

**Response of
Tata Communications Internet Services
Limited to the Consultation Paper
dated 10th June, 2010 on National
Broadband Plan**

CHAPTER 2: Broadband – Demand & Supply

5.1 What should be done to increase broadband demand ? (Reference Para 2.23)

Following steps needs to be taken to increase the Broadband demand :

1. Take steps for making available the local content as well as applications relevant to the local population.
2. Increase the awareness about the local content and applications and the benefits arising out of the same by use of Broadband.
3. Involve local NGOs in the awareness building programmes.
4. Provide ICT literacy to the local population for effective use of Broadband based applications and services.
5. Lower costs of devices and services by reducing taxes, duties and other levy on them.

5.2 What, according to you, will improve the perceived utility of broadband among the masses? (Reference Para 2.23).

- Government sponsored computer literacy training and awareness programmes to bring home the advantages of broadband based net services
- Greater participation of Central, State and local governments in e-governance to all citizens
- Promoting e-education and e-health services through various government initiatives.

5.3 What measures should be taken to enhance the availability of useful applications for broadband? (Reference Para 2.23)

- Promoting region-specific content applications with the help of NGOs, State, local government bodies for identification of applications; and financial support from the Government and private entrepreneurs (for content and programme development).
- Offering tax holiday for a prolonged period for application developers.
- Offering applications using local language and/or graphics base.
- Offering ready and easy access to application developers making them available ,the existing database.

5.4 How can broadband be made more consumer friendly especially to those having limited knowledge of English and computer? (Reference Para 2.23)

- Using available information for local areas with the help of NGOs, local bodies to identify local, region specific needs.

- Developing applications in local language and/or extensive use of graphics.
- Conducting training/awareness initiatives, programmes in the use of computers and intelligent terminals. Awareness and training on use of internet/BB and other ICT tools right at the schools level to engage the youth. As often quoted we have 450 million citizens in the age group of 4-14 and these in a decade will be 14-24 making a very powerful work force. It is imperative that they be exposed to the benefits of BB at this stage. The NBP needs to have pertinent recommendations for the dovetailing of the efforts of the Sarva Shiksha Abhiyan for this.
- Carrying out advertisement campaigns on regional and national radio, FM, TV channels and local and national print media.
- Enhanced use of video applications and the spoken web browser capabilities to overcome the need to know English.

5.5 Do you agree with projected broadband growth pattern and futuristic bandwidth requirements? (Reference Para 2.35)

- The future planning has to be done on the basis of requirements of large bandwidths in the Access as well as backhaul networks.

5.6 Do you agree that existing telecom infrastructure is inadequate to support broadband demand? If so what actions has to be taken to create an infrastructure capable to support futuristic broadband? (Reference Para 2.35)

- The existing telecom infrastructure is inadequate to support broadband demand.
- The current infrastructure has to be augmented through extensive deployment of both wireless and optic fibre cable based networks. The paramount need is to establish a highly competitive supply environment which is both technology and service neutral and in which reasonable cost bandwidth is available to all operators including ISPs.
- Judging by the actions taken by a large number of countries who either have successful broadband programmes or have embarked upon national initiatives to popularize and substantially increase broadband access, there is a need for direct government initiative backed by massive public funding for the development of necessary infrastructure. Funding could come partially from the USO Fund and partly directly from the national budget.
- More spectrum viz. 700 MHz band and remaining 60 MHz in 2.3 GHz band should be considered for release in a technology and service neutral manner, to support new wireless network technologies and services.

CHAPTER 3: National Broadband Network

5.7 What network topology do you perceive to support high speed broadband using evolving wireless technologies? (Reference Para 3.22)

- The network topology will necessarily use both wireline (optic fibre cable) and wireless systems (WiMax and LTE).

