Telewings 'Uninor' Response to TRAI Consultation Paper on Delivering Broadband Quickly: What do we need to do? (12/2014)

Preamble

At the outset, we welcome TRAI timely consultation considering the fact that the data demand in India is growing exponentially and has the potential to significantly contribute to socio economic development.

ITU in its Broadband Commission 2014 report has acknowledged that accessibility to secure, reliable and high speed internet connectivity is imperative for future social and economic development and growth. The relevant excerpt from the report is as follows:

> "*High-speed, affordable broadband connectivity to the Internet is a foundation stone of modern society, offering widely recognized economic and social benefits. High-speed broadband is no longer just cutting-edge technology for an elite few; instead, the steady march of connectivity among the broader population is slowly but surely transforming our society with new ways of accessing services and information. Broadband does not just comprise infrastructure; today, widespread broadband connectivity offers the prospects of new services and an information revolution to change – and challenge – our very approach to development"*.

The National Telecom Policy 2012 has set out the desired objectives for the achievement of the "Broadband for all on demand" vision. The NTP'12 has laid out the Vision to "*Provide affordable and reliable broadband-on-demand by the year 2015 and to achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020 at minimum 2 Mbps download speed and making available higher speeds of at least 100 Mbps on demand*". The policy recognised telecom, including broadband connectivity as basic necessity like education & health and envisaged work towards "*Right to Broadband*".

The Indian mobile industry has been so far successful in providing affordable telecom services (voice, SMS, mobile internet), thereby empowering the common man, driving wider economic growth across the country and significantly contributed to government revenues. However, the next phase of the telecom revolution would come from enabling affordable Broadband access to all. The current broadband subscriber figure stands at 70 million (as on 31st July'14) dominated by Wireless access which constitutes ~75-80% of the total and is a main contributor in the broadband growth in the country. Therefore, for achieving the broadband targets as set out by the NTP'12, it is evident that the majority of the targets would be achieved through Mobile Broadband.

The increasing smartphone penetration and advent of higher technologies has fuelled further data growth and will continue to have a significant impact on the growth of mobile-broadband subscriptions in future. It is expected that by 2017, the data consumption per user will be increased by three times translating into multi-fold increase in revenue opportunities. As a result, significant upgrades of networks, higher speeds and abundant spectrum will be required. This warrants a sustained investment flow in the telecom infrastructure.

As per ITU report "*The State of Broadband 2013: Universalizing Broadband*", India has been ranked 122 in the list of 183 countries for broadband penetration perspective which shows that broadband proliferation in still very low and currently limited to Metros and A category circles. Even if we assume the timely achievement of the target set by NTP'12 for year 2020, India's position would move to about rank 53 (assuming no change in broadband penetration of other countries, which is highly improbable). This would mean that we would continue to be at the bottom rung of countries in the Broadband benchmarking tables. In light of this, we need to review whether such broadband targets are aspirational enough to achieve the status of a global economic giant.

TRAI has also pointed out in its paper that the current penetration of broadband is unsatisfactory thus, there is an urgent need to review the present policies / address the issues acting as an impediment to build infrastructure required for penetration of mobile broadband in the country. **Extensive fibre infrastructure in backhaul and going upto the last point in the network architecture coupled with liberal spectrum availability for last mile is going to be key for broadband growth.** Government has initiated several programs focusing increase in socio-economic developments, like – Digital India, Smart Cities, Jan-Dhan Yojana etc. where broadband is essential to make these initiatives successful, it is essential to have stable and forward looking National Broadband policy addressing following issues to support the mobile broadband demand and to achieve NTP'12 broadband targets and beyond.

