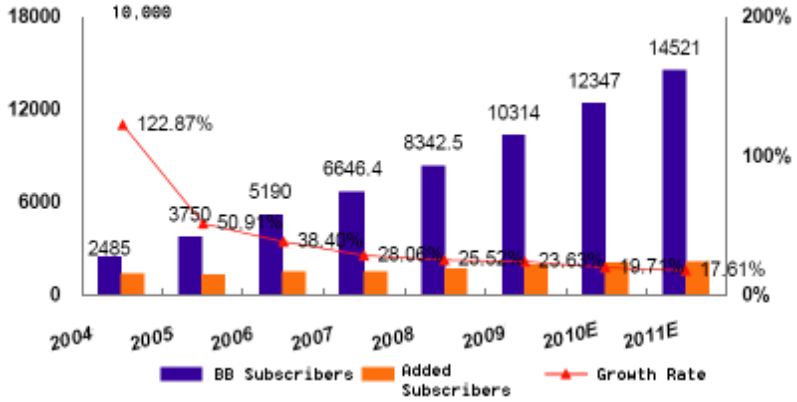
5.1 What should be done to increase broadband demand?

(Reference Para 2.23)

According to ZTE experience in various countries, broadband development shall follow the process which transforms from niche market to mass market, and the audience also transform from professional and high-end person to ordinary consumers correspondingly. This means that the broadband should reach the masses not only the classes.

For example, in China, The net broadband addition per year is 14.455 million since from 2004 to 2008, the average growth rate is 35.4□, please refer to the following figure.



The factors which will increase broadband demand are:

1. It is imperative that broadband terminal's penetration should be improved, including PC, Laptop, 3G mobile phone, Netbook, etc;

2. Broadband network coverage should be improved. Nation must have an expansive broadband network so that operators can provide broadband service as soon as customer has broadband requirement;

3. Attractive contents are very important. SP/CP should provide rich and colorful applications base on broadband network, especially the multimedia services; It is imperative that India increases the consumption of available bandwidth resources.

4. Cultivate love of broadband services in the subscribers.

From Government prospective, the following steps should be taken to increase broadband demand:

1) Increase the PC and mobile terminal literacy rate:

According to IAMAI I-Cube 2009-2010, total PC literate population was 95 million in September 2009, accounting for 11.6% of total population (age>12) and 35% of total urban population(age>12). The lower PC literacy rate limits people's demand of broadband and hinders them to get acquainted to 3rd screen (Mobile, smart phones). Government should increase the PC and mobile terminal literacy by promoting the know-how via education, society activities etc.

b) Introduce government promotions to increase the awareness of the potential value of using broadband.

2) Encourage innovation with Financial Support

a) Encourage operators to combine broadband applications with people's life in India. For example, invest in e-health and e-learning in the rural area; subsidize the delivery of information to rural industry. Encourage operators to deploy Internet-center in village and provide proper training to local staff. Subsidize the bundled voice and data service in rural area.

b) Refine the terminal design or production to lower the terminal's price, say, PC or notebook or cell phone

c) Enhance income per capita and consider a proper TAX scheme for broadband providers to encourage competition and innovation. Ensure a Good return of investment for deploying infrastructure in rural areas.

d) Forge a healthy value chain to encourage innovation such as cultivate and encourage small companies for broadband applications development and new business innovation.

e) Deploy related auxiliary infrastructure for broadband (e.g. power, road etc)

3) Select proper technique and business mode suitable for India

a) Consider to leverage government asset for providing convergence (e.g. Encourage Triple-play services)

b) Bundling the broadband applications with the other popular services, say, Mobile TV or IP telephone etc., which fits Indian culture well

c) Encourage Business Services which demand high speed network

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

1. Reduce the charges of broadband service. High charges for broadband restricts the use of Internet/ Broadband even if one has capable device and appropriate access;
2. Improve broadband penetration, cultivate love for broadband services amongst the subscribers so as to improve the perceived utility of broadband among the masses;
3. Provide abundant broadband services, especially the applications which are closely related to masses;
4. Increase the quantity of public broadband service spot, such as Cyber Café, Net Bar, etc to expand broadband influence;
5. Provide bundling package service (Fixed voice service, Mobile service, broadband service) to subscribers;
6. Unified service, unified billing is telecom industry trend which require operators transfer to full service operation.

Summary

1) Encourage innovation on broadband to make more convenience of people's daily life:

e.g. government subsidized e-banking, online law consultancy, remote health care and remote education.

