INTERNATIONAL TELECOMMUNICATION UNION

10TH GLOBAL SYMPOSIUM FOR REGULATORS (GSR)

DAKAR, SENEGAL, 10 - 12 NOVEMBER 2010

CHAIRMAN'S REPORT

December 2010

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EXECUTIVE SUMMARY

The 10th Global Symposium for Regulators (GSR10), organized by the Telecommunication Development Bureau (BDT) of the International Telecommunication Union (ITU), in collaboration with the Regulatory Authority for Telecommunications and Post (ARTP) of Senegal, was held in Dakar, Senegal.

H.E. President Abdoulaye Wade, President of the Republic of Senegal, presided over the opening ceremony accompanied by the ITU Secretary General, Dr Hamadoun Touré and the BDT Director, Mr Sami Al Basheer Al Morshid. Mr Ndongo Diao, Director General, ARTP acted as GSR10 Chairman. This year's event attracted 437 participants, bringing together regulators, policy makers and service providers from 81 countries.

The theme of this year's meeting was "Enabling Tomorrow's Digital World" and examined the challenges for regulators to stimulate nationwide broadband deployment through adaptive and targeted regulations and out-of-the-box tools. GSR10 also focused on the need to keep up with the pace of convergence and integration of ubiquitous networks, in particular through adapting institutional structure and mandates, adopting cutting-edge best practices and embracing new tools such as innovative dispute resolution techniques.

This year's symposium consisted of eight plenary sessions and a way forward session. The GSR also included one networking lunch session. In addition to the panel discussions and presentations, two interactive workshops were held: one on the topic of "Building on Broadband" and the other on "National School Connectivity Plans" featuring ITU's flagship initiative "Connect a School, Connect a Community".

As in the previous GSRs, consensus was reached on an output document, "Best Practice Guidelines for Enabling Open Access". These guidelines express the consensus reached at the meeting by the National Regulatory Authorities (NRAs) present. The final text of the Guidelines is attached to this report (Annex A).

With the growing complexity of the ICT market environment, there is a need to rethink the different degrees of regulation to anchor national broadband strategies and regulatory frameworks around the multi-facetted concept of open access to and over networks, which provides for effective competition while ensuring accessible, affordable and reliable services for consumers. A new ladder of regulation may now be required to set the right balance between service competition and infrastructure competition to address the challenges associated with access to broadband networks and services.

A series of GSR Discussion Papers were issued for the global gathering of regulators to spark a common understanding of the key regulatory issues. These are available on the symposium website at: www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR10/document/documents.html.

OPENING CEREMONY

The opening ceremony was held on 10 November 2010. The following personalities took the floor respectively:

Mr Ndongo Diao, Director General, ARTP, Senegal and Chairman of GSR-10, welcomed the participants and thanked the ITU for organising such an important event in Senegal and Sub-Saharan Africa for the first time. He highlighted some recent actions implemented in Senegal in the ICT sector, particularly in the field of education and health, under the leadership of President Wade, whose vision and initiatives have enabled Senegal to be among the leading countries in Africa in the field of ICTs.

Sami Al Basheer Al Morshid, Director, ITU Telecommunication Development Bureau (BDT) thanked H.E. President Abdoulaye Wade, President of the Republic of Senegal, the Senegalese authorities and ARTP for hosting the Global Industry Leaders Forum (GILF) and GSR 2010, and for having put in place all the necessary facilities to enable excellent working conditions for the participants. After recalling the mission of BDT and the objectives of the GSR, he said that he was very pleased and honoured to have organised the GSR for the first time in Sub-Saharan Africa.

Dr Hamadoun Touré, ITU Secretary-General welcomed the participants and thanked H.E. President Abdoulaye Wade, President of the Republic of Senegal and all the Senegalese authorities for hosting the event. He recalled the great actions implemented by President Wade in both Senegal and Africa to bridge the digital divide and to bring the benefits of ICTs to all. He reminded the audience that President Wade was a visionary who had contributed greatly to the success of the World Summit on the Information Society (WSIS) with his brilliant initiative to create the Digital Solidarity Fund. The ITU was very proud to honour President Wade with the first ever WSIS award in Geneva, on 17 May 2006.

H.E. President Abdoulaye Wade, President of the Republic of Senegal, presided over the opening ceremony, and in addressing the audience he stressed that everyone should share in the benefits of the digital dividend. He noted some of the national initiatives for youth, such as the "cyberhuts", and asked the regulators to focus their efforts on one simple challenge: a computer for all, digital for all. He also said that Senegal is very satisfied with the achievements of the ITU and support provided to developing countries to move forward on the implementation of the Information Society and the digital world, and for his part, he said, he would spare no effort to assist the ITU in its work and to help achieve the Millennium Development Goals.

REPORTING SESSION

Mr Mahfoudh Ould Brahim, Deputy CEO, Expresso Senegal, Senegal and Chairman of the Global Industry Leaders Forum (GILF), presented the GILF report with two sets of recommendations, the first on the topic of Securing a wireless future, and the second on Creating a “light touch” policy and regulatory environment.[1]

Mr Alagi B. Gaye, Director General, Public Utilities Regulatory Authority (PURA), Gambia, and Vice Chairman of the West Africa Telecommunications Regulators Assembly (WATRA) and chairman of the meeting of Regulatory Associations held just prior to the start of the GSR. He reported on some of the issues discussed during this meeting, including, the status and challenges of regulatory harmonization, regional experiences with regards to international mobile roaming, and the transition from analogue to digital broadcasting.[2]

[1] The Recommendations of the Global Industry Leaders Forum to the GSR can be downloaded at: www.itu.int/ITU-D/partners/GILF/2010/documents/GILF-recommendations-en.pdf.
[2] The report of the meeting of Regulatory Associations is available at: www.itu.int/ITU-D/treg/Events/Seminars/GSR/GSR10/rras10/index-en.html

SESSION I: BUILDING TOMORROW'S DIGITAL WORLD TODAY: THE IMPACT OF BROADBAND ON THE ECONOMY

The session was moderated by **Mr Ndongo Diao,** Director General, ARTP, Senegal and Chairman of GSR-10.

Dr Raúl L. Katz, Adjunct Professor, Division of Finance and Economics, and Director, Business Strategy Research, Columbia Institute of Tele-information and author of the GSR Discussion Paper on Understanding the impact of broadband on national and global economies. He noted that broadband brings economic benefits, similar to other investments in infrastructure and can trigger similar economic returns, with a direct impact on labour capital and household consumption, contributing to a growth in GDP. In addition, consumer surplus, which benefits the population in general, has a direct impact on access to other services such as health care and education, and consequently offers value for money for investment. The question is how to continue that growth to ensure the impact in developing countries reflects that in many developed countries. The impact of policy can be measured through market studies which can lead to the further establishment of targets in addition to an understanding of what is slowing broadband take-up, such as taxation policy. These targets will in turn have the effect of enabling the monitoring of broadband impact on the economy.

Ms Mignon Clyburn, Commissioner, Federal Communications Commission (FCC), United States was asked why in many statements and remarks, she emphasizes that the federal government should focus on adoption efforts as well as deployment efforts in order to meet its goal of having all Americans use broadband. Commissioner Clyburne outlined the positive effects of broadband and emphasized that broadband addresses poverty issues and solutions offered by advanced technologies and services can only have a positive impact on these issues, acting as a panacea.

