Broadband Highway: Driving India’s Growth Story

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Indian telecom market

The Indian telecom industry has witnessed an unprecedented growth and has been recognized in the global arena for its contribution in the development of the country’s economy. In the last decade, the telecom sector was the third-highest FDI contributor (after services and construction), attracting INR867.2 billion in FDI in FY01–FY14. It also played a significant role in the socio-economic development of the country by connecting the masses.

Figure 1: Indian telecom market - key facts

- World’s second largest telecom market by subscribers.
- In FY12, sector revenue grew by 13.4 per cent to reach USD 64.1 billion.
- Wireless and wireline revenue increased at a CAGR of 10.4 % to USD 39.1 Bn over FY06-13.
- Data traffic powered by third-generation (3G) services grew at 146% in FY13; higher than the global average.
- Sector attracted over 4-fold growth in foreign investments at USD 1.3 billion during FY13-14.


► **Subscriber growth and teledensity**: Globally, India accounts for over 10% of total subscribers, and has the second-highest number subscribers in the world after China. The overall subscriber base in India has increased from 28.5 million in 2000 to 933 million in FY14, recording a CAGR of 28.3%. Teledensity also rose from 2.8% in 2000 to 75.2% in FY14, with the wireless segment leading this growth.

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1. Department of Industrial Policy and Promotion.
2. Telecom Regulatory Authority of India, ITU.
3. Telecom Regulatory Authority of India.
4. Ibid.
The sector is moving towards a phase of evolution and development: The telecom industry in India, as well as globally, is transforming itself - from the phase of voice-dominated growth towards a data-centric growth. Moreover, telecoms of tomorrow are headed towards the convergence of multiple communication channels, all of which are being offered through handheld devices. Operators are transforming their networks into absorbent digital platforms with the confluence of the internet, IT, social media, mobile computing and cloud services.

Internet and broadband market: India has witnessed a rapid growth in its internet subscriber base. However, till recently, the country has primarily been dependent on fixed broadband. Due to its weak wireline infrastructure, the country's overall internet penetration remained less than ~20% and broadband subscriptions stood at a mere 60.9 million at the end of FY14. Wireless broadband subscribers constituted 24.4% of total broadband subscribers in FY14.
Broadband segment a critical growth engine for India’s socio-economic development

Broadband infrastructure plays a critical role in an economy and contributes significantly to the social progress and development of a country. It connects consumers, businesses, governments; facilitates social interaction; and presents opportunities for education, governance and entrepreneurship.

► **Extensive benefits to emerging markets:** According to the World Bank’s estimates, a 10% increase in broadband penetration accelerates economic growth by 1.38% in low and middle income countries as compared to a rise of 1.21% in high-income countries.7

► **Government to boost the growth of internet:** The Government of India (GoI) has envisaged driving broadband demand by advocating provision and support of easy, affordable and reliable broadband access to the masses. The National Telecom Policy (NTP) 2012 envisages 600 million broadband subscribers by 2020.

► **Focus on 3G and 4G services:** The demand for mobile data services has been growing, and operators are investing in 3G and 4G network rollouts. 3G services have been rolled out in all licensed circles in the country, and 4G rollouts have also been initiated. The 3G subscriber base is expected to reach 96.3 million in 2015.8

► **National Optical Fibre Network (NOFN):** NOFN is the national broadband plan of the GoI to bring broadband connectivity to rural areas in the country.

**Figure 4: Internet and broadband key priority for Government and industry**

<table>
<thead>
<tr>
<th>1</th>
<th>Government target: 600 million broadband connections by 2020</th>
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<tbody>
<tr>
<td>2</td>
<td>3G expansion and 4G roll-outs</td>
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<tr>
<td>3</td>
<td>NOFN: to connect all 250,000 Gram Panchayats in the country</td>
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</tbody>
</table>

- Government target: 600 million broadband connections by 2020
  - ~520 million broadband connections at a CAGR of 29% through 2012–2020
  - 5.4 million broadband connections per month

- 3G and 4G roll-outs
  - 3G services rolled out in all licensed circles
  - 4G rollout initiated

- NOFN
  - Operators investing in expansion of 3G network and rollout of 4G
  - Estimated to cost ~INR200 billion: to be funded by USOF
  - Being implemented by utilizing existing fibers of PSUs and laying incremental fiber

Connecting and empowering the unconnected for inclusive growth

Source: EY analysis, DoT, ThomsonOne

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7 World Bank analysis.
Role of broadband in empowering the masses

Broadband is an enabling technology that provides the ability to support multiple applications such as voice, video and data applications as well as location-based and global communication services. These applications enable governments, communities and businesses to accomplish socio-economic growth. It not only increases competitiveness and productivity in the industry but also helps the economy to eliminate the social divide and achieve inclusive growth.