- Ensures availability of adequate spectrum at reasonable price - supply of contiguous / harmonised spectrum is must for mobile broadband technologies
- Early release of Spectrum Trading & Sharing policies
- Allocation of Backhaul spectrum along with access spectrum for Greenfield network rollout
- Spectrum availability roadmap for newer bands (700 MHz band)
- Formulation of new comprehensive ROW policy addressing issues for laying fibre like timely permission and minimum restoration rates.
- Relook on applicability of USOF
- Availability of grid power to support telecom infrastructure

In light of above, there is an urgent need for the development and implementation of a detailed action plan for the Broadband Policy addressing the above issues at the earliest.

Response to Issues raised in the Consultation Paper

Q1. What immediate measures are required to promote wireline technologies in access networks? What is the cost per line for various wireline technologies and how can this cost be minimised? Please reply separately for each technology.

Response:

Presently, Uninor is not providing wireline services in any of its operational service areas therefore this question is not applicable. However, we would like highlight the following:

- As highlighted in the preamble, growth of mobile broadband is gaining momentum and the future broadband penetration is majorly dependent on wireless technologies and it is imperative to leverage the same for providing broadband services in India.
- Currently only about 15-20% broadband growth is coming from wireline broadband services. The existing wireline infrastructure available with a select few operators is not made available to other broadband service providers. Thus, existing wireline infrastructure is being grossly underutilized. In fact this infrastructure is also not been effectively maintained due to limited utilization.
- The wireline broadband service providers are at present not open for sharing their infrastructure with other service providers. Broadband penetration could improve if all service providers permit sharing and can ease out the shortage of spectrum and hence reduce load on spectrum.

Q2. What are the impediments to the deployment of wireless technologies in the access network? How can these deployments be made faster? Please reply separately for each technology.

Response:

- Spectrum availability and initial cost of spectrum are two major bottlenecks for deploying wireless technologies in the access network. The severe crunch of spectrum is further accentuated by fragmentation. For all mobile broadband technologies to be deployed effectively, the most important requirement is availability of sufficient quantity of globally harmonized spectrum in a contiguous manner. In India, all IMT spectrum bands are either occupied by the government agencies or assigned to operators in small and non-contiguous chunks which cannot be used effectively for deployment of mobile broadband. Indian TSPs average spectrum assignment is 10 MHz per operator which is much lower than the global average of 50MHz per operator combining all access spectrum bands. To achieve contiguity of spectrum, it is essential that the current assignments to operators is harmonized and the government agencies be migrated out of these commercial spectrum bands. It is requested that TRAI should reiterate its earlier recommendation of rearrangement of all spectrum within the band (liberalised and administrative).

- Service providers have acquired spectrum in the auctions held in 2010, 2012, 2013 and 2014 at high cost. The auction acquired spectrum is not contiguous and partial in many cases (except 2010 auctions), therefore making it unsuitable for data applications. It is

incumbent on Regulator and Licensor to put in place **policies to make available contiguous blocks of 5 Mhz liberalised spectrum in all possible bands**, so that the networks are being rolled out in the next 2 to 3 years and the telecom sector is fully geared to meet the future data demand from mobile broadband.

- The alternate means of easing spectrum scarcity to be addressed by early release of spectrum trading and spectrum sharing policy by the Government in line with the TRAI recommendations.

- Formation of policy on allocation of Backhaul spectrum for green field network rollout. After Industry consultation, TRAI has given progressive recommendation which are under review at DoT.

- Wireless technology is intended to serve the last mile and therefore availability of fibre backbone from the Wireless node to the core network is another key issue in the deployment of technology. These resources are currently prohibitive both from CAPEX as well as OPEX perspective to make the technology a viable proposition.

- There is a need to harmonise site approvals / rights of way procedures so as to lower the costs and expedite the process. Otherwise such operational bottlenecks truly hinder the effective implementation of broadband. On RoW, a coordinated effort must be initiated on the part of central and state governments. RoW permissions should be provided on priority and a time limit needs to be fixed. The issue is dealt in detail in response to Q 11 of this Paper.

- Liberal policy on the issue of RoW commonly practiced by across the board Agencies for a period of five years at a very much discounted rate and setting up a target to achieve fibre penetration just as target is set for broadband User base.