Mr. R.K. Arnold, Secretary, Telecom Regulatory Authority of India (TRAI), India, explained that despite unprecedented growth in tele-density, where growth increases in mobile use per month is comparable to the population of The Gambia, India has a comparatively low tele-density for a population of over one billion. The reason lies in the historically low level of landline penetration, with only 35 million landlines. The situation is changing with new market entrants offering broadband through various technologies such as DSL and cable. The recent launch of 3G mobile licences and a competitive market in India will mean that in the near future, GSRs will be talking about broadband growth in India.

Mr Ould Brahim Mahfoudh, Deputy Director General, Expresso Senegal, said that broadband access is essential for health and education which are fundamental in the fight against poverty. When levels of employability increase, poverty is reduced and by enhancing education, the intellectual human resources in Africa increase. Talking about the competitiveness of the Senegalese market he indicated that most revenue still comes from voice. Africa benefits from submarine cables and optical fibre but still suffers from a lack of local content, Internet Exchange Points (IXPs) and control of the hubs. In this regard, the regulator needs to reform spectrum, specifications and material and newcomers need resources and financing, and this will require changes in the legislation.

Mr Alagi B. Gaye, spoke from the point of view of a regulator of multiple services (water, electricity, etc), and underlined the fact that the problem is not just about ICTs, but that how to deal with infrastructure in general is at the core of the problem, and this problem needs to looked at holistically. Costs for operators are non-negligible and reducing bottlenecks in infrastructure is a major concern for ICTs. All services need to be looked at together and other sectors need to contribute, perhaps also with the support of the World Bank and African Development Bank, etc. Infrastructure needs to be considere holistically while trying to look at synergies and frameworks together to provide one service that includes other sectors, he noted.

The floor was then opened for comments and discussion.

It was stressed that many countries in Africa are trying to stop government investment and taxes are considered a 'golden goose' by many governments on the continent. It was also noted that there are other variables than those mentioned in the presentation related to society, health, and human development levels and the need to consider both the macro and the micro perspective when addressing this. It was agreed that having access to the necessary data is key in the process, and the lack of it is a problem, especially with regards to time series data, where three to four years of solid data is required to be accurate. Impact indicators such as fixed assets and capital investment and other variables are also required for a good analysis. At the micro level, when the SME sector adopts broadband, this will naturally lead to increased output and income can be generated from related exports.

SESSION II: 21ST CENTURY REGULATION

The session was moderated by **His Excellency Mr José Rizek,** Minister and Telecommunications Advisor to the President of the Dominican Republic.

Janet Hernandez, President, TMG presented the GSR Discussion Paper on ICT Regulation for the digital economy. The paper highlighted past and present trends, from the increase in mobile cellular and broadband subscribers (fixed and mobile), the successes of YouTube, Facebook and Google, to regulatory trends such as the shift from an ex-ante regulatory environment to an ex-post regulatory environment and the growing need for effective, robust competition laws. Today, ICTs interact with all sectors of the economy adding new regulatory challenges to existing ones, and governments are responding with new initiatives such as green ICTs, e-health and m-health, education, m-banking, etc. However, regulatory tools have not been able to keep up with the pace of change, while still trying to deal with evergreen issues such as universal service, new challenges like privacy, piracy, e-waste, etc. are growing in importance. With limited resources, ICT regulators must consider ways to increase cooperation with other government agencies.

Mr Nicolas Curien, Commissioner, Autorité de Régulation des Communications Electroniques et des Postes (ARCEP), highlighted today's role of regulation to nurture growth and ensure stability. He also noted that future regulation will most likely involve stages of ex-post and co-regulation. He stressed the importance for the regulator to provide incentives to stimulate innovation, and to create the right conditions for innovation to take place.

Mr Tom Phillips, Chief Government and Regulatory Affairs Officer, GSM Association noted that ICT regulators face three fundamental challenges in a fast changing market, where business models are radically different, and in an era of ex-post regulation where new players will be talking a radically different language. Today's new markets need to be embraced not resisted and to be understood in a holistic way, also as this relates to its different languages and business models.

Mr Pavel Dvorak, Chairman, Czech Telecommunication Office, Czech Republic indicated that regulators must take into account the slowly changing political structure and legal frameworks in their work. He further noted that regulatory impact assessment methodologies will help the sector and the economy. Overall, regulatory decisions need to be transparent.

Mr Gustavo Peña-Quiñones, Secretary General, Latin American Forum of Telecom Regulators (REGULATEL) said that regulators in Latin America are trying to apply regulatory models from developed countries and measuring the effects of ICTs on the economy, and cited the success of a model based on openness to competition, which led to the build-out of new networks, new infrastructure and increased connectivity to the Internet. In the future, he said, regulators will need to be flexible and work closer with other actors in the economy.

The floor was then opened for comments and discussion.

It was noted that new applications and services can reduce access to ICTs when there is limited bandwidth. The emergence of new economic models and new regulatory frameworks can be disruptive and their applicability and impact in developing countries is raising concerns

where stakeholders are continually playing catch up with innovation. However, regulators are in a position to create good conditions for new services to emerge and to ensure, through dialogue, that all stakeholders will benefit. A call for an increase in training and information for policy makers to understand regulation and reduce interference was put forward.

ITU reminded the audience of the ITU-infoDev ICT Regulation Toolkit and the Trends in Telecommunication Reform publication that assist regulators in their day to day work. The moderator reiterated the need to be open-minded for regulators to be able to successfully tackle regulation in the 21st century.

SESSION III: SPECTRUM IN TRANSITION: THE DIGITAL DIVIDEND

The session was moderated by **Dr Drazen Lucic,** Executive Director, Croatian Post and Electronic Communications Agency (HAKOM), Croatia.

Adrian Foster, Founding Partner, McLean Foster & Co, gave an overview of the GSR Discussion Paper on Digital switchover and the digital dividend. After defining the digital dividend he highlighted the related economic aspects, and raised technical and regulatory considerations. The digital dividend, that is a consequence of digital switchover, will allow for many new technologies and services by reallocating the freed up spectrum. Harmonization of allocation across regions as well as cross–border coordination is also very important. It was also pointed out that some key issues remain, such as, different regulatory frameworks, conflicts created by refarming, and the reservation of spectrum for future use and coordination. Regarding migration, regulators can choose between market led and regulatory intervention. Migration requires organization, coordination and harmonization. However, in liberalized markets policy makers and regulators usually consider social, cultural and developmental objectives. Policy makers have to take decisions on when to move and then how to exploit the dividend. Migration is feasible when properly managed and organized, but the resolution of interference remains extremely complex.

Mr Pape Cire CISSE, Director of Radiocommunication, Network and Services, ARTP, Senegal, highlighted the particular case of Senegal regarding the Multichannel Multipoint Distribution Service (MMDS) using the 2500- 2686 MHz frequency band. Some countries have planned to take a portion of the bands already used to complete the digital dividend. The question which remains is whether the MMDS will disappear with the advent of digital broadcasting. The objective in Senegal is to maintain the operation of the MMDS and allow new wireless broadband users. The proposed solution is to take 72 MHz from the 186 MHz allocated for MMDS and assign it to new broadband networks. Regulators should have specific projects for future optimal use of these frequencies by new users after reduction of the part allocated to broadcasters.

Dr Muhammad Budi Setiawan, Director General Posts and Telecommunications, Ministry of Communication and Information Technology, Indonesia highlighted the benefits and challenges faced by his country in implementing digital broadcasting and digital dividend Discussions began in 2007 with the DVB-T standard followed by some tests that helped finalize the business model. They faced the following challenges: problems with the broadcasters; the release of frequencies; and, channels 4 and 5 which are already used by existing services. A roadmap has been developed, he noted. Regarding the allocation of frequency bands, several options were presented including: the status quo, allocation of the band to broadband users; technological neutrality approach or tenders for the selection.

