

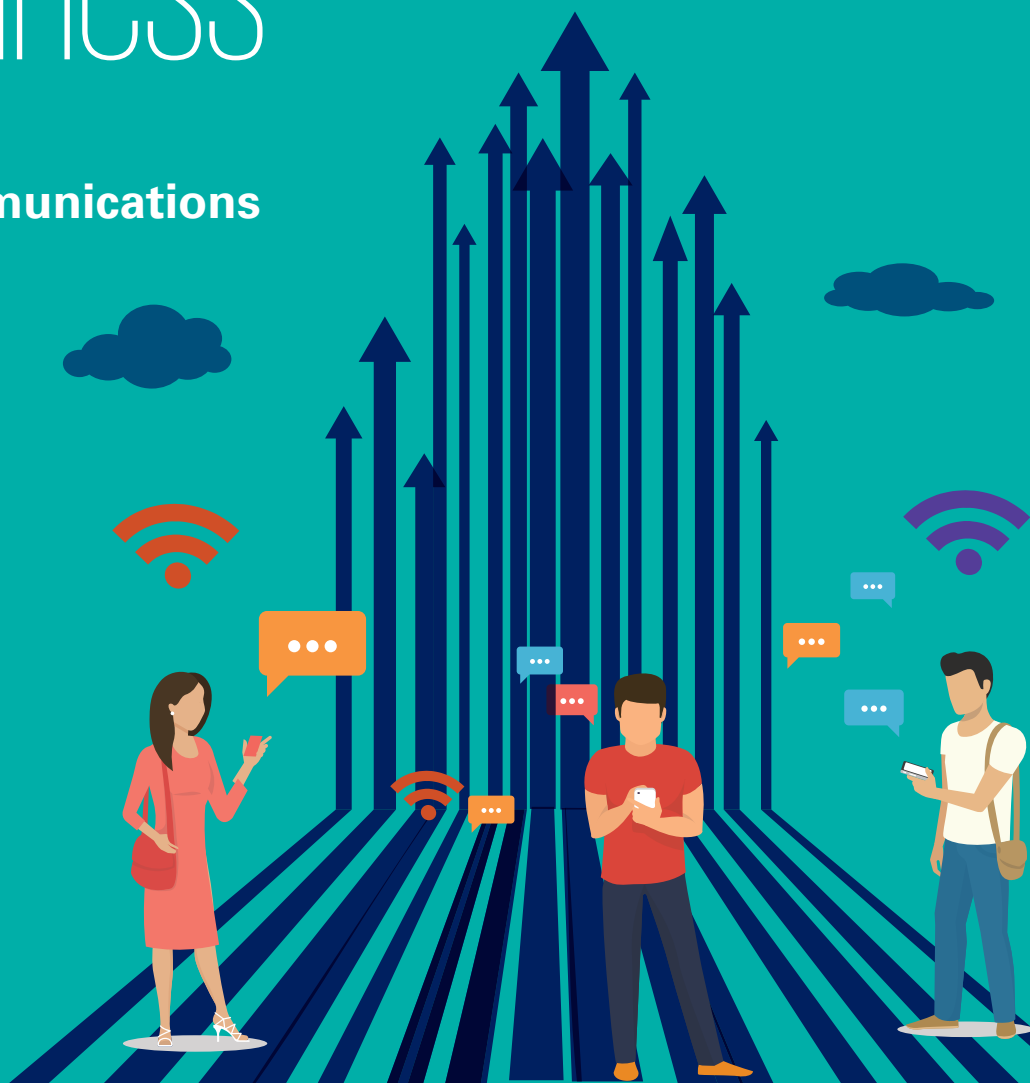


Accelerating growth and ease of doing business

Telecommunications

August 2017

KPMG.com/in



Foreword - Ministry of Communications

The achievements of the Government in the last three years have been phenomenal. The government is catering to all sections of the society, be it pro-poor schemes like “Pradhan Mantri Jan Dhan Yojana”, which is the world’s largest financial inclusion programme, Mudra Bank, Housing for all, or pro-youth as My Gov online, Make in India, Digital India, or pro-development as Smart City program, National Urban Development Mission, Skill Development etc.

“India’s digital economy is currently USD400 billion and in the coming 5-7 years, it is going to become a USD1 trillion economy.”

For business, Digital India is a USD 1 trillion business opportunity, combining the requirements of the telecoms, IT/ITeS and electronics manufacturing sectors. The government is building a robust broadband infrastructure. For digital delivery of services including e-education cable and e-health, with the rapid rollout of a country wide optical fibre cable network that will connect all gram panchayats or village blocks. Policy will be more app driven than connection-driven.

We need to think of and prepare for an ecosystem where “Internet of Things” and artificial intelligence are mainstream, and connectivity is seamless, designed to improve the quality of e-governance and education, as well as to enable financial inclusion, smart cities, and an intelligent transportation system, amongst other things.

I am happy to note that ASSOCHAM is organizing the 10th telecom India summit on 2 August 2017 with the theme “Accelerating growth and ease of doing business” which would give a holistic view by focusing on each aspects of telecom industry contributing towards the digital transformation and Digital India vision.

I wish the event great success.



Manoj Sinha

Minster of State (Independent charge) for
Communications and Minster of State for Railways,
Government of India

Foreword - Telecom Regulatory Authority of India

The Digital India programme unveiled by Hon'ble Prime Minister is an exemplary initiative to usher in an era of digital empowerment for the country. India has already begun this journey of digital transformation and is expected to become one of the leading Internet markets in the world.

Telecommunications is the backbone of 'Digital India', where future technologies like mobility, analytics, cloud, Internet of Things (IoT) and Machine to Machine (M2M) playing a key role in implementing the Digital India vision. This dovetails with its other initiatives like Smart Cities and Make in India.

The industries like consumer electronics, automotive will include mobile sensors in virtually all products. A Plethora of e-governance services across sectors like healthcare, education and banking— will see consumers using mobile technologies and Internet.

With the mobile subscriber base having crossed the billion mark, the next big opportunity is to accelerate this power in the hands of the masses to boost the country's GDP.

The high level of penetration of mobile phones, accompanied by the availability of cheaper smart phones, has provided tremendous opportunities for using mobile devices for public service delivery.

Robust telecom and broadband network will play a key role in seamless connectivity, which is the essence of true digitisation.

I convey my best wishes for the success of the ASSOCHAM 10th Telecom summit.



R.S. Sharma

IAS,

Chairman

Telecom Regulatory Authority of India

Foreword – ASSOCHAM

Mobility, Broadband, Cloud services and Internet of everything is changing the way we live and communicate. The Indian telecom sector in the last two decades has transformed lives, and many sectors of industry and economy from healthcare, education, manufacturing, financial services among others. It contributes 6.5 per cent to India's GDP (Gross Domestic Product) and is expected to contribute towards 8.2 per cent of GDP & 30 lakh direct jobs by 2020. It is at the core of the Government's Digital India vision encompassing programs like Smart Cities, Skill India, Make in India.

The Industry which embraces 4 verticals, Telecom Service providers; Infrastructure providers; Telecom equipment manufacturers and the Handset manufacturers has been instrumental in the digital transformation and has seen significant investment over the years.

There is much more coming. Technology changes and investments in 4G and beyond, connected objects, Artificial Intelligence (AI), Big data analytics, Virtual Reality (VR) that would yield benefits with Digital simplicity being introduced, demanding even higher standards of connectivity. Enhanced communication with remote health monitoring tools, connected cars, comfortable life style, real-time supply chain analytics, socio-economic benefits, time-sensitive data processing to identify potential fraud will enrich India further.

That said, there are challenges that need to be addressed to accelerate this change and unshackle constraints on the industry. Tele-density in rural India is still an issue, Broadband needs to reach many parts of our country and that requires an enabling environment for the sector to be looked at as not just a revenue generator for the government but as an economic enabler. We are confident that the government which has recognized the stress in the sector will take right steps in this direction.

The ease and cost of business is the other dimension. With multiple stakeholders in centre, state and local administration, there are issues at implementation level for all the four telecom verticals that when addressed will allow for greater inflow of investment into services, infrastructure and manufacturing.