2) Push the adoption of broadband in public sectors:

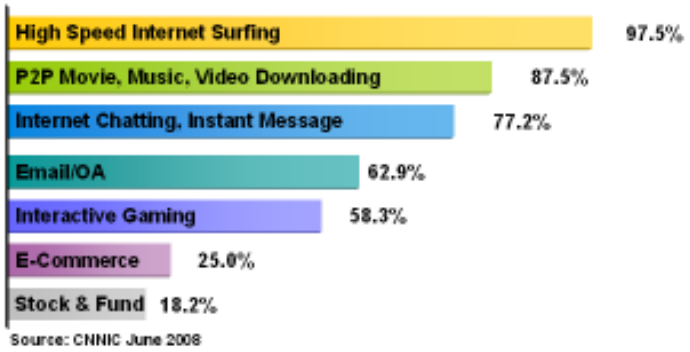
e.g. hazard control, rail way, police, first aid, etc.

3 Improve the broadband utilization in Government operation (e.g. e-government)

4) Proper promotion such as selecting celebrity as the ambassador of national promotion or subsidize the PC or laptop sales in rural or sub urban areas.

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

The major applications for broadband are shown in the following figure:



So the following measures should be taken to enhance the availability of useful applications for broadband:

1. Provide the popular content in local language, include high speed internet surfing, P2P applications, interactive gaming, e-commerce and so on;

2. e-Governance, e-Health, e-Education, e-Commerce are important for masses;

3. Online banking, online e-tickets;

4. Entertainment, communication.

We believe to stimulate user generated content through attractive business model (e.g. revenue sharing model, like i-mode and app store) will help for forging a healthy value chain and encourage the innovation. The following measures may be taken into consideration:

1) Encourage CPs to create more applications via encouragement policy including lowering the tax or government awards (refer to the regulation in Japan)

2) Establish one or more government funded award(s) for application innovations

3) Encourage manufacture or import various types of broadband devices

with proper policy (e.g. taxes).

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

1. Provide the popular content in local language;
2. Provide more multimedia services which have less limitation in language, such as IPTV, Video Conference, Visual Communication, Surveillance and so on.
3. Encourage the development of local websites: encourage the creations based on the local culture
4. Encourage the design of terminal with touch screen or voice control, and thus to ease the operation of handsets
5. Encourage CPs/SPs to development the applications with local languages and the content familiar to the masses
6. Provide pre-installed applications and self-adaptable configuration

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

We agree with projected broadband growth pattern and futuristic bandwidth requirement. The projected broadband pattern and futuristic bandwidth requirement is consistent with the projections from OVUM 2009 (The current broadband penetration is 8.75% and YOY growth rate is 41% and thus it makes sense for the future coverage 5%, 20% and 40% in 2010, 2012 and 2014; Per the bandwidth requirement forecast, the assumptions and calculations are also in line with the ones in OVUM report.

At the same time, the demand for communication services is growing fast from the past few years. In addition to the traditional narrowband services such as POTS, ISDN and DDN, the demand for broadband data services is soaring. More and more users have started to transfer their attention to the broadband-based new services such as 3D network games, remote-education, video-conference, video-phone, VOD, HDTV/SDTV and IPTV; such Value-Added Services (VAS) will become revenue growth points of the operators and the approaches for the operator to attract users, providing differentiated services and increasing service revenue.

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)

Yes. India is ranked very low in IDI sub-indices, out of 154 countries. The existing telecom infrastructure is inadequate to support broadband demand.

Sub-Index	Rank of India
IDI Access	129
IDI Use	106
IDI Skill	118

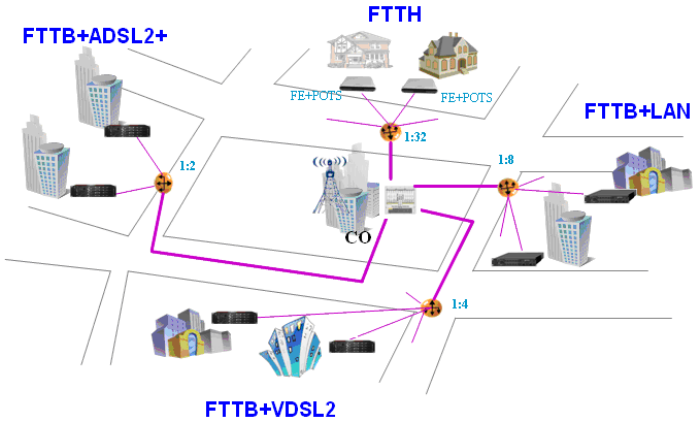
Actions:

1. Improve DSL utilization rate: So far just 21.45% of wireline connections are having DSL broadband activated. There is a need to enhance utilization of existing wireline infrastructure for providing broadband services;

2. Roll out FTTx: The xPON technology based on ITUT G.984 is widely accepted as an ideal solution for last mile access technology. It has following features,

- **Wide coverage, high bandwidth, high efficiency;**
- **WDM transmission and P2MP networking;**
- **Carrier-grade standard and architecture for voice, data, video services;**
- **Low power consumption feature solely owned by ODN, no noise and no electromagnetic emission, eco friendly system.**
- **High reliability and highly compatible with environment;**

With the xPON technology, the commercial market and industrial chain would become more mature, presenting big potential of increasing ARPU and reducing CAPEX/OPEX, xPON has became the main streaming solution for fiber access network.



We agree that existing telecom infrastructure is inadequate to support broadband demand. The bandwidth needed for various applications are calling for the speed much higher than 256kbps. Considering the family bandwidth requirement, the current infrastructure could not span from 256kbps to 3Mbps. As per the projected penetration speed (5% to 20% to 40% of households every two years make the new infrastructure vital)

The following actions have to be taken to create an infrastructure capable to support futuristic broadband:
[1] Government takes the national telecommunication infrastructure initiatives. A state-owned infrastructure company could be considered.
[2] The introduction of a few vendors (e.g. incumbents or leading operators) to co-invest in infrastructure such as fiber and cable and thus leverage capacity;
[3] MVNO spectrum band sharing;
[4] Proper regulation for infrastructure sharing

5.7 What network topology do you perceive to support high speed broadband using evolving wireless technologies? (Reference Para 3.22)
Response: No comment

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

Response:

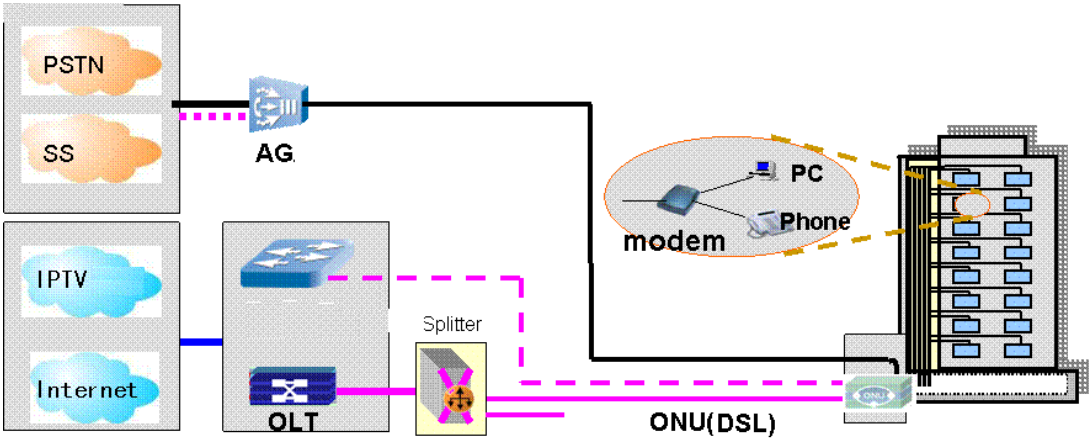
Telcos face the following challenges:

- How to efficiently make use of the existing resource, Including cable, power supply, etc
- How to optimally meet various user requirements and some special requirement based on location and culture.
- How to make sure that the installed device has long-term evolution capability. Hence a better ROI and low TCO.
- How to have efficient and easy O&M in addition to faster roll outs.

Base on fiber's technology advantage and existing resource with lots of twisted-pair cables, FTTB+DSL ensure optimal utilization of existing copper network used to provide wireline telephone connections.

FTTB+DSL is the main solution for fiber to the end users. In this case FTTB+Mini DSLAM is adopted to provide VDSL2/ADSL2+/SHDSL interfaces to the subscriber, using the existing twisted-pair, and is very useful if there is only existing twisted-pair in the network. The distance from subscriber to the

ONU is generally from 300 to 1500 meters. Capacity of single ONU is bigger than the ONU in FTTB+LAN, and covers more users. ONU can be placed in the equipment room, basement or weak-current well in the building, or in the outdoor cross-connection cabinet. For high buildings, there may be distribution box /cabinet in certain layer for convenient engineering.



China Telecom made great success during last two year to achieve 20 million broadband subscribers by FTTB+DSL solution, which utilize legacy copper network rapid deployment and low CAPEX compared with FTTH.

