

Broadband Services for Rural India- Connectivity and Content

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Introduction

It is a now foregone conclusion that in the present information age, the spread of broadband facilities is vital to bring about the socio-economic development of a nation. Broadband enables greater access to knowledge, markets and government services for all sections of the population. This is especially critical for those population segments who are otherwise deprived of the same due to infrastructural bottlenecks such as poor roads and public transportation and also the lack of basic health, educational and administrative facilities prevailing in the rural and remote areas that they inhabit. In India, we are all acutely aware that though mobile phones are fast reaching a greater percentage of population and even rural tele-density is growing steadily¹; internet and broadband penetration is still very unsatisfactory. Rural broadband penetration would be almost negligible as of today. This situation is critical. Rural areas urgently need broadband which has the potential to bridge the urban-rural gap in access to information, markets, health, education and other essential services. Further, it has been predicted that the very low internet penetration would hamper India's global competitiveness by affecting the quality of its human resources vis-à-vis other emerging economies such as China, Korea and Indonesia.²

It is interesting to note that even a developed nation such as the USA has recognized universal broadband access as a key area to concentrate upon. Hence, a \$6 billion stimulus plan to expand high-speed internet access in rural and underserved communities forms a part of President Obama's recently announced economic revival package. The U.K Government too is debating the merits of a £6billion stimulus package aimed at roll out of superfast broadband (100 Mbps) using fibre to the home technology, which would bring U.K at par with Japan and South Korea. They reckon that roll out of digital infrastructure would be a wise decision in the information age, just as in the past, construction of critical infrastructure such as, roads, bridges and railways were appropriate anti-recession measures which yielded long-term benefits. Not many of us are perhaps aware that when it comes to broadband access, is not USA or U.K, but South Korea, Denmark, Finland, Netherlands, Sweden and Canada which lead in speed, population coverage and affordability of broadband services. The status of BB penetration in some of the leading nations is depicted below³:

Country	Average Speed (Mbps)	Average Monthly Price (\$)	Broadband subscribers/100 people
Denmark	6	34	34.3
Netherlands	5.3	39	33.5
Iceland	4.9	58	29.8
S.Korea	43.3	42	29.9
Finland	13	31	28.8
Sweden	21.4	34	28.6
France	44.2	37	22.5
Japan	93.7	34	21.3
Canada	7.8	51	25.0
USA	8.9	53	22.1

¹ Rural tele density stood at 12.7 in September 2008

² James Lamont, www.ft.com, 20.1.09

³ Hindustan Times, 5.12.07

The explanation for this lies in a proactive regulatory environment combined with healthy competition. America's relatively poor position in comparison to other developed countries is attributed to a not so competition friendly regulatory environment. Renting lines (the medium on which broadband services may be provided) to rivals was not mandated on the grounds that new firms should build their own infrastructure. . However, as has been rightly said by Taylor Reynolds an OECD analyst, innovation comes in steps; newcomers first rent space on existing networks, to build customers and income; they then create newer and better infrastructure when they need it.⁴ In France and Canada for example the regulators forced the incumbents to rent out their lines. In Canada provinces subsidized trunk lines from which smaller operators could lease capacity to provide services. In South Korea, where half the population lives in flats, each block owns its own cabling and allows rival operators to put their equipment in the basement; tenants then chose which to use. The Scandinavian countries have largely followed a model whereby a third party infrastructure provider constructs and manages broadband infrastructure to be leased to several operators on a cost oriented basis. The role of this third party is to be limited to the very basic elements of telecommunication infrastructure. It thus leaves plenty of room for competition among operators on technological solutions, applications, services etc.

Thus, even more than telephony, rural broadband represents a facility the growth of which requires a push by way of government intervention and which will not follow from the free play of market forces alone.

Efforts to Provide Broadband Services

In India, the effort towards rural ICT is being largely spearheaded by the Ministry of Communication and IT through the Department of IT (DIT) and the Department of Telecommunications (DOT) including the various schemes of the Universal Service Obligation Fund(USOF) an attached office under the DOT. India's Broadband Policy defines Broadband as "An 'always-on' data connection that is able to support interactive services including Internet access and has the capability of the minimum download speed of 256 kilo bits per second (kbps) to an individual subscriber from the Point of Presence (POP) of the service provider intending to provide Broadband service where multiple such individual Broadband connections are aggregated and the subscriber is able to access these interactive services including the Internet through this POP. The targets set by Government of India with respect to Broadband are as follows⁵:

Table 1: Broadband Targets

Year Ending	Internet subscribers	Broadband subscribers
2005	6 million	3 million
2007	18 million	9 million
2010	40 million	20 million

⁴ In India too TRAI had initially recommended that the incumbent operators who own 95% of the wire line network should un-bundle the last mile. This was not implemented. TRAI then later suggested that the incumbents should adopt a franchisee model to make the most of their assets to meet the country's broadband targets.