This report aims to bring forth the support required, that would further enable the Industry to sustain, grow and contribute towards the Digital Growth. This is in continuation of the efforts at ASSOCHAM, for a collaborative approach through 'Ease of doing Business' and to start a dialogue to create inputs for the proposed National Telecom Policy 2018.



P. Balaji

Chairman,
ASSOCHAM,
National Council on Telecommunications &
Convergence
Director-Regulatory, External Affairs & CSR,
Vodafone India

Foreword – ASSOCHAM

ASSOCHAM also known as the country's "Knowledge Chamber" has always been in forefront for the promotion of the new technologies for the benefit of the Industry yet remaining technology neutral.

The Telecommunications Sector in India has grown exponentially to become the second largest network by subscribers in the world. The common man has benefited from lower prices and access to communication services. This in turn has fueled the entire ecosystem resulting in a positive impact on overall economy.

Telecom sector plays a pivotal role in the socio-economic development as there is a positive correlation between the penetration of mobile services and internet on the growth of GDP of a country. In today's world, digital inclusion is a key parameter depicting social growth, as digital access and literacy, provides the masses an opportunity to access public and private services, like never before. Digital access also opens up a plethora of content and powers the movement towards a knowledge-based economy. The key sectors such as agriculture, manufacturing, banking and financial services, public services, e-commerce, healthcare, education, advanced industries, entertainment etc. are riding on the backbone of telecommunications services.

To deliberate upon the upcoming challenges and way forward ASSOCHAM is organising the 10th Edition on its Annual TELECOM INDIA Summit.

I am also pleased to inform you that ASSOCHAM along with KPMG has brought out a comprehensive compendium of studies in this direction based on the feedback of various stakeholders.

I like to acknowledge the efforts made by ASSOCHAM & KPMG Team in making this Compendium more meaningful.



DS Rawat

Secretary General
ASSOCHAM

Foreword - Ministry of Electronics & Information Technology (MeitY)

I am pleased to note that the 10th telecom India summit is being organized by ASSOCHAM along with AUSPI, COAI, ICA and TAIPA on 2nd August 2017 at New Delhi.

The telecom industry plays an important role in making 'Digital India' vision a reality, by providing telecom services to various sectors of economy such as banking and financial services, manufacturing, agriculture and public services.

The organisers of the workshop have come out with an excellent background paper for discussion during the workshop. Emerging technologies, such as Internet of Things (IoT), 5G, and Industry 4.0 are expected to provide several challenges and opportunities for the telecom industry.

I congratulate ASSOCHAM and other organizations involved in organizing the workshop and extend my best wishes to the participants.



Ajay Sawhney

IAS,
Secretary, Ministry of Electronics & Information
Technology (MeitY),
Government of India



Foreword – KPMG in India

In association with the Associated Chambers of Commerce and Industry of India (ASSOCHAM), KPMG in India is pleased to present the report – 'Accelerating growth and ease of doing business. Its purpose is to re-inforce the framework which incorporates the major areas of enhancement to allow seamless flow of business in the telecommunications sector.

The Indian telecommunications sector has witnessed immense growth in the last two decades and has the second largest subscriber base and internet subscribers in the world.¹ The growth of the Indian economy is closely linked to the rise of the telecommunications sector as key sectors in the economy are inextricably linked to mobile services as a fundamental requirement for business. The users have been empowered from mere passive consumers to active participants and have benefited from low tariffs, availability of affordable smart phones and an evolving Information and communications technology infrastructure.

However, in the last three years, the telecom sector has experienced significant turbulence due to disruptive pricing which have aggravated the financial stress that the sector in general was facing from high spectrum prices, already low tariffs, diminishing margins and the advent of other digital service players.

A financially viable telecom sector holds the key to attracting further investments for expansion that will propel the growth for the Indian economy. Further, digital inclusion as well as flagship government programmes like 'Digital India' are dependent on connectivity as well as on the well-being of the telecom sector. Further disruptions in the sector may ultimately impact the achievement of national goals of digitisation, job creation and the ambitious targets that have been envisioned by the government.

This report is a representation of ideas from a diverse base of stakeholders including telecommunications service and infrastructure providers, equipment manufacturers, industry associations, policy makers and thought leaders. It is aimed at presenting a consolidated view of the industry to facilitate a healthy discussion amongst the stakeholders to identify solutions and to alleviate concerns that the industry currently is facing.

We take this opportunity to express our gratitude to various members of industry and their representative associations as well as government bodies for their inputs in framing key recommendations. We would also like to thank ASSOCHAM for actively contributing to the insights and for facilitating discussions with members of industry. We hope you find this report interesting and useful in facilitating the industry in attaining the goals of a connected India.



Mritunjay Kapur
Partner and Head, Strategy
and Markets, Technology,
Media and Telecom
KPMG in India

1. Top 20 countries with the highest number of internet users dated 8 July 2017, Internetworldstats <http://www.internetworldstats.com/top20.htm> and India Figures TRAI as of July 2017, accessed on 24 July 2017



Rajan Mathews
Director General,
COAI

“The Indian telecommunications and internet sector is considered to be the second largest in the world, and potentially also the fastest growing; connecting billions, empowering citizens and powering the Digital economy, it is also most keenly watched globally. After the successful deployment of 4G, India is now poised for 5G rollout in the next couple of years, connecting things and creating the internet of people with rising data consumption and unprecedented availability of local language content. Telecom will remain the nerve centre of the Hon’ble Prime Minister’s visionary programs like “Digital India”, “Skill India” and “Make in India”, given the right policy and regulatory environment. I wish Telecom India all the very best and look forward to the deliberations an celebration of everything telecom and internet.”



Sunil Sood
MD & CEO
Vodafone India

“Telecom is at the Heart of Digital India and Universal Internet access, a must to fulfill the Government’s vision of Digital India and the ambition of a cashless economy. Mobile technology and platform with its near ubiquitous reach, will continue to remain at the forefront for driving ‘Internet for All’. We see ourselves as the catalysts and enablers of this Digital transformation for both individuals as well as enterprises.

It is important for the future of India to have a robust telecom network as India has an opportunity to power ahead of the rest of the world as a digital economy. It is important for the government to therefore nurture this industry. As one of India’s largest telecom service providers, we are committed to partnering the government and playing our due role in connecting the yet unconnected to bring all citizens of the country under the digital umbrella.”

Prominent associations in the industry

1

Cellular Operators Association of India (COAI):

COAI was constituted in 1995 as a registered, non-governmental society. COAI's vision is to establish India as the global leader of innovative mobile communications infrastructure, products and services and achieving a national tele density of 100 per cent, including broadband. The association is also dedicated to the advancement of modern communication and towards delivering the benefits of innovative and affordable mobile communication services to the people of India.

2

Association of Unified Telecom Service Providers of India (AUSPI):

Constituted in 1997, AUSPI is a registered society that works as a non-profit organisation with the aim of delivering improved access to, coverage of and tele density in India. It is the representative industry body of unified access service licensees providing CDMA and GSM mobile, fixed line and value-added services across the country.

3

Towers and Infrastructure Providers Association (TAIPA):

TAIPA is the body of infrastructure providers who service telecom operators. It plays an active role in deliberations with ministries, policy-makers, regulators, financial institutions and technical bodies for promotion and growth of telecom infrastructure and telecom services.

4

Indian Cellular Association (ICA):

ICA is the apex body of the mobile industry and includes brand-owners, technology providers, manufacturers, national distributors, applications, and solution and VAS providers. It was constituted to provide value and services to India's mobile cellular handset industry by fueling its growth and improving its competitiveness by helping to create a legal and ethical market, and regulatory environment. This is expected to result in the benefits of mobile connectivity being extended to the masses.

5

GSMA Association (GSMA):

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, Mobile World Congress Americas and the Mobile 360 Series of conferences.