Mr Peter Pitsch, Executive Director, Communications and Associate General Counsel, Intel Corporation, United States, acknowledged that since 1981 many mistakes have been made by the Federal Communications Commission but some improvements could also be seen. The biggest mistake was the denial of access to new mobile entrants. The good news was the flexibility regarding new services and technological neutrality. The spectrum for data services is becoming increasingly scarce, he further noted. To create a win-win situation between all stakeholders, incentives have been provided to the incumbents. This has allowed consumer needs to be met and that new broadband technologies could be rapidly introduced.

The floor was then opened for comments and discussion.

It was recognized that in most developing countries, broadcasting does not fall within the traditional mandate of the regulator. Therefore, the importance of having good cooperation between all involved stakeholders was stressed. On the question of possibily exchanging frequencies between the incumbent and the newcomers for providing services, it was noted that this is indeed feasible and should be done under the supervision of the regulator. It was also noted that the emphasis should be placed on issues such as the coordination of frequency bands and the harmonization of regulatory frameworks, ensuring the commitment of broadcasters and subsidizing converter boxes as an option. The use of a cost-benefit approach was mentioned as a means to identifying digital dividend opportunities. Regarding rural areas, it was proposed that regulators use the funds generated by the sale of the frequency bands to subsidize the equipment and some of the costs related to digital broadcasting migration.

The ITU representative informed the meeting about the work carried out by ITU in the area of Digital Dividend (ITU Guidelines for the Transition from Analogue to Digital Broadcasting)[3] and the technical assistance provided to members in this regard.

SESSION IV: DISPUTE RESOLUTION IN THE ICT SECTOR

The session was moderated by **Mr C. Lizcano Ortiz,** Executive Director, Comisión de Regulación de Comunicaciones (CRC), Colombia who stressed that dispute resolution is the responsibility of the regulator and a key driver of ICT sector competition, referring to the role CRC plays in resolving conflicts and developing the mobile sector in Colombia. Regulators must learn how to solve controversies faced by regulators in the 21st century, with changes affecting the market, technologies and business models. This will be a key factor in contributing to achieving the goals of Digital Colombia, and the national ICT strategy launched by the President of Colombia, to have all population of the country connected by 2018, he noted.

Mr Rory Macmillan, Founding Partner, Macmillan Keck presented the GSR discussion paper on Dispute resolution in the ICT sector. He emphasized that dispute resolution is the continuation of competition by other means. The sector is now competitive and many operators are competing for market share and ideas. Dispute resolution is itself going through a liberalization process leading to the unbundling of dispute resolution techniques. This creates an opportunity for regulators to use these techniques to better regulate the sector. As the judicial system in shifting to a more liberalized process, the degree of interventionism in the sector is also changing. In a number of countries, new laws include arbitration to address disputes. Some countries are for example using special tribunals to review appeals from the regulatory authority. Licensing conditions may also include arbitration and mediation clauses where a neutral party can resolve disputes and fundamental questions.

Mr Satya Brata Sinha, Chairperson, Telecom Disputes Settlement and Appellate Tribunal, India mentioned that India has a unique model, where ICTs are governed by three acts and telecommunications and broadcast services have a common regulator, the Telecom Regulatory Authority of India (TRAI). TDSAT exercises two jurisdictions, one is the appellate jurisdiction to TRAI decisions and regulation and the other one is the original jurisdiction (adjudication between licensor and licensee, service provider and group of consumers, etc). As cable services and broadcasters were not subject to a license, they broadened the definition of license to include any permission granted by the Government of India. Under its appeals jurisdiction, content provider adjudication can be made by TDSAT. Appeals to TDSAT decisions can be brought to the Supreme Court. This flexible procedure encourages mediation, conciliation and negotiation, and settlement is set in accordance with mediation, under the Arbitration and Conciliation Act.

Dr Krishna Oolun, Chief Executive Officer, Information and Communication Technologies Authority (ICTA), Mauritius noted that reforming the whole dispute resolution process is a sign

[3] www.itu.int/publ/D-HDB-GUIDELINES.01-2010/en

that market is maturing. Initially, the regulator addressed disputes through arbitration and adjudication, where the incumbent tried to win unconditionally. However, the market is now gaining in maturity, with new players and services, moving away from fault-finding to finding solutions for cohabitation. The regulator should focus on disputes in which it has expertise, and which specifically affects consumer protection. With ICT sector reforms and increased light touch regulation, regulators should educate operators on alternative modes of addressing redress such as alternative dispute resolution processes.

Dr Eugene Juwah, Chief Executive Officer, Nigeria Communications Commission (NCC) mentioned that in Nigeria ICT sector issues were not best handled by traditional courts. In response, workshops on ICT dispute resolution have been organized for judges, the use of alternative dispute resolution, and its inclusion in contractual agreements, have been encouraged. In addition, dispute resolution centers have been created, as well as lists of dispute resolution companies and experts that the sector can call upon to address disputes have been published. Adjudication has been used but the trend in Nigeria is to move to alternative dispute resolution and use the courts as a last resort.

The floor was then opened for comments and discussion.

The discussions focused on understanding what works to resolve disputes and whether disputes should be handled by the regulator or independently. It was clear that there is no single answer to this question as situations vary from one country to another. The establishment of permanent and separate dispute resolution tribunals may work well in countries with strong adjudication systems such as in India. In Mauritius, an appeal system is in place so that operators can appeal to a decision of the regulator to the dispute appeal tribunal. In other countries, other options exist, including arbitration procedures in the law, with lists of arbitrators, mediators, and experts to be selected by a panel composed of the regulator. Third party involvement to solve a conflict without the regulator relies on procedural flexibility but this has to be done carefully. Training judges on complex ICT disputes is key. Alternative dispute resolution mechanisms are concrete and cost effective measures even if resources are lacking. There is a large number of international, regional and independent bodies that can help regulators resolve disputes. But the question remains as to whom to turn to and how to ensure neutrality in the case of a dispute. Should ITU, in cooperation with others, set up such a body? The need for more case studies on dispute resolution was also expressed.

ITU officials thanked the Government of Columbia for their offer to host the 2011 edition of the GSR and informed participants of ICTDec, the unique online regulatory decisions database[4].

SESSION V: ICTS AND CLIMATE CHANGE: WHAT ROLE FOR REGULATORS?

The Moderator **Mr Ilyas Ahmed,** Chief Executive, Communications Authority (CAM), Maldives noted that the ICT sector contributes to global warming, but there are steps that can be taken to combat and reduce our carbon footprint such as cleaner sources of energy to power devices or by making devices more power efficient. The Maldives are confronted with the effects of climate change and its severe consequences. Although unproven, consumers are also concerned with negative effects of radiation of ICTs.

Stephen Young, Founder/Director, *www.ICTandClimateChange.com,* presented the GSR discussion paper on Climate change, ICTs and regulation. Does a special relation with ICTs require ICT regulators to get involved? Should regulators take the first steps? Should regulation become a point of contact between ICTs and climate change? Which ICT players are regulated and are these the right players to regulate as there is a constant shift in power between new and old players? Although ITCs contribute to GHG emissions, they can also reduce carbon footprint emissions. Mobile phones, for example, can be used to deploy different platforms to help change people's behavior through social networks, but everybody can play a

[4] www.ictdec.org/en/

role to cut GHG emissions. The ICT sector has to demonstrate it does everything it can to reduce GHG, setting examples of best practice.

