]

UNEP

[194] www.creativecommons.ga/powering-an-open-future-at-the-creative-commons-global-summit

[195] www.cibervoluntarios.org/proyecto.php?id=2

Conclusion

The WSIS Stocktaking Report 2012 reflected numerous ICT related activities for the period 2010-2012 in response to the ITU official call 2010 and 2011 for update and new entries. The information was submitted by different stakeholders including governments, private sector, international organizations, and the civil society. Core facilitators and other UN agencies have also actively contributed to this report in their respective area.

The diverse activities reflected in the publication served as evidence of the hard work that stakeholders contributed during the last years to achieve WSIS targets. Stakeholders invested a lot of efforts towards building an inclusive approach of the Information society. This has been evidenced in the national strategies developed on multi-stakeholder approach taking into consideration the views of the civil society and private sector. In Bhutan, the strategies were formulated with inputs from open consultative workshops and studies; in Chez Republic, comments from private and public sector were included in the draft strategy; and in Poland it was preceded by a series of extensive consultations with experts. More and more ICTs are becoming an integral part of government strategies from cross-cutting industries, governments such as Mauritius tries to strengthen ICT sector as a pillar of the economy; while in Costa-Rica, the government tries to integrate telecommunications in various economic and social sectors.

Currently, broadband is becoming an integral component of ICTs national strategies. Some governments are undertaking efforts to develop strategies particularly focused on broadband that include coverage and improvement of infrastructure.

It is important to consider that some ICT national strategies are also aligned with regional strategies, as in the case of Poland where *Strategy for the Development of the Information Society until 2013* is aligned with Lisbon Strategy, eEurope and i2010.

The access to information and knowledge is the right of everyone, however there are still some constraints for disadvantage groups of people. As mentioned in the report, there are more than one billion people living with some form of disability. In order to overcome these barriers and ensure that information is accessible to everyone, stakeholders continue to work on the development of innovative and accessible tools such as websites, learning portals and ICT centers capable of catering to disabled individuals.

Stakeholders are continuing to work on a clear definition of digital communications literacy and highlight its importance in areas such as business, culture, education and creativity. (*Digital Communications Literacy Forum*).

In many countries the revenue of telecom market is growing fast, thanks to the regulation framework adopted by the governments. Taking the UAE as an example, the market has grown from AED 30 billion to AED 50 billion since 2005. (8.16771 billion U.S. dollars to 13.61285 billion U.S. dollars). In Mauritius, GDP reached 6.4 per cent in 2010 and the ICT sector has positioned itself as the third pillar of the country's economy.

The aim and scope of projects are very different, some projects target connectivity for millions of people such as Trans-Eurasian Information Super Highway (TASIM) that provides affordable connectivity to landlocked countries of Eurasia, particularly in Central Asia; some projects target investments to the region in order to enhance ICT access, applications and services throughout region such as series of Connect Summits; some projects are developed to raise the awareness about particular topic by organizing conferences and workshops.

More resources become available online through the digital libraries and archives. In Mauritius, 500 000 pages of historical documents is planned to be available online. It is also important to take into consideration that websites should be accessible online for the visually impaired. As an example, in UAE, the use of video cultural materials was implemented for the visually impaired (Arabic online digital library).

Computer emergency teams play a particular role in the number of countries in order to facilitate detection and prevention of and response to cybersecurity incidents. Particular attention is drawn to initiatives for children such as Keep them safe, Keep them Curious (Qatar,) Safe Space.qa (Qatar), Child Online Protection (ITU), Be Smar-

tOnline (Malta), Healthy Internet Porgramme (Dominican Republic), Oman Kids portal (Oman), Global Cyber Ambassadors for peace (eWorldwide Group), Klikni Bezbedno (Serbia) among others.

ICT applications are part of our daily life and prevail in different sectors such as public administration, business, education and training, health, employment, environment, agriculture and science, within the framework of national e-strategies. The economic and social benefits of these applications are enormous taking an example of *Electronic Russia* that ensures access to electronic services for Russian citizens; *Mobi-Dinar* (Tunisia) implements new means of payments and give citizens easy access to services; *Hakeem* (Jordan) facilitates health information electronically, *Women Working from Home (Qatar)* provides teleworking opportunities; *e-Krishok* (Bangladesh) empowers farmers and make progress towards e-agriculture, *National biomonitoring online database* (Georgia) serves as management systems and databases to track e-environment issues, *Green Voice* (ICVolunteers) raises the awareness about e-environment. It is just a few examples among others that illustrate the impact and value of ICT applications for society.