Prominent contributors to this document

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Chairman, Fast Track Task Force (FTTF) and National President - Indian Cellular Association

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Director General, TAIPA

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Partner, KPMG in India

Mohit Prabhakar

Partner, KPMG in India

Rahul Hakeem

Director, KPMG in India

Context

India has one of the fastest growing telecommunications sector with over 1.1 billion connections. It is the second largest in the world while continuing to grow at a Compounded Annual Growth Rate (CAGR) of 19.6 per cent from FY'07-17¹. Driven by an exponential surge in data consumption in the recent few years, India ranks among top five countries across the world in highest internet users and is speculated to rank as the fourth largest market by the year 2020 with two out of every three mobile phones to be smart phones.²

Collaborative efforts by numerous players in the market, Telecom Services Providers (TSPs), infrastructure companies, regulatory bodies and the government have nurtured the Indian telecom market and the same is expected to cross the INR 6.6 trillion² revenue mark by the year 2020. Initiatives under the flagship 'Digital India' programme have played a pivotal role in making telecommunication a necessity for the Indian population. Also, 'Smart Cities', 5G deployment, Machine to Machine (M2M), Internet of Things (IoT) require advanced information technology and connectivity landscape. However, despite the growth numbers and an upward trajectory, significant enhancements have to be made in the IT and telecommunications ecosystems for greater efficiencies and sustained growth.

It is imperative that the government, regulators and the industry players deliberate and collaboratively devise strategies and solutions to cater to the issues at hand. In order to provide a platform for the required ideations, the Ministry of Communications and Information Technology along with ASSOCHAM and players from across the industry are organising the 10th annual telecom summit to brainstorm and discuss possible roadmaps for the near future.

This publication highlights some of the key achievements made in the telecom industry by both the public and the private sector. It presents critical challenges faced by key stakeholders – TSPs, handset manufacturers, infrastructure providers and original equipment manufacturers. It also attempts to reflect the sector's expectations from the government in order to create a healthy ecosystem both in terms of financial stability and ease of doing business.

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1. IBEF Telecommunication report – 5 March 2017; IBEF website; <https://www.ibef.org/download/Telecommunication-March-2017.pdf>; accessed on 15 July 2017
 2. IBEF Telecommunication report – June 2017; IBEF website <https://www.ibef.org/industry/telecommunications.aspx> dated June 2017 accessed on 28 July 2017



Major achievements of the telecom industry

Over 400 million internet users users³



Contributes 6.5 per cent to India's GDP⁴



Rural Tele density increased by 30 per cent over the last five years⁵

More than 3/4th of the data consumption was from 3G/4G users.⁶



FDI quadrupled in FY2016-17 recording inflow of approximately USD 5.6 billion⁷



Greater than 20 per cent tower sites now diesel free⁸



Over 280 million mobile broadband subscribers⁹



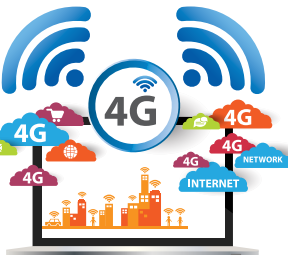
Telecom industry generates over 4 million jobs (direct and indirect)¹⁰



Optical fibre cables laid over 100,000 gram panchayats as part of BharatNet initiative¹³

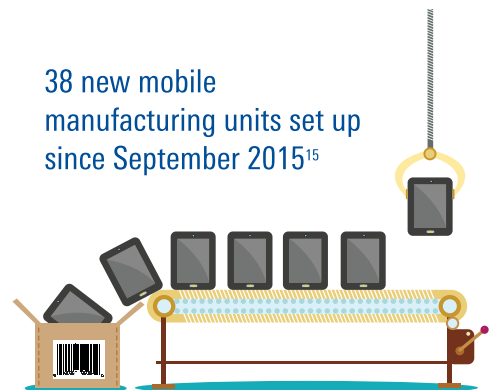


60 per cent of incremental data volume contributed by 4G in 2016¹²



LTE device ecosystem grew by 270 per cent from 2015¹¹

38 new mobile manufacturing units set up since September 2015¹⁵



30 new locations added to 'Smart City' mission in June 2017, total count reaches 90 smart cities¹⁴



165 Petabytes of data payload. 60 per cent from 4G subscribers.¹⁶



Top 20 countries with the highest number of internet users, dated 8 July 2017, Internet world Stats website, <http://www.internetworldstats.com/top20.htm>, accessed on 15 July 2017 and India Figures TRAI as of July 2017, accessed on 24 July 2017
<http://indianexpress.com/article/technology/tech-news-technology/mobile-industry-to-contribute-8-2-to-gdp-by-2020-govt-report-4394308/>
 Telecom Industry Report, dated 31 March 2017, <http://www.careratings.com/upload/NewsFiles/SplAnalysis/Telecom%20Report%20March%202017.pdf>, accessed 11 July 2017
 India Mobile Broadband Index 2017 Report, dated March 2017 <https://resources.ext.nokia.com/asset/201176>, accessed on 14 July 2017
 Hopeful of new telecom policy in 2018: Secretary Aruna Sundararajan, dated 12 July 2017, Green telecom is the next idea from TRAI, dated 17 January 2017, <http://www.telecomlead.com/telecom-services/green-telecom-next-idea-trai-73798>, accessed on 11 July 2017
 TRAI – The telecom service performance indicator report, January-March 2017, dated 5 July 2017, <http://trai.gov.in/sites/default>
 Telecom Industry in India report, dated July 2017, IBEF website, <https://www.ibef.org/industry/telecommunications.aspx>, accessed on 11 July 2017

India Mobile Broadband Index 2017 Report, dated March 2017 <https://resources.ext.nokia.com/asset/201176>, accessed on 14 July 2017
 4G Contributed 60% of Incremental Data Traffic in 2016: Nokia Survey, dated 23 March 2017, news18 website, <http://www.news18.com/news/business/4g-contributed-60-percent-of-incremental-data-traffic-in-2016-nokia-survey-1363421.html>, accessed on 27 July 2017
 BharatNet project: Only 22% gram panchayats have broadband connectivity, dated 6 July 2017, Indian Express website, <http://indianexpress.com/article/business/business-others/bharatnet-project-only-22-per-cent-gram-panchayats-have-broadband-connectivity-4737763/>, accessed on 11 July 2017
 Full list of 30 new smart cities announced by Modi government: 4 from Tamil Nadu, 3 from UP, Gujarat, dated 23 June 2017, <http://www.india.com/news/india/full-list-of-30-new-smart-cities-announced-by-modi-government-4-from-tamil-nadu-3-from-up-gujarat-2262689/>, accessed on 28 July 2017
 Cos set up 38 new mobile handset units since Sep 2015, dated 7 November 2017, http://www.business-standard.com/article/pti-stories/cos-set-up-38-new-mobile-handset-units-since-sep-2015-116110701941_1.html, accessed on 28 July 2017
 Nokia India Mobile broadband index 2017

Sector overview

The Indian telecom industry is the second largest in the world by number of subscribers.¹ The sector has witnessed exponential growth over the last few years primarily driven by affordable tariffs, wider availability, roll out of Mobile number portability (MNP), 3G and 4G, evolving consumption patterns of subscribers and a conducive regulatory environment. However, the hyper competitive nature of the Indian telecom market and introduction of disruptive tariff plans have put operator margins under pressure and resulted in consolidation via mergers and acquisitions. The telecom sector finds itself in an unenviable position where despite falling ARPU the players are forced to invest significantly in infrastructure and technology upgrades in order to maintain competitiveness. Moving up the technology curve and expanding the breadth of coverage is paramount for the industry to provide differentiated value offerings to end customers.

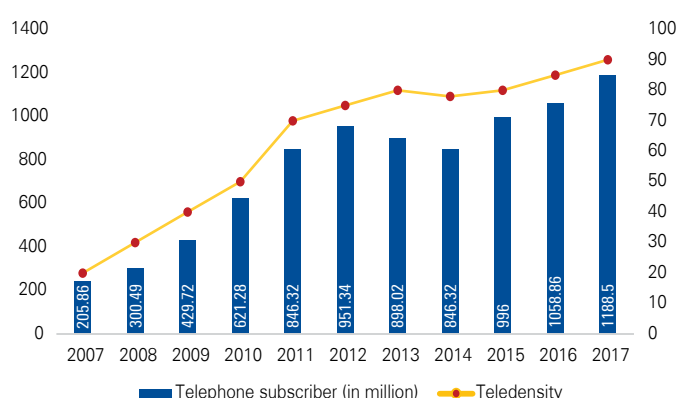
Successful realisation of the 'Digital India' vision in a cost effective manner, requires critical players in the telecom value chain to collaborate and work in a synchronous manner. Maintaining a conducive and favorable regulatory environment is also key to ensure minimum impact on the overall health of the sector – and reduce stress on TSP balance sheets.