Mr Harry Yuan, Commissioner for Government Affairs and National Policy, Telecommunications Authority (LTA), Liberia, indicated that we are fortunate to have access to ITU's repository of experience and research. Regulators can utilize the toolkits that ITU has developed. ICTs can contribute to stabilizing and reducing GHG emissions by achieving significant decrease in switching centres, by taking specifications for NGN switching and adopting standards such as very high speed DSL or VDSL2, and the three power modes. He emphasized the need to work together to combat the effects of climate change.

Mr Oscar Manikunda, Director General, Autorité de Régulation de la Poste et des Télécommunications ARCPT, Congo (Dem. Rep.) emphasized the link between ICTs and climate change with resulting negative effects on infrastructure. He noted that the ICTs industry should develop technologies that are climate neutral and regulators can define new standards, for example, through the approval of equipment. This question requires joint regulation and inter-regulation with other institutions dealing for example with meteorology, cross-border regulation with neighboring countries and countries in sub-regions, and inter-regulation among regional and international organizations, before bringing them to national legislation. Regulator can also bring about changes in the behavior of the population. He also noted the need to list climate change indicators and to anticipate and take preventive measures and solutions.

Mr Paarock Vanpercy, Director General, National Communications Authority, Ghana, shared NCA's experience in coordinating the guidelines for the deployment of communications towers where since January this year, all operators were banned from erecting new towers, due to the proliferation of deployment, inappropriate disposal, noise pollution from generators and concerns about RF emissions and standards of construction. The guidelines for the deployment of communications towers were developed to address the proliferation issue and to set up licensing mechanisms, introducing a collocation requirement unless technical reasons to prevent this. He encouraged infrastructure sharing as a means to reduce the number of power stations.

Ing. Miguel Velez, Director of Markets Regulation, CONATEL, Honduras, emphasized the responsibilities of everyone involved, operators, consumers and equipment manufacturers. Obsolete devices (such as phones) should be recycled but such measures are not enough. Coordination among ministries is required to build a list of what needs to be done, for example, teaching children and youth about the different types of waste. Regulators should take on their responsibility to raise awareness, and through ITU, address the issues with recommendations to manufacturers.

The floor was then opened for comments and discussion.

Discussions focused on how regulators can best collaborate and coordinate their activities. It was noted that the important question of climate change was put forward at the Plenipotentiary Conference 2010 by many countries. How can regulators and government coordinate the various activities to limit GHG effects? Several tools can be used and many activities are already taking place. The need for high level coordination between ITU and other international organizations was raised. It was also noted that regulators can put in place remote environmental monitoring systems. There is however still a need to convince donor countries to invest in this sector but also to avoid conflict of jurisdictions between regulatory authorities and other entities dealing with these issues.

Botswana referred to a recent workshop that involved all stakeholders to discuss environmental clean-up and electromagnetic radiation, and noted that they are working on a policy that includes infrastructure sharing. The need for a policy on obsolete equipment was also brought up as was the need for an assessment on how it contributes to future environmental deterioration. They also noted that operators were keen to cooperate.

The BDT Director, **Mr Sami Al-Basheer Al Morshid,** indicated that this question is taken very seriously by the ITU. He reminded participants that WTDC 2010 adopted a resolution on this

issue and that Climate Change is one of the questions addressed by ITU-D Study Groups as well as by the Radiocommunication Bureau (ITU-R).

SESSION VI: ADDRESSING CYBERTHREATS

The session Moderator, **Ms Zohra Derdouri,** President, Autorité de Régulation de la Poste et des Télécommunications, Algeria, introduced the session and provided examples of recent cybercrime. In 2009, a network breach at CitiBank resulted in the theft of tens of millions of dollars. In 2007, Estonia suffered the first recorded full-scale cyberattack targeting a country. Hackers attacked a number of Estonian institutions, including banks, ministries, newspapers and broadcasters causing chaos. Career criminals – and even young people still in high school – are indiscriminately committing such offences. We are all at risk, she said: citizens, small and large companies, financial institutions, universities and government agencies alike. Therefore, there is a need for regional and international cooperation to establish conventions for common actions and investigations similar to what is described in the November 2001 "Council of Europe Convention on Cybercrime", which was signed by only 43 countries. User awareness remains the best way to protect private data, economic goods, intellectual property and government infrastructure from cyberthreats.

Dr Marco Gercke, Director of the Cybercrime Research Institute in Germany, acknowledged that offences in cyberspace are a growing concern because they affect private businesses, users and governments. The concerns are relevant for developing and developed countries alike. Noting the current debate about the role of regulators in the fight against offences in cyberspace, he highlighted several areas where regulators can play an important part: global policy strategies, where regulators already play a major role in addressing the challenges of cybercrime, and legislation. The work of the regulator needs to be separated from the work of legislators but at the same time, regulators can assist in the drafting process by advising the legislators. Since the regulators have close contact with industry, they know where the problems are, and they generally have a good understanding of the technologies involved. The session also stressed the need to have the capacity to enforce legislation. A number of countries have put in place cybercrime legislation, but have not used a single provision of that legislation in recent years due to the lack of capacity. Regulators can take over monitoring activities through, for example, computer incident response teams (CIRT) or computer emergency response teams (CERT). Some countries authorize ICT regulators to act as a law-enforcement agency in cybercrime-related areas such as anti-spam and content regulation. To strengthen the involvement of regulators the existing mandates of regulators can be strengthened or new ones created[5].

Assane Pape Touré, Magistrate in Senegal's Ministry of Justice, commented that the digital revolution is not just a technical revolution, but is also a legal revolution. Mr Touré explained that classic legislation have had difficulty in dealing with cyberthreats and cybercriminality. Penal law applies to a specific country, but cyberthreats are often characterized by the use of the Internet in one country to commit a crime in another country, making the crime international and cross-border in nature. Cyberthreats are also characterized by almost perfect anonymity, so it is difficult to identify the perpetrators. Senegal, starting in 2005, adopted several laws on such aspects as information technology, cryptology, and cybercriminality. Senegalese legislators are trying to fill the legal gaps that exist in traditional legislation. But this is not enough. Judges, magistrates, police officers and others responsible for implementing the law often lack the right tools and knowledge, and this is often an obstacle for the implementation of the law.

Ekwow Spio-Garbrah, CEO of the Commonwealth Telecommunications Organisation (CTO) highlighted not only the legal vacuum, but also the lack of technical capacity among lawyers,

5 Further information on the role of regulators in addressing offences in cyberspace can be found in the 2nd edition of the ITU publication *Understanding Cybercrime: A Guide for Developing Countries*, which explains the phenomenon of cybercrime, and the challenges of investigation as well as the legal response.

engineers or the police to develop the necessary laws. According to research commissioned by CTO, only one university in the world offers a degree in cybersecurity.

Agencies and ministries, even police departments and defence ministries are unlikely to have a unit set up specifically to deal with cyberthreats. To improve the level of readiness to deal with the multi-dimensional challenges of cybersecurity, more workshops and training are needed on this issue, and NRAs should have a greater role in this. There is an evident need to raise public understanding and awareness of the problem, especially amongst the young. Operators need to work closely with ISPs to stop crime, there is a growing need to move from IPv4 to IPv6, and a strong legal framework is required especially to deal with the problem of criminal anonymity.

