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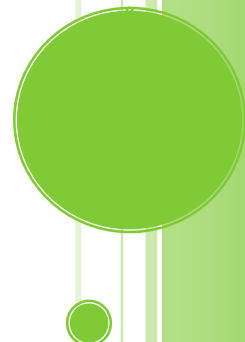
**APT Secretariat**

**SUMMARY OF OUTCOMES OF SATRC ACTION PLAN PHASE III**



# OUTCOME OF THE SATRC ACTION PLAN PHASE III

SATRC Action Plan Phase III (SAP-III) was adopted at the 11th SATRC Meeting in Colombo Sri Lanka. SAP-III was implemented in the years 2010 and 2011 by APT in association with the nine SATRC Members. SAP-III included task on 12 defined work items approved by the Council in three different working groups (WGs). Each WG included at least one experts from each of nine SATRC Members. Each of the WGs had two physical meetings in years 2010 and 2011 to discuss and finalize the work on assigned work items by the Council. WGs conducted studies on work items based contribution from WG experts as well as by survey. Out of 12 assigned work items, outcomes on 10 work items have been concluded successfully by the WGs. Outcomes in form of SATRC Report and Guideline were submitted to the 13th SATRC Meeting in Kathmandu. Outcomes were approved by the council and upload on APT Website. This document provides a brief summary and key recommendations of each of the outcomes.



## **FACILITATION OF BROADBAND IN SATRC COUNTRIES:**

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From this study, it can be concluded that, despite huge potential in the broadband market in the SATRC region, the growth of the broadband is not very significant. There are lots that need to be undertaken for promoting the growth of broadband through initiatives of government, public and private sectors. Internet penetration rate in SATRC region is not very impressive and lots need to be done to increase the rate. This clearly reveals that there is a huge potential for the increasing the growth of broadband services with the region.

The study reveals that, huge initiatives have been undertaken or being implemented by respective government within the region to promote broadband by carefully addressing both supply and demand side of broadband growth. The high growth rate of mobile cellular services in the region also indicates that mobile broadband would be one of the fastest solutions for promoting the broadband services, especially in the rural and remote areas. This could be facilitated through having in place a good regulatory system like fair and open access to backhaul infrastructures, spectrum sharing etc.

### **Key Recommended Actions:**

- Government should play a very important role in expanding broadband diffusion. Unlike traditional way, the government must tackle broadband issues beyond the issue of accessibility (supply), lots need to be undertaken to tackle the demand issues too.
- Broadband should be included under the universal services obligations
- Government should have strong policy and strategies to promote development of local contents through establishment of “Incubator centre”.
- A flexible and easy access to spectrum is very essential for facilitating the growth of mobile broadband services.
- Initiate appropriate regulatory measures in open access regulation, licensing framework, IP interconnection, content regulation and online security.
- Taking initiative to build SATRC regional internet network that would provide direct exchange of regional traffic without need to go through other international network

## **ENSURING QUALITY MOBILE HANDSETS IN SATRC COUNTRIES:**

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SATRC Members have seen tremendous growth in mobile telecommunication sector in past few years. Overall quality of telecom services depends on the telecom ecosystem and mobile handset is the part of the ecosystem. Handsets have evolved from dumb terminal to Smartphone in this decade. However, low quality and look-a-like cheap clone of branded mobile sets have eroded the mobile market as a whole. Moreover, genuine mobile sets vendors as well as users are getting more confused on the quality of handsets. Hence, to solve the problem there is a need in the region to establish a regional collaboration on ensuring quality handsets.

In SATRC region, some of the countries do not have specific legislation to combat inferior handsets. Some of the countries in the region are carrying out type approval process, where as some of the countries are not carrying out the process altogether. Hence, it will be beneficial for the countries which have not yet started type approval process to share experiences among the countries which have already type approval process in place.

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### **Key Recommended Actions:**

- *Need of Declaration of Conformity (DoC):* Regulators need to assure that DoC of manufacturer as a requirement (but not sufficient) in order to ensure the quality mobile handsets. DoC should be authentic and properly applies to the handsets.
- Harmonized Standard code to be published: Common standards for EMC, SAR, safety standards and labeling requirement shall be prepared and published.
- Need of unified standardization body in the SATRC Region looking at it's market size. Unified standardization body will help in knowledge sharing as well as help individual country to have uniformity in the standards, without having need in reinventing the wheel.
- Sharing database of IMEI/ESN of Mobile handsets: Increment in mobile theft apart from spurious mobile handset is one of the problems faced by the region. Hence, to combat the issue it is advisable that the information stored in Equipment Identity Register (EIR) database be shared among the telecom service providers among the member countries. This will ensure that unauthorized handsets will render unusable in the region.
- Establishment of common accredited laboratory in the region: Members are encouraged to accredit common test laboratories (meeting specified criteria) to test the mobile handset for the mutual benefit. This will not only encourage OEM but also ensures that very minimum amount of administrative work is associated with Type Approval activities
- Formulate a mechanism for coordination among the member countries.