- The present auction acquired spectrum mandated extensive Block Level Rollouts till the fifth year of license. The number of blocks are approximately 10 times the number of districts. There in an urgent need to revisit the testing procedure and a self certificate from service provider for the block level coverage should suffice with 10% sample testing being carried by TERM cell. This would act a multiplier effect, where the service providers would be able to deploy more resources towards rollout of networks at block level.

- The existing Merger and Acquisition norms should be liberalised so that resources are utilised by the operators who value the most.

Q3. The recommendations of the Authority on Microwave backhaul have been recently released. Are there any other issues which need to be addressed to ensure availability of sufficient Microwave backhaul capacity for the growth of broadband in the country?

Response:

- We sincerely appreciate the recommendations of the Authority on Microwave backhaul. We believe that the Government should accept these recommendations without delay and release the policy for administrative allocation of MW.

- Microwave backhaul is a supplement to the rollout of access networks including overlay wireless broadband networks. The constraint on fibre availability at the sites and absence of long haul Microwave spot frequencies (<10GHz) leads to quality issues. This acts as an impediment in network expansion.

Q4. The pricing of Domestic Leased Circuits (DLC) have been reviewed in July 2014. Apart from pricing, are there any other issues which can improve availability of DLC?

Response:

At the outset, we appreciate TRAI efforts for reviewing the current ceiling downward and continue to regulate the DLCs to protect the interest of the growing operators despite of strong opposition from established telecom players.

We wish to inform TRAI that currently, we are not selling domestic leased circuits including virtual private networks (VPNs). However, **we would like to highlight various practical challenges which we are experiencing while procuring leased lines from other telecom Operators**. These are as follows:

- **Cross Connect** – In present scenario, Carriers are not allowing Cross connect between their MuXs at their premises resulting in to big challenge and if they are at all allowing us in some exceptional cases, demanding huge cost for the same. It is strongly recommended that there should not be any Cross Connect Charges applicable at all in any circumstances.
- **Dark Fiber** - Currently, there is no regulation on leasing Dark Fiber. We request TRAI to look into this matter to safeguard the interest of the customers. Following is the proposed cost methodology for the same.

Particulars	Unit of Measurement	Unit Price
Intercity	Cost /Pair/Km	50,000
Intracity	Cost /Pair/Km	1,80,000

Assumption: IRU is 15 years. O&M cost is 3% of total cost per annum. Price is in INR.

- **One time charge (OTC)** – These charges are levied by TSPs/ NLDOs and way above the normal cost of deployment (Equipment, fiber & ROW). Although these cost are already inbuilt in the end-to-end leased line ceiling tariffs prescribed by TRAI, however these are charged on case to case basis. This is increasing our overall cost for end customer as well as delaying network rollout / augmentation.
- **FTTH Technology -** Encourage fibre to the home technology and look at replacing copper media with fibre media upto the curb / home. Pull out copper line from existing duct and replace them with high capacity fibre will help in increasing fibre penetration in the network while at the same time help in increasing high capacity bandwidth in the network.

The existing framework regulates the ceiling tariff but the above issues should also be addressed for level playing field for new operators in terms of cost disadvantage, discrimination treatment etc. by incumbent Operators/ Carriers. We request TRAI to consider above mentioned challenges and include it in its recommendations.

Q5. What are the specific reasons that ISPs are proactively not connecting with NIXI? What measures are required so that all ISPs are connected to the NIXI?

Response:

- The purpose of NIXI is a neutral Internet exchange serving as a gateway for Internet connectivity for peering ISPs among themselves, so as to route the domestic traffic within the country for better quality of service, reduced latency and reduced bandwidth charges for ISPs. It has very little to offer from end customer benefits point of view.

- It is also suggested that NIXI may start content service provisioning (local hosting) within the country. This way would not only encourage ISPs to connect to the NIXI and also offer a viable business proposition.

