COAI's response to the TRAI's Consultation Paper on
"Issues related to Telecommunications Infrastructure policy"

1. The Authority in its Consultation paper has correctly noted that telecom sector plays a critical role in economic growth. Continuous expansion in the telecommunications and broadband infrastructure to enhance coverage is essential for provision of reliable telecom services to all citizens. Telecom service providers today face several challenges in expanding the telecom infrastructure in the country and there is a need to put in place policy initiatives which exploit existing infrastructure and also enhance expansion of services. A sound telecommunications infrastructure development policy is therefore a key to ensuring sustained growth of the telecom sector as well as the overall economic growth in India.

2. It is well appreciated that the requirement of telecom and broadband services is an essential need for the common man and is increasingly being considered critical for daily requirements; therefore, we need to have a policy in place for the sustained development of telecom and broadband infrastructure. On the contrary the telecom sector faces multiple hurdles, various policy impediments and multiple levies which inhibit expansion of telecom infrastructure in the country. Creation of telecom infrastructure should be viewed as a national asset rather than be seen as a lucrative option to generate revenue.

3. Regulation on Telegraph is a Central government mandate and is governed by Constitution of India, Schedule – 7, list – 1, Entry 31st, which is a Union list and as such the same falls within the domain of Union Government and not the state Government. Therefore, regulating the towers / telegraph should be within the exclusive jurisdiction of the Central Government and not depend on the arbitrary policies of Local Bodies. Further, the subject matter of the Bye Laws in Telecommunication is governed by provisions of Indian Telegraph Act 1885, the Union Government should effectively enforce relevant enabling and strong clauses of the said Act in case of differences with Local Authorities wherein the final decision rests with the Union Government.

4. Problem is the multiplicity of authorities and their varying agenda. Hence there is urgent need to accord the status of "Critical Infrastructure" at par with all other infrastructure sector/players as well as status of 'Public Utility Service' to the telecom service at the earliest. This must become a strategic intent of TRAI and the Ministry to push through Central Government.

3. It is hence important to have **uniform policy guidelines in place which should be applicable across all states of India which will encourage establishment of telecom and broadband infrastructure.** This uniform or a common "Telecommunications Infrastructure Policy" should cover the following key aspects:

   a) **RoW aspects:-**

      i) P**rovision of the essential Right of Way (RoW) permissions** in a time bound manner.

      ii) Right of Way (RoW) guidelines should be so as to enable speedy acquisition of sites with minimum costs for the service provider. In fact it should only be on

"Restoration basis" without costs after giving it social dimension by according status of "Critical Infrastructure" & "Public Utility Service".

iii) **Encourage sharing of infrastructure and IBS solutions**. To incentives sharing the RoW charges could be prescribed at a lower rate in case the facility/ telecom infrastructure is shared.

iv) State Govt/Local Bodies should ensure that service providers do not face any problems/ hurdles in obtaining a "No Objection Certificate" (NOC) from various Local Authorities.

v) There should be **a single agency to co-ordinate for provision of "No Objection Certificate"** (NOC) from various agencies. **The process of multiple approvals should be replaced by a Single window clearance**.

b) **Power Supply.** Availability of Power supply is a difficult proposition in the urban, and especially in the rural areas, and is charged at commercial tariffs. As a part of the Uniform infrastructure policy, this needs to be addressed for priority connections, and at industrial rates.

c) **State Focus for Infrastructure.** Every state of India should have in place an annual action plan with a target for providing network coverage to a specified number of uncovered villages.

d) **Levies & Taxes.** The charging of taxes. levies by the local bodies should be based on the provisions of the Telegraph Act. There should be no additional taxes/levies instituted by local bodies other than those for restoration work as per this Act.

e) **Design Parameters for New Infrastructure**. Appropriate clauses in the building design parameters of all new infrastructure (ports, airports, railway, roads & highways, residential and office buildings etc) be made for including ab-initio space/ducts for telecom related services while constructing such infrastructure to preclude RoW and digging requirements with a "dig once" principle.

4. Our comments to the issues raised in the Consultation paper are as follows:

Overview of Telecom Infrastructure

Q No 6.1 Do you agree with the classification of infrastructure elements described in this chapter? Please indicate additions/modifications, if any, particularly where you feel that policy interventions are required.

a) Considering that telecommunication industry is dynamic in nature, we believe that the classification of infrastructure elements described in the chapter is adequate as per the current scenario, however we believe that the following requires due consideration by the Authority:

i. Infrastructure Providers act as facility providers to all telecom services – fixed, mobile, broadband, long distance and IP, and have no direct contact with the end consumers. This makes it a very unique segment in the telecom sector. This is an inherent part of the telecom value chain.

ii. More so, Telecom infrastructure is critical to telecom services, this infrastructure, which not only supports the telecom services, but also, supports other allied services such as the Common Services Centers (CSC) facilitating various NeGP initiatives, defence and internal security networks, and various other communications services. The same telecom infrastructure can be exploited for internal security, surveillance, climate warning, disaster warning/ mitigation efforts, financial services etc.

iii. The IP-1 category infrastructure providers are registered with the DoT and they can provide assets such as Dark Fibre, Right of Way, Duct space and Tower etc. We believe that the provisions should be made by the government so that the IP-1 registrants get faster permissions from state/local bodies w.r.t. Tower installations, right-of-way etc.

iv. Infrastructure to be established in rural/remote areas with USO support should be based on annual action plan of the USO which is announced at the beginning of each financial year to facilitate planning and formulate work plans.

v. Scope must be kept for new classification as the technology evolves such as IP implementation in Transport network.

Q No 6.2 What measures can be taken to encourage more ILDOs and ISPs to set up cable landing stations?

In order to encourage the ILDO's and the ISP's to set up cable landing stations it is recommended that:

a) Single window clearance should be provided for setting up the cable landing stations and Security clearance be given expeditiously in time bound manner.

b) Provide incentives by way of tax benefits and reduction in duties to ILDO's and ISP's for setting up the cable landing stations

I . **Internet Exchange Point**

Q No 6.3 Do you perceive the need for effective Internet exchange point(s) in the country to efficiently route domestic IP traffic?