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 Para3.22)

Response:

DSL still dominates the broadband world market. DSL accounts for 65% of BB market share and subscriber bases amount to 295 million, quarterly growth is 3.33% in Q3 2009.

FTTx presents robust growth more than the other technologies with the quarterly growth highest among the three major technologies at 4.77%. FTTx robust growth reflects a strong demand for more bandwidth for multi-play services. We believe that FTTx is future of wireline broadband for its low power consumption and high bandwidth. Compared with wireless broadband, FTTx has more advantages.

There are three major driving points for FTTx development, one is service requirement.

Bandwith Requirement	
Downstream	**2010:20M**
	IPTV:1 HDTV 6-10M, 2 SDTV 4£ 6M
	Video Communication:1-2M
	Web Service:2M
	Gaming on line:300k-800k
	2 VOIP:200k
Downstream	**2015:50M-100M**
	IPTV:1HDTV 6£ -10M£ »2 SDTV 4£ 6M
	Video Communication:1-2M
	Web Service:2M
	Gaming on line:300k-800k
	2 VOIP:200k
	1 HDTV(0) 60M
	Source:CTC

Figure 1, bandwidth requirement

You can see from figure 1, that in 2010, 20 Megabit would meet most of family entertainment applications, but in year 2015, if the HDTV is widely deployed, especially the digital theater channel is advent, the bandwidth requirement would be in tunes of more than 50 megabit. In USA, analog television is losing popularity whereas SDTV and HDTV are gaining. With the development of IPTV, bandwidth demand is increasing rapidly as well.

The second driving power is competition, with the convergence of network, broadband service can be supplied by not only telecom operators, but also by the cable operators. FTTH is good strategy to attract subscribers.

The third driving force is investment requirement from government. As we know, the financial crisis that occurred in 2008 depressed the global economy. In order to boost the economy, many governments from Europe to North America plan to invest lots of money to stimulate every industry, including telecom industry.

Country	Capital investment Million $
America	7,200
Germany	227
Ireland	326
Canada	183/3 years
Portugal	1,000
South Korea	938
Finland	102
Australia	300,000/8 years
Greece	900
Singapore	700
Malaysia	2,200
Chile	54
Source: IIAI	

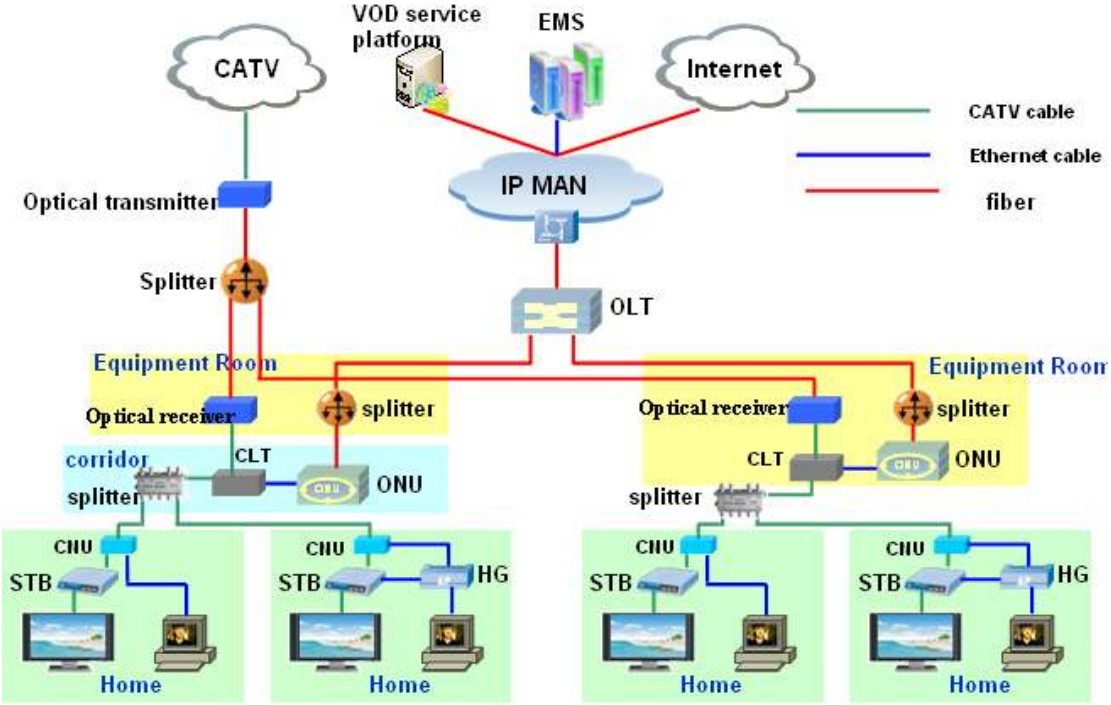
Figure 2, Government investment

From the table above we can see that the Obama government has already laid out plans to invest more than 7 thousand million US dollars in America national broadband project. Singapore and Australia have also planned to build a national wide NGN (Next Generation Network) network based on xPON access network which is open for any ISPs to access, this can avoid overlapping investment and is also good for competition. Government investment is a great momentum for FTTH. About one-third Telecom operators in developed countries have already chosen one-shot move to FTTH. Many western countries are aware of the development of high broadband penetration which is crucial for economic revival.