Q6. Would the hosting of content within the country help in reduction of the cost of broadband to a subscriber? If yes, what measures are required to encourage content service providers to host content in the data centre situated within India?

Response:

- Currently, most of the content is hosted outside India and hence there is very high usage of International internet bandwidth. The major cost of delivering Internet today is linked to the high International bandwidth prices. Nearly 70% of the cost for delivering broadband connectivity and Internet access is due to the high cost of International bandwidth.

- Therefore, it is suggested that the hosting of as much as contents possible within the country will certainly help from the perspective of lesser bandwidth required for international connectivity. This will bring down the cost of content and will also improve the utilization efficiency.

- Government should devise schemes to enhance domestic content thereby reducing dependency on International Internet bandwidth requirement. This will also lead to lower latency. Discounted hosting charges may be thought of as an option to encourage content service providers to host content in the data centre situated within India.

- The licensed content hosts have a direct handicap of 8% of AGR as compared to the unlicensed hosting operators. This should be made as a level playing field.

Q7. Are PSUs ideal choices for implementing the National Optical Fibre Network (NOFN) project?

Q8. Should awarding of EPC turnkey contracts to private sector parties through International Competitive Bidding (ICB) be considered for the NOFN project?

Q9. Are there any ways in which infrastructure development costs can be reduced? Is it possible to piggyback on the existing private sector access networks so as to minimize costs in reaching remote rural locations?

Q10. What can the private sector do to reduce delivery costs? Please provide specific examples.

Response to Q7, Q8, Q9 & Q10:

- The Government has started building the National Optical Fibre Network (NOFN) from the USO Fund but the project has struggled to take off due to operational reasons. We believe that a nationwide, professionally implemented national backbone network can surely act as a great catalyst for broadband penetration in the country. **However, the problem with NOFN is that the scheme is not holistic and comprehensive and hence is not able to take off properly.**

- Many analysts have clearly noted that the NOFN project would build a strong middle mile, but for a sustainable and scalable ecosystem with viable and profitable business models around the relevant e-services for the rural masses, the core and last miles would also need to be taken care of. **The biggest hurdle in the taking off of the NOFN project is that there is no focus on the core and the last mile.**

- The NOFN project also does not include service offering. It is just about the laying of optic fibres. For end-to-end services, service providers will have to set up their own infrastructure at the gram panchayat level. However, there is no focus on this aspect. Until and unless a strong business case is build including designing of the services, provisioning of these services to the customers, hosting and tariff option, etc., there will be no takers for this connectivity at the block level. There is need for a favourable policy environment to be in place in order to develop sustainable business models for the takers of this connectivity.

- The incentives to private players to provide last mile access and deliver services in rural areas as of now are absent in the NOFN scheme.

- Most important factor, which is required to be kept in mind, is the quality of implementation, to which not much attention is being at this point in time. International competitive bidding will help in improving the execution - speed up route-kilometers of fibre being laid at the shortest possible time, improve quality of execution while at the same time bring in new technology for fibre laying in the country.

- **The project execution skills of private sector and SPVs of Government of India which have impressive past track record in executing large infrastructure projects should be leveraged through ICB.**

Q11. What are the major issues in obtaining right of way for laying optical fibre? What are the applicable charges/ constraints imposed by various bodies who grant permission of right of way? In your opinion what is the feasible solution?

Response:

Presently, we are not having our own OFC infrastructure in any of the telecom service area which we are serving and currently being taken on leased from other telecom / infrastructure service providers to meet our network requirements. Therefore, we would not be able to provide the ROW charges. **Our initial strategy of not laying our own OFC infrastructure was primarily to ensure quick roll-out and constraining both Op-Ex as well as Cap-Ex. As our network is growing time has now come to look at our own OFC infrastructure.** However, it is a very important issue raised by telecom service providers over a period of time and play a vital role in making Government vision of Digital India into a reality as well as building smart cities.