&

Q No 6.4 If your answer to issue in 6.3 is in affirmative, please comment on the licensing framework of the entities for setting up Internet Exchange Points in India.

&

Q No 6.5 Will it be desirable to permit those Unified licenses to setup IP exchange points in the country who have no vested interest in routing of the IP traffic?

a) Yes, we agree that there is a need for effective Internet exchange point(s) in the country to efficiently route domestic IP traffic.

b) We believe that the private operators may be allowed to set up the IP exchange point in the country and may also be given license for the same. Neutral third party providers may also be encouraged for setting up the IP exchange points.

c) Incentives/ subsidy from National Telecom Infrastructure Fund should be given to encourage private participation coupled with Tax Holidays, No or normal license fees and reduction in duties.

d) However we would like to submit that there should not be a mandatory requirement for the ISP to connect to the IP exchange and the same should be left to the market forces.

e) Though RIO must be published for enabling interconnection in non-discriminatory manner.

III . **Mobile Virtual Network Operator**

Q No 6.6 Please give your comments on the changes proposed in para 3.5 of Section C of Chapter 3.

No comments.

IV .**In- Building Solutions**

Q No 6.7 What methods would you propose for reduction of the number of towers?
&

Q No 6.8 In what ways do you think that IBS can be encouraged for better in building coverage, better QoS and reduction in level of radiated power from Macro cell sites?
&

Q No 6.9 How can sharing of IBS among service providers be encouraged? Does TRAI need to issue any guidelines in this regard?
&

V . **Distributed Antennae Systems**

Q No 6.10 Do you agree that innovative technologies such as 'Distributed Antenna System' (DAS) can be effectively utilized to reduce number of towers and migrate towards tower-less cities?

&

Q No 6.11 What are the impediments in adoption of new technologies such as DAS and how can these be removed? Standardization of Tower Design

a) With increasing urbanization, IBS will increasingly be viewed as from "nice to have" to "necessity". High capacity 3G / LTE services require good network infrastructure to be provided with suitable RF coverage with in-building solutions. The infrastructure should be able to cater for increase in data delivery capacitates due to the following:-

i. 3G / LTE high capacity services will be used when stationary, i.e. indoor

ii. High bit rate services and building attenuation loss will quickly consume the shared downlink capacity from macro cells providing in-door coverage.

iii. Field trials indicate a capacity gain with in building solutions as compared to macro.

iv. High Capacity will shrink the coverage and as a result this would require more sites to be planned.

b) IBS and DAS enhance overall coverage and capacity specially at locations where the potential for increase in data usage is evident. This will enable reduction in the number of towers. Further, shared IBS solution complimented with cost benefits of network can encourage deployment of IBS. The deployment of these solutions should be based on the requisite QoS parameters as well as the building design parameters. It is worth specifying the RF coverage for a building in its design stage and be a part of the architectural approval by the concerned authority.

c) DAS is being used extensively by operators for IBS solution. It should also be encouraged to be used for outdoor coverage sites. DAS design with Multi Operator and Multi Technology support for both indoor and outdoor site will lead to a better utilization of the overall infrastructure as well as from the point of aesthetics.

d) However, the deployment of IBS and DAS requires adequate OFC points available in the vicinity. Some of the impediments for using the new technologies such as DAS may be:

i. Non-availability of Fiber connectivity to every nook & corner in cities/urban areas for back-haul. The FTTH /FTTC infrastructure is essential to facilitate this.

ii. Lack of procedures with Electricity boards/MC for leasing of Power posts space to Telecom Infra companies.

There may be a need to overcome the above impediments so as to enable faster pace in adoption of DAS.

e) In light of the above, we believe that deployment of IBS and DAS should be encouraged as the same will help in reducing the number of towers. In this regard, we would like to submit that the following should be taken into consideration in order move ahead with the implementation of IBS & DAS systems:

i. Emphasis needs to be given on speedy ROW permissions

ii. Incentives to be provided to the operators for the adoption of these technologies

iii. Incentives should be provided in a mode of reduction / removal of custom duties, exercise duties, tax benefits etc.

iv. A provision in the JNURRM and the building design must be made to include the parameters for including the data connectivity i.e OFC and suitable ducting in the construction of all new infrastructure viz roads, ports, airports and residential constructions.

v. Promote Overlaying Multi Operator Multi Technology IBS solution over macro network for dedicated in building solution for large public places like airport, metros, shopping mall,

railway station etc. Coverage in parking areas and other open areas of such structures to be included in the planning of IBS solution.

vi. DAS be implemented with right earnest as soon as Fiber to the Kerb is made available for backhaul as per National Broadband Plan.

vii. Government may subsidize taxes, duties, levies etc for sharing the infrastructure for IBS and DAS

f) We would like to submit that the license does not stipulate the use of any specific network architecture and is technology neutral, hence the operator has a choice of using any architecture as per his requirement.

g) **Operators should not be mandated to deploy these technologies.** In fact we believe that market forces should prevail in this regard and there should not be any regulatory intervention as long as the requisite QoS parameters are being met.

h) Promote active sharing of radio access network with multiple operators which have significant impact on the reduction of number of towers.

VI . **Standardization of tower design**

Q No 6.12 Would you agree that the design of towers can and should be standardized?

&

Q No 6.13 If yes, how many different types of towers need to be standardized?

&

Q No 6.14 What are the important specifications that need to be included in these standards?