5.8 What actions are required to ensure optimal utilization of existing copper network used to provide wireline telephone connections? (Reference Para 3.22)

- There is substantial scope for enhancing the suitability of the existing copper network for broadband connections. Owing to the distance limitations as well as quality of existing copper network, it is necessary to extensively deploy optic fibre cables in the access network. This will effectively shorten the distance over which copper line needs to be used in the last mile besides improving the quality of the access network.
- Introducing local loop unbundling to help ISPs and other service providers to have greater access to consumer's thereby achieving greater competitive environment.

5.9 Do you see prominent role for fibre based technologies in access network in providing high speed broadband in next 5 years? What should be done to encourage such optical fibre to facilitate high speed broadband penetration? (Reference Para 3.22)

- We see prominent role both for fibre based technologies as well as wireless technologies in the Access Network for providing high speed broadband in next 5 years.
- To encourage optical fibre roll out, policy measures should be taken to ease the procedure for ROW permission including lowering the cost for the same on a uniform basis.

5.10 What changes do you perceive in existing licensing and regulatory framework to encourage Cable TV operators to upgrade their networks to provide broadband? (Reference Para 3.22)

5.11 Is non-availability of optical fibre from districts/cities to villages one of the bottlenecks for effective backhaul connectivity and impacts roll out of broadband services in rural areas? (Reference Para 3.39)

- Yes besides several other factors

5.12 If so, is there a need to create national optical fibre network extending upto villages? (Reference Para 3.39)

- Yes

5.13 In order to create National optical fibre core network extending upto villages, do you think a specialized agency can leverage on various government schemes as discussed in para B? (Reference Para 3.39)

- Yes

5.14 Among the various options discussed in Para 3.35 to 3.37, what framework do you suggest for National Fibre Agency for creating optical fibre network extending upto village level and why? (Reference Para 3.39)

- The Government could play a role in having the core network build and then unbundle to provide the same to all operators. By this shared infrastructure, individual private operator would not build parallel infrastructure.
- While the day to day operations need to be controlled by a national agency and the entire supervisory, planning and traffic has to be under the control of such an agency. The agency must have representatives from all the stake holders including Industry, the service providers and government and has to be mostly funded by the government or PPP mode.
- Agency should take the stock of all existing network by the various operators including incumbents across the country. Extra capacity available with Service Providers in different states/region shall be parked with Neutral Agency which should be made available to all the Service Providers on fair and equitable basis even to their own companies which have provided their spare capacity to the Agency. Agency should also be tasked with the modernization of such capacities for unleashing the potential.

5.15 What precautions should be taken while planning and executing such optical fibre network extending upto villages so that such networks can be used as national resource in future? What is suitable time frame to rollout such project? (Reference Para 3.39)

- The clear cut Usage Policy of Optical Fibre Network and backhaul created by the Government should be in place to ensure that all operators can leverage this in the best possible way in ensuring to increase Broadband penetration and usage in the rural areas.

CHAPTER 4: Regulatory Challenges and Future Approach

5.16 Is there a need to define fixed and mobile broadband separately? If yes, what should be important considerations for finalizing new definitions? (Reference Para 4.18)

and

5.17 Is present broadband definition too conservative to support bandwidth intensive applications? If so, what should be the minimum speed of broadband connection? (Reference Para 4.18)

- There are two issues for consideration in the definition of broadband are the aspect of an 'always on' connectivity and the minimum speed which qualifies a connection to be regarded as a broadband connection.