Key trends in the sector

Continued investments and competition impacting the financial health of the sector

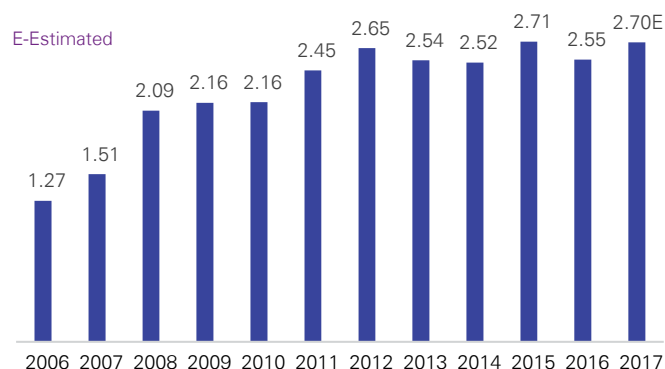
The telecom sector has grown at 19.6 per cent CAGR in terms of subscriber base and at 7.07 per cent CAGR from a revenue perspective over the last few years.²

Growth in total subscribers



Source: : Telecommunication industry presentation, IBEF, June 2017

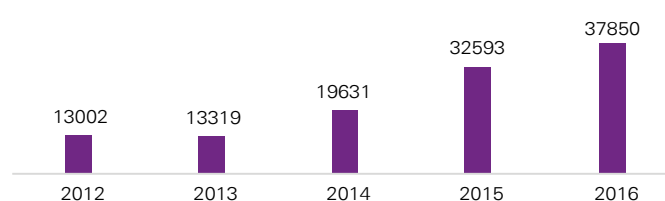
Telecom Sector Revenue (INR lakh crore)



Source: Telecommunication industry presentation, IBEF, June 2017 presentation, June 2017

TSPs have continued to invest in their networks and modernise their existing network infrastructure. Operators CAPEX investments stands at INR8500³ crore during Q1 2017 and the below figure depicts the significant CAPEX investment during the period 2012- 2016.

CAPEX (in INR crores)*



Source: GSMA Intelligence, Telecom subscription data from 2012-2016 (Top 4 incumbent operators)

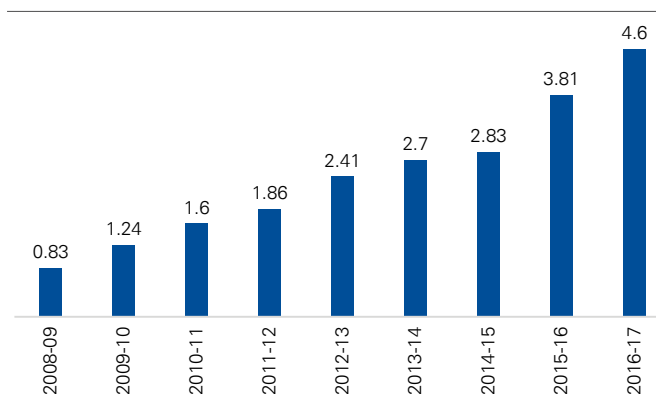
*In addition to the above, a new greenfield operator has made over INR150,000 crores of capital investments in the last five years.

Operators made these capex investments primarily to deploy new technologies like 4G and 4G-Advanced, to expand their fibre footprint and to acquire spectrum via spectrum auctions. These investments have resulted in increased borrowings for the TSPs and hence led to an increase in debt burden for the operators, resulting in highly leveraged TSP balance sheets.

1. The Mobile Economy 2017 Report, GSMA, accessed on 20 July 2017
 2. IBEF, Telecommunication industry presentation, June 2017; Accessed on 20 July 2017
 3. Telecom subscription data, GSMA Intelligence June 2017, accessed on 20 July 2017

Year-wise debt of the Telecom Industry

Debt (in INR lakh crores)

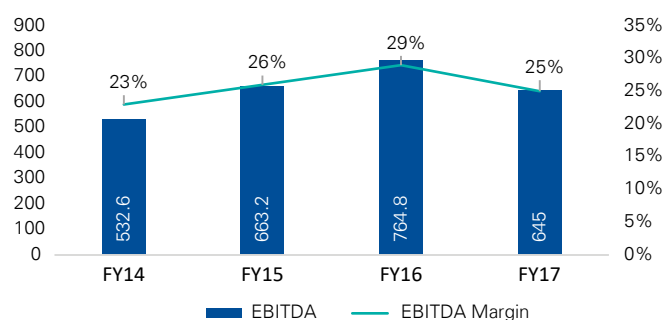


Source: COAI Internal Report on 'Financial Health of Telecom Industry'

Indian telecom sector is a highly price-sensitive market with a subscriber base that has majority prepaid subscribers with lower ARPU. Also, competition in the sector has increased thereby putting a pressure on the operator margins.

"TSPs are currently in a situation where total debt is approximately double the value of revenue generated"

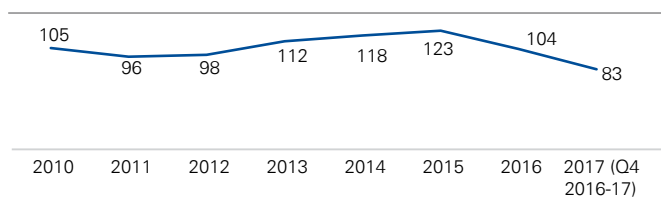
Industry EBITDA and EBITDA margins



Source: COAI annual report 2016-17 https://coai.com/sites/default/files/2017-07/COAI_AGM_2017_1.pdf

The entry of a green-field operator has further heightened competition, and accentuated price sensitivities resulting in an ARPU fall over the last quarter.

ARPU (in INR)



Source: COAI annual report 2016-17 https://coai.com/sites/default/files/2017-07/COAI_AGM_2017_1.pdf

The increased debt burden on operators coupled with continuous pressure on profitability has affected the financial health of the telecom sector. Further, initiatives from the government to enhance the health of the telecom sector and enable a cost efficient expansion of digital services are required.

Data – The growth driver

The Indian telecom industry has seen a paradigm shift from a voice centric market to a data-centric market.

While voice business still contributes a large chunk towards operator revenues, data revenues have shown an exponential growth trajectory over the last few years.

By the end of 2016 the number of internet subscribers in India was 391.50 million making India globally the 2nd highest in terms of internet users.⁴

Mobile data traffic also grew by 76 per cent⁵ in India in 2016 primarily attributed to increased smart phone penetration. This growing usage of smart phones, especially in urban areas, has increased the usage of internet on hand-held devices – in 2016, 559 megabytes of mobile data was generated per month by an average smart phone, up from 430 megabytes per month in 2015.⁶

Consumption of video content is also forecasted to be 75 per cent of India's mobile data traffic by 2021, compared to 49 per cent in 2016.⁶

Advancements in innovative IoT technologies, like health monitors, smart transport, smart meters among others, is projected to result in 21 per cent increase in M2M services.⁷ These advances will result in a significant growth of mobile data, and as the telecom sector moves to newer technologies, TSPs will need to identify innovative avenues to monetise this data opportunity.

4. IBEF, Telecommunication industry presentation, June 2017; Accessed on 20 July 2017
 5. India internet users report' dated 9 June 2017, <https://yourstory.com/>; accessed on 2017
 6. CISCO VNI Forecast 2016-2021, http://www.cisco.com/assets/sol/sp/vni/forecast_highlights_mobile/#~Country; Accessed on 20 July 2017

Government initiatives spurring broadband outreach

Government of India (GOI) launched the 'Digital India' initiative in July 2015 which had three broad targets – providing Digital Infrastructure as a core utility to every citizen, Governance and Services on Demand as well as Digital empowerment of citizens.