As understood, the Right of Way (ROW) is a major concern for TSPs due to following issues-

- Inconsistencies in the ROW norms of various municipalities and other State agencies
- State Governments levying exorbitant charges and indirect and other overriding conditions not commensurate with or limited to just restoration charges.
- No uniformity/rationale in charging by various states/ municipalities and within a state
- Exorbitant RoW charges are impacting the business plans of the telecommunication/ infrastructure service providers – creating additional financial burden on TSPs.

ROW should not be viewed as money making model by state governments, municipal corporation, local bodies etc and should see the implied benefits of making such infrastructure available supporting Government Vision of Digital India. Following are the suggestions/ possible solutions to minimise ROW related issues:

- ROW owned by agency like Municipal corporations, local bodies etc should proactively build the infrastructure and share the same with all other agencies/ service providers by taking reasonable charges in a non discriminatory manner.
- It should be mandated to put either ducts /optical fibre with well-defined access mechanism in all new road constructions along national highways, inter & intra city roads.
- Existing building by-laws which currently only see electricity, water, fire safety as necessary infrastructure to get a completion certificate should be amended by mandating inclusion of either ducts /optical fibre with well-defined access mechanism in all upcoming office complexes, commercial spaces and residential complexes.
- Share the existing Fibre backbone infrastructure among all operators to reach up to the block level – to enable the same, Government may consider setting up an SPV under PPP model wherein BSNL who is having largest and most extensive fibre backbone, should transfer the same to SPV and other Private operators could also be free to pool their infrastructure with the SPV. The SPV would then play the role of NOFA (National Optical Fibre Authority) proposed by TRAI and lease fibre / bandwidth to TSPs at TRAI's prescribed tariffs.

- All state governments should extend the facility of rights of way for laying underground Telecom cables, to all licenses without payment of any compensatory charges/ levy /lease rentals/ licence fee/ free bandwidth/ revenue share/ cashless equity etc
- Municipality should encourage multiple parties carrying out ducts laying activity. In the first place itself at the time of granting permission for such digging activity priority should be given for proposals with more than one operator seeking permission for fibre laying activity.
- Municipality should be instructed to plan duct laying while new alignment work or new road laying activity is being taken up and such ducts shall be leased to service providers at competitive price.
- Road planning should mandatorily include duct crossing so as to facilitate road crossing by fibre/telecom cables and avoid road cutting once a road alignment is built. International practice shall be followed for infra facilities both during planning and execution phase.
- Streets should be earmarked for fibre laying and only during specific window during a year such activity be permitted to be taken up.
- Publicise all fibre laying activity for the benefit of other service providers so as to encourage infrastructure sharing or collaborative efforts for the benefit of industry and general public.
- Permission for towers in areas covered by Cantonement Boards, Lutyens Zone, ASI, Steel Plants etc. is generally not available leading to patch network coverage. Specific area may be demarked for installation of telecom towers on sharing basis by all service providers.

Q12. Should the Government consider framing guidelines to mandate compulsory deployment of duct space for fibre/ telecommunications cables and space for telecommunication towers in all major physical infrastructure construction projects such as building or upgrading highways, inner-city metros, railways or sewer networks?

Response:

In addition to our response submitted in Q11, we would like to mention that this will certainly be a step in the right direction. It should become mandatory for any infrastructure provider to ensure provision for such essential telecom needs besides other operational requirements. Suitable planning guidelines need to be issued so that these become part of the bylaw to be compulsorily adhered. Ready availability of duct on highways and railway crossing will definitely speed up fibre laying activity and ultimately help in greater penetration of broadband services in a time bound manner.

All national and state level infrastructure viz. Highways, Metro rails, waterway bridges, oil and gas pipelines should mandatorily be planned in such a way so as to create fibre infrastructure. The bylaws for town planning should be amended accordingly.

It is also suggested that to enhance fibre density in the country, the Government should entrust OFC rollout in a PPP mode to potential implementing agencies (such as agencies with a proven track record of meeting target time frames).