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 Para3.22)

Response: In existing licensing and regulatory framework, telecom operators cooperating with CATV suppliers may be a good business model. Telecom operators could provide xPON network infrastructure and use the Cable TV last mile access network to give customer broadband service. PON+EOC (Ethernet over cable) can be a good solution for this scenario which would utilize the cable home network, which currently is facing a fierce competition from the DTH. The following figure shows how it works.

PON+EOC



- **Provide the benefits of FTTx while maintaining the existing HFC back office system**
- **A union of HFC systems and the powerful potential of an all-fiber network**

- **Telecom and Cable operator bundle together to promote business development.**

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)

Response: According to the experience in many countries, broadband network will become more and more important in the future. With the rapid development of user services including IPTV, 3G, triple-play and so on, the transmission network will face the great challenges to transport in both cities and villages. Based on optical fibre, you can create SDH/PTN/WDM transmission network system, which are very suitable to bear large capacity service data and it is really easy to upgrade such networks.
In order to bear the multi-service more effectively and make the whole network manageable and scalable, we suggest building an IP/MPLS Backbone to transfer the traffic from different service areas. Also, to protect the legacy devices and make full use of the metro network we can deploy NGN for the voice service.

5.12 If so, is there a need to create national optical fibre network extending upto villages? (Reference Para 3.39)
Response: Yes, in our opinion, we strongly suggest this. On one hand, at present, 2G users are rising rapidly, which will need more and more transmission broadband capacity; on the other hand, with 3G being launched, many new high broadband services will be used, which also need optical fibre network to transport data. So it is a good idea to extend optical fibre network all over the country.

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)
Response: Yes, we think so.

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)
Response: We suggest that an autonomous national level agency should be set up, which can manage and coordinate project on mission mode as well as subsequently administer the optical fibre network. Because of the national transmission network being planned uniformly, it can help us save TCO and reduce society resources.

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? (ReferencePara 3.39)

Response:

The following precautions should be taken:

1) **Reasonable planning of optical fibre network.**
2) **Design hierarchical transmission network system.**
3) **Setup scalable and extendible network.**
4) **Use long distance transport technology to create optical network.**

For different network layer, you can choose different time to construct network. Today is a good time because of 3G becoming more and more fashionable. The earlier you setup, the more you get from it. The optical transmission network is just like building roads, which is the basis of everything. All Services can be mounted on it.

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)

Response:

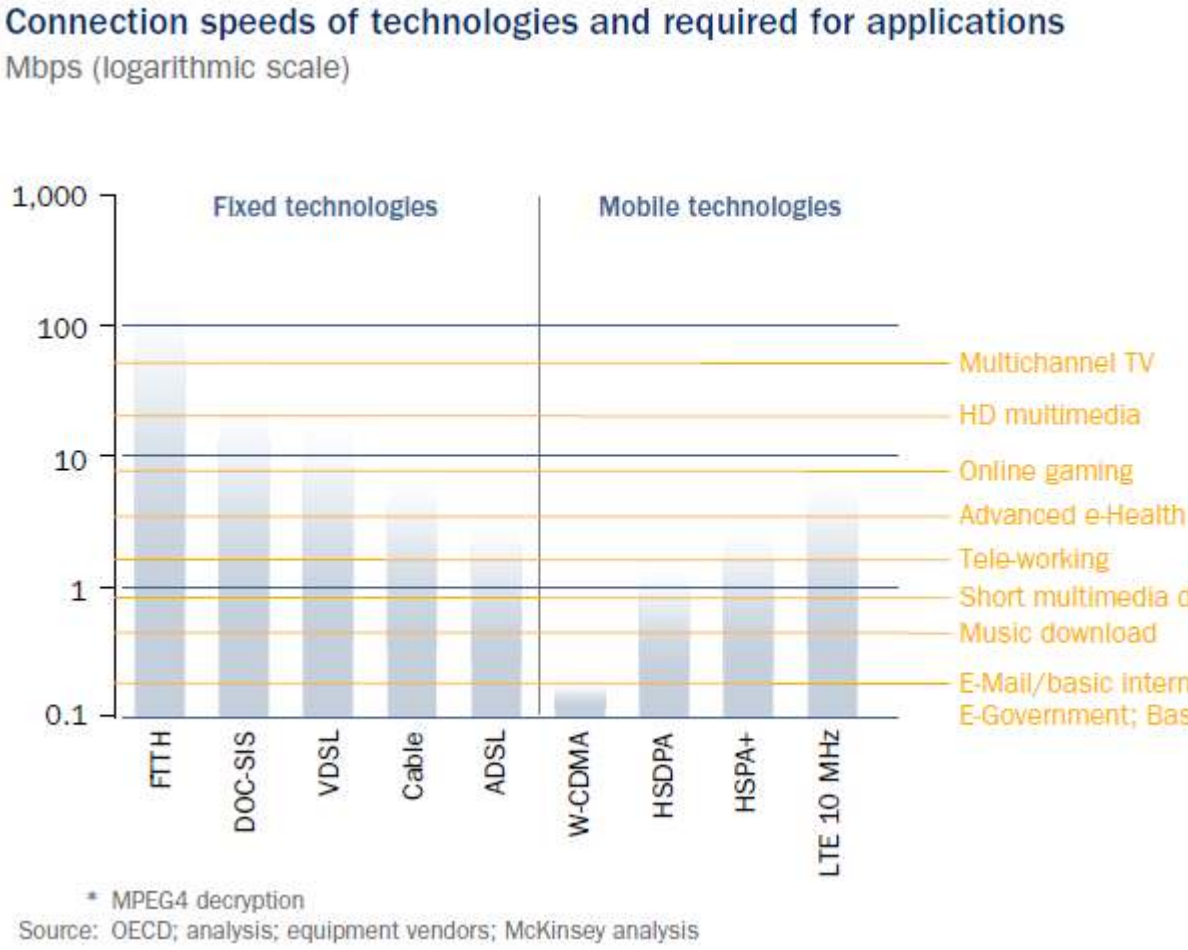
Yes. It's necessary when considering the limitations of mobile environment. Mobile and fixed broadband are accessed under different scenarios and thus have different characteristics and user behaviors. For example, it is not cost-effective to deploy copper wire in rural areas and the bandwidth requirement varies from lower income areas to higher income areas. As per the gap of the speed of wire line broadband and wireless broadband might be 50 times, the speed and the technology used might be important consideration for finalizing the new definition.

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)

Response:

It's conservative to define >256Kps as broadband bandwidth.

Multimedia services are becoming popular in India as well as worldwide. In order to provide affordable multimedia services with sustainable downloading time, the 1M seems to be a realistic requirement. As depicted in the diagram below, 1M should be available for short multi-media downloading



The present broadband definition is too conservative to support bandwidth intensive applications such as tele-medicine, video streaming, video gaming etc. The minimum speed of broadband connection should be 2Mbps per subscriber considering wireless networks (also compared with other countries).

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)
Response:
Central government should take Broadband as potential economy booster, if permitted, central government can build underground duct along with railway/road/ designed for telecom utilities, ducts can be shared by all operators in order to avoid repeated investment in duct channels. As telecom vendor, we don't have too much advice.
The following specific steps will ease grant of speedy ROW:
[1] Lower and unify the ROW charges
[2] Limit the numbers of ROW agencies with strict regulation.
[3] Transform ROW agencies to an organization with the ability of constructing/digging to let them earn revenue from construction other

than ROW charge.

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

Yes. Due to limitation of laying fiber to end users and monopolized copper resource, private operators can't churn the market heavily. Based on practical situation, the TRAI can encourage new entrants with various access technologies and encourage cooperation among organizations like ISP+Local cable operator.

Currently the deployment of fiber network is mainly restricted by civil work. Like digging and laying. These restrictions should be further loosened.

Even though there are a lot of ISPs, two of them are dominant in market share. So the competition is not that sufficient.

The following initiatives could be taken into consideration to encourage competition:

1. Anti-monopoly, establish the order of fair play, encourage the management of major operators,
2. Open access
3. The separation of services and network infrastructure, encourage VNOs (Virtual Network Operators)
4. Local loop unbundled to lower the threshold of market access and thus to enhance competition (refer to Europe)
5. Technology options should be welcomed to encourage various technology used in the same spectrum band.
6. Network infrastructure sharing
7. New businesses permit (refer to Indian 2008 IPTV)

To implement the above, the premises are:

[1] Government should act as an independent, fund-sufficient institute to supervise the market activities

[2] Encourage operators to separate the infrastructure and 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)

Response:

High service charge damages the health of broadband market, indirectly impact the potential growth of overall economy. Normally, there are two ways to decrease the negative impact, one way is to introduce more

competition in the broadband industry, another way is that regulator sets up tariff ceiling. It's intuitive that increasing competition is good way to resolve the problem.