One of the projects under the 'Digital India' initiative was 'BharatNet', launched to deploy high-speed optical fiber cables to connect 2.5⁸ lakh Gram Panchayat across the country by 2018. This project would also help in increasing the fiberized sites in India which currently stands at less than 20 per cent as compared to other developed countries.⁹

The project is being implemented in Phases, with more than 100,000 gram panchayats connected under Phase-I as of July 2017¹⁰ and states like Kerala, Karnataka, Chhattisgarh, Haryana, Uttar Pradesh and Madhya Pradesh neared 100 per cent completion.¹¹

Description	Phase-I	Phase-II
Planned GPs	1,00,000	1,50,000
Fund allocation	INR 6,000 crore in Budget 2016-17	INR 18,792 crore
Implementation model	BBNL led via implementing agencies	State / CPSUs / PPP implementation
Media	Primary-Underground Terrain dependent - Satellite and Radio	Primarily- Aerial OFC, Secondary - Underground OFC, Terrain dependent - Satellite and Radio
Technology	MPLS and GPON	MPLS and GPON

Source: BBNL website

The government has laid special impetus on connecting the unconnected through the 'BharatNet' initiative and below table depicts the progress made under this program.

Comparison of key statistics from the BharatNet program

S. No	Description of Work	Status as on July 2016 ¹²	Status as on July 2017 ¹³
1	OFC pipe laid	1,25,642 Kms (54,023 GPs)	2,40,001 Kms (1,06,588 GPs)
2	Optical Fiber laid	over 90,000 Kms	2,21,925 Kms
3	Tenders Finalized	over 1,00,000 GPs	1,24,412 GPs
4	Optical Fiber Cable Delivered on site	over 1,40,000 Kms	2,60,977 Kms
5	GPON Integrated and Tested (Lit)	7,312 GPs	25, 426 GPs

Source: 'Status of BharatNet as on 23 July 2017', BBNL Website

Another critical government program which contribute significantly to the 'Digital India' initiative and requires robust underlying digital infrastructure is the 'Smart City' program. The Government of India has recently announced 30 new locations to be developed as 'Smart Cities' in addition to the 60 locations identified in June 2016. The total investment outlay under the smart city plans for 90 cities has gone up to INR191,155 Crore¹⁴

Telecom policy and framework

Government's National Telecom Policy (NTP) released in 2012 laid emphasis on providing last mile connectivity and bridging the digital divide in the country. Regulations introduced in the National Telecom Policy (NTP) 2012, have burdened the TSPs with additional levies which cut into their profit margins. NTP 2012 formalised delinking of spectrum from license fees and mandated auctions to determine the market rate for spectrum. Further coupled with limited availability, prices at which spectrum was bought were very high, bringing the viability of such prices into question.

The market landscape has changed with growing consumer demand for mobile broadband to access a variety of content and applications, emergence of new types of internet-based players and the new generation of 4G and 5G mobile technologies. Policy makers should consider the impacts of the new competitive landscape and modernise the regulatory framework so that no single entity or type of entity is disadvantaged due to regulatory asymmetries. The modernisation of the regulatory framework should be based on (a) functional objectives rather than legacy industry structure or technologies (b) consistent principles across the ecosystem and (c) a preference for ex-post, performance based approaches over ex-ante, prescriptive rules.

Consequently, there is a need to revisit the existing policy framework as well as seek active industry participation to modernise the regulatory frameworks. The DoT and TRAI may consider focusing their efforts on reducing the overall regulatory burden/reporting on operators by streamlining the licence obligations, regulations and other legal instruments. The Government hence is working on an ambitious review of the National Telecoms Policy and the licensing framework in order to simplify operators' licenses and to apply consistent rules across the digital market. Regulatory intervention may be based on detailed regulatory impact assessment, establishing a preference for ex-post review and enforcement, rather than restrictive ex-ante regulation. Where intervention is deemed necessary, it should be based on the principle of applying consistent rules across the digital ecosystem bringing clarity and certainty.

7. 'India internet users report' dated 9 June 2017, <https://yourstory.com/>; accessed on 2017
8. 'Status of BharatNet as on 23 July 2017', www.bbnl.nic.in
9. 'Sterlite Tech redefines data network deployment standards - launches Sterlite Academy' dated 8 August 2016, https://www.sterlite-tech.com/press_release/324; accessed on 20 July 2017

10. 'Status of BharatNet as on 23 July 2017', www.bbnl.nic.in
11. 'BharatNetProgress: 80K panchayats reached, 25k WiFihotspots by 2018', www.medianama.com, accessed 20 July 2017
12. 'All Gram Panchayats to be connected through OFC by 2018: Govt', Indian Express, July 2016
13. BBNL website, 23rd July 2017

Need to enhance manpower capabilities

Skilled manpower is one of the drivers in the overall growth of the telecommunications sector. Roll out of 4G technology with an increase in data, entry of new players in the market, introduction of digital wallets, popularity of smart phone leading to consistent increase in demand for such technology and other developments in the sector are speculated to increase job opportunities by 20 lakhs in the year 2017 itself.¹⁵ Also, emerging technologies such as 5G, M2M and the evolution of Information and Communications Technology (ICT) are expected to create employment avenues for almost 870,000 individuals by 2021.¹⁶

The existing manpower in the sector may not be adequate both in number as well as in skill to cater to the upcoming demand. There is a need to bridge the gap in skill which on the one hand would require identification of skilled manpower in diverse roles such as infra and cyber security experts, application developers, sales executives, infrastructure technicians, handset technicians etc. as well as on the other hand reskilling of existing manpower working on existing technologies for them to be updated with upcoming requirements.

Government initiatives such as 'Skill India' have been implemented for the ease of providing sufficient and appropriate manpower to the telecom sector, among other sectors. The Telecom Sector Skill Council (TSSC) has been set up to cater to the demands and skill needs of the telecom sector. However, the Industry recommends more targeted and specialised skill development programmes that would enhance existing manpower capabilities and availability to ensure uninterrupted development of the sector as a whole.



"My congratulations to ASSOCHAM and KPMG for producing a very lucid and timely report". I am confident that it will help catalyse meaningful discussions in the 10th ASSCHAM Telecom India Summit".

Ashok Sud,
Secretary General,
AUSPI

14. 'Smart City Mission: 30 smart cities announced, ten spots remain', 23 June 2017, Business Today; accessed on 21 July 2017

15. 'Telecommunication sector to create two million jobs in 2017: report', 18 January 2017, The Indian Express, accessed on 21 July 2017

16. Data gathered from various sources:

- GSM Mobile Economy Report India, 2016, accessed on 20 July 2017
- India Ericsson Mobility Report, June 2017, accessed on 20 July 2017
- GSMA India Digital Promise Report, Feb 2017, accessed on 20 July 2017

Vision 2020 - Trends and targets¹⁶

1. Total number of SIM connections is expected to reach 1.4 billion by 2020 from the current 1.1 billion
2. With 646 million unique mobile subscribers, India is the second largest mobile market in the world and will add more than 300 million new unique subscribers by 2020
3. Telecom sector contribution to GDP will reach 8.2 per cent by 2020
4. Smart phone subscriptions will reach 674 million by 2020
5. Telecom sector will provide 5 million direct and indirect employment by 2020 from the current 4 million jobs
6. Wearable device market is expected to grow from 2.5 million units in 2016 to 4.1 million units in 2020
7. India has shown tremendous growth potential for IOT solutions with the market poised to reach USD 15 billion by 2020 with 2.7 billion units of connected devices from the current USD 5.6 billion with 200 million units of connected devices in 2016
8. Data growth driving operator revenues from USD 31 billion in 2016 to USD 39.7 billion in 2020 with a capex investment of USD 35 billion during the period 2016-2020.