► As access to broadband services becomes ubiquitous and affordable, citizens and businesses in rural areas are likely to engage directly in the national economy.

► Broadband brings a number of benefits, such as opportunities for education, healthcare, banking, governance, entrepreneurship and other services. The opportunities hold a much larger promise for India’s large low-income population and a growing economy.

Figure 5: Benefits provided by broadband for rural development

Source: EY analysis

Reducing the cost of last mile access and business case viability: It is essential to incentivize private sector to provide last mile connectivity in rural areas. While the GoI is providing for the optical fiber connectivity up to the Gram Panchayat level through the NOFN project, telecom operators will need to set up their own infrastructure at the Panchayat level to provide services to the end customers. Viable business models need to be adopted in order to deploy broadband services in a commercially feasible manner.
Demand side aspects for broadband adoption

Demand side drivers for Indian broadband market: Affordability of services, availability of low cost devices and readiness of relevant local content are expected to generate significant demand. India, with its young and increasing urban population, has a tremendous potential for growth. Moreover, growth in smartphone penetration, especially in urban areas, is driving usage of internet on hand-held devices.

Factors influencing sluggish uptake of broadband in India: The mass adoption of broadband relies on several factors which need to blend for enabling a conducive ecosystem for its rollout and adoption.

Figure 6: Factors responsible for low uptake of broadband

<table>
<thead>
<tr>
<th>Awareness</th>
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<td>Restricted coverage – terrestrial land</td>
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<table>
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<tr>
<th>Challenges</th>
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<tr>
<td>Availability</td>
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<tr>
<td>Affordability</td>
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<tr>
<td>Relevance</td>
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</table>

Source: EY analysis

Demand-side stimulation

Measures to increase demand for broadband services

- On the demand side, uptake of broadband services depends on the perceived utility of these services. Measures to drive broadband adoption and increase its demand will help in making investments in this segment attractive.
- For this, the government plays an important role in promoting relevant content creation, content availability and enabling consumer support and awareness.

Government’s role in enhancing content creation and diffusion

- Help create relevant online content, such as by the use of mobile technology for payment of social grants, payments for utilities, content related to health support, agriculture and taxes information.
- Promote content diffusion by making e-government a primary tool for interaction with small and medium enterprises.
- Incentivize creation and use of local content through grant programs, digital literacy programs, facilitation of collaboration between content creators.
- Raise digital awareness and literacy through education, skills training and digital programs.
- Address security concerns by consumer education and by developing a trust-based cybersecurity community with participation of all concerned stakeholders.
- Reducing sector taxes and duties on smartphones, tablets and other equipment to reduce prices.

Source: Industry inputs
Need for a healthy broadband eco-system

While government targets for broadband are robust, only a small fraction of the country’s population has been able to reap its benefits. To improve broadband usage, India will need to address not just supply, but also demand side issues.

A healthy broadband ecosystem rests on these pillars

- Spectrum availability
- Awareness
- Government initiatives
- Infrastructure

National broadband policy: The GoI introduced its dedicated policy on broadband in 2004, recognizing the ubiquitous potential of broadband services and their contribution toward the GDP growth and improved quality of life. In 2011, the GoI approved the NOFN project, which aims to provide connectivity of 100Mbps broadband service to 2,50,000 Gram Panchayats in the country.9

Figure 7: Best practice approach for the National Broadband Policy

- Diagnose the problem
  - Understand why maintaining the status quo will not lead to desired outcomes
  - Start from evidence-based baseline, benchmarked against international peers. Next, identify the response, keeping targets achievable

- Address the supply-side and demand-side aspects
  - Supply-side: geographic and population coverage, services offered, target customers, minimum/average speed
  - Demand-side: digital literacy, service uptake and affordability

- Establish policy direction and a detailed phased implementation process
  - In accordance with the legal framework

- Extensive engagement with stakeholders — both external stakeholders and other government ministries

- Co-ordinate with various government departments, authorities and agencies for their respective relevant issues

Source: Industry inputs.