This year, 2012, marks a significant date for sustainable development as 20 years ago the Earth Summit in Rio De Jainero adopted the notion of sustainable development. The report provides a detailed look at the role of ICTs in the transition towards a green economy as well as important information on sustainable development, climate change and environmental challenges in the future.

The volume of entries also brings to light initiatives that have resulted in the realization of several objectives within a single project, thus illustrating a multidimensional approach in achieving WSIS targets.

Aside from numerous advancements in technology and projects, there have also been an increasing number of initiatives from governments towards empowering citizens, young people and entrepreneurs. The governments are trying to overcome global economic challenges by integrating ICT good practices and using ICT to encourage economic growth and development.

On behalf of the entire team, we would like to thank all stakeholders who contributed to the WSIS Stocktaking Database during the period 2012-2012. The entries have doubled over the years and based on this success, the WSIS Stocktaking process will continue to be an important mechanism that responds to the needs of stakeholders through reporting and sharing of best practices.

As mentioned previously, preparatory process for the Overall Review WSIS+10 will require significant reporting on ten-years of achievements and identification of challenges to be addressed beyond 2015. WSIS Stocktaking reporting will be one of the main tools for overall assessment and evaluation.

It is our hope that the reflected activities registered and showcased in the WSIS Stocktaking Report will encourage all participants to continue to help construct a more inclusive and sustainable Information Society.

Annex: Plan of Action[1]

Expected Final Outcomes of the Overall Review Process (WSIS+10)

1. Evaluation and Assessment Reports (adaptations possible in the lead-up to 2015)

- WSIS+10 Progress Report (Quantitative Focus)
  (Initial Coordination by Partnership on the Measuring ICT for Development during the WSIS Forum 2012)
- Review Reports by Action Line Facilitators (11 Action Lines)
  (Template to be prepared by WSIS Action Line Facilitators' Meeting during the WSIS Forum 2012)
- Self-evaluation National Review Reports
  (Draft template to be prepared during WSIS Action Line Facilitators' Meeting of the WSIS Forum 2012)
- WSIS+10 Stocktaking Report
  (International Telecommunication Union)
- IGF Secretariat Report
- UNGIS Review Report
- Contributions to the MDG Process

2. Forward looking outcome setting an agenda beyond 2015

Preparatory Process and Meetings within the Framework of the Overall Review up to 2015

Preparatory process will include virtual working methods as an integral part of the overall review.

2012:

- **May: Start of Preparations for the WSIS+10 Review during the WSIS Forum 2012, Geneva (2 days) to define**
  - preliminary indications for the scope of the possible forward looking outcome, setting agenda beyond 2015
  - templates for the reports of the lead facilitators on the Action Lines
  - templates for the national self-evaluation reporting on the implementation of the WSIS outcomes
- **May: Report on the outcomes of the UNGIS Consultations on the WSIS+10 Review** to the 15th Session of the Commission on Science and Technology for Development (CSTD)
- **October/December: UN General Assembly**

[1] Please note that presented version of the Draft Plan of Action is original version of the outcome of the UNGIS consultation on WSIS+10 as published the 5th October 2012, Since then follow-up actions led to minor changes in particular in terms of dates, i.e. concluding High Level Meeting on WSIS+10 has been planned for April 2014 back to back with the World Telecommunication Development Conference.

2013:

- **February/March: Multi-stakeholder Event for the WSIS+10 Review (title to be decided)**

  (3 days event, hosted by UNESCO in Paris, with a high-level component)

  - Review of emerging trends in the Information Society
  - Development of recommendations of relevance to the forward looking outcome.
- **May: Preparations to the WSIS+10 during WSIS Forum 2013**
  (Geneva, 2-3 days)
  - Agreement on outline of the forward looking outcome
  - Discussion on text

2014:

- **May: Preparations to the WSIS+10 during WSIS Forum 2014**
  (Geneva, 2-3 days)
  - Finalization of the forward looking outcome
- **June/July[2]: High-Level Meeting on the Overall Review (WSIS+10)**
  (Location to be determined based on hosting proposals)
  - Presentation of all review reports
  - Adoption of the forward looking outcome

2015:

- Report on the outcomes of the Overall Review Process to the 18th Session of CSTD
- UN General Assembly to endorse the forward looking outcome.
- Contribution to MDG Review Process

[2] UPDATE: Please note that this meeting will be held back to back with the ITU World Telecommunication Development Conference to take place in March-April 2014.