Executive summary

Telecom service providers

Reduction in Spectrum usage charge along with reduction in license fee can help decrease the financial burden of the TSPs

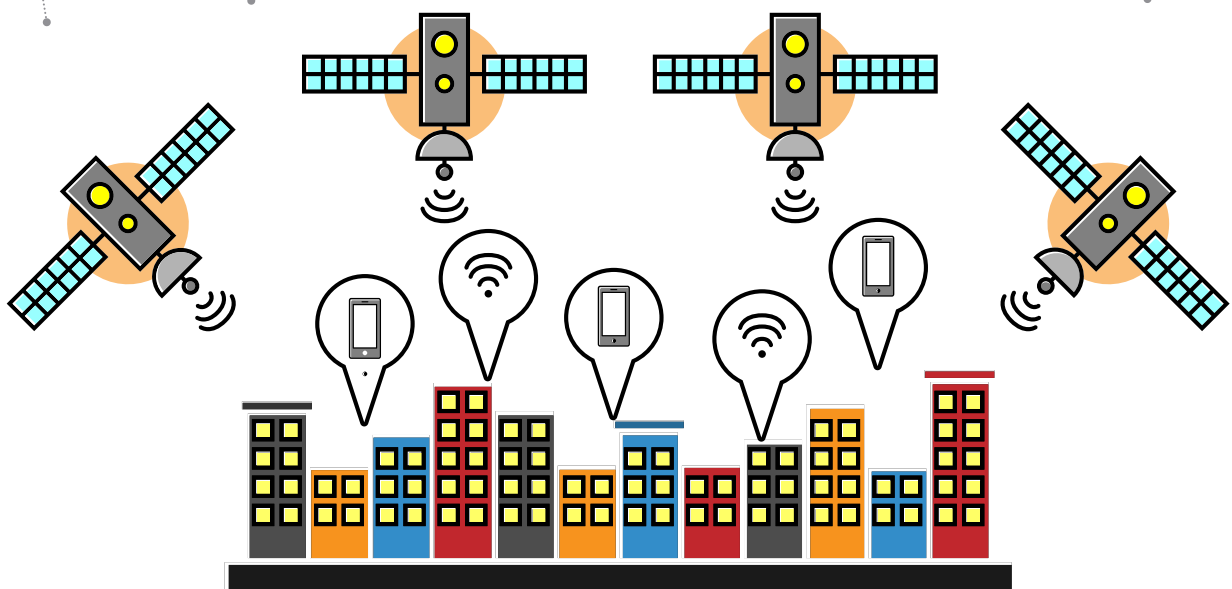
Reduction of USO contribution from the license fee from 5 per cent to 3 per cent of annual revenue may be considered

Resolution of Adjusted Gross Revenue (AGR) definition to avoid disputes in computation of license fee

Allocation of E and V bands will help in providing seamless connectivity to subscribers

Formulation of a new National Telecom Policy may be considered in light of changing industry landscape

Uniform and seamless implementation of Right of Way Rules 2016, across states within the Country

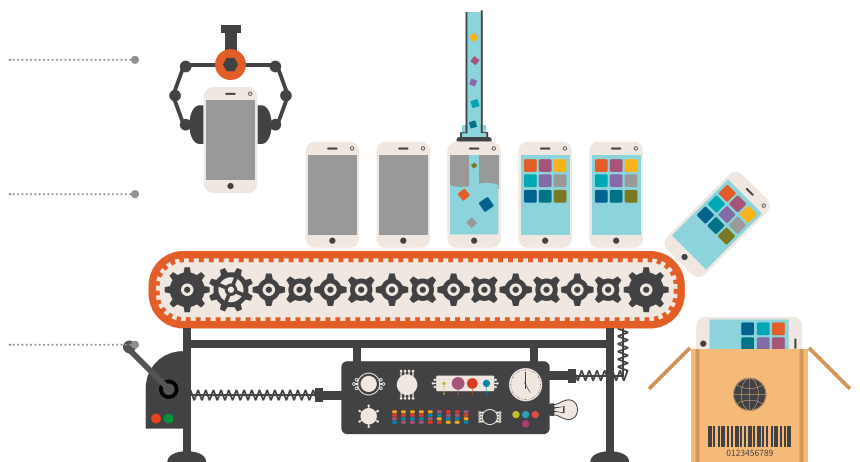


Mobile handset manufacturers

Clauses defined in E-waste management rules may be reconsidered to ensure a phased approach towards achieving targets set by the government

Registration of brands and handset manufacturing facilities as a whole can be considered rather than of individual handsets to enhance ease of doing business

The Government may consider introducing reforms with regard to tax exemptions and providing subsidies to boost handset manufacturing in India



Telecom infrastructure providers



Development of implementation guidelines for ensuring deployment of telecom towers on government buildings across states and municipal bodies may be considered

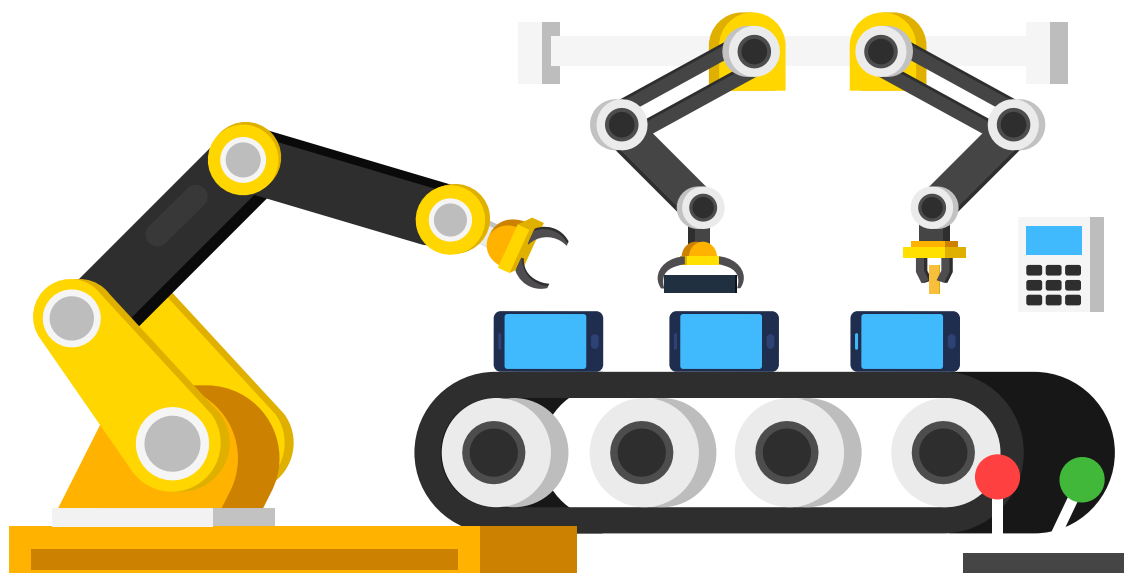
Classification with respect to active and passive infrastructure needs to be revisited to help promote effective sharing of infrastructure

Formulation of uniform import duty structure for Lithium-ion batteries irrespective of its end use would help in keeping costs in check

New security directives may be considered to ensure safeguarding of the telecom network infrastructure

Inclusion of IP-1s in the recently released Indian Telegraph Right of Way rules, 2016 will help in reducing approval process for laying infrastructure

Telecom equipment manufacturers



Custom duty on the import of network equipment may be rationalized to make telecom services more affordable

Preferential Market Access (PMA) may be redesigned in order to maintain the competitive edge of the state owned players in the market

Self certification of security testing of telecom equipment will help reduce the burden on operational activities of equipment manufacturers

Consideration of one time issuance of Wireless planning and Coordination (WPC) import licenses per operator to help improve ease of doing business

Overview of global telecom market and contribution of india¹

Mobile subscriptions are growing at around 4 per cent year-on-year, reaching 7.6 billion in Q1 2017

- India: 1.1 billion
- Global: 7.6 billion

107 million new mobile subscribers were added globally in Q1 2017

- India: 43 million
- Global: 107 million

Rate of market penetration as on 2016 (excluding M2M) is 65 per cent global

Market Penetration Rate by 2016 (excluding M2M)

- India: 51.4 per cent
- Global: 65 per cent

Growth of mobile traffic in 2016

Mobile Traffic Growth in 2016

- India: 76 per cent
- Global: 63 per cent

Global telecom sector contributes 4.4 per cent towards GDP in 2016

Telecom sector contribution to GDP in 2016

- India: 6.5 per cent
- Global: 4.4 per cent

Growth of smart phone users as on 2016

adoption in 2016

- India: 28 per cent
- Global: 51 per cent

Mobile broadband connections as percentage of total connections as on 2016

Mobile Broadband connections

- India: 20 per cent
- Global: 55 per cent

Tower company ownership from the total installed tower base as on 2016

- India: approximately 300,000 or 66 per cent of the 454,521 towers are owned by tower companies
- Global: over 2 million of the world's telecom towers over 3 billion or 69 per cent are owned by tower companies