&

Q No 6.15 Which is the best Agency to standardize the tower design?

a) The tower infrastructure companies have followed self-regulation in adoption of deigns, keeping in mind the various geographical challenges, where safety is inherent in the design. Tower infrastructure is approved by technically competent agencies such as TEC, SERC, CPRI and IITs, before its deployment.

b) We believe that the existing framework for the tower design is working well. We believe that the present mechanism is adequate and should be continued. However we believe more independent certifying agencies should be established in view of envisaged increase in rollout of towers for 3G/LTE services.

c) Any design that is the aesthetically good, improves infrastructure sharing and reduces Capex for the operators should be encouraged.

d) Innovation in designs would help further in improving efficiencies and enhancing safety, and the same should be encouraged.

e) New types of towers like Reinforced concrete towers and Fiber glass towers should be encouraged as this would help in :

   i. Reduced Environmental impact (other material , rather than iron /steel to reduce the carbon footprint in manufacturing)

   ii. These type of towers can blend in the local area are more amenable to be aesthetically acceptable and have a local character.

   iii. Incentives to agencies using alternate material can be considered

f) Towers having lesser carbon footprint, camouflage, aesthetic, materials, structure etc should be encouraged by giving subsidies.

g) The sates should define the building codes in order to facilitate the greater standardization of tower design.

VII . **Reducing Visual Impact of Towers**

Q No 6.16 What is the likely cost of camouflaging the towers?

&

Q No 6.17 Can camouflaging be made mandatory? If so, can this be made part of the design standards of the towers?

a) The term "camouflaging" for towers does not have a definition and can have many interpretations. This will vary from location to location and has the potential to add to the problems in obtaining NoCs / RoW clearances from local bodies. It may be more prudent to adapt the tower to be designed for local aesthetic requirements which should be based on clear articulation of the aesthetic requirement by the local body.

b) While we feel the aesthetic needs to be addressed and promoted, however the same should not be mandated due to i) the high capital expenditure ii) interpretations in what constitutes camouflaging, iii) where all will it be applicable. We must recognize the fact that there are significant costs associated with camouflaging towers, which will have to be passed on to the operators by the telecom infrastructure providers, and it would lead to additional burden on the end-consumer. Requirements for camouflaging /redesigning a tower to adapt to local aesthetic designs should be accompanied by sharing of costs by the requesting agency.

c) Further, there could also be special consideration made for adapting tower design in and around certain specific urban areas having heritage or other architectural significance. However for these limited/specific requirements, there should be a joint endeavor between civic agencies and other related departments and sharing of costs.

VIII . **Clearances From Local Authorities**

Q No 6.18 Do you consider that the existing framework of different civic authorities to grant permission for telecom towers is adequate and supportive for growth of telecom infrastructure?

&

Q No 6.19 Is there a need to set-up a single agency for approval and certification of towers? Is there an existing agency that can do this work? If a new agency is proposed, what should be its composition and framework?

&

Q No 6.20 Is it feasible to have a uniform framework of guidelines including registration charges, time frame, single window clearance etc for granting permission for installation of telecom towers and laying of optical fibre cables? If so, can it be prescribed by the Licensor or the Regulator?

&

Q No 6.21 What can be an appropriate time frame for grant of permission for erection of tower

&

Q No 6.22 How can a level playing field be ensured for telecom service provider's vis-à-vis other utility service providers especially in reference to tower erection?

&

Q No 6.23 Which agency is best suited to inspect the buildings and certify the structural strength of the buildings in case of roof based towers?

a) It is pertinent ot mention that telegraphs, telephone, wireless and other forms of communications are Central subject. Entry 31 of List-I - , Union List of Schedule Seven of Constitution of India reads as under:-

> *"Posts and telegraphs; telephones, wireless, broadcasting and other like forms of communication."*

Also, Entry 96 of List-I reads as under:-

> *"Fees in respect of any of the matters in this List, but not including fees taken in any court."*

b) It is clear from the above that telecommunication is a Central subject and Central Government is exclusively empowered to legislate thereon. Therefore we believe that the framework / guidelines issued by the central government should be uniformly followed by the state governments and the local municipal bodies.

c) Need for a **National Telecom Infrastructure Policy (NTIP).** With the learning from the environment in building telecom infrastructure in the country and taking into account the requirement of facilitating smooth and enhancement in the pace of telecom infrastructure growth it is imperative that there is need to lay down a **National Telecom Infrastructure Policy (NTIP)**, . This is potentially one of the most important requisites for inclusion in the new National Telecom Policy 2011. It will help in alignment of all states and local bodies leading to facilitating the future build up of the telecom and broadband infrastructure, by specifying

uniform procedures for land acquisition, uniform taxation regime, extending subsidies, encouraging optimum sharing and other packages for creating conducive environment to boost national telecom infrastructure building. We feel that with telecom and broadband permeating into the daily lives of the common man, catalyzing inclusive and sustained social and economic growth, it needs to be accorded the status of " critical infrastructure" and dealt with in accordance to the importance/attention due to such classification of infrastructure. .

d) We believe the existing framework is not supportive and there is a need of holistic view of all the issues involved. The decisions related to telecom infrastructure must reflect its role as a critical utility especially in a citizen's daily life, internal security, disaster mitigation, and emergencies.

e) This requires that rules relating to infrastructure are made after due process involving key stakeholders from the community as well as the industry. Approval process must be transparent and objective so as to avoid the huge costs that poor quality decisions can impose on the players as well as the community.

f) More so, there has to be **Parity with "infrastructure designated sectors".** Keeping in mind the criticality of telecom, the telecom infrastructure should be considered at par with other "infrastructure sectors" such as water, power, ports, natural gas distribution, etc. Telecom Infrastructure companies should be provided similar incentives, as provided to "infrastructure companies" in India.

g) Uniformity in the rules across country in providing right of way, levies and specifying other requirements of safety are an absolute must as the absence of same is resulting in wide scale harassment and adhocism at local levels.

h) The local bodies should grant the permission for setting up of the towers in a time bound manner, say within 30 days of the request. In the absence of any communications from local bodies, it would be considered to be deemed approved.

i) There should be Uniformity in Policies for Right of way, procedure for laying underground cable , Rules and levies related to Telecom Infrastructure including Telecom Towers.

j) Since the network has been expanding very rapidly, more agencies should be allowed to provide the certificate for the structural strength, NOC etc, to reduce the delays.

IX . **Infrastructure sharing**

Q No 6.24 Should sharing of mobile towers be mandated?