## **KEY REGULATORY ISSUES ON VOICE-OVER-IP IN SATRC COUNTRIES:**

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The VoIP related policy, related issues were in the discussion for many years, many countries have initially developed light regulations with regard to VoIP whereas some other countries had a concern over it and then liberalised at the later stage but still few countries not liberalised yet. Though the countries are not liberalised based on valid national interest now started realising the real benefit of VoIP proliferation and taking necessary steps towards it.

VoIP is the major and most revenue generating application in IP-based network. VoIP also provides a cheaper option to the consumers for making long distance and international calls. However, due to certain restrictions for VoIP, there have been the issues for ILD call bypass and resulted in a loss of billions of US dollars per year both to the telecom operator as well as to the government. Therefore, the SATRC member countries must make necessary provisions in their regulatory framework to implement VoIP.

While implementing VoIP, the issues of VoIP classification, interconnection, numbering, emergency call service, privacy and security, interoperability and standardization have to be well addressed. The approach of light touch regulation can be adopted for PC-to-PC voice communications whereas PC (or IP phone)-to-Phone or Phone-to-Phone VoIP can be treated similar as voice telephony. Phone-to-Phone VoIP may require low entry barriers and shall be promoted to deliver very cost effective services to the end user.

The regulators in SATRC member countries must, therefore, consider the options as suggested in this study and review their regulatory framework to implement VoIP services as soon as possible. VoIP being an especial service in IP-based network will lead to proliferation of broadband services and the consequent implementation of NGN/IMS.

### **Key Recommended Actions:**

- The policy pertaining to VoIP in their National interest and the scope of VoIP services shall be defined by considering the international trends and practices in place
- Light touch regulation can be adopted for PC-to-PC or IP-to-IP Voice Communication whereas Phone-to-Phone or Phone-to-IP Device VoIP may be treated at par, in terms of interconnection, with PSTN/PLMN services. While ensuring the benefits of VoIP Services including the reduction in cost passed to the consumer.
- The VoIP operators shall be allowed to have interconnection with the PSTN/PLMN operators and interconnection guidelines may include provisions for volume based, bandwidth based and SLA based IUC mechanisms for local, national and international calls.
- The VoIP operators must also maintain privacy and must provide sufficient lawful interception and traceability features for security concerns.
- To deal with the international call bypass regulators shall address the problem by technological, economical and regulatory framework along with very effective law enforcement mechanism.

## CRITICAL INFORMATION INFRASTRUCTURE PROTECTION AND CYBER SECURITY

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Cybersecurity concerns cannot be dealt with easily by market forces or by regulation but require a novel mix of solutions. All stakeholders or key actors—working in their own domains and in concert—has a potential role in orchestrating the set of functions that in aggregate result in an effective cyber security policy. Effective cyber security policy requires a wide range of international collaborative activities. This needs to take place at different levels between governments—and between private sector stakeholders. The reasons for these international collaborations include information sharing on risks, vulnerabilities and best practices, developing formal and informal working relationships with key stakeholders in other countries with comparable roles and responsibilities, and enabling the assessment of one’s efforts against those of similar countries. Many developing countries have yet to become part of the international dialogue about cyber security. The circle of international dialogue needs to be widened; new consultative venues and resources may be required to do this.

There is a need to promote the development of information flows between SATRC countries through collaborative research and information gathering. Some of the issues for consideration related to cyber security can be:

- *Licensing and Regulatory Measures:* This includes establishing public-private architecture for responding to national cyber incidents; developing a robust Lawful Interception Monitoring (LIM) mechanism; improving national incident response capabilities by establishing Computer Emergency Response Team (CERT) and etc.
- *Legal Measures:* This includes adoption of appropriate legislation against the misuse of ICTs for criminal or disruptive purposes; enhancing information sharing to improve incidence response capabilities etc.
- *Technical and Procedural Measure:* This includes identification of focal points in the critical infrastructure; exercise cyber security continuity plans; tactical and strategic analysis of cyber attacks; periodic audit of network vulnerability; and expand the Cyber Warning and Information Network to support the role of Government in coordinating crisis management for cyberspace security.
- *Customer Education and Capacity Building:* This includes promoting cyber security risk awareness for all citizens; building an education system that will enhance understanding of cyber security; developing skills to reduce risk and exposure and etc.