The following could be considered so as to improve affordability:

[1] Lower the spectrum cost, the cost of spectrum band is estimated more than 80% of total CAPEX in the initial stage. License holders will also pay to their license fee as well as spectrum usage fee in India. Government could consider lower the percentage of AGR paid by operators

[2] Consider provide lower power charge for broadband operation.

[3] Increasing spectrum provision: improve the spectrum efficiency by spectrum refarming or optimizing the current spectrum

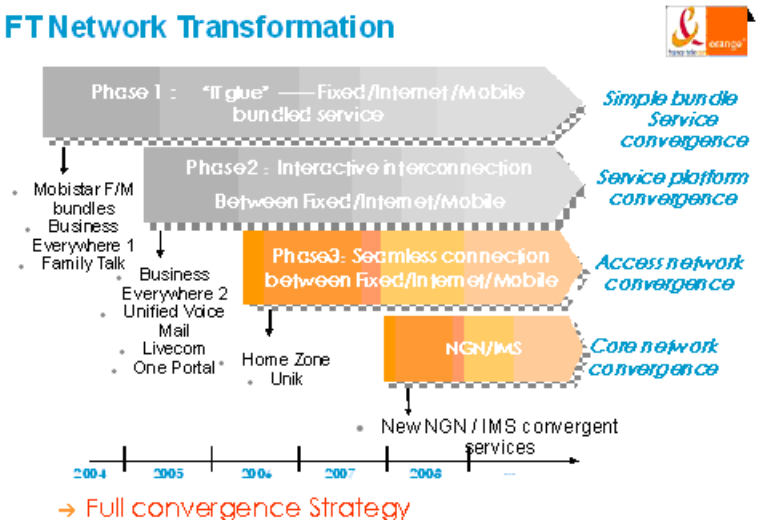
[4] Consider to reduce the SIM card sales tax

[5]Government subsidy such as provide cheap internet devices (hand set, laptop, desktop, cable TV etc) to rural areas

[6] Considering to provided licensing some spectrum with condition of offering free or much lower tariff for special groups, funded by USOF

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

Response: Flat monthly broadband tariff can stimulate more interest from customer. Most operator bundle a variety of services, in which broadband is charged by monthly tariff.



Anyway, Flat rate is simple to understand and promote, it also has the potential to become a trend in the broadband business model.

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

Response:

In essence, it's not the best way to adjust broadband economy due to the reason above. It's difficult to determine the price point which can achieve

maximal operator and customer surplus, relatively low price will damage the motivation of broadband investment. As telecom vendor, we suggest the TRAI to facilitate the "smaller" players by providing discriminated polices, the ultimate goal is to make broadband industry severely competitive. For example, low interest rate of government loan for fiber access investment, etc.

Retailing regulation should be weakened since it could enhance the free pricing in the market. On the other hand, wholesale regulation should be enhanced to make the market run in order. Because of the economies of scale, scope and density that characterize telecommunications networks, well functioning wholesale markets can help foster retail competition, as it is not economically or practically feasible for competitors to build facilities in all geographic areas.

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

Response:

Currently, BSNL and MTNL have the largest number of broadband users accounting for majority of fixed broadband users. Taking them as benchmark, the tariff can be regulated by adding reasonable margin on total average cost per broadband user. This way is operable compared with method looking for the price point of maximal operator and client surplus. As what we discussed in previous question, the regulation will damage the industry to certain extent.

The following factors would be considered:

[1] Cost of infrastructure

[2] Cost of service provision

[3] The demand of market

[4] Competition

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

Response: The reason behind the issue is that Indian internet users are expecting to have more local websites and local internet resources, TRAI also can encourage local content providers.

Caching or mirroring of frequently visited sites within service providers network can play important role in reducing international bandwidth and also enhance the user experience due to reduced latency. Meanwhile, government should encourage the contents of local language.

Encourage an open market for international connection and the infrastructure sharing.

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 4.42)

R: The conclusion of impact can be accurately drawn by broadband user survey
Government also should consider separating domestic and international internet bandwidth to lower down the international bandwidth cost but should not give different user experiences. The quantified impact of affordability may require a detailed market survey.