Q13. What are the impediments to the provision of Broadband by Cable operators? Please suggest measures (including policy changes) to be taken for promoting broadband through the cable network.

Response:

Uninor is not providing any broadcasting services hence not responding.

Q14. What measures are required to reduce the cost and create a proper eco system for deployment of FTTH in the access network?

Response:

We have following suggestions in this regard:

- Share the existing Fibre backbone infrastructure among all operators in a non discriminatory manner.
- As stated earlier, a partnership venture (which shall include power companies as well) shall be established made with pooling of all resources. This venture then takes on new installation wherever necessary.
- Permission to dig for purpose of laying fibre shall be freely granted especially on those roads where there is already a plan to redeveloped.
- Close coordination between Municipal agencies and Operators for taking on duct laying activity. This in essence would mean when Municipal themselves are in the process of road development, invite telecom partners to multiple ducts while the road development is in progress. In such cases no right of way shall be charged.

Q15. Are there any regulatory issues in providing internet facility through Wi-Fi Hotspots? What are the reasons that installation of Wi-Fi hotspots has not picked up in the country? What type of business model needs to be adopted to create more Wi-Fi hotspots?

Response:

- Presently there are no long term sustainable business models and service providers are in the exploratory phase on the issue of Wi-Fi. The owner of public space should be made financial partner in rolling out of the Wi-Fi infrastructure. Ideally it should be owned by them, and shared with all telecom service providers on a revenue share basis.

- There is a need for Innovative business models that need to be worked out to make operator investments viable and attractive in creation, maintenance, marketing, customer support and upgrades of Wi-Fi hotspots.

- Currently, the devices including smartphones which are available in the market has Wi-Fi feature for accessing Internet facility. Additionally it is now feasible for mobile subscribers to roam in Wi-Fi hotspots and charged for the service through the parent network. Such architecture is already in vogue in the Country with major players already started deploying either in collaboration with the existing Wi-Fi players are embarked on a pilot deployment of Wi-Fi systems. What is impeding Wi-Fi hotspot growth is high rental sought by the building owner and the availability/cost of high bandwidth last mile connectivity from the hotspot to the Wi-Fi controller.

Q16. What are other spectrum bands which can be unlicensed for usage of Wi-Fi technology or any other technology for provision of broadband?

Response:

- Current de-licensing in India is different from ITU T & Worldwide norms in ISM bands; we should align ourselves with ISM Bands. In 5.8 GHz band only 50 MHz have been de-licensed vs 120 MHz available in all other countries. This will bring in economies of scale.

- Commercially available Wi-Fi systems are operational using 2.4 GHz UHF and 5 GHz SHF radio waves. Spectrum assignments and operational limitations are not consistent worldwide: Australia and Europe allow for an additional two channels beyond those permitted in the US for the 2.4 GHz band, while Japan has one more on top of that.

- The current 'fastest' norm, 802.11n, uses double the radio spectrum/bandwidth (40 MHz) compared to 802.11a or 802.11g (20 MHz). This means there can be only one 802.11n network on the 2.4 GHz band at a given location, without interference to/from other WLAN traffic. 802.11n can also be set to use 20 MHz bandwidth only to prevent interference in dense community. Many newer consumer devices support the latest 802.11ac standard, which uses the 5 GHz band and is capable of multi-station WLAN throughput of at least 1 gigabit per second.

- Given the paucity of available fiber in the country and the high cost and time to deploy the optical fiber it is required that existing de-licensed band of 5.825 to 5.875 GHz be deployed as backhaul for Wi-Fi zones by increasing its maximum EIRP from present 36 dBm to 55 dBm.

Q17. How much spectrum will be required in the immediate future and in the long term to meet the target of broadband penetration? What initiatives are required to make available the required spectrum?