&

Q No 6.25 Should sharing of active infrastructure, created by themselves or infrastructure providers, be allowed?

a) While sharing of towers should be encouraged, it should not be mandated and should be left to the discretion of the operators as each operator would have their own requirement /strategy. Given the already existing competitive environment there is adequate incentive for operators to share towers and the market forces are already taking this into account.

b) We believe that sharing of mobile towers should be promoted, as government has already approved the sharing of passive/active infrastructure between service providers like telecom and ISP's. The sharing of infrastructure would help in:

  i. Reduction of OPEX and CAPEX when reaching out to subscribers in rural areas.
  ii. Reduce the visual impact of towers in the area.
  iii. Effectively and efficient use of resources (land, power etc) by sharing the infrastructure
  iv. Reduces time to market for rollout, ,
  v. Provides better coverage quality,
  vi. Minimizes issues related to local authorities.

c) Government should consider permitting pure play of market forces for sharing of active network elements, provided these are Spectrum agonistic and have not received any government subsidy in any manner. **Therefore, we believe that the sharing of the active infrastructure should be extended to the core network also.**

Ⅹ. **Use of USO for Underserved areas**

6.26 Please comment on the issues raised in paragraph 5.6 of Section A of Chapter 5.

a) The TRAI's recommendation on "An Approach to Rural telephony", "Spectrum management" and "National Broadband Plan" recommends the ways to overcome the challenges face by telecom operators like, RoW, infrastructure sharing, network elements, funds, ecosystem, etc. We would recommend accepting the recommendations given by the industry stakeholders.

b) DoT had constituted a Committee, with Shri JS Deepak, Joint Secretary (T), DoT- Chairman, to examine each recommendations of TRAI on "An Approach to Rural telephony –Suggested Measures for an Accelerated Growth" in detail and submit an action plan. Both the industry Associations COAI & AUSPI were part of the committee (the recommendations of this Committee are enclosed as Annexure -1).

c) We would like to <u>submit that this DoT Committee's recommendations are still valid and should be considered in the formulation of the policy related to telecom infrastructure and be accepted in order to have a optimal utilization of the USO fund for the rural areas.</u> We would like to endorse the following aspects of this report relating to the USOF:

  - *USO Fund should be re-organized/revamped as an autonomous unit (like C-DoT) within DoT. The overall functioning should be monitored by a Governing Council chaired by Secretary, DoT and USO Fund Administrator as its Convener with some more members from DoT and external experts.*

  - *The Governing Council should be responsible for formulating policy guidelines, approving the annual budget and monitoring the progress of various schemes.*

  - *USO F Administrator should be responsible for day to day functioning of the Fund.*

  - *USOF should draw an annual plan of various schemes and projects with appropriate budgetary allocations at the beginning of the financial year itself.*

  - *USOF should aggressively invest the funds at its disposal to cover 90% of the geographical area of the country within the next 3 years.*

- *USO Fund should develop enabling schemes and not elimination schemes.*

- *USO Fund should devise specific schemes for*
  - *Wireless Broadband*
  - *Fiber based Backhaul*
  - *Alternate Energy*
  - *Applications and Services*
  - *Technology Development*

- *Looking at the specific needs of J&K and North-East, USOF should aggressively devise special schemes for development of telecom network in rural areas of these regions.*

- *In the bidding, a minimum pricing be fixed. The minimum level may be based on an appropriate business model study by USOF. This minimum may be a certain percentage of the benchmark cost- say 50% of the actual cost (exact number to be determined by USOF after detailed study).*

- *Further incentives may be granted to operators who roll out the network faster than the specified timeline.*

- *USO should encourage sharing of infrastructure. Any number of operators may be allowed on tower by granting subsidy for increasing the height of the tower if required.*

- *There is an immense potential for providing broadband over wireless in rural areas using different wireless technologies. USOF should devise a scheme for subsidizing infrastructure for wireless broadband.*

- *Regarding backhaul, USOF should devise a scheme for providing subsidy for laying fiber optic network to all Village Panchayats to be shared by various operators for backhaul purposes.*

- *Wherever feasible, even microwave/wireless/VSAT based backhaul should also be subsidized for effective and quick roll out of services.*

- *USOF should devise a scheme for rural broadband connections in government run schools, primary health centers etc. The complete set up cost including broadband connection, CPE/PC may be subsidized.*

- *USOF could provide seed funding to select companies focused on developing rural specific and local language contents*

- *Department of Telecom, in consultation with state governments and after obtaining the views of industry, will frame a **National Telecom Infrastructure Policy** in a time bound manner which will speed up deployment of infrastructure in rural areas by laying down guidelines for RoW, land acquisition, availability of power supply etc.*

- *The Committee felt that policy guidelines alone may not help. It will be desirable to make this policy into **"National Telecom Infrastructure Act"** or appropriate changes in Indian Telegraph Act which will be binding on state governments.*

- *USO should devise scheme to provide subsidy to service providers who deploy alternate energy sources in rural network.*

d) Though there have been many discussions in USOF Administration for quite some time, regarding telecom infrastructure and broadband scheme involving both wire line as well as wireless , only a state level scheme only for (OFC) has been announced and wire line was restricted . We recommend that an early announcement of a subsidy scheme for next phase of the telecom infrastructure for both wire line as well as wireless be brought out. Existing infrastructure of PSUs and private sector should be used for providing universal and affordable access to the broadband.

XI . **IPV6**

Q No 6.27 What measures are required to encourage the deployment and adoption of IPv6 in the country?