Fiber outreach and rural connectivity and the NOFN/BBNL model: Broadband penetration in India remains low in rural areas. The NOFN project was introduced with an aim to provide an impetus to rural broadband growth. The project seeks to bridge the connectivity gap between the Gram Panchayats and block levels. To achieve this, the Government has estimated a cost of about INR200 billion that is to be funded through Universal Service Obligation Fund (USOF) in a phased manner.10 ‘A special-purpose vehicle, Bharat Broadband Network Limited (BBNL), has been set up to execute the project.’

10 Ibid
NOFN: challenges and way forward:

- **Rollout and provisioning of funding by the Government:** This is bound to affect the timely implementation of the broadband project. The industry estimates that there have been delays in approving INR15 billion payouts (on account of administrative charges) for the companies tasked with handling cable laying and trenching responsibilities.\(^\text{11}\) Moreover, there is a shortfall of INR47.6 billion out of the total INR57.6 billion required to implement the first phase of NOFN in FY14.\(^\text{12}\) Such financial concerns need to be removed and timely monitoring is required to facilitate the execution process.

- **Facilitation of Right of Way (RoW) for laying cables:** In this respect, 16 states and union territories had signed tripartite agreements with the Central Government and BBNL, and were expected to provide free RoW for laying optical fiber cables. However, industry has concerns over operators facing issues in obtaining timely RoW-related clearances. Timely facilitation of RoW at reasonable costs should be made available.

- **Lack of clarity on participation of service providers:** Although the project provides for non-discriminatory access to all categories of service providers, details of their involvement or incentives provided to them on being a part of the could not be made clearer.

- **Contribution to USOF:** Indian operators are charged a fee of 5% of their adjusted gross revenue as contribution to USOF, with an aim to provide basic telecom services available to all Indians at affordable prices, especially in rural and remote areas. The USOF is also set to provide for the funding requirements of the NOFN project. Despite having one of the highest USOF corpuses in the world, India has yet to efficiently utilize it - the fund contains INR301.2 billion of unutilized accumulated funds.\(^\text{13}\) The high quantum of this levy and its suboptimal utilization is a key concern.

**Spectrum issues:** Availability of adequate and contiguous spectrum is an essential requirement in order to enable high speed-data services on wireless broadband. However, spectrum availability continues to be low in India and poses a challenge for most operators. The current quantum of spectrum is insufficient to meet broadband penetration goals as per NTP 2012 and to ensure affordability. India also lags behind its global peers in terms of its distribution of spectrum.

### Spectrum policy for enabling wireless broadband

A robust spectrum policy is essential for successful rollout of wireless broadband. Such a spectrum policy should have the following key characteristics:

- Ensure availability of suitable spectrum for broadband deployments, such as release of 700MHz spectrum; and in adequate quantities and bandwidths to deliver quality services in affordable and efficient manner.

- Follow a transparent and non-discriminatory process of spectrum assignment
  - Spectrum auction should be based on a combination of multiple metrics, such as data coverage/network rollout commitments by operators and spectrum prices.

- Enable flexibility in spectrum management by allowing spectrum trading and sharing.

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\(^{\text{13}}\) “Collection of Universal Access Levy vis-a-vis Allocation and Disbursement of Funds from USOF,” USOF, accessed 7 August 2014.
Role of private sector in enabling broadband proliferation

Transformational role of operators: Operators play a significant role in empowering the masses by provision of broadband services to the end customers. Additionally, public private partnerships (PPP) are one of the most commonly used means for financing broadband plans. Globally, PPP accounted for 48% of the total national broadband plans in 2012.\(^\text{14}\)

<table>
<thead>
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<th>Leveraging private sector investment and capabilities for broadband proliferation</th>
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<tr>
<td>In order to achieve the broadband penetration goals in a timely and efficient manner, it is essential for the government to involve the private sector and leverage their existing capabilities in the domain.</td>
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<tr>
<td>➤ Provide an enabling regulatory framework to attract and incentivize private sector investments.</td>
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<td>➤ Implement fiscal measures, such as by reducing sector-specific fees, taxes and customs duties.</td>
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<tr>
<td>➤ Restrict public funding to areas where the broadband ambitions cannot be achieved by the market on a commercial basis, such as for rural and remote areas. Government funding should not lead to crowding out private sector investment.</td>
</tr>
<tr>
<td>➤ Follow a technology neutral approach for investment options and policies, thus enabling appropriate technologies to be used by the operators as per requirement.</td>
</tr>
<tr>
<td>➤ Involve private sector in management, governance and operation of the national broadband companies in the PPP models, to capitalize on their domain expertise.</td>
</tr>
</tbody>
</table>