Response:

The average allocation of spectrum per service provider is of the order of 10 to 13 MHz per LSA. As per present growth pattern each service provider would mandatorily require 25MHz per LSA over the next 3 years and around 50MHz per service provider per LSA would be required over the next 5 to 6 years. The table below depicts the spectrum indentified for mobile applications and the corresponding allocations.

Band	Total Spectrum (in MHz)	Spectrum Allocated (in MHz)
700	660	-
800	321	256.25

900	667	483
1800	1053	948.85
2100	685	465
2300	880	880
Total	**4266**	**3033.1**

There is an immediate need to get all present and future IMT bands cleared from all government agencies and harmonize all current commercial assignments so that each operator gets large chunks of contiguous blocks of spectrum. There is also a need to define the roadmap, including quantum, broad timelines for availability and tentative auction time for all the bands of spectrum to be used for mobile broadband. This should be the prerequisite for any auction in the Telecom sector. It is suggested that TRAI vide its response dated 12 May 2012 to back reference received from DoT on its recommendation of 23 April 2013, had recommended for creation of a **spectrum fund** where a part of the auction proceeds are parked and used for refarming / reallocation. We recommend that such mechanisms should be re-emphasised by Authority for compensating Govt users and making additional spectrum available in future.

Q18. Are there any other spectrum bands apart from the ones mentioned in Chapter-2 to be identified for provision of wireless broadband services?

Response:

It has already been specified by us in response to Q 17 that the immediate need for the industry to allocate the bands completely in which the industry is operating at present.

However, in order to meet the requirements of mobile broadband in the country, the following bands should be allocated in the near future:

a. **470-698 MHz** – This band is already having a co-primary allocation to the mobile service in the Asia Pacific region. This band is essential to provide widespread mobile broadband access, especially inside buildings and in rural areas.

b. **1427-1518 MHz** – This band provides an opportunity to identify a harmonized mobile broadband identification to meet medium term mobile broadband requirements for additional capacity and coverage.

c. **3400-3600 MHz** – This band has already been identified for IMT in India as well as by few other major countries in the Asia Pacific region This is a good spectrum for areas of high population density.

Q19. What are the measures required to encourage Government agencies to surrender spectrum occupied by them in IMT bands?

Response:

- A large portion of globally identified IMT spectrum bands are occupied by the government agencies in India due to which issues of lesser availability of spectrum for mobile broadband usage and fragmentation arise.

- It is extremely important that these spectrum bands are vacated by the government users and are auctioned for mobile broadband usage. The sooner this is done the more efficiency and effectiveness it will bring along. It is seen that in North America, due to early launch of 4G services (in 2010) mobile subscribers in the North American region are taking advantage of the latest mobile technologies and innovations at lower retail rates than other comparable global markets. The North American mobile operators have been able to grow revenue at a time when mobile revenue in Europe and other developed markets has been in decline. This is evident from a GSMA report available at http://northamerica.gsmamobileeconomy.com/.

- For vacation of spectrum by government agencies from the IMT bands, first of all the Government needs to set a realistic time bound plan for vacation. This needs to be communicated to the current government users so that they get sufficient time to make alternative arrangements in discussion with the DoT/WPC. In case these users vacate spectrum earlier than the targeted date then they should be incentivized, however, in case there is a delay from these agencies then they should be charged for this spectrum as otherwise, the Government would have earned revenues on this spectrum by auctioning it. The likely steps may be :

- Identification and allocation of alternate spectrum
- Compensate for purchase, installation & commissioning cost for alternate equipment through spectrum fund.
- Prescribe timeline for replacement and surrender of spectrum in the IMT band.
- Alternatively compensate for fibre connectivity to premises from nearest transmission hub.

Q20. What should be the time frame for auctioning the spectrum in 700 MHz band?

Response:

We feel that the roadmap for 700 MHz should be released in the next two years, starting with a study of the device eco system, followed by consultation on technical interoperability and finally the spectrum valuation and auction.

Q21. Do you agree with the demand side issues discussed in Chapter 5 and Chapter 6? How these issues can be addressed? Please also indicate any other demand side issues which are not covered in the CP.