Professor Ibrahim Kadi, Senior Advisor, Communications and Information Technology Commission (CITC), Saudi Arabia, said that the regulatory authority in the country is responsible for two aspects: communication, including opening up the market; and providing protection, both of the consumer and of the computer environment. He noted the creation of a national centre for cybersecurity. The centre has laid out electronic processes to ensure data protection, for example an electronic signature that has legal validity. The centre also carries out awareness-raising campaigns for the public, but also in schools. Professor Kadi underlined the importance of reducing people's fear of using ICT which prevents them from benefiting fully from it.

The floor was then opened for comments and discussion.

It was noted that cybercriminals are always one step ahead and legally there are many issues like laws, training etc. for one country to deal with. Measurable targets should be set, where countries select the level they can achieve each year. Participants called on ITU to issue recommendations on measures that regulators can take to address offences in cyberspace, for example a system to be put in place where countries can report back to ITU, or some other international or regional body, on progress made on their selected targets, to define cybercrime (making the distinction between cyberthreats and cybercrime), and for more training and workshops that would also include judges and magistrates. It was however noted that creating unnecessary phobias among people using ICT should be avoided, especially in developing countries. It was also suggested that ITU come up with a regulatory framework, where filtering technology can be standardized to work at national and international levels. Cybersecurity is a global challenge that needs a global solution due to the nature of cyberthreats and cybercrimes. The need for international, regional and national cooperation was continually emphasized.

The ITU representative explained that the Telecommunication Development Bureau (BDT) has a full programme on cybersecurity, targeting the creation of computer incident response teams (CIRTs), among other things. To ensure that regulators are fully included in this work, it had been proposed that the GSR bring up this issue with them. ITU will take all the suggestions onboard and will continue the discussion in the future, in order to create tools that will be helpful for regulators in fighting offences in cyberspace.

SESSION VII: LIVING THE INFORMATION SOCIETY

Mr Lotty Kakubo, Director of Public Relations and Consumer Affairs of Zambia Information and Communications Technology Authority, moderated the session on living the information society. He acknowledged three main mechanisms of the exchange process: the personal computer, the Internet, and the human mind, adding that the information society is moving at various speeds, with the developing countries moving at a much slower pace, pointing to the cost of Internet connectivity as one of the reasons for this. The Internet holds substantial promise for these countries in education, commerce and trade, government, agriculture, and science and technology. In Zambia, the regulator works with all stakeholders, including local chiefs and political leader, to build the information society. The Zambian regulator has started investments in infrastructure using universal access funds, and is now establishing multipurpose telecentres through cooperatives and post offices in rural and under-served area

to provide, for example, access to information on agriculture and health. Communication towers are being established in rural Zambia with the full collaboration of service providers. As a result, the number of mobile subscribers has grown from 49 957 in 2000 to over 4 million in 2009. Internet users have more than doubled to reach 17, 754. However, the cost of mobile Internet browsing coupled with Internet-enabled handsets, now poses a challenge to the future growth of the country's mobile sector. The regulator has reduced access fees in order to stimulate growth.

John Alden, Vice President of Freedom Technologies, presented the GSR Discussion Paper on Postcards from the Information Society: Living with Always-On Technology. If the Information Society is upon us, at least for some, then how does the individual user actually experience its various aspects?, he asked. The Information Society does not necessarily mean broadband, as much can be undertaken and completed with narrowband. But to get the full rich experience of multimedia, graphics data and interactivity, broadband is the key. So to a large extent the information society begins with broadband, the digital divide exists, not only between countries, but also within countries. Regulators will have to face up to how to encompass everyone in the scope of benefits, such as e-government and e-health, distance learning as well as access to consumer goods and social networks. But at the same time, they face the dangers of cybercrime, the affront of culturally unacceptable content, lack of online privacy and the risks attached to Internet 'addiction' or over-indulgence, as well as reports of bullying and harassment. Regulators need to look at how the Internet can be used to bolster, not erode, cultural integrity and participation in civil society, how governments can address security concerns without stifling the full benefits of the Information Society, and how social issues can be regulated, if at all.

Dr Natee Sukonrat, Commissioner, Thailand's National Telecommunications Commission, commented that social networking recently played a significant role in Thailand, where during the political crisis and flooding in 2010, Twitter and Facebook, among others, were used by people to distribute news, messages and assistance to each other, and note that these new media are more complicated for the government to control. The regulator even tried to set up a spectrum auction using Twitter to stimulate public interest and participation. Social networking is changing the social and political scene in Thailand.

Jean Louis Beh Mengue, Director General, Agence de Régulation des Télécommunications of Cameroon, noted that Cameroon faces the same problems as elsewhere, from cybercrime to frequency management, as well as the Information Society benefits from teaching to women's rights. However, he also noted that regulators have to act now to ensure that the proper legislative and regulatory frameworks are in place. In certain countries, regulators implement regulations but they do not create them. In others, there is a legislative vacuum and then regulators have a very difficult task. If regulation exists, it has to be enforceable. Regulators, he stressed, have to play the important role of a catalyst in the development of telecommunications, in harmony with the realities that prevail at local, national, regional or international levels.

Philippe Metzger, Deputy Director of Switzerland's Office of Federal Communications (OFCOM) in responding to a question on the opportunities and challenges that new technologies present for an all-inclusive information society, cited the roll-out of fibre-to-the-home broadband networks in Switzerland. He also noted that the cost of new technology begs the question of who can afford it and called for a more technology neutral Information Society with inclusive services without enormous cost.

Rafael Eslava Herrada, Head of Unit of Prospective and Regulation, COFETEL, Mexico, was of the opinion that Internet access was only the tip of the iceberg and drew the attention of the participants to the distinction between the Information Society and the Knowledge Society. He linked this session with the previous session on addressing cyberthreats and stressed the need to focus on good Internet governance or cybergovernance in order to avoid any obstacles to the future development of broadband. He called for a clear vision and direction, saying that initially, the regulator's role was to liberalize the telecommunications market and bring about fair competition, and not to regulate the Internet. The world should now move on from the Information Society to a Knowledge Society, he re-iterated.

The floor was then opened for comments and discussion.

It was noted that new problems require new solutions and that countries should not resort too quickly to criminalizing things related to the web. The importance of the Information Society to the economy was noted and it was also recognized that too much emphasis was being placed on the negative aspects of the Internet. If young people make up the majority users of the Internet, then media campaigns in schools and in society at large should be used to influence the way the Internet is perceived and to ensure that the social aspects are addressed at the user level. The importance of the Information Society to the economy was alos noted.

SESSION VIII: MEASURING REGULATORY EFFICIENCY

Mr Charles Njoroge, Director General, Communications Commission of Kenya (CCK), Kenya, moderated the session. Regulators face many challenges and critical issue not least to ensure a positive impact on the ICT environment and society, to measure our efficiency, and to adapt our frameworks to fast changing technologies.

Mr Daniel Leza, Vice President, Legal and Regulatory, TMG presented the Regulatory Self-Assessment Tool he developed for regulators to measure their efficiency[6]. This tool provides a resource for regulator to stimulate discussion internally on the structure and performance of regulatory authorities based on their self assessment, and will also serve as starting point for regulators planning to move from one institutional type to another. It provides references and comparative analysis of different types of regulatory authorities in a converging environment. It provides tailored responses based on regulators' inputs, gives examples from international practices from around the world, and disseminates data processed and collected through the ITU annual telecommunication/ICT regulatory survey. It also presents information highlighting the advantages and disadvantages of institutional and regulatory practices, performances, and compliance with targets such as transparency, liberalization and migration processes. Moreover it addresses the relationship and collaboration with other government entities.