- The first issue of ‘always on’ connection separate dedicated modem based connections and dialled up connections. In the past when fixed dial-up connections were the prominent mode, higher speeds of the order of 256 kbps were not feasible. Today, with predominance of wireless dial-up connections using advanced ‘edge’ and 3G and IMT technologies, the requirement of a dedicated modem based connection is not a requirement and wireless dial up connections can give excellent speeds. There is therefore no need to retain the ‘always on’ component in the broadband definition any longer.
- The second issue of minimum speed is more difficult to handle. Fixed networks based on optic fibre technology are capable of speeds which can not be matched by wireless connections. In addition, in the case of wireless connections, a given BTS defines the total possible speed that can be delivered and depending on the deployed technology it can be several Mbps. However, this bandwidth is shared by a number of subscribers which because of the association of mobility, can not be controlled or restricted. The speed available to a subscriber can be a few Mbps or less than 256 kbps. What services or applications can be supported successfully and with high quality by any network will therefore depend on the customer density in any BTS area. It is therefore possible to have separate definitions for fixed and mobile broadband.
- As for whether the definition of minimum speed should be revised upwards or not, it is evident that the minimum speed of 256 kbps does not preclude provisioning of higher speeds for services which require such higher speeds. For example, corporate networks which need more of large bandwidth applications will always seek and install connections capable of much higher speeds. Similarly, to take several large-bandwidth based applications to rural areas will require higher bandwidths but these, at least initially, can be at locations for public access and not for individual requirements. Since 256 kbps minimum speed is adequate for several common applications, there is no need to revise this value but the networks have to be planned with high bandwidth usage particularly because as the perception of utility of broadband increases, the number of much higher bandwidth connections will increase.

5.18 What specific steps do you feel will ease grant of speedy ROW permission and ensure availability of ROW at affordable cost? (Reference Para 4.30)

It is suggested that going forward all the Nation and state level authorities to be insisted for constructing suitable ducts for telecom cables during any new road constructions; road widening and improvement plans as standard practice and this infrastructure can be leased at reasonable tariffs to the Telecom operators. Such practices already exist in various countries across the globe. Considering the rapid pace of urbanization visualized and planned to be catered for in the JNURRM (Jawaharlal Nehru National Urban Renewal Mission), the TRAI recommendations on the NBP should recommend that the JNURRM specify that all future infrastructure projects in the real estate sector, roads, and related infrastructure be broadband enabled ab initio.

Enabling a standard process for site clearance, right of way management for fiber deployment across all circles: Currently every state / Town Municipality authority has its own policies for clearance for construction of passive infrastructure for BTS sites and ROW permissions including various tariffs / commercials. This needs to be streamlined and uniform process and concessional commercials to be formulated across all the circles to facilitate speedy and transparent infrastructure roll out.

The requirement for rollout of backhaul fibre networks has increased the importance of rights of way (RoW). The delay in issuing ROW approvals increases cost of project. In addition state governments are also imposing very high RoW levies which is increasing cost for laying of fibre network. Since large part of the cost of deploying fibre networks is in form of RoW there is a need to have appropriate policies in place for ensuring access to right of way at reasonable prices. The Consultation paper must propose the method of funding the RoW clearances which them selves amounts to $2 * 11,46,000 = \text{Rs } 22,92,000$ lakhs (@ Rs 2 lakh /km) only for OFC. The NBP must take into account the RoW for wireless access in addition to this cost .

The Telecom Operators have been guaranteed the Right of Way (ROW) under Section 10 of the Indian Telegraph Act, 1885 and as per the Act, the charges that can be levied for granting RoW shall be limited to the restoration charges. However, various municipalities and other State agencies have stipulated their own norms across the country for granting permission / access. State governments have started levying exorbitant charges not commensurate with restoration charges of the particular area. Such rates are often arbitrary and range from few Tens of Thousands to Rs 26 lacs per km. There is no rationality/ uniformity in charging as well as there is no uniformity across various states / municipalities and within a state.

In the absence of clear central government guidance, a number of states have begun to regulate the ROW charges as a source of revenue for the state, resulting in additional costs to the providers and, ultimately, to consumers.

We recommend that the NBP should specify a Uniform RoW policy which should be adopted and followed by all state governments. These guidelines should lay down principle for charging for RoW approval, timeline for ROW approvals. These guidelines may also advise the state governments that land conversion requirement should also be dispensed with for laying optical fibre connecting the mobile towers in the forest land.