## GREEN TELECOMMUNICATIONS

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The information and communications technology (ICT) industry alone accounts for about 2% or 860 million tons of the world's greenhouse gas emissions. The main contributing sectors within the ICT industry include the energy requirements of PCs and monitors (40%), data centres about 23% and fixed and mobile telecommunications contribute about 24% of the total emissions. Telecommunications contributing just 0.7% or about 230 million tons of greenhouse gas emissions. The challenge for the telecom service providers, telecom equipment manufacturers and the government is to pursue growth in telecom networks, while ensuring that the 2% of global emissions does not significantly increase over the coming years.

Green telecom has many facets. It can be classified broadly in terms of greening of telecom networks, green telecom equipment manufacture, environment friendly design of telecom buildings and safe telecom waste disposal. Green Telecommunication challenges the norms of the design and construction industry. Design teams must actively search for better alternatives to conventional models to successfully reduce the environmental impact related to Telecommunication construction and uses.

### Key Recommended Actions:

- *Measures for Reducing Telecom Carbon Footprint:* This includes adoption of energy efficient equipment and innovative technologies; use of renewable sources of energy; infrastructure sharing; improvement of grid supply; waste management; better network planning standardization of equipment, test and certification; monitoring and reporting etc.
- *Government Support – Subsidies, Taxes and Levies:* This includes incentives for equipment working on the principle of energy conservation; subsidizing equipment that uses renewable energy sources; incentives to operators who utilize non-hazardous materials in telecom and uses recycling program; non-financial incentives to operators/tower companies in the form of technical assistance etc.
- *Corporate Social Responsibility and Community Service:* Adopted corporate social responsibility initiatives with a goal of reducing their networks' carbon footprints, and network infrastructure vendors are striving to gain competitive advantage by reducing the power requirements of their equipment.

## **HARMONIZED USE OF FREQUENCY BANDS FOR PUBLIC PROTECTION AND DISASTER RELIEF (PPDR)**

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Radio frequency spectrum is a key element of any national disaster management plan. PPDR applications are used for safety of life and regarded as essential public services. PPDR services do not use large volumes of spectrum, but need to access spectrum immediately and with priority in case of an emergency. Increasingly, national public safety networks depend on interoperability between different emergency services organizations, but the economics of sharing are also realized with other safety organizations. In addition, emergency situations are often cross-border or involve multinational teams; therefore interoperability and mutual coordination among neighbouring countries or some group of countries is one of the most important and accepted ways. Ultimately there is a need for harmonization of an appropriate frequency bands for addressing (PPDR) requirements in the long run. It is also felt that there is a need to specify frequency bands for narrowband, wideband and broadband PPDR applications, even though not all of these will be used immediately in all SATRC countries. The identification of harmonised frequencies for PPDR systems is a step in the right direction and will lead eventually to the development of SATRC regional PPDR systems and procedures.

### **Key Recommended Actions:**

- Use of 406.1-430 MHz and 440-470 MHz for narrow band PPDR applications
- Use of 806-824/851-869 MHz for wide band PPDR applications
- Use of 4 940-4 990 MHz (to be reviewed in future based on the decision by WRC-15) for broadband PPDR applications



## **EMERGENCY TELECOMMUNICATION - ACCEDING TO TAMPERE CONVENTION**

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Tampere Convention' is a lifesaving UN treaty which calls on States to facilitate the provision of prompt telecommunication assistance to mitigate the impact of a disaster. United Nations Secretary-General is the depository of this Convention. The Tampere Convention was signed on 18 June 1998 in Tampere Hall in Tampere Finland. This Convention is open for signature by all States which are members of the United Nations or of the International Telecommunication Union. This convention came into force on 8 January 2005, following the ratification by 30 countries. At present 44 countries including 4 countries from SATRC Members have ratified the Convention. The promotion of accession to Tampere Convention amongst SATRC countries offers significant potential benefits to the member countries such as a 'Multilateral Agreement on Emergencies' amongst SATRC countries and sharing of information related to authorities, non-State entities, specific telecom resources and emergency plans.

### **Key Recommended Actions:**

- All the SATRC member countries should sign/ratify this convention to become the state parties
- any pending steps left in order to make the convention effective for those SATRC members who have already signed the convention, they should make the efforts to complete these steps on priority basis
- SATRC member countries should sign a multinational agreement to facilitate the use of telecommunication resources for disaster mitigation and relief
- SATRC members may share a list of respective authorities, non-State entities, specific telecom resources and emergency plans
- All the members must put efforts to minimize the number of interfaces for the requesting state party during disaster mitigation and relief.