List of Abbreviations and Acronyms

ACALAN	African Academy of Languages
ADSIC	Abu Dhabi Information and Systems Centre
AGEDI	Abu Dhabi Global Environmental Data Initiative
AISA	African Information Security Association
ANIE	Africa Network for Information Ethics
ASNS	Agrostatistical Network System
AT	Assistive Technologies
ATCON	Association of Telecom Companies of Nigeria
B2B	Business-to-Business
B2G	Business-to-Governments
BEFA	Better Education for All Foundation
BFES	Bangladesh Friendship Education Society
BIID	Institute of ICT in Development, Bangladesh
BIM	Bulgarian Institute of Metrology
BNNRC	Bangladesh NGOs Network for Radio and Communication
CAP	Common Agricultural Policy
CAT	Computer Adaptive Testing
CBD	Convention on Biological Diversity
CBO	Central Bank of Oman
CCL	Core Component Library
CECIs	Intelligent Community Centres
CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
CEM	Council for Electronic Media
CIDA	Canadian International Development Agency
CoE	Council of Europe
COe2	Carbon Dioxide Equivalent
COTS	Crime Occurrence Tracking System
CPC	Commission for Consumer Protection
CPDP	Commission for Personal Data Protection
CPI	Consumer Price Index
CRC	Communications Regulation Commission
CRPD	United Nations Convention on the Rights of Persons with Disabilities
CSCs	common service centres
CTA	Technical Centre for Agricultural and Rural Cooperation
CTLC	Community Technology Learning Centres
DDR	Disaster Risk Reduction
DDS	Data Design System
DHA	Dubai Health Authority
DSG	Dubai School of Government
EAC	East African Community
EAFA	Executive Agency for Fisheries and Aquaculture
EBTIC	Etisalat-BT Innovation Centre
EC	European Commission
EDIFACT	United Nations Electronic Data Interchange Standard
EEA	Energy Efficiency Agency
EHIS	European Health Interview Survey
EHR	Electronic Health Record
EHS	Electronic Health Solutions
EIAST	Emirates Institution for Advanced Science and Technology
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
ESF	European Social Fund
EST	Environmentally Sound Technology
EU	European Union
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organization of the United Nations

FNC	Federal National Council
FTRA-10	Forum on Telecommunication/ICT Regulation and Partnership in Africa
GCC	Gulf Cooperation Council
GDCO	Gedaref Digital City Organization
GDP	Gross Domestic Product
GeSCI	Global e-Schools and Communities Initiative
GFATM	Global Fund to Fight Aids, Tuberculosis and Malaria
GFCS	Global Framework for Climate Services
GHG	Greenhouse gases
GIAC	Global International Security Certification
GIS	Geographical Information System
GRENA	Georgian Research and Educational Networking Association
GRP	Government Resources Planning
GSF	Gulf Seismic Forum
GSR	Global Symposium for Regulators
GTZ	Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH on behalf of Federal Ministry for Economic Cooperation and Development (BMZ)
GUIs	Graphical User Interfaces
G-WADI	Global Network on water and development information
HMIS	Health Management Information System
HP	Hewlett-Packard
HRDWG	Human Resources Development Working Group
IC3	Internet and Core Computing Certification
ICC	Chamber of Commerce
ICH	Intangible Cultural Heritage
ICIE	International Centre for Information Ethics
ICT	Information and communication Technologies
ICT4D	Information and Communication Technology for Development
ICTPA	Information, Communications Technology and Post Authority
IFAD	International Fund for Agricultural Development
IHP	International Hydrological Programme
IHR	International Health Regulations
IIC	International Institute of Communications
IIM	Institute of Management, India
IIS	Institute of the Information Society
IMT	International Mobile Telecommunications
IMTAC	Industrial Management Technology and Contracting
IPCC	United Nations Intergovernmental Panel on Climate Change
ISOC	Internet Society
ISPON	Institute of Software Practitioners of Nigeria
IT	Information Technologies
ITA	Information Technology Authority
ITAN	Information Technology Association of Nigeria
ITC	International Trade Centre
ITDMDC	Information Technology and Digital Media Development Centre
ITIDA	Information Technology Industry Development Agency
ITS	Intelligent Transportation Systems
ITU	International Telecommunication Union
IVR	Interactive voice response
KADO	Korea Agency for Digital Opportunities and Promotion
KIITEC	Kilimanjaro International Institute for Telecommunications, Electronics and Computers
KUSTAR	Khalifa University of Science, Technology and Research
LDC	Least Developed Countries
LEPL	Legal Entity of Public Law, Georgia
LOCODE	United Nations Location Code
MCN	Multimedia Content Network
MEA	Multilateral Environmental Agreements
MENA	Middle East and North Africa
MI	Measurement Instruments
MINAET	Ministry for the Environment, Energy and Tele-communications
MLSP	Bulgarian Ministry of Labour and Social Policy
MNRVCW	Moldovan Network of Rural Volunteering Centres for Water
MoC	Ministry of Culture
MoCI	Ministry of Commerce and Industry