5.19 Does the broadband sector lack competition? If so, how can competition be enhanced in broadband sector? (Reference Para 4.42)

There is no lack of competition in the Urban areas, particularly the business districts as there are number of Service Providers available and providing services in such areas. Presently, the competition is hampered by lack of infrastructure in the last mile, both wireline as well as wireless. The competition

in Broadband services is likely to grow once recently auctioned BWA and 3G spectrum comes in to operation and the Service Providers start providing services based on 3G and BWA technologies.

The competition can be enhanced further by releasing/auctioning more spectrum in 2.3 GHz band and 700 MHz band for Broadband services.

5.20 Do you think high broadband usage charge is hindrance in growth of broadband? If yes, what steps do you suggest to make it more affordable? (Reference Para 4.42)

and

5.21 Do you think simple and flat monthly broadband tariff plans will enhance broadband acceptability and usage? (Reference Para 4.42)

There are multiple simple and flat monthly broadband tariff plans available in the market. Adoption as mentioned earlier is more due to lack of availability rather than pricing

and

5.22 Should broadband tariff be regulated in view of low competition in this sector as present? (Reference Para 4.42)

There is already abundant competition in the sector with ISPs plus local cable operators plus mobile operators providing internet access services. Hence there is no additional need for regulation of broadband tariff any further.

and

5.23 What should be the basis for calculation of tariff for broadband, if it is to be regulated? (Reference Para 4.42)

As mentioned, we should not look at regulating the broadband tariffs.

5.24 How can utilization of International Internet bandwidth be made more efficient in present situation? (Reference Para 4.39 & 4.42)

Price of Internet BW in India have fallen drastically over the past 3-4 years due to intense competition. Also many ISPs and other application providers have now started providing hosting services and content delivery services with in India. Due to this many of the popular content sites are already being hosted/cached/mirrored in India in various ISPs / other application providers network. This has reduced the percentage of international traffic for the past 2-3 years. Also the international internet bandwidth cost has been a very small portion of ISP business and accounts for only 5 to 8% of the total cost for provision of broadband service.

Though the international traffic percentage pattern has reduced over the past 2-3 years but it can be further improved by creating and promoting domestic and regional language content & applications, e-governance and by creating an environment for roll out of high speed last mile broadband infrastructure to increase the Broadband penetration which will also provide platform for promoting the band width hungry applications like Video (on Demand and Live), Cloud Computing etc. Further, since there has been increase in Internet Data Centre Costs due to increase in real estate costs and power costs, Govt may consider to encourage Internet Service Providers by giving land, power at lower cost and giving tax benefits.

5.25 How can use of domestic and international internet bandwidth be segregated? Will it have direct impact on broadband affordability? If so, quantify the likely impact. (Reference Para 4.40 & 4.42)

Most of the ISPs and all major ISP are already connected in all 4 major NIXI nodes and exchanging all the domestic traffic domestically. Also these ISPs are also doing Private Peering among themselves. There is no other operational cost effective way by which the traffic can be segregated at end consumer side. Since this exchange of domestic traffic is already being done at NIXI and at Private Peering among ISPs and hence this will not have any further affect on reducing the Broadband prices or broadband affordability because most of the ISPs are already getting the domestic traffic at notional price. Also the major cost for providing the broadband connection to consumers is the cost of rolling out last mile infrastructure. The international internet bandwidth cost has been a very small portion of ISP business and accounts for only 5 to 8% of the total cost for provision of broadband service

5.26 What steps should be taken to bring down the cost of international internet bandwidth in India? (Reference Para 4.48)

And

5.27 How can competition be enhanced in the International bandwidth sector? (Reference Para 4.48)

Following are the key points to highlight the current scenario with respect to International bandwidth prices and competition in this sector:

1. Currently there are 24 ILD license holders in India. Many of them have their own ILD LIM providing them access to the International BW infrastructure not only through India ILDOs but also but also many foreign players. Hence there is already intense competition for International BW in India.
2. It has been mentioned that majority of STM-1 capacity are available at a recurring charge of USD 15,000/- per month. It is to be noted that the price of USD 15,000/- is only from PoP to PoP and does not include the last mile

access and cross-connect charges. Hence we would observe the actual price in the range of ~USD 18,000/- for end to end service.