⁵ <http://www.trai.gov.in/broadbandpolicy.asp>

The actual position as on 30th September 2008 was as follows:

Table 4 : Actual Position of Internet/Broadband Subscribers⁶

Subscribers	As on 30 th September 2008
Internet	12.24million
Broadband	4.9 million
Wireless Internet	88.27 million

Even as on 31.12.08, the number of Broad band subscribers in the country was only 5.45 Million⁷

The DIT's CSC Scheme

The Common Services Centres (CSC) Scheme was launched in 2005-06 for providing support for establishing 100,000 Common Services Centres in 600,000 villages of India. The Scheme, as approved by the Government of India, envisions CSCs as the front-end delivery points for Government, private and social sector services to rural citizens of India, in an integrated manner. The objective is to develop a platform that can enable Government, private and social sector organizations to align their social and commercial goals for the benefit of the rural population in the remotest corners of the country through a combination of IT-based as well as non-IT-based services. The Scheme has been approved at a total cost of Rs 5742 Cr. over four years, of which the Government of India is estimated to contribute Rs 856 Cr. and the State Governments Rs 793 Cr. The balance resources would be mobilized from the private sector. The Common Services Centres are designed as ICT-enabled Kiosks having a personal computer along with basic support equipment like printer, scanner, UPS, with wireless connectivity as the backbone and additional equipment for edutainment, telemedicine, projection systems, etc, as the case may be. The scheme is to be implemented through a Public Private Partnership. (PPP). CSCs are the primary physical front-end for delivery of Government and private services to citizens. They are one of the three pillars of the core and support infrastructure of the National e-Governance Plan (NeGAP) for enabling anytime anywhere delivery of government services; the other two being (a) the State Wide Area Network (for Connectivity) and b) the State Data Centre Scheme (for secure hosting of data and applications). Up till now about 21,822 CSCs have been rolled out in 14 states. Notable progress has been made by states of Gujarat, Haryana, Jharkhand and Sikkim.

Universal Service Obligation Fund

Perhaps, less is known about the efforts of the Universal Service Obligation Fund (USOF), in this direction. India is one of the few countries which has included broadband in its definition of Universal Service Obligation. This was done by an amendment in the Indian

⁶ TRAI Performance Indicators Report,13.1.09

⁷ TRAI press release 11/2009

Telegraph Act and Rules in December 2006. The USOF is working on number of schemes under which it endeavors to bring the benefits of voice and data connectivity to the rural population. These include:

A. The Shared Mobile Infrastructure Scheme. Under this scheme about 7,500 mobile infrastructure sites are being set up across about 2 lakh villages of the country. These sites are to be shared by three service providers to provide mobile services to rural population. There is a built in provision for accommodation of a fourth, broadband services operator, who is to be decided by USOF. About 2,800 towers had been set up by December 2008. On a similar basis another 10,000 towers will be rolled out shortly by the USOF to cover another 1.5 lakh (approx) villages.

B. The Rural Broadband Scheme: Under this scheme the USOF intends to leverage on existing infrastructure to provide access to broadband services to CSCs, village schools, health centres, panchayats and individuals. The platforms for connectivity would include landline, satellite and wireless medium. An agreement has already been signed with BSNL for provision of broadband services to the villages falling in the coverage area of its approximately 28,000 rural exchanges⁸. This scheme would create a capacity to serve about 18 lakh rural customers. What is unique in this scheme is that the service provider has been assigned the task of rolling out at least one public access points or broadband kiosk from each of these exchanges. The idea is that these broadband kiosks will provide a range of e-services to the rural population, with access to locally relevant content including available content developed by NGOs, business and government agencies. For this purpose the service provider will be free to adopt a franchisee model assisted by a private agency which would act as an aggregator of content. Underlying this model is an appreciation that with the correct tie-ups, the rural broadband kiosk, providing a mix of plain vanilla internet access and specialized flavour-full 'infotainment' could surprise us with its powerful revenue potential. Similar agreements would be entered into with eligible private rural wire line service providers. Once the much awaited 3G and Broadband wireless spectrum auction takes place, USOF would be in a position to launch a similar scheme for wireless broadband in 5000 blocks. In the meanwhile at least the nation's existing rural wire line assets would be put to good use, providing public and private access to broadband facilities. Further, the lessons learnt from the wire line based rural broadband kiosks would also help the USOF refine the design of its subsidy scheme, which would be beneficial for the larger scale second phase of roll out, based on wireless technologies.