Source: Industry inputs

Role of fixed and wireless broadband access

The growth trend in broadband is changing, and wireless broadband is expected to drive mass adoption. Due to low capex, affordable customer premise equipment (CPE) and lesser time for rollout, wireless broadband would increase proliferation of broadband services. 3G/broadband wireless access (BWA) networks are gaining scale, and the demand for mobile data is witnessing an exponential growth. In March 2014, wireless internet subscribers formed ~92.6% of the total internet subscribers.\(^\text{15}\)

<table>
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<th>Support for wireless networks critical to achieve broadband targets</th>
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<td>Wireless networks form an essential means for propagation of broadband services, especially in the rural and remote areas where fixed infrastructure is difficult and expensive to deploy. Accordingly, sufficient support for wireless networks by way of spectrum availability, adequate funding and investments is critical.</td>
</tr>
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\(^{14}\) International Telecommunication Union

\(^{15}\) Telecom Regulatory Authority of India
**Initiatives to drive manufacturing**

For the growth of broadband, availability of equipment and access to a suitable device is as important as the connection itself.

The equipment manufacturing industry forms an integral part of the telecoms value chain. According to industry estimates, the demand for telecom equipment in India was INR769.4 billion in FY13 and is expected to reach INR1,700.9 billion by FY20.16

**Figure 8: Growth drivers of telecom equipment industry**

![Diagram showing growth drivers of telecom equipment industry](source: EY analysis)

- Growth in wireless subscribers base and potential in broadband market
- Expansion of networks in rural markets
- Government initiatives to boost local R&D and manufacturing
- Demand for IPv6 compliant telecom equipment
- Deployment of new technologies (3G, LTE, high speed Ethernet, GPON)
- Capacity expansion of legacy networks (2G wireless, fixed line, internet)

**Enabling global scale manufacturing and quality:** With the opportunity in this segment, the aim is to boost domestic manufacturing and gradually increase exports to make India a global telecom equipment manufacturing hub. In line with this, the government, under its NTP 2012 policy, envisioned to promote the ecosystem for design, R&D, intellectual property rights (IPR) creation, manufacturing, standardization and testing for domestic telecom equipment production.

**Existing initiatives to boost local manufacturing and R&D:** The GoI has undertaken various initiatives such as export promotion schemes, establishment of Telecom Equipment and Services Export Promotion Council, financial incentive schemes such as modified special incentive package scheme, establishment of special economic zones, etc. There is a need to further strengthen and regularly monitor these schemes.

**Challenges faced at multiple levels:** This includes weak ecosystem for domestic manufacturing and R&D; absence of adequate policy support; lack of policy push in form of fiscal incentives; and funding as well as high taxes and levies.

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Taxes and levies: Rationalization of taxes and duties and provision of fiscal incentives will provide a push to the local manufacturing industry. Research indicates that a one percentage point (pp) reduction in taxes on mobile broadband would result in an up to 1.8 pp increase in penetration, and up to 0.7 pp increase in GDP over five years in emerging markets.\(^\text{17}\) Specifically for wireless broadband, every dollar reduced in taxes for emerging markets, will generate GDP ranging between US$1.4 and US$12.6.\(^\text{18}\)

IPR: Additional systems for education, R&D centers and an IPR regime are required to improve competitiveness in skills and enhance innovation.

Handsets and customer-premises equipment (CPE): Consumers are increasingly opting for smartphones as they offer a compelling user experience, with access to social media, emails and the internet. Availability of low cost smartphones, adoption of 3G and BWA services, relatively low penetration of personal computers and a deficient fixed broadband network make smartphones a preferred choice for customers. Handset costs in India have come down by a considerable margin — with the average selling price of a smartphone being INR2,327 in 2013.\(^\text{19}\) With respect to CPEs, the development of the CPE model should be supported for the interoperability of broadband.

Conclusion

Broadband holds the potential of being a cultural equalizer. It is bound to enable citizens of this country to take advantage of economic opportunities and enhance their quality of life. Developments on the regulatory front, such as the special emphasis laid by NTP 2012 on boosting broadband availability and the launch of the NOFN project, are steps in the right direction to drive broadband penetration in the country. Specifically, wireless broadband services — 3G and 4G — are likely to replicate the growth of voice telephony in the growth of internet and broadband. Participation of both the GoI and industry stakeholders is critical to achieve the broadband goals of the nation.


\(^{18}\) Ibid

\(^{19}\) Indian Cellular Association
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