&

Q No 6.28 In your opinion, what should be the timeframe for migration to IPv6 in the country?

a) In our opinion IPv6 adoption is an ongoing complex integration process that impacts all sectors of the internet economy. In addition, while IPv6 offers plug-and-play configurations and these capabilities are way beyond what IPv4 currently offers, dual stacking is the way forward globally and should not be diluted – exhaustion of IPV4 would not mean that IPv4 addresses won't be used any longer. Therefore, a long period of co-existence between IPv4 and IPv6 is envisaged during which maintaining operations and interoperability at the application level will be critical.

b) To **encourage the deployment and adoption of IPv6 in the country** the policy may consider the following:

i. Adopt clear policy objectives that are endorsed at a high level, to guide the transition effort to IPv6.

ii. Establish co-operation mechanisms for the development and implementation of high-level policy objectives to guide the transition to IPv6.

iii. Focus on policies that safeguard security & stability and give stakeholders ample opportunity to be ready and operate smoothly during the upcoming period of IPv4 unallocated address space depletion.

iv. Ensuring that the deployment of IPv6 and the necessary co-existence of IPv4 and IPv6

v. Encouraging Operators to consider IPv6 connectivity in peer-to-peer agreements.

vi. Encouraging Greenfield deployments to contemplate IPv6 since inception so as to future-proof deployments.

vii. Plan for the adoption of IPv6 for government's internal use and for public services, by developing a road map and planning time needed to conduct network assessment, infrastructure upgrade, and upgrade of applications, hosts, and servers.

viii. Ensure that all new programmes involving the Internet and ICT consider the relevancy of IPv6 and assess public programmes and priorities to determine how they can benefit from IPv6.

ix. Ensure that all relevant government security entities fully integrate the new dimension that IPv6 brings to security.

c) We believe that in order to create policy environment conducive to the timely deployment of IPv6, Indian government (TEC) has already:

i. Worked with the private sector and other stakeholders to increase education and awareness and reduce bottlenecks. (Conducted various seminars and workshops in different part of the country)

ii. Demonstrated government commitment to adoption of IPv6

iii. Pursued international co-operation and monitoring IPv6 deployment.

iv. **Most importantly TEC has prepared the "National IPv6 Deployment Roadmap", which examines the different issues related to the deployment of IPv6 in India.**

d) Various task forces created under the "**National IPv6 Deployment Roadmap**", has already initiated the work on the migration along with the various government departments.

e) **We believe that the industry and TRAI should support TEC in its endeavor for the migration from IPV4 to IPV6 by mid 2012.**

XII . **IPTV**

Q No 6.29 What measures do you suggest to enhance provision of IPTV services by various service providers?

&

Q No 6.30 Should there be any restriction on ISPs for providing IPTV services?

a) IPTV is an integral part of broadband infrastructure. It should be promoted via:

i. Unbundling of the local loop i.e. PSU's should be incentivised to offer local loop facilities to ISP's on availability basis.

ii. License fee for the wireline services should be waived

iii. The net worth of IPTV services provider should be reduced.

iv. Issues between the broadcasters and the IPTV services providers should be resolved.

v. Enhancing and sharing of key infrastructure like Digital Headend and Network (i.e. Network layer consists of Broadband access, Metro Transport, Multi access edge and Service control).

vi.   Promotion of secure interoperability between the services and devices via Interoperable Specifications and open architecture (Open IPTV Forum).

vii.   Encourage initiatives like multi screen TV (including wireless and Mobile) and converged services via IMS and DLNA.

viii.   Availability of Fibre Optic Cable bandwidth at reasonable price.

ix.   Promotion of Mergers and acquisition and venture funding in the Cable and ISP Industry.

x.   Promotion of Foreign Direct Investment in IPTV services.

xi.   Allowing DTH and Digital Terrestrial TV service providers to provide IPTV like interactive services via wireline (Hybrid Set Top Box)

b)   ISPs shall spur innovation in the broadband sector ecosystem as they will be able to use IPTV infrastructure not only for entertainment but also for communication (VoIP), secure sharing of local content (e.g. digital photos and films), Tele-education, online games, ecommerce, remote supervision and home control.

XIII . **General**

6.31 Please give your comments on any related matter not covered above.

Need for Establishment of a Telecom Infrastructure Fund

a)   Adequate funding is an important consideration for Government, as a policy, to enable the sustained development of the telecom infrastructure. It is recommended that these **recommendations from the Authority to take into account the measures for creation of Telecom Infrastructure Fund. Primary objective of this fund will be to lend to the companies involved in setting up telecom infrastructure** to include the following aspects :-

i).   Channelise funds from various international Development Finance Institutions that set up for promoting infrastructure development in rural areas.

ii).   Extend long term loans to telecom and telecom infrastructure companies for setting up active and passive towers in the identified rural areas.

iii).   Extend favorable repayments terms based on the cash flows including an extended moratorium period.

iv).   Charge lower rates of interest for funds invested in creating infrastructure in the rural areas.

v).   Raise low cost funds through Tax Saving Bonds as these qualify as Infrastructure Bonds.

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Report on TRAI Recommendations Dated 19th March 2009

On

An Approach to Rural Telephony –
Suggested Measures for an Accelerated Growth

January, 2009

Department of Telecommunications
Ministry of Communications and Information Technology
Sanchar Bhawan
20, Ashoka Road
New Delhi

INDEX

1 BACKGROUND

1. India has witnessed a phenomenal growth in the telecom sector in the last decade. This has been possible due to advances in technology, regulatory framework adopted by Telecom regulator and policy changes introduced by the government from time to time. However, despite this significant growth, rural teledensity is still well below the national average.

2. While there has been a substantial increase in total number of subscribers, the geographical coverage of wireless is still around 60%. There is a need to increase the wireless geographical penetration to 90-95% in the next 5 years.

3. Telecom Regulatory Authority of India (TRAI) issued a paper "Measures to improve Telecom Penetration in Rural India- The next 100 million subscribers" dated December 16th 2008 seeking suggestions and comments from various stakeholders. After analyzing comments and suggestions received on this paper, TRAI submitted its recommendations "An Approach to Rural Telephony- Suggested Measures for an Accelerated Growth" in its report dated March 19th 2009 (Annexure-A). These recommendations have suggested measures to improve rural telecom infrastructure to bridge the digital divide between urban and rural India.