Projection of growth of operators' revenue as on 2016

Operator Revenues in 2016

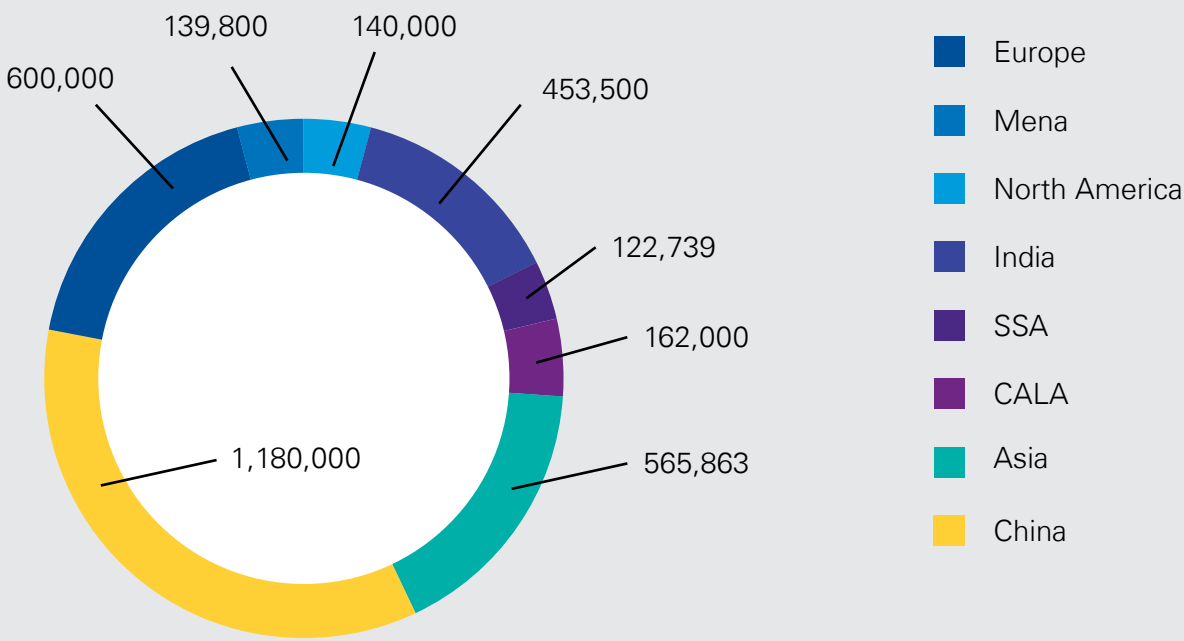
- India: USD 40 billion
- Global: USD 1.05 trillion

Growth of employment in telecom sector

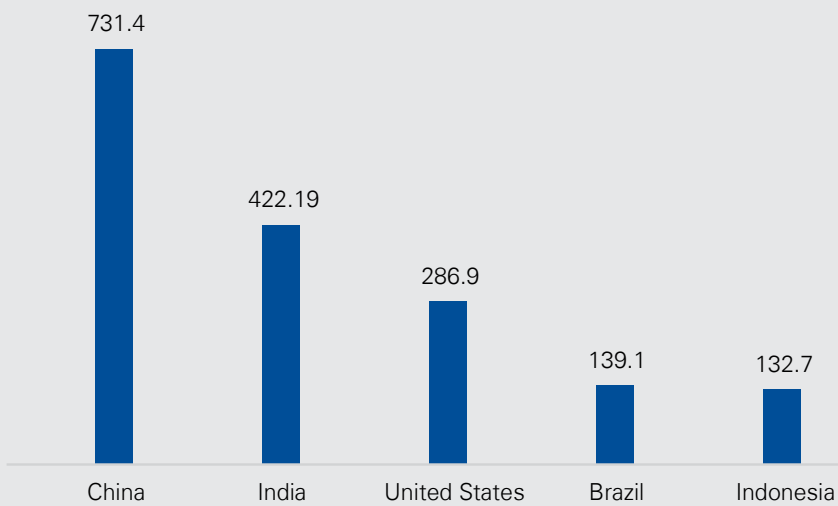
Employment

- India: 2.2 million (as on 2015)
- Global: 28.5 million (as on 2016)

Tower count by regions as on 2016¹



Top 5 country-wise number of internet users, 2017(in millions)¹



Source: Top 20 countries with the highest number of internet users dated 8 July 2017, Internetworldstats website, <http://www.internetworldstats.com/top20.htm> and India Figures from TRAI as of July 2017, accessed on 24 July 2017

1. Data gathered from various sources:
• GSM Mobile Economy Report India, 2016, accessed on 20 July 2017
• India Ericsson Mobility Report, June 2017, accessed on 20 July 2017
• GSMA India Digital Promise Report, Feb 2017, accessed on 20 July 2017
• TowerExchange Asia dossier, 2016, accessed on 20 July 2017

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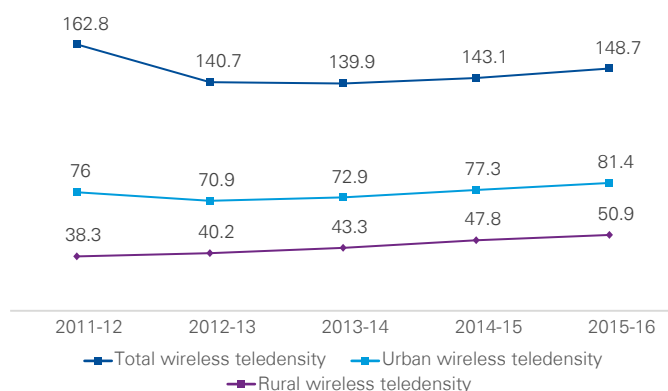
Telecom service providers



Telecom service providers (TSP) play a vital role in providing major support services required for swift growth and transformation of multiple sectors such as IT, insurance, education, health, public sector, etc. Indian TSPs have invested about INR9,27,000 crore¹ while Foreign Direct Investment (FDI) in the telecom industry has increased from INR20,000 crore² in FY'15-16 to approximately INR67,000 crore in the first three quarters of FY'16-17, contributing towards building an efficient infrastructure to provide accessible and affordable service to customers. A fairly conducive regulatory environment has been created for TSPs through implementation of new policies and regulatory framework by Telecom Regulatory Authority of India (TRAI)

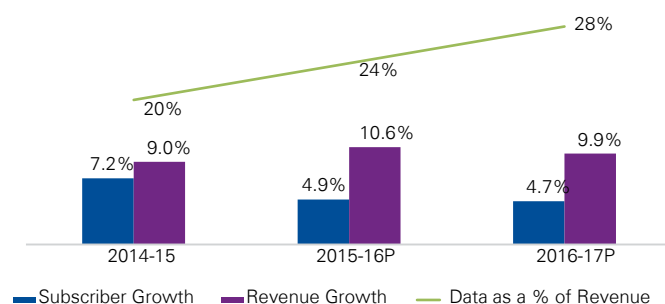
TSPs gross revenue stood at approximately INR188,000 crore³ with a decline of 2.68 per cent in 2016-17.

Teledensity in India³



Source: Telecom Industry Report, dated 31 March 2017, <http://www.careratings.com/upload/News-Files/SplAnalysis/Telecom%20Report%20March%202017.pdf>, accessed 11 July 2017

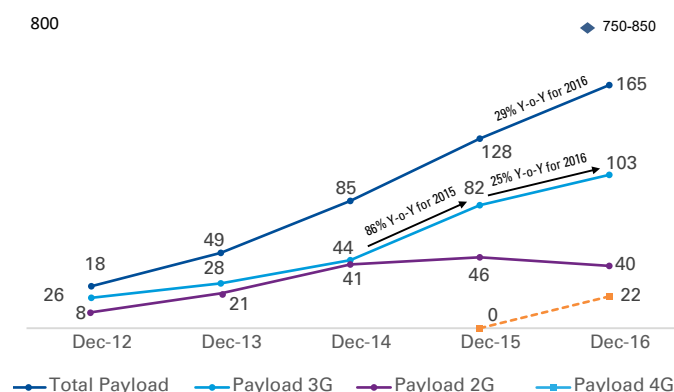
Domestic revenues and subscriber growth



Source: CRISIL India Outlook Report, dated March 2016, <https://www.crisil.com/pdf/corporate/india-outlook-fiscal-2017.pdf>, accessed 11 July 2017