5.26 What steps should be taken to bring down the cost of international internet bandwidth in India? (Reference Para 4.48)
Response: The cost can be reduced by scale economy, if more users subscribe broadband service, the average cost should be reduced. TRAI can improve the broadband market so as to reduce the cost of international internet bandwidth.
Scale-up might lower the cost.
Encourage incumbents or leading operators to build up submarine fiber cables and try to share the infrastructures. Encourage more participants in the international internet broadband business market.
Increase the connectivity pipe size to lower the price per MB per year;
Introduce fat backbone, which supports connectivity of 10G or above, to the networks

5.27 How can competition be enhanced in the International bandwidth sector? (Reference Para 4.48)
Response:
Stimulate the Internet gateway market by introducing more players (e.g. private operators).
Encourage and cultivate India's own operators to deploy submarine fibers, thus to gain more bargain power and reduce the cost.

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)
QoS is a key element of customer experience. The ways to ensure good quality broadband to subscribers are:
1. From telecom infrastructure point of view, more bandwidth has to be offered to meet the increasing broadband service requirements. Refer to the foregoing actions: improve DSL utilization rate, roll out FTTx, and so on
2. From product point of view, the broadband system equipment should be "service aware", in other words, it must implement perfect QoS

mechanism to guarantee different quality for differentiated service.

3. From business point of view, enrich the broadband service content and reduce the charge, it will also strongly improve the QoE.

To conclude, the following actions might ensure good quality broadband to subscribers

[1] Introduce 'intelligent' equipment to analyze user behavior and henceforth make proper 'Policy' to allocate needed bandwidth according to policy with related QoS.

[2] Control the Peer-to-peer download to ensure the user experience

[3] Encourage the use of non-busy time

[4] Guide end-users behavior by proper tariff scheme.

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)

Yes, bad quality of broadband connection is impacting the performance of bandwidth hungry applications and hence crippling the broadband growth. We would like to suggest:

1. From telecom infrastructure point of view, more bandwidth has to be offered to meet the increasing broadband service requirements. Refer to the foregoing actions: improve DSL utilization rate, roll out FTTx and so on.

2. From product point of view, the broadband system equipment should be "service aware", in other words, it must implement perfect QoS mechanism to guarantee different quality for differentiated service.

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)

Response:

Yes. As broadband becomes more and more popular, a detailed survey/study should be conducted to define new QoS benchmarks.

5.31 What measures do you propose to make Customer Premises Equipment affordable for common masses? Elaborate your reply giving various options. (Reference Para 4.64)

1. Customized & Low cost CPE is desired for common masses. By reducing the redundant functions/components, or new design to decrease the cost, the CPE can be affordable for common masses.

2. Incentive of preferential charge. For instance, the CPE could be offered for free when the subscriber orders fixed subscription. (One year etc.).

3. Government subsidies for electronic gadgets such as handset, laptop,

desktop to rural areas (Chinese government did the same thing).
4. Encourage local manufactures and introduce attractive policy to international CPE vendors to reduce cost.
5. Cultivate open market channel to reduce the channel cost.

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

Response:

[1] Enlarge the scale of usage to attract more vendors who are willing to customize its content to local language.
[2] Considering beneficial policy for operator who provides local language services.
[3] Encourage users to create the local content.

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

Response:

Refer to European Countries,
Lower the license cost (Entry fee, Annual fee) to enhance the competition and thus to boost broadband penetration.
Continuous Technology innovation matters a lot for the broadband penetration
Technology neutralities might allow various technologies to be used in the same spectrum and this would also diversify the broadband network.
Prolong the license period.

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

Response:

More broadband operators are expected to participate in the competition. While the competitors have similar size and the competition has been completely activated, the providers will have to enhance their broadband infrastructure.
We believe the following factors will hinder the growth of broadband:
[1] Lack of spectrum resource
[2] Market monopoly
[3] Specific consumer behavior (In India, people are not get used to get info. or play games on the move. Instead they enjoy family gathering after work)

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

1. Adopt different broadband technology for different scenario:
1.1. Deploy ADSL2+/VDSL2 system in the areas which have copper resource;

1.2. Deploy FTTB/FTTH system in the areas which have fiber resource;

1.3. Deploy EoC system in the areas which have HFC cable resource;

1.4. Deploy WLAN system in urban dense and hot spot;

2. Offer customized & low cost CPE.

At the same time, the following should be considered:

[1] Raise more capital by fund such as USOF

[2] Improving the per capita income

[3]Government subsidy: infrastructure investment by government or encourage private investment, lower the tax for SP/operators