MoE	Ministry of Education
MoEVT	Ministry of Education and Vocational Training
MoH	Ministry of Health
MoHEST	Ministry of Higher Education Science and Technology
MOICT	Ministry of Information and Communications Technology
MOIT	Ministry of Information Technology
MoLHSA	Ministry of Labour, Health and Social Affairs
MSAD	Ministry of State for Administrative Development, Egypt
MSMEs	Micro, Small and Medium-sized Enterprises
MTU	Mobile Telemedicine Units
NASA	National Aeronautics and Space Administration
NBS	National Bureau of Statistics, United Arab Emirates
NCB	National Computer Board
NCCR	National Commission for Communications Regulation
NCS	Nigerian Computer Society
NGFS	Bulgarian National Grain and Feed Service
NGO	Non-Governmental Organization
NIA	Korean National Information Society Agency
NICT	Network of Information and Computer Technology, India
NIH	National Institutes of Health, United States
NITDA	National Information Technology Development Agency
NLP-BBI	New legislative paradigms fostering development of broadband infrastructure
NOAA	National Oceanic and Atmospheric Administration
NSC	National Statistics Centre
NSI	National Statistical Institute
NSO	National Statistical Office
OECD	Organisation for Economic Co-operation and Development
OER	Open Educational Resources
OP	Operational Programme
OSCE	Organization for Security and Cooperation in Europe
OSS	One-Stop Shop
PAPU	Pan-African Postal Union
PC	Personal Computer
PHARE	Pologne, Hongrie Assistance pour la Restructuration Economique
PPR	Public Procurement Register
Q.NBN	Qatar National Broadband Network Company
QITCOM	Qatar ICT Conference and Exhibition
QNEP	Qatar National e-Learning Portal
RA-12	Radiocommunication Assembly
RCC	Regional Commonwealth in the field of Communications
REBICs	Renewable Energy Powered Business Information Centres
SADC	Southern African Development Community
SELA	Latin American and Caribbean Economic System
SISP	State Information System, Sudan
SME	Small and Medium-Sized Enterprises
SMS	Short message service
SPECA	Special Programme for the Economies of Central Asia
SQU	Sultan Qaboos University
TAMONGSCO	Tanzania Association of Managers and Owners of Non-Government Schools and Colleges
TANMIA	National Human Resources Development and Employment Authority, United Arab Emirates
TB	Tuberculosis
TCI	Technical Control Inspectorate
TCRA	Tanzania Communications Regulatory Authority
TELWG	Telecommunication Working Group
TESA	Technology Students' Association
TISPA	Tanzania Internet Service Providers Association
TOGAF	The Open Group Architecture Framework
ToT	Training of Trainers
TRA	Telecommunication Regulatory Authority
TT	Tunisie Telecom
UAE	United Arab Emirates
UMES	University of Maryland Eastern Shore
UN	United Nations

UNCDDD	United Nations Convention to Combat Desertification
UNCED	United Nations Conference on Environment and Development
UNCITRAL	United Nations Commission on International Trade Law
UNCSD	United Nations Conference on Sustainable Development
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCWA	United Nations Economic and Social Commission for Western Asia
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNODC	United Nations Office on Drugs and Crime
UNPAN	United Nations Public Administration Network
UNU-IAS	United Nations University Institute of Advanced Studies
UPU	Universal Postal Union
US	United States
W3C	World Wide Web Consortium
WACC	World Association for Christian Communication
WAIS	West Africa ICT Society
WAP	Wireless Application Protocol
WFP	World Food Programme
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WISP	Web-based Integrated Services Platform
WITFOR	World IT Forum
WMO	World Meteorological Organization
WRC-12	World Radiocommunication Conference
WSIS	World Summit on the Information Society
WTISD	World Telecommunication and Information Society Day
WWF	World Wildlife Fund
XBRL	eXtensible Business Reporting, United Arab Emirates
YPARD	Young Professionals Platform for Agricultural Research for Development

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