4. In order to examine TRAI recommendations, the Department of Telecom (DoT) has constituted a Committee with the following members-

   - Shri JS Deepak, Joint Secretary (T), DoT- Chairman
   - Shri Ashok Kumar, Joint Administrator (Tech), USOF
   - Shri Manish Sinha, DDG (LF)
   - Dr Abhay Karandikar, Professor, IIT Bombay
   - Shri TV Ramachandran (upto Oct, 2009), Director General, COAI
   - Shri T.R.Dua, (from Nov. 2009), Director General, COAI
   - Shri SC Khanna, Secretary General, AUSPI

The Committee's terms of reference were to examine each recommendation in detail and submit an action plan.

1.1 Overview of TRAI Recommendations

TRAI in its paper "Measures to improve Telecom Penetration in Rural India" identified the following constraints for low penetration of telecom services in rural India-

- Non-availability of affordable Backhaul
- Difficulties in Land Acquisition, Right of Way, Power Supply
- Non-availability of locally relevant contents and affordable access devices for broadband penetration.

TRAI also examined the role of Universal Services Obligation (USO) Fund in detail to provide affordable telecom infrastructure including broadband. Accordingly, TRAI suggested specific measures in its report "An Approach to Rural Telephony- Suggested Measures for an Accelerated Growth". These recommendations have been summarized in Chapter 4 of TRAI report.

The Committee deliberated on each recommendation. Broadly, TRAI recommendations can be classified into the following major sub-categories-

- Restructuring of USO Fund (Recommendation 4.1)
- Bidding Approach Adopted by USO Fund (Recommendation 4.2, 4.3, 4.4)
- Backhaul Connectivity (Recommendation 4.5, 4.11)
- Broadband Infrastructure and Services (Recommendation 4.7, 4.8)
- Coordination with State Governments and DoPT (Recommendation 4.9, 4.10, 4.12)
- Alternate Energy (Recommendation 4.13)
- Human Resource Development (Recommendation 4.14)

Apart from these the Committee also deliberated on the following aspects, though these were not explicitly mentioned in TRAI recommendations-

- Thrust for Technology development

1.2 Committee Recommendations

The Committee after extensive deliberations on TRAI recommendations suggests the following concrete action plan.

1.2.1 Autonomy of USO Fund

USO Fund has undertaken several rural telecom development activities and is a key enabler to improving telecom infrastructure. However, there are several shortcomings in its operations that have not yielded the desired results. In its recommendation, TRAI states-

4.1   In regard to revitalization of USOF:

- *USOF should be reorganized and revamped with concrete powers.*
-
- *It is extremely important that the USOF Administrator is empowered effectively in terms of administrative, financial powers and ultimate decision making.*
-
- *It needs to be separated from Department of Telecom and a framework on the lines of National Highway Authority should be considered.*
-
- *It is important that the present USO Fund Act/ Rule should be so amended that the funds accruing to USOF through levy is directly managed by the organization and is not routed through the budgetary process of the Union Government.*

Committee agrees with TRAI observation that USO Fund should be empowered adequately to discharge its obligations effectively. Specifically, USO Fund may be restructured as follows-

Restructuring of USO Fund-

As suggested by TRAI, the Committee felt that it may not be possible to completely separate USOF from DoT. However, USOF should be restructured to function independently while remaining a unit within DoT. This can be accomplished along the lines of C-DOT/C-DAC. It is recommended that-

1. *USO Fund should be re-organized/revamped as an autonomous unit (like C-DoT) within DoT. The overall functioning should be monitored by a Governing Council chaired by Secretary, DoT and USO Fund Administrator as its Convener with some more members from DoT and external experts.*

2. *The Governing Council should be responsible for formulating policy guidelines, approving the annual budget and monitoring the progress of various schemes. The Governing Council can meet periodically (preferably once in a month) to review various activities of the Fund.*

3. *USO F Administrator should be responsible for day to day functioning of the Fund. He should be empowered to recruit/hire permanent/temporary staff/consultants in an independent manner within the accepted norms of salary and other benefits as approved by the Governing Council. He should be accountable to the Governing Council.*

4. *Ii is not possible to accept the TRAI recommendation that the funds accruing to USOF should not be routed through the budgetary process. However, it is strongly recommended that USOF should draw an annual plan of various schemes and projects with appropriate budgetary allocations at the beginning of the financial year itself. This budget should be approved by the Governing Council. This annual roadmap of schemes should also be advertised to enable operators to plan in an effective manner.*

1.2.2 Bidding Process

TRAI has analyzed the bidding process of USO Fund and found several problems with it. It has recommended-

4.2 *For expediting the infrastructure support in rural area, for the mobile and broad band services,*

- *The USOF should follow the bidding process only where it is necessary.*

- *It should concentrate primarily on planning and monitoring of the implementation of the scheme.*

- *In view of the need to proliferate ICT applications in the rural areas and the fact that broadband is practically non existent in most of the rural areas, the identification of SDCAs should be revisited, and scope for the payment of subsidy may be broadened so as to cover majority of the geographical area designated as rural as per the last census*

4.3 *Based on the experience of Phase-I, the Authority recommends that:*

- *USOF should determine the subsidy support for setting up towers in different regions and any IP- /CMTS/UASL operator, who sets up the tower in the designated SDCAs and shares it, should be paid subsidy depending on the number of operators sharing the tower:*

- *It is further recommended that 80% of the bid amount determined by the USOF in phase-I of a rural cluster may be considered as an incentive to the existing IP-I / access service providers having mobile towers in the designated SDCAs. For this purpose, up to three service providers may be encouraged for sharing of existing towers. Example : If rupees "X" per annum for five years is the bid amount for a certain cluster under phase-I, then any IP-I / existing service provider having mobile tower, that falls within the designated SDCA, shall be eligible for 40% of Rs. "X" subsidy per annum for five years in case the tower is shared by two service providers and shall get subsidy of 80% of Rs. "X" in case of sharing by three service providers) In case the designated SDCA is not one of the identified in phase-I then the rates finalized for the nearest identified cluster may be taken.*

One of the key problems with universal service is to determine the right amount of subsidy and how to distribute it. The correct level of subsidy should be equal to the gap between the amount an operator is willing to invest and the actual amount needed to roll out the service. Committee observes that

1. Competitive bidding/auction is required to determine the correct level of subsidy.
2. For optimal utilization of USOF to meet its obligations and for fair opportunity to all service providers/operators, bidding/auction is the only alternative.