## **EFFICIENT USE OF SPECTRUM USING LONG TERM EVOLUTION (LTE):**

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Effectively managing the available spectrum is a strategic issue for the Spectrum Regulators. The wireless industry is witnessing explosive growth in the demand for both voice and data services, the number of mobile telephone subscribers, as well as usage rates, have also grown considerably. Unless spectrum can be made available to meet the ever growing demand, there will be a setback to innovations and competition and businesses as well as consumers will be worse off. Making spectrum available at a time when convergence is causing rapid and unpredictable change poses a severe challenge. Advances in technology create the potential for systems to use spectrum more efficiently and to be much more tolerant of interference than in the past.

Advanced technologies such as LTE pose a number of challenges on spectrum regulators. Such as identification of common spectrum bands; spectrum management planning, allocation, allotment and regulations of frequency bands; frequency assignment and licensing; responsive to change and need for spectrum audit. With the pace of technology march, SATRC countries need to prepare themselves to tackle the challenges posed by the new technologies. Timely preparation will help in orderly growth of the telecom radio sector.

### **Key Recommended Actions:**

- Refarming the spectrum so that existing users may be asked to shift to other bands or they may be asked to start new technologies in the same band.
- Audit the spectrum held by various agencies to check if they are employing spectrum efficient techniques. They may serve same number of subscribers in the smaller chunk of spectrum using spectrum efficient techniques and leaving some of the spectrum for the new technology applications.
- Change the traditional way of spectrum planning and engineering. Spectrum should be assigned to those operators who value it the most.
- Exploring the new bands and shifting applications to the newly explored band if appropriate.

## **SPECTRUM SHARING AND TRADING**

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Spectrum sharing typically involves more than one user sharing the same piece of spectrum for different applications or using different technologies. Spectrum sharing is required when sufficient demand exists for spectrum, causing congestion, and the technical means exist to permit different users to coincide. Success in implementing spectrum sharing requires both vision and commitment for moving from current regulatory allocation and assignment practices based on a sound understanding of technology and systems operating under predictable circumstances.

### **Key Recommended Actions:**

- Spectrum policies should address incentives for innovation, promote flexibility, establish spectrum users' rights, determine practical methods for compliance monitoring, compliance monitoring, and dispute resolution
- Analysis of current and future spectrum uses will be needed to help determine which bands should be included and how and when they should be released,
- Planning needs to involve consultation with various stakeholders and with industry fora.
- Careful review and understanding of recent decisions at WRC and certain leading countries will be both helpful and necessary.
- Ensuring sufficient spectrum is available to satisfy demand and for proper market functioning.

## **SPECTRUM PRICING**

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Since spectrum is very important vital limited resource, its pricing strategy/techniques should be in such a way that facilitates the effective and efficient management of the spectrum for the development and expansion of telecommunication services. Although it seems that the pricing of spectrum in various countries varies according to their national rules and regulation (e.g. Policy, Act, Regulation, National Frequency Allocation Plan) as per the priority sector of the country, it is agreed to have common norms and standards to be adopted for the facilitation of innovative wireless technologies in a timely manner.

### **Key Recommended Actions:**

- Adopting a common guideline for SATRC countries on spectrum pricing in line with the spectrum pricing objective, principles, methodologies, approaches and criteria as far as applicable.
- Use spectrum pricing as a tool to promote effective and efficient management of spectrum; making spectrum management economic, rational, scientific, & transparent.
- Sharing and coordinating the relevant information on spectrum pricing among the member countries.

## **CHALLENGES OF FUTURE TECHNOLOGIES IN SPECTRUM MANAGEMENT: COGNITIVE RADIO**

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The main goal of cognitive radio (CR) is to provide adaptability to wireless transmission through dynamic spectrum access so that the performance of wireless transmission can be optimized, as well as enhancing the utilization of the frequency spectrum. In terms of spectrum regulation, the key benefit of CR is more efficient use of spectrum, because CR will enable new systems to share spectrum with existing legacy devices, with managed degrees of interference.

There are significant regulatory, technological and application challenges that need to be addressed. Main challenges include ensuring that CRs do not interfere with other primary radio users; control of CR as well as ensuring security issues such as authenticity, air-interface cryptography and software certification etc.

Creation of appropriate spectrum environment for CR will involve the development of spectrum databases, of spectrum monitoring facilities and of software spectrum policies. The distinctive and intelligent features of cognitive radio do raise the question as to whether cognitive radio can take over the spectrum management functions from communications regulators. The role of the regulator is still needed and its role is necessary to provide regulations. While the major purpose of CR is to efficiently use spectrum, it poses a challenge to regulators to mitigate interference caused by this technology.