Mr Tomas Barakauskas, Director, Communications Regulatory Authority (RRT), Lithuania, noted that as an independent regulator, responsible for regulation of telecommunication and postal sectors in Lithuania, the main fields of RRT activities include electronic communications, frequency management, computer Emergency Response Team (CERT) and post and parcel services. To improve efficiency, RRT intends to adopt a converged regulatory multi-sector approach and join efforts to regulate services of general interests such as electricity, gas, heating, water, and transport. These currently separate institutions are all seeking to ensure access to services, supply of good quality services, effective competition and consumer protection. Furthermore, activities of some market players are becoming multi-sector, e.g. electricity companies are already offering some electronic communications services. To improve efficiencies of regulation between these sectors, the creation of a new multi/sector regulator is foreseen. It is believed that having one regulatory institution would allow a consistent application of the same harmonized principles and similar methods of regulation in all sectors of infrastructure regulation.

Prof. Milan Jankovic, Director, Republic Agency for Electronic Communications (RATEL), Serbia indicated that three months ago a new law was enacted on electronic communications to increase broadband services. They adopted a general authorization regime to foster competition in this area, to attract new players, and to increase broadband penetration and carry digital switchover. This will require the regulator to prepare approximately thirty new bylaws in six months. Over the last ten years they have regulated according to the EU regulation and introduced competition in the communications sector.

Mr Joseph Nana, Member of the Council of Regulation, Autorité de Régulation des Communications Electroniques (ARCE), Burkina Faso, explained how reforms have, since 1998, led to the creation, independence and extension of powers of the regulator to mirror the

[6] The Beta version for testing is available online at: www.itu.int/ITU-D/icteye/tregbeta.aspx

changes taking place in the sector. He noted that changes in operator ownership and control are one of the challenges faced by the regulator.

Ms Tamir Ukhnaa, Director General, Regulatory Department, Communications Regulatory Commission (CRC) of Mongolia, Mongolia indicated that with the growing complexity of the ICT and telecommunications market environment, there is a need to rethink the different degrees of regulation and dimensions of effectiveness. CRC was established in 2001 and is financially independent, and Ms Ukhnaa stressed the importance of CRC staff salaries, which is almost twice the average of civil servants in Mongolia; a sound practice which keeps people in their posts. However, she noted that during the last three years, six commissioners had been changed. She suggested making a clear roadmap of regulatory activities.

The floor was then opened for comments and discussion.

Discussion focused on how to measure independence and the need to consider independency from a financial, functional and political point of view. For example, commissioners cannot be removed for the decisions they make in the United States and they are independent from operators, however, the notion of absolute independence was recognized as not being a realistic goal. The need to include a change management strategy component in the Regulatory Self-Assessment Tool was noted. It was also mentioned that the next step for some of the regulators, as illustrated by Lithuania, and the successful experiences of Germany and Latvia, will be the move to a multi-sector approach to gain efficiency. However, it was recognized that the choice of institutional structure varies from country to country. Legal traditions and frameworks have a big impact on the structure, with staffing a key element, and cross-sector issues have had different approaches from converged regulators. The moderator concluded by stressing that regulators cannot afford to be on a cruise mode. They need to adapt to changes. Regulators must contribute to contribute to the well-being of the world population. He further highlighted the critical role ITU plays in providing platforms to share ideas and experiences.

CONNECT A SCHOOL CONNECT A COMMUNITY WORKSHOP

The workshop examined the Connect a School Connect a Community flagship initiative, launched in 2009, to focus special attention on certain populations, notably youth and children, women and girls, indigenous peoples, persons with disabilities, and communities in underserved areas.

Susan Schorr, Head of the Special Initiatives Division, outlined the results achieved since its launch, including an online toolkit[7] to share best practices, small-scale projects to develop national school connectivity plans, an e-accessibility toolkit for policy-makers[8], as well as a number of multipurpose community telecentres for persons with disabilities in developing countries.

According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), 90 percent of children with disabilities are out of school. This is an indicator that can – and must – be changed with the power of ICT. Examples where given where regulators have take steps to set requirements to ensure availability of accessible mobile handsets in their markets, and where operators have develop an industry code of practice to ensure that there are accessible mobile phones. It was also noted how the transition from analogue to digital television provides an ideal opportunity for broadcasting regulations to be updated, and how regulators can play a role in raising public awareness, through campaigns, on the availability of accessibility features in ICT devices for people with disabilities. Regulators can also encourage the use of universal service funds to fund projects for persons with disabilities. Regulators could also grant special licences to those operating community ICT centres for women.

The importance of reaching out to women and girls, especially in the developing world, was also highlighted, as they make up the largest percentage of people who have been left behind

[7] www.itu.int/ITU-D/connect/flagship_initiatives/connecting_children/index.html
[8] www.e-accessibilitytoolkit.org

in education and in literacy skills – and they often have little or no access to health, to financial services, or to political decision-making.

Commissioner Prasit Prapinmongkolkarn, of the National Telecommunications Commission (NTC) of Thailand, outlined projects being implemented to help people with disabilities, children, the elderly and the underprivileged.

In Thailand, ICT accessibility is classified as a Universal Service Obligation (USO). Under the Telecommunications Business Act of 2001, the Commission has the duty to provide telecommunication services for educational and medical institutions, and facilities enabling people with disabilities, children, the elderly and the underprivileged to use public telecommunication services. Several projects were outlined including schools for indigenous peoples and for children with special needs, and telephone booths to accommodate wheelchairs and equipped with a keyboard, enabling people with hearing and speech impairments to communicate through telecommunication relay services. Elderly people, with low income, in rural areas are provided with telephone cards, and an information service has been launched using the Digital Accessible Information System (DAISY) assisting those with impaired eyesight or reading difficulties, and eBooks, including children's stories, and can also be accessed via mobile phones. In another project, 10 000 videos have been produced to provide normal communication for people with a hearing impairment. NTC also offers a music composing programme, enabling those with impaired eyesight to learn how they can compose music and play their musical instruments. ICT training is also provided, including in e-commerce.

A committee that was set up three years ago has developed telecommunication standards for persons with disabilities. These include public phone standards, mobile phone standards, and ICT standards. A call centre for people with disabilities and an archive for hand sign symbols have also been established.

Emily Heather Khamula, Deputy-Director of ICT Development from Malawi's Communications Regulatory Authority outlined initiatives under way in her country to provide ICT access to rural communities. Malawi's national strategy includes the review of the legal framework to enable the creation of a universal access fund mechanism and includes funding for a connect a school, connect a community programme. The Malawi Government facilitates access to networks and has established and is promoting awareness campaigns for the Public Internet Access Centres (PIACs), is extending the network, and plans an open access policy to future submarine cable connections. The government also plans to connect postal agencies (2010-2011) and a hundred government institutions under the regional telecommunication infrastructure project (2010-2012). Licensing obligations have been set out to establish Internet laboratories in schools and as a result, two university colleges are already enjoying Internet lab/connectivity. Focus is also being directed at producing local content.

Arvind Kumar, Joint Advisor, Telecom Regulatory Authority of India (TRAI), oulined the objectives of the National e-Governance Plan (NeGP), a multi-stakeholder programme, primarily focuses on making crucial public services available and promoting rural entrepreneurship. NeGP, comprising 27 "mission mode projects" (MMPs) with clear objectives and scope, seeks to provide high quality and cost-effective video, voice and data content and services, in e-governance, education, health, telemedicine, and entertainment, web-enabled e-governance services in rural areas, where people can get application forms and certificates online, as well as pay their electricity, telephone and water bills. Another objective of the plan is to create an environment that is conducive for the private sector and non-governmental organizations to play an active role in implementing the Common Service Centre (CSC) Scheme. Some 83 569 Common Service Centres, with plans to deploy a total of 250,000, had been installed by 31 July 2010, bridging the digital divide, and also facilitating inclusive growth in the country.