3. Additionally the pricing for IPLC capacity in India is competitive considering the large number of players in the market who offer IPLC services . Hence the multiple providers in the market are causing the prices to be substantially discounted.
4. Further the IPLC tariff has undergone downward revision 5 times in the past 8 years indicating the prices becoming more and more competitive.
5. Comparison with the global market trends of median STM-1 pricing as per Figure 4.8 clearly indicates that Hong Kong – Tokyo at \$18,000 is higher compared to the India touching price trends observed. Further if we add local loop Prices in Singapore and take STM-1 cost from Singapore to US then it will be more than India IPLC price. Additionally Atlantic prices are below \$15,000 per month due to abundant submarine cable capacity available in the European & American continent and hence are not the right example to compare with India.
6. For the per MB price trend observed in domestic TRAI pricing slabs, the price per MB of a DS-3 is 5 times higher compared to the price per MB of a 10Gb pipe. This is less compared to what is shown as 1/100th price of DS-3 per Mb compared to a 10Gb pipe per mb. Hence again showing that the price per Mb is competitive in India.
7. It has been stated that Most of the service providers hire bandwidth in terms of STM-1 or in some cases STM-4 only due to lack of fat back bone of 10G and above. However on the contrary today we have network back bones which support multiple 10G requirements. However the ISPs still request for mostly STM-1 capacity. This is a result of less number of broadband customers. Today the problem faced for limited broadband access is the lack of ready availability & deep penetration of last mile access networks. This results in the service providers unable to serve larger number of potential broad band customers. Thus resulting in a lesser requirement for high bandwidth pipes. Hence causing an increase in per MB price due to demand of low bandwidth pipes of STM-1. Thus driving overall costs higher.

This clearly indicates that the un-bundling of last mile access is crucial for deeper penetration of broadband utilization in the country which will result in higher bandwidth consumption and lower per MB bandwidth costs. Further there is URGENT need to reduce or waive the ROW charges for last mile roll out as these have gone substantially high over the past 3-4 years and this is proving detrimental for the growth of broadband (Consumer as well as enterprise) in India.

5.28 QoS of broadband, availability of bandwidth, adherence to given contention ratio, affordability, availability and spread are some intricately linked parameters. In your opinion what should be done to ensure good quality broadband to subscribers? (Reference Para 4.59)

5.29 Do you think that bad quality of broadband connection is impacting the performance of bandwidth hungry applications and hence crippling the broadband growth? If so, please suggest remedial actions. (Reference Para 4.59)

5.30 Is there a need to define new/redefine existing quality of service parameters considering future bandwidth hungry applications, time sensitivity of applications and user expectation? What should be such parameters including their suggestive value and should such parameters be mandated? (Reference Para 4.59)

5.31 What measures do you propose to make Customer Premises Equipment affordable for common masses? Elaborate your reply giving various options.

The present regulations in respect of Quality of Service are perceived to be sufficient to provide a quality broadband service to the end consumer. It is felt that entry of 3G and BWA technology based BWA services will lead to more competition and higher quality of services.

It is recommended that a more stringent QoS norms may be considered for imposition once the growth in broadband services takes place. If need is felt, a voluntary QoS metrics should be developed in partnership with industry.

CPE cost constitutes a major entry barrier for increased demand for broadband services. One possible method to reduce these costs would be to promote the use of intelligent terminals. Given adequate demand and adequate supplies, the price of the basic CPE can be reduced.