However, the Committee agrees with TRAI observations that there were many problems in the scheme adopted by USOF in phase 1. The subsidies claimed were much less than that the actual capex leading to ineffective utilization of funds. This contradicts the objectives of USO Fund where it should enable to kick start telecom services in rural areas where service providers may not find it a viable business proposition by providing subsidy.

The Committee observes that

1. *USOF should aggressively invest the funds at its disposal to cover 90% of the geographical area of the country within the next 3 years.*

2. *Towards this goal, USOF should devise subsidy schemes that encourage operators to deploy infrastructure in areas where it may not otherwise make business sense.*

3. *USO Fund should develop enabling schemes and not elimination schemes.*

4. USO Fund should devise specific schemes for
     a. Wireless Broadband
     b. Fiber based Backhaul
     c. Alternate Energy
     d. Applications and Services
     e. Technology Development

5. Looking at the specific needs of J&K and North-East, USOF should aggressively devise special schemes for development of telecom network in rural areas of these regions.

Formulating specific schemes is the mandate of USOF Administration. However, the Committee felt that certain aspect should be kept in mind while devising such schemes. These schemes should be enabling schemes to expedite creation of rural telecom infrastructure. While the USOF should lookout the details of schemes, to avoid the pitfalls observed by TRAI, it is recommended that:

1. In the bidding, a minimum pricing be fixed. The minimum level may be based on an appropriate business model study by USOF. This minimum may be a certain percentage of the benchmark cost- say 50% of the actual cost (exact number to be determined by USOF after detailed study). In a complex set up such as this, it is desirable to ensure that the bidders do not quote below the unviable level. Fixing a minimum price will ensure that bidders would bid their own value (above this benchmark).

2. Further incentives may be granted to operators who roll out the network faster than the specified timeline. These incentives should be of substantial nature.

3. The basic idea in 1 and 2 above is to formulate a scheme which gives some minimum subsidy (below the benchmark cost) and incentives for early completion. This should enable operators to even claim more than 100% subsidy for faster completion. This will also ensure that bidders will quote their fair bid value by taking into account both the benchmark cost and their estimate for time required for completion.

4. USO Fund may engage an independent agency to design the bidding/auction process.

5. *USO should encourage sharing of infrastructure. Any number of operators may be allowed on tower by granting subsidy for increasing the height of the tower if required. If more operators are willing, then subsidy should be granted for additional tower as well including assured tenancy.*

6. *While giving subsidy, some notion of degree of difficulty in terms of laying infrastructure in sensitive areas, difficult geographical terrain etc. should be introduced.*

1.2.3 Broadband

It is well recognized that broadband penetration in rural areas is very limited. Broadband will be the key to enable ICT applications in rural areas. There is an urgent need to develop specific schemes for improving broadband connectivity. The Committee recommends that

1. *USOF should devise attractive schemes for rural- broadband to enable broadband connectivity in rural areas. The details of the schemes could be worked out by USOF.*

2. *There is an immense potential for providing broadband over wireless in rural areas using different wireless technologies. USOF should devise a scheme for subsidizing infrastructure for wireless broadband immediately so that this scheme can be implemented soon after completion of 3G and BWA spectrum auction..*

1.2.4 Backhaul

Regarding backhaul, TRAI has stated in its recommendations-

The USOF may devise a scheme to call expression of Interest from IP-I/NLD/UAS licensees to provide fiber from the USOF subsidized towers to nearest block headquarter. USOF shall give subsidy @ maximum one lakh per KM per sharing (to be distributed over a period of three years) provided it shares it with at least one access service provider. The subsidy will be restricted up to two sharing's with those telecom service providers who are having USOF subsidized sites. The OFC owner will be free to lease the remaining fiber to the other service providers but the subsidy will be given for only two sharing's. The subsidy will be given only after certification of usage by the concerned access service providers.

DoT should review the existing procedure for various approvals regarding VSAT and prescribe strict timelines so as to reduce the delay. It is also recommended that DoT should also simplify the procedures with emphasis on automatic clearances in case of non critical approvals. It is further recommended that the charges for VSATs (except transponder charges) may be borne by USOF initially for a period of three years for all the VSATs installed in rural areas. The TERM cell may be entrusted to certify the eligibility for the exemption

The Committee agrees with TRAI observation that backhaul constitutes one of the significant costs in setting up infrastructure in rural India. Moreover, it is desirable to have fiber optic based backhaul network not only for efficient backhaul network but also for providing broadband/Internet services to rural areas. It is well known that fiber based backhaul involves high capex but low opex. The Committee recommends that

1. *USOF should devise a scheme for providing subsidy for laying fiber optic network to all Village Panchayats to be shared by various operators for backhaul purposes.*

2. *Microwave/wireless/VSAT are other alternate backhaul technologies. Wherever feasible, even mcrowave/wireless/VSAT based backhaul should also be subsidized for effective and quick roll out of services in some specific locations due to geographic and demographic reasons.*

1.2.5 Broadband Applications/ICT/Services

Apart from mobile connectivity, broadband infrastructure and applications and services over it may be key enablers for economic growth of rural India. TRAI has recommended-

4.7   *In order to improve broadband infrastructure, the Authority recommends that USOF may device a scheme / agreement with state governments in which broadband connection are facilitated by USOF while state Government would assure fixed number of broadband connections for Government offices/public places such as hospitals /schools etc*

4.8   *The development of local content needs to be area specific and should address the local and immediate needs of the people*

An integrated approach is required for penetration of broadband and enabling various ICT applications and services over the broadband networks. While the cost of mobile handsets has come down significantly, the cost of access devices including CPE for broadband remains a barrier for large scale penetration of broadband services in rural areas. Moreover, non-availability of relevant applications and contents in local language also remains a bottleneck for availability of broadband services.