Two other projects for the provision of broadband connectivity to rural and remote areas and rural public service terminals are being supported through the USO fund. Delivery of basic financial services using mobile phones is another project under implementation, and TRAI is in the process of finalizing the framework for agreement between the licensed telecommunication

service providers and banks, as well as finding ways of ensuring QoS for consumers and how best to make the "mobile banking" service secure through the short messaging service (SMS).

NATIONAL SCHOOL CONNECTIVITY PLAN WORKSHOP

The National School Connectivity Plan workshop identified concrete steps regulators can take to promote broadband Internet connectivity in schools and leverage connected schools as community ICT centres. The ITU Connect a School, Connect a Community toolkit (www.connectaschool.org) sets out best practices in connecting schools and developing community ICT centres meeting the needs of women, indigenous peoples and persons with disabilities. There is international consensus that all schools should be connected by 2015, in line with the goals set by the World Summit on the Information Society (WSIS), which also supports achievement of the Millennium Development Goals.

Sofie Maddens Toscano made a presentation on national school connectivity plans (NSCPs), noting that many countries today are analyzing how to use their additional broadband capacity from submarine cable, fibre backbones and satellite networks. She highlighted several of the many country examples identified in the Connect a School, Connect a Community toolkit, including Brazil, Ecuador, Egypt, Portugal, Tunisia and Morocco, and the reasons why it's important for countries to develop a NSCP. She outlined the benefits, possible ways to finance such projects and the main issues a NSCP should address.

Ms. Roxane Mcelvane, introduced the United States FCC E-Rate programme and the FCC's National Broadband Plan. Today, with over 95 per cent of schools included, schools can obtain connectivity from municipalities, universities, etc. and can use their connected facilities to serve the community. The FCC is also testing funding for "offsite wireless devices" such as Kindles and IPADs, which can store hundreds of thousands of books, and promise to lower the costs of providing textbooks to students. In addition, the programme is open to schools for children with physical and cognitive disabilities and juvenile detention centres.

Ms. Mercy Wanjau, presented Connectivity in Schools, explaining how ICTs are being integrated in Kenya's national development plans and educational plans for free primary education. As part of a government ICT strategy, schools and hospitals were also identified as anchor points for Kenyan communities, opening to the community on weekends and evenings, and developing partnerships to provide trainers and generate local content.

Connecting schools enhanced teaching mechanisms, and opened rural communities to the rest of the world, building human capacity and employment. The initial experiences highlighted the need for Kenya to include instruction on safety online and improve computer literacy among teachers when it develops its own NSCP. The projects also inspired schools in neighboring areas to buy their own computers or to charge fees to purchase additional solar panels, projectors or routers, without funding from universal service funds.

CCK is analyzing how to scale up the experience and extend it to include indigenous peoples and persons with disabilities. CCK is also collaborating with the Ministry of Education to digitize local curriculum. Kenya has seen that the high cost of computers can be addressed by reducing taxes on ICTs and using mobile phones as a platform for health and education.

THE WAY FORWARD & CLOSING

The BDT Director, **Mr Sami Al-Basheer Al Morshid,** underlined the importance of working together and sharing experiences that the GSR gives. Noting further that the best practice guidelines shared reflect the work carried out at this year's GSR. He further voiced his thanks to ARTP and the contributors.

Mr Ndongo Diao, Director General, ARTP agreed telecommunications regulations have come a long way, paving the way for faster and faster connections and communication, improved

quality, more services and lower costs, all to the benefit of the users. Regulating means that rules and laws have to be created, but need to be flexible enough to constantly adapt to technological advancement and change.

This year's GSR Best Practices can be referred to as SMART – specific, measurable, achievable, realistic and measurable in time. He underlined the importance of negotiation in competition without harming investment or innovation and at the same time protecting consumers and public interests. He summarized the broad consultations that led to this year's guidelines as a process of synergy, and thanked all those who participated. The best practice guidelines presented were adopted. The guidelines were developed based on input received from: Congo (Rep. of), France, India, Lebanon, Liberia, Mauritius, Portugal, Saudi Arabia, Senegal, Suriname, Switzerland, Thailand, and the United States.

Mr Mario Maniewicz, Chief, BDT Policies and Strategies Dept., ITU/BDT, reminded the participants of the Global Regulators' Exchange (G-REX) and announced the latest enhancements made to the ICT Regulatory Decisions Clearinghouse (ICTDec), an online resource that provides a one-stop access point to decisions originating from ICT decision making bodies such as telecommunications regulators, industry ombudsmen and specialized dispute resolution tribunals. He mentioned future topics for follow-up in 2011. The winners of this year's G-REX awards were acknowledged[9].

Colombia took the floor to congratulate Senegal and all those involved, and on behalf of the Colombian President announced that his country would be honoured to hold the next GSR.

Mr Sami Al-Basheer Al Morshid opened the floor to participants on the theme of the 2011 GSR. A proposal was made to examine appropriate broadband policies and strategies.

In making his closing remarks, Mr Sami Al-Basheer Al Morshid, stressed that this GSR was pivotal in enabling tomorrow's digital world. It was the 10th anniversary of the GSR, the first time it was held in Africa, and critical to embrace the principles of open networks. He added that enabling tomorrow's digital world goes hand in hand with ensuring digital inclusion of all. He expressed how honored we were by the presence of the President of the Republic of Senegal, His Excellency Mr Abdoulaye Wade. He extended his warm thanks to Mr Diao, the ARTP team and the Senegalese authorities, for the excellent organization of the event. He also extended his thanks to all participants, moderators, panelists, speakers and GSR discussion paper authors and concluded by thanking his staff and the interpreters. He expressed his pride in the 2010 edition of the GSR and extended his best wishes to Mr Brahima Sanou, BDT Director elect.

Mr Ndongo Diao, Director General, ARTP in his closing remarks expressed his satisfaction that the North and the South examined the future together. We are linked by common objectives, he said. The North came to the South and the South also has expertise. Telecommunications are the present and the future. He further stressed that without a vision we cannot move forward. He expressed his thanks to all participants, the ITU and his staff.

Her Excellency Ms Aminata Tall, Minister of Telecommunications and Secretary of State congratulated the ITU for bringing together, in collaboration with the ARTP, this group of eminent experts to think, discuss and share concrete experiences. She recognized the importance of the ITU in strengthening human capacity building and in improving regulatory frameworks. She further noted that we are all depending on ICTs as we are living in the era of the 'knowledge' economy. She highlighted the process made by Senegal in terms of penetration levels and congratulated the Senegalese entities in charge. She concluded by wishing well to Mr Sami Al Basheer Al Morshid and by congratulating the BDT Director elect, Mr Brahima Sanou.

Her Excellency Ms Aminata Tall, declared the meeting closed.

[9] National Telecommunication Regulatory Commission (NTRC), St Vincent & The Grenadines; National Telecommunications Corporation (NTC), Sudan, Autorité de Régulation de la Poste et des Télécommunications du Congo (ARPTC), Democratic Rep. of Congo; Telecommunications Regulatory Authority, Oman.

ANNEX A

GSR10
Best Practice Guidelines for Enabling Open Access[10]

With the growing complexity of the ICT market environment, there is a need to rethink the different degrees of regulation to anchor national broadband strategies and regulatory frameworks around the multi-facetted concept of open access to and over networks, which provides for achieving effective competition while ensuring accessible, affordable and reliable services for consumers.