The overall data traffic in India went up by 28 per cent of the total data traffic pan-India in a year since launch.⁴ In India 4G subscribers have reached the mark of approximately 160 million as on 31 March 2017.⁵

Pan India mobile data usage (in Petabytes (PB), December 2016)



Source: India Mobile Broadband Index 2017 Report, dated March 2017 <https://resources.ext.nokia.com/asset/201176>, accessed on 14 July 2017

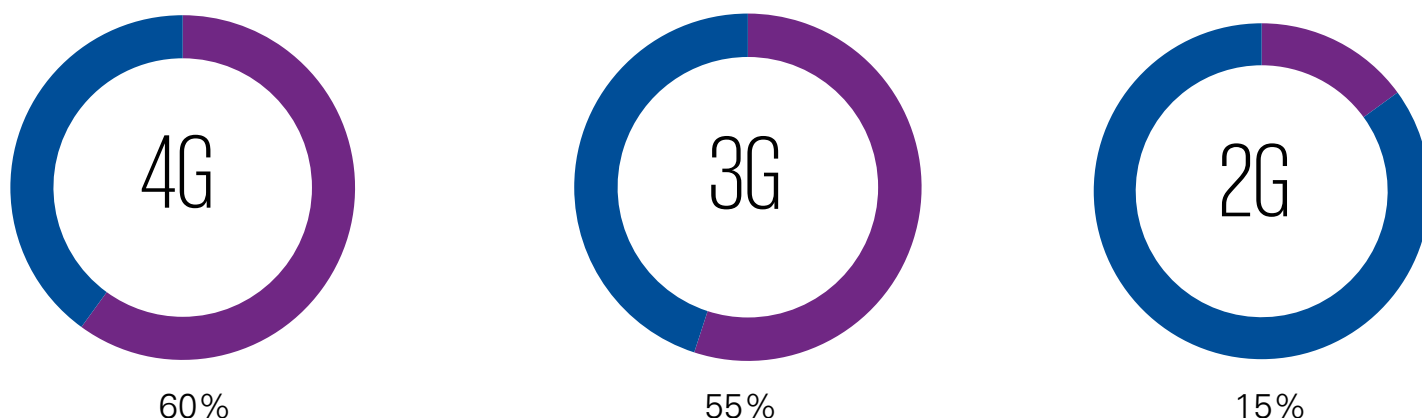
1. Telecom sector set for action-packed 2017, According to Economic Times India website, dated 25 December 2016, <http://economictimes.indiatimes.com/news/economy/policy/telecom-sector-set-for-action-packed-2017/articleshow/56166210.cms>, accessed on 12 July 2017
 2. Telecommunication Sector Report, dated 23 June 2017, <https://www.ibef.org/industry/telecommunications.aspx>, accessed on 12 July 2017
 3. Rs4,600 crore hit for telecom firms in FY17, Rs4,900 crore hit in FY18, dated 11 April 2017, <http://www.careratings.com/upload/NewsFiles/SplAnalysis/Telecom%20Report%20>

March%202017.pdf, accessed on 11 July 2017
 4. India's data traffic growth in 2016 led by 4G technology: Nokia, dated 28 March 2017, money-control website, <http://www.moneycontrol.com/news/business/indias-data-traffic-growth-in-2016-led-by-4g-technology-nokia-2248433.html>, accessed on 12 July 2017
 5. India 4G subscriber base to reach 225 mn by year-end, dated 23 March 2017, telecomlead website, <http://www.telecomlead.com/smart-phone/india-4g-subscriber-base-reach-225-mn-year-end-75584>, accessed on 12 July 2017

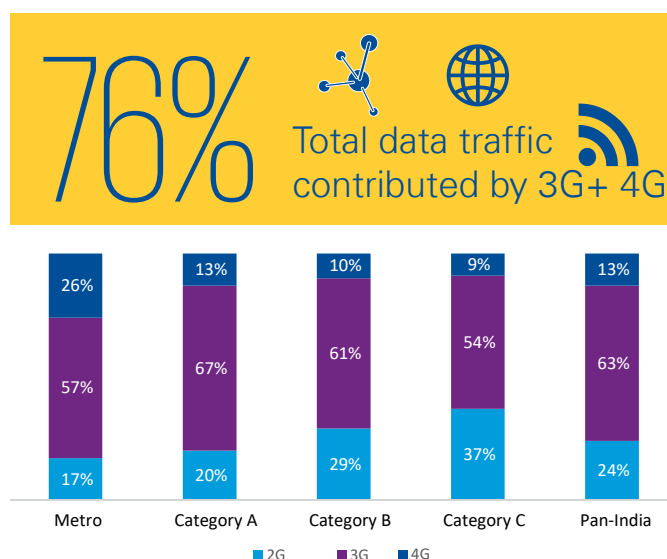
India is now one of the biggest smart phone markets in the world in terms of volume with an increase in the usage of data services leading to a rapid increase in smart phone sales. Four out of every 20 mobile subscribers in metro circles have a 4G enabled smart device and 11 have a 3G enabled smart device.⁷

Social media and messaging application drove data consumption with nearly 90 per cent consumers accessing applications on mobile devices. Videos continued to be the main growth engine for data traffic with nearly 65 per cent contribution.⁸

Share of Incremental data payload: 2016 versus 2015



Contribution of 2G, 3G and 4G



Source: India's data traffic growth in 2016 led by 4G technology: Nokia, dated 28 March 2017, moneycontrol website, <http://www.moneycontrol.com/news/business/indias-data-traffic-growth-in-2016-led-by-4g-technology-nokia-2248433.htm>, accessed on 14 July 2017

Nokia's annual Mobile Broadband Index study shows that "4G was the major source of data traffic across the country in 2016 with 60 per cent of the incremental data payload from 2015 levels contributed by 4G."⁶



"Policymakers and regulators create conditions that encourage telecoms investment and strengthen digital trust - two key pillars of a vibrant digital economy. Regulatory frameworks should be modernised to keep pace with the converged, highly dynamic and evolving digital ecosystem. We should embrace the principles of a new regulatory framework that fosters dynamic competition, promoting investment and innovation while keeping costs and obligations low. The National Telecom Policy and the regulatory framework in India should be reviewed and updated to reflect these principles"

Dr Mani Manimohan,
Senior Director of Public Policy,
GSMA

6. India's data traffic growth in 2016 led by 4G technology: Nokia, dated 28 March 2017, moneycontrol website, <http://www.moneycontrol.com/news/business/indias-data-traffic-growth-in-2016-led-by-4g-technology-nokia-2248433.html>, accessed on 12 July 2017

7. India's data traffic growth in 2016 led by 4G technology: Nokia, dated 28 March 2017, moneycontrol website, <http://www.moneycontrol.com/news/business/indias-data-traffic-growth-in-2016-led-by-4g-technology-nokia-2248433.html>, accessed on 12 July 2017

8. India Mobile Broadband Index 2017 Report, dated March 2017 <https://resources.ext.nokia.com/asset/201176>, accessed on 14 July 2017

Current market landscape and key challenges

High debt burden and stress on profitability

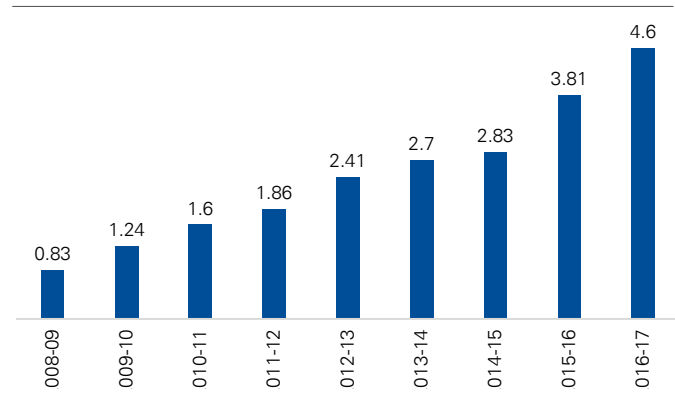
India's telecom industry which is a major contributor to the country's GDP is going through challenging times where maintaining a balance between market dynamics and time to deliver has created a bottleneck for TSP's. Tariff wars, increasing debt burden, spectrum license fees and new types of internet based players