Response:

1. In order to achieve the Broadband vision set out for India, addressing supply-side constraints are important, but demand side considerations are equally vital. Over the last decade, the experience of developing countries aspiring to bridge the digital divide has provided the learning that ***broadband availability is not the same as broadband adoption.*** If the socio-economic benefits of broadband are to be realized, then adoption needs to be actively encouraged. Adoption increase will need to factor in issues of perceived utility, availability of useful applications/ usage, connectivity, content in local language, affordability (Low CPE cost and low tariff), easy access, dependable availability of service etc.

2. The need of the hour is to endeavor to provide urban like facilities/ opportunities to villagers without actually urbanizing them. Broadband can significantly contribute to this endeavor by providing access to enormous information, employment generation, better medical facilities and business opportunities to the rural population. Presently, more than 60% broadband subscribers belongs to top ten metros / tier-I cities and more than 75% connections belongs to top 30 cities. This low broadband penetration in non- top tier areas, itself will be viewed as a market opportunity provided systematic imperatives are made to fuel demand so that Operators have demand led reasons to provide coverage rather than fulfilling an obligation. This would also mean that innovative business models will have to be encouraged so as to provide fillip for ***provision of services in a commercially sustainable manner***. The positive externality of ***an urban like ecosystem will be to help ebb the migration trend to urban areas*** which will reduce pressure on resources required for urban planning and have positive benefits for the economy.

3. Besides basic infrastructure, rural and remote areas suffer the largest deficit and cost for access to government provided services. Ability to access the government related services through ***e-governance initiatives would fuel demand*** for broadband services to access the same. Therefore there is need to hasten the action steps for the following objective and strategy recognized in NTP'12:

   a. Enable citizens to participate in and contribute to e-governance in key sectors like health, education, skill development, employment, governance, banking etc. to ensure equitable and inclusive growth".
   b. To promote synergies between roll-out of broadband and various Government programs viz e- governance, e-panchayat, MNREGA, NKN, AADHAR, low cost CPEs/ devices etc.

4. In order to achieve progress on its e-Governance initiatives, it is recommended that GoI leverages technology, harness learnings from successful e-Governance initiatives like 'E-Gram, Vishwa Gram' scheme in Gujarat and engage proactively with the people through social media for participative governance and effective public grievance redressal mechanism.

5. For encouraging the stakeholders playing vital role in mobile broadband growth, following additional measures are suggested in addition to operationalizing NTP'12 strategies:

   a. **<u>Availability of affordable devices</u>**

      i. Even though the cost of handsets has fallen significantly, the rural households may still perceive mobile handsets or access devices to be expensive.
      ii. It has been a long standing view of the industry that the bundling of handsets should be encouraged and the **receipts from sale of handsets, accessories, etc. should not be included in AGR.**
      iii. **Tax relief in terms of custom duty, import duty** should be considered in order to reduce the cost of CPE imported in the country.

   b. **<u>Availability of digital content</u>**

      i. It is essential to provide the right kind of application to the right customer. This is possible by developing applications and content that is relevant, usable and understandable by the local people.

ii. To enable this, **Government supported initiatives** would be extremely important. This should include mandating of m-governance for all Government Departments. This will help drive the demand for Broadband, thus helping the business case for operators to rollout networks and coverage.

iii. **Funding and financial support to entrepreneurs and service providers** to help them generate and maintain localized, packaged content – in various regional languages would be required.

iv. It is also important to **change the perception amongst users**, especially in rural areas that **accessing internet is only associated with computers**.

Q22. Please give your comments on any related matter, not covered above.

Response:

Creation of Spectrum Fund: We suggest that TRAI should reiterate its earlier recommendation on creation of spectrum fund as adequate supply of spectrum is the single largest ingredient towards Broadband growth. This fund would be immensely useful for the vacation of spectrum from Government users and release of this spectrum through auction for Broadband use.

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