Establish easy accessibility and affordability to internet devices like PC, laptops, net books, mobile internet devices and other BB enabled devices. This can be enabled by eliminating or minimizing tax on internet access devices, such as computers, net books, mobile internet devices, etc. Reducing the taxes and duties on these devices to 'Zero' will help affordability and hasten the pace of BB penetration and proliferation.

5.32 What measures are required to encourage development of content in Indian vernacular languages? (Reference Para 4.68)

The issue really is how to popularize the use of Internet based applications in an environment of illiteracy or non familiarity with English. Applications developed on the basis of user friendly graphics would go a long way to meet this requirement.

Use of vernacular language will help since familiarity with English in rural areas is low. Rather than only attempting transliteration based on appropriate software, encouragement to local entrepreneurs to add value to such application programmes in vernacular through fiscal incentives including local and central tax benefits will be more desirable.

5.33 Do you perceive need for any regulatory or licensing change to boost broadband penetration? (Reference Para 4.71)

and

5.34 Are there any specific competition and market related issues that are hindering growth of broadband? (Reference Para 4.71)

The Broadband density in India has not followed the same growth path as mobile services despite of the presence of over 150 ISPs and about more than 10 UASLs. One of the prime reasons for the dismal growth in the Broadband sector is that the unrestricted Internet Telephony has not been permitted to be deployed by the ISPs making the provision of Broadband services by such stand alone ISPs commercially unviable. On the policy front, unrestricted Internet Telephony should be permitted to be provided by the ISPs including interconnection to PSTN/PLMN and use of E.164 based numbering plan. Alternatively, the recent TRAI recommendations of creating a new Unified Access license category (without spectrum) need to be implemented.

Lack of spectrum for last mile access is another reason for low broadband density. It is strongly recommended that the remaining 60 MHz spectrum in 2.3 GHz band and the spectrum in the 700 MHz band should be made available for provision of BWA services.

5.35 What other fiscal/non-fiscal measures should be considered to boost broadband penetration? (Reference Para 4.71)

Fiscal Measures

We must agree on certain key attributes and objectives to be used as the basic criteria for broadband to be classified as a 'key infrastructure' in the true sense. It would be appropriate to extend the Income Tax benefits under section 80 (I) (A) to ISPs and other licensees who are authorized to provide Internet and Broadband access.

The Government of India should also recommend to all State Governments to waive sales tax on goods and services that are transacted through electronic mode (e-commerce) for the next 5 years up to limits to be prescribed by the Government. This recommendation should be then followed with legislation to ensure execution by the State Governments.

A similar recommendation or legislation should also go from the Government of India to the State Governments to waive Entertainment Tax, currently approximately 30% in certain states, levied on broadband subscriptions and entertainment services, if they are provided through a broadband or internet platform.

Broadband services should be exempted from Service Tax and AGR and proposed Unified License fee offered by any Service Providers.

USOF should be used in subsidizing CPE, Bandwidth and rural infrastructure. It should be available to all service providers capable of providing broadband services in rural areas.

Full depreciation should be allowed within first year on PC, CPE and Security / Monitoring equipment installed by Service Providers.

One PC upto Rs. 30K and/or Laptop (upto Rs. 45 K) should be exempted from the Income of the individual and self employed on the production of valid Invoice.

All corporations, whether public or private, should be allowed to give Rs. 9600 per annum allowance to employees for broadband services access at home. This allowance should be removed from taxable income for the corporation. The same facility should be extended to self-employed and individuals.

Non-fiscal measurers

Remove entry barriers faced by ISPs in providing a full bouquet of data and Internet based services including internet telephony, IPTV and all related services.

Permit sharing of Infrastructure by ISPs with other Service Providers.

Facilitate ISPs in innovating and expanding services provided by them to end users.

USO fund should be available to ISPs who wish to provide Internet/Broadband Services in the rural/semi-rural areas.

While making or amending or streamlining any policy / regulation Govt must ensure that interest of existing ISPs should not be affected.