It is also proposed shortly, to provide satellite based broadband services in areas where terrestrial means of broadband access are not possible. This is envisaged to be done by supporting BSNL to upgrade its infrastructure in the locations where they have already provided USOF supported Village Public Telephones using Digital Satellite Phones. The schools, health centres, panchayats and other government institutions in these areas would reap the benefits of broadband access and kiosks would be set up for the public, wherever viable.

C. Scheme for Optical Fibre Connectivity Augmentation: A critical component of effective connectivity is a backbone capable of high speed data transmission. Many rural mobile tower sites are forced to rely on microwave backbone with its inherent limitations. Realizing that the lack of OFC backbone will hinder the growth of rural broadband, the USOF is soon to commence a scheme whereby the OFC networks between blocks and district headquarters will be provided /strengthened. The state of Assam shall be taken up first, followed by other states and U.Ts in a phased manner. The infrastructure thus created would

⁸ BSNL owns 99.5% of the country's rural wire line network

have the capacity to sustain future growth of broadband services and would be compulsory shareable with other telecom service providers at concessional rates. It is hoped that this would create a conducive environment whereby the cheaply available backbone would spur the robust growth of a variety of affordable voice and broadband based services to residential, government and business users in rural areas. This in turn would offer a tremendous boost to the socio-economic development of these areas.

Thus it can be said that the USOF through a range complementary schemes for ICT connectivity is aiming to create a multi-platform access to rural broadband services.

The Chicken and Egg Dilemma

One cannot write about rural broadband without addressing the widely prevalent viewpoint often expressed by sceptics in this regard. India's low literacy rates, multiplicity of regional languages and lack of availability of locally relevant content in regional languages has often been quoted as an insurmountable stumbling block in the uptake of broadband. However it is felt that once there is access to broadband by way of ubiquitous connectivity, the pace of necessary content development will gain momentum. One must learn from the past. Take the example of the Public Call Offices which were the forerunners of universal telephone connectivity for the masses when individual connections were prohibitive. They introduced and popularised telephony, especially long distance services, among the masses. Then came cheap wireless telephony which brought with it a host of marketing strategies, packages and applications ideally suited to shallow pockets of the urban poor and the price sensitive rural markets. Increasingly, tailor-made cell phone applications are being developed in local languages by both private entities and government agencies. The mobile applications developed for fisherman of Kerala is a much quoted example. These applications provide real time information about weather conditions, fish shoals and prices in a user friendly manner. A Harvard University economist, Robert Jensen who studied the impact of mobile telephony on these fishermen has reported that mobiles have not only eliminated the need to dump unsold fish in the sea but also helped the fishermen increase their margins by 8% while reducing the prices for consumers by 4%. His report also says that soon after mobile phone coverage improved from 1997 onwards, the number of fishermen selling their catch outside their home markets rocketed from zero to 35%. Realising the importance of commodity price availability for rural India, mobile phone companies such as Airtel and Tata Teleservices have incorporated applications that provides timely price updates. In a fiercely competitive market customer centric applications become a necessity to create and retain customers.

In a parallel movement which is steadily gaining strength, many State Government's are working on creating awareness and knowledge dissemination through cell phones. For example, farmers in Haryana are already SMSing a free Government help line for agro-related problems. This trouble shooting service gives farmers access to senior officials in agriculture department to seek their advice. All the farmers need to do is to tell their address and the problem via SMS and a telephonic response is received within two days. There is also an option to speak directly to a toll free number⁹. Similar SMS based initiatives are underway in Kerala in relation to e-Government and health services for rural areas. Thus, the tremendous potential that the cell phone offers as a means of two way communication with rural masses was realised once affordable rural cellular connectivity became a reality. Innovations such as voice SMS and video content enable even the uneducated to communicate and access information through the cell phone. Would it have been wise for the

⁹ Divya A, "Now farmers SMS their way out of a problem", The Times of India, 9.9.07

applications to be developed first before working towards universal telephony or has the growth of the latter spurred the development of the former?