A new ladder of regulation may now be required to set the right balance between service competition and infrastructure competition to address the challenges associated with access to broadband networks and services. This includes ensuring equal and non-discriminatory access to the networks and lifting potential bottlenecks that could prevent end users from enjoying the full benefits of living in a digital world, driven by speed, ubiquity of access and affordable prices, irrespective of the location of the networks providers and users.

We, the regulators participating in the 2010 Global Symposium for Regulators, put forward the following best practice guidelines for enabling open networks.

1. Defining open access: making sense of the various concepts

1. We note that, from a service provider's perspective, open access means the possibility for third parties to use an existing network infrastructure. Open access can have two main forms: regulated open access (such as unbundling, especially where there is a dominant operator), and commercial open access.
2. Every user (consumer) should have access to all services and applications carried over these networks, as long as those services and applications are public and lawful; regardless of the type of network and who is supplying or using them; and in a transparent and non-discriminatory fashion. The user's range of choice should not be unduly constrained by the inability of competitors to obtain access services, especially over the last mile infrastructure.

2. Open access to networks: what policy and regulatory tools are needed to enable opening up access to network facilities (i.e., international fibre networks, "essential" or "bottleneck" facilities, other networks) without harming investment and innovation?

1. We stress the importance of legislation to set out the general principles of open access –non-discrimination, effectiveness and transparency – highlighting the importance of both active and passive infrastructure sharing in the deployment of electronic communications networks in property owned by any operator, private entities and public bodies, even if they are operating in other sectors.

[10] The Best Practice Guidelines were developed based on input received from: Congo (Rep. of), France, India, Lebanon, Liberia, Mauritius, Portugal, Saudi Arabia, Senegal, Suriname, Switzerland, Thailand, and the United States. These guidelines are available in the six official UN languages at: www.itu.int/ITU-D/treg/bestpractices.html.

2. We note that in order to encourage broadband deployment, preserve and promote the open and the interconnected nature of the public Internet, regulators may consider mandating dominant providers of national broadband networks, including cable landing stations, to provide open access on a fair and non-discriminatory basis to their networks and essential facilities for competitors at different levels of the networks.
3. We recognize the importance of wholesale regulation, including the obligation to publish reference offers for access to essential facilities and prices oriented to costs, as means to ensure open access.
4. We recognize that, in countries where Fibre-to-the-Building is deployed, the regulators need to define rules that ensure shared and equal access, and prevent discriminatory behaviors and monopolization by the first infrastructure operator in such buildings.
5. We recognize that a centralized information system, containing the data records of infrastructures held by public bodies, electronic communications operators and other public utilities that can be shared, would be of great advantage to all market players. We encourage operators to set up and make available in a database accessible online, information regarding passive infrastructure (i.e., civil elements such as ducts and towers) that can be shared (including paths and space available) with the respective prices oriented to costs.
6. We recognize the importance of coordination among all stakeholders (from the ICT sector and beyond) in the deployment of civil works to prevent any barriers to the spread of broadband networks. We furthermore stress the importance of defining flexible open access rules adapted to the fast-paced broadband growth.
7. We recommend the development of a change management strategy to assist the regulators in reforming their regulatory practices in order to adequately adapt to the exigencies of new market structures, innovations and business models.

3. Open networks: how to ensure that every citizen has access to the benefits of ubiquitous broadband networks (i.e., through policies for universal access to broadband, transition to NGN, leveraging on the digital dividend)

1. We recognize that efficient allocation and assignment of the digital dividend spectrum, will result in social and economic benefits that could stimulate innovation for the provision of lower-cost communications and services, especially in rural and remote areas.
2. We suggest that governments update the definition of universal service as needs evolve to ensure technology neutrality and the inclusion of broadband access.
3. We note the need to put in place concrete national plans and strategies to stimulate deployment of broadband networks, particularly in developing countries. Furthermore, given the challenges in attracting investment for large scale deployments, these strategies should consider the role of the state in funding the national broadband infrastructure, *inter alia* through Public Private Partnerships and promoting the involvement of municipalities or cities.

4. Open and neutral Internet: how to handle traffic management over increasingly congested networks while applying fair rules?

1. With regard to Internet traffic management, we recommend that only objectively justifiable differentiations be made in the way in which various data streams are treated, whether according to the type of content, the service, application, device or the address of the stream's origin or destination.
2. We recommend that when Internet Service Providers (ISPs) do employ traffic management mechanisms for ensuring access to the Internet at any point of the

network, they comply with the general principles of relevance, proportionality, efficiency, non-discrimination between parties and transparency.

3. We recognize that to ensure reasonable traffic management practices, regulators should take measures such as:

   - Consider implementing measures for ISPs to disclose information concerning network management, quality of service and other practices as is reasonably required for subscribers and content, application, and service providers;
   - Allow clients to quickly end their contracts without high switching costs,
   - Allow clients to prescribe minimum quality of service for Internet access, and
   - Create policy directives stating the rights of consumers to access any lawful content, applications, and services over their Internet connections.

4. We note that these principles would not supersede any obligation an ISP may have—or limit its ability—to deliver emergency communications or to address the needs of law enforcement, public safety, or national or homeland security authorities, consistent with applicable law.

5. Regulators may consider facilitating the creation of local content and the implementation of local Internet exchange points (IXP), to complement and ease the international data flow.

5. Open access to content: what role for regulators in bringing public services online (i.e. e-government, e-education, e-health) and creating demand for such services?

1. We stress the importance, on one hand, of the creation of preconditions for the organizational, legal and technical, standardization and interoperability aspects, so that public authorities can offer their services electronically and, on the other hand, that public websites be created and maintained to be user friendly and accessible to all, according to relevant guidelines and standards.

2. Regulators may also want to ensure broadband connectivity to all schools, health centres and hospitals so that citizens may benefit when connecting through high bandwidth to these services.

3. We note that there is a definite need to create awareness about the risks of technological progress among consumers and take necessary measures for data protection, privacy, consumer rights, and protection of minors and vulnerable segments of the society.

6. Challenges to open networks (i.e., cyberthreats, unforeseen aspects of the Information Society, disputes, regulatory efficiency and consistency across services and networks): what strategies?

1. We note that open networks pose challenges in terms of network stability, business continuity, resilience, critical infrastructure protection, data privacy and crime prevention. IP networks, being based on an open architecture and well known protocols, are vulnerable to cyber attacks. The complexity of the challenges require cross-cutting approaches in the form of multi-stakeholder processes on one hand, and enhanced inter-service co-operation between the various authorities concerned on the other.

2. We note that it is essential that service providers exercise reasonable network management practices with respect to outbound as well as inbound traffic. Such practices can help stamp out attacks at the source and thus stop them from spreading, without subjecting the network to congestion.

3. We recommend that measures for outbound traffic monitoring be developed and eventually standardized to add a new layer of security to the existing measures deployed by stakeholders.

4. Regulators may consider implementing measures to prevent ISPs from connecting unlawful user devices to the networks.

5. We recognize that strategies aimed at ensuring security in cyberspace has to transition from the traditional reactive stance to an incrementally proactive stance by reducing windows of vulnerability, improving reaction times, and effectively mitigating attacks. Also, we stress that preventing attacks by patching vulnerable systems, implementing firewalls or other access control technologies, monitoring through intrusion detection systems, and responding to the threats in real time, have become crucial to effective network operation.

6. We stress the importance of a harmonized regulatory framework within regions and the establishment of a broader dialogue between all stakeholders so that this central issue of open access networks can be further discussed and the appropriate measures taken.