The Committee broadly agrees with TRAI recommendations- 4.7 and 4.8. Specifically, the Committee recommends that

1. *USOF should devise a scheme for rural broadband connections in government run schools, primary health centers etc. The complete set up cost including broadband connection, CPE/PC may be subsidized with the support of respective state government wherever possible.*

2. *USOF could provide seed funding to select companies focused on developing rural specific and local language contents*

3. *USOF can either create a corpus fund or provide funding support for micro financing of access devices like low cost PC/CPE through various state government agencies/ micro finance credit institutions.*

1.2.6 Coordination with State Governments

TRAI has stated-

4.9 The USOF supported activities should be synergized and coordinated with the State Government activities and efforts.

4.10 The delay in obtaining the right of way can be considerably reduced if amendment is made in section 10 of the Indian Telegraph Act, 1885. Accordingly the Authority suggests the following amendments in the said Act:

- *In section 10 after Clause (c), the following clause may be inserted as 10(ca) -"The local authority will grant permission within such reasonable time as it thinks fit, but not exceeding 90 days from the date of receipt of requests for such permissions from the telegraph authority."*

- *DoT, in consultation with state governments, should invoke this provision and shall appoint, in general, the District Magistrate as an officer for redressal of such disputes.*

- *The installation of towers and related equipment in rural areas serves the purpose of local population and to some extent business organizations. Hence the requirement for land conversion for setting up tower in rural areas by the telecom service providers should be dispensed with.*

- *State electricity boards should provide power supply to rural BTSs on priority basis.*

Committee agrees with TRAI observation that state governments have a pivotal role to facilitate telecom infrastructure. While telecom is a central subject, coordination with many state government agencies are needed to provide telecom infrastructure. Specifically, state government support is needed in the following three key areas-

- Right of Way (RoW)
- Land Acquisition
- Power Supply

COAI and AUSPI have pointed out the following critical problems in these matters-

1. Various state governments/municipal corporations have stipulated their own norms across the country for granting permission for providing the RoW despite the fact that operators have been granted right of way under Section 10 of Indian Telegraph Act.
2. There is also no uniform policy for setting up of telecom towers.
3. There is a need to supply power supply to BTS/BSC on priority basis.

The Committee recommends that

Department of Telecom, in consultation with state governments and after obtaining the views of industry, will frame a National Telecom Infrastructure Policy in a time bound manner which will speed up deployment of infrastructure in rural areas by laying down guidelines for RoW, land acquisition, availability of power supply etc. This policy should make state governments and local self governments party to successful implementation and enabler for telecom infrastructure including time bound approval for right of way (ROW) and standardized restoration charges. The state governments may also assure fixed number of broadband connections in schools, primary health center and police stations etc.

The Committee felt that policy guidelines alone may not help. It will be desirable to make this policy into "National Telecom Infrastructure Act" or appropriate changes in Indian Telegraph Act which will be binding on state governments.

1.2.7 Alternate/Non Conventional Energy Sources

4.13 USOF should workout the cost of providing mobile chargers which can work with alternate / solar power /little power supply in rural areas. Accordingly, a fixed amount of subsidy may be extended to those service providers who have installed towers in rural areas, for installing such mobile charger facilities in the nearby villages.

The Committee agrees with TRAI recommendation. Moreover, availability of power supply is a critical bottleneck in rural areas. The use of non conventional energy sources like solar/wind/bio fuel/ may form an important source of energy in powering base stations. The Committee recommends

USO should devise scheme to provide subsidy to service providers who deploy alternate energy sources in rural network.

1.2.8 Human Resource Development

4.14 USOF may facilitate fellowship training program for local rural youths.

While appreciating the recommendations of TRAI regarding facilitation of training programme for local rural youth, the Committee find it impractical to implement such exercise by USOF. Moreover, the mandate of USOF also does not permit to undertake such activities. The Committee, therefore, recommends not to accept this recommendation.

1.3 Other Thrust Areas for USO Fund

Apart from TRAI recommendations relating to rural telecom, the Committee also deliberated on other measures that should be adopted by USO Fund to foster all round growth in telecom sector.. The following are the recommendations.

1.3.1 Technology Development and Indigenous R&D

The Committee observed that while there has been a significant growth in Indian telecom scenario, most of the technology and equipments are imported. India's presence in International telecom technology development is practically nil and we are currently regarded only as the consumers of the technology. The Committee observed that in countries like China, several technology development ventures have gone on to become successful multinational companies with active support from governments.

Similarly, Indian contributions in International standards have been practically marginal. We need to promote indigenous R&D and promote Indian service providers' requirements in international standards on a large scale. It may be noted that industry along with the Government has already set up Several Telecom Centers of Excellence (TCOE) in Public-Private partnership mode. Seven TCOEs have been set up so far on key focus areas such as Next Generation Networks, Technology Integration, Telecom Policy & Regulation, Infrastructure, Disaster Management, Security issues and Rural Applications. Each TCOE has a public /private telecom operator as a sponsor which, in association with a premier academic institute (IIT/IIM/IISc) focuses on capacity and capability building in the above focus areas. The TCOE initiative has indeed proved to be successful. The Committee recommends that

1. *USOF should leverage/build upon the already existing TCOE initiative.*

2. *USOF should support Telecom Entrepreneurship Development Fund to provide critical funding for telecom research and development in Indian R&D institutions. Moreover, this funding should also be used to perform research to address the problems of Indian service providers' and their future requirements. These solutions should be promoted in international telecom standards in a way that would enable us to eventually drive these standards in future. It is generally felt that we missed the earlier boats of 2G and 3G standards and technology developments. It is necessary to aggressively participate in future generation technologies.*

3. *This fund should also be used to provide critical support in the form of seed or venture funding to foster the growth of telecom start-up companies.*

4. *In the past several efforts have taken place to fund telecom R&D and provide seed funding from various agencies, however, these efforts have not yielded desirable results due to either lack of a complete eco-system for venture funding or in many cases the funding was sub-critical. This aberrations need to be rectified. It is recommended that full funding support be provided to such projects to develop a critical mass in order to get productive results.*

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