It has been openly acknowledged that rural areas represent a huge latent and untapped demand for a variety of goods and services. They constitute an attractive market that business would happily tap into especially these times of recession when urban demand will slow down. Realizing that the Internet is the simplest and fastest way to engage rural customers FMCG companies are actively tapping into this option. Rural India is also the supplier of inputs to exporters of handicrafts and agri-based product firms besides retail chains. Setting up broadband kiosks in rural areas with suitable content is thus a lucrative option for many private entities. This is the business logic behind ICT's e-*Choupal* kiosks, which bring many useful services to rural areas touching the lives of 3.5 million farmers and empowering nine states. Similarly, *Aadhar* a retail venture launched by Godrej Agrovet provides end-to-end solutions, soil testing facilities, fertilizers, seed recommendations and agri-inputs to the farming community.

According to Nasscom, ITeSs-BPO industry in India employs about 15 lakh people and is expected to face a shortfall of 3.5 lakh professionals by 2010. On the other hand a recent report by OECD¹⁰ states that there are 13 crores surplus workers in rural India. In fact, it is no longer a distant dream but already a reality that after small towns BPO/KPO¹¹ businesses will move steadily into villages which offer cheaper manpower and lower attrition rates. For instance, Byrajju Foundation in Andhra Pradesh, employs 300 rural folk, (40% of them married women) in three BPO units and plans to expand its work force further¹². The Sai Seva BPO of Puttaparthi has given a new direction to young lives in the 15 km radius of Puttaparthi, Andhra Pradesh. This BPO has landed outsourcing contracts from no less than HDFC bank¹³. Rural BPOs also exist in Tamil Nadu. President Nasscom, Kiran Karnik, In a recent article has explained that rural BPO business represents the next logical step in disaggregating of complex tasks into smaller components and their outsourcing to appropriate skill centers. Thus even a high school or college drop out can do simple tasks¹⁴. The literate work force in rural India can be trained for jobs such as data entry, generating and updating databases, format conversion, proof reading etc. This movement to rural BPOs is also essential for India to retain the cost advantage that cheap labour offers. But for this scenario to take off in a big way rural broadband connectivity is an urgent necessity. Finally, when we see urban youngsters expertly hooked on to the Internet why do we ignore that fact that 70% of our demographic strength (Over half of India's population is under 25 and within a decade the working population would peak at 800 million¹⁵) lies in rural India. Given access and affordability, rural youngsters too would easily take to and benefit from access to the vast pool of knowledge available on the worldwide web.

Thus instead of pondering endlessly over the questions as to whether broadband is useful for rural Indians or whether content is to drive connectivity or vice-versa, for growth of rural broadband, we must move forward quickly. It is strongly felt that broadband connectivity assumes even greater importance in rural India due to its poor rural infrastructure (roads, health, education and administrative machinery etc), low literacy levels (61%)¹⁶ and the resulting need for reaching out to rural populations through multi-media content. A good case in point of this argument is DVAR or Direct Video Assisted Redressal,

¹⁰ Organistaion for Economic Development

¹¹ Business Process Outsourcing/Knowledge Process Outsourcing

¹² Reema Jose, Bharat buoys BPO bottom lines, Economic Times, 15.7.07

¹³ The Hindu, 20.8.07

¹⁴ Kiran Karnik, 'India Inc's Next Destination: Bharat; Economic Times, 18.12.07

¹⁵ The Hindu, Business Line, 18.12.07

¹⁶ http://en.wikipedia.org/wiki/Literacy_in_India

which is being pilot tested in Unjha, a village in north Gujarat. A small camcorder has been placed to enable villagers to communicate with experts and Government officials regarding their problems related to health, agriculture and education, that too sitting in the panchayat office pressing a green button on a small box atop a T.V set. Wireless broadband connectivity had made this possible¹⁷.

Conclusion

It is now universally accepted that broadband can help overcome infrastructural constraints which have persistently plagued rural areas such as the lack of roads, administrative machinery, schools, and health facilities. Broadband can provide access to employment opportunities, price information, markets, consumer products, health, education and government services. This in turn would offer rural Indians the opportunity to participate in the socio-political and economic development of the nation; a necessary condition for inclusive and sustainable growth. The Universal Service Obligation Fund, Department of Telecommunications and Department of IT are already in the process of formulating and implementing subsidised schemes for rural ICT connectivity. It is felt that the other essential ingredient of access to ICT i.e. content development will also be stimulated as broadband connectivity becomes increasingly ubiquitous.

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¹⁷ Economic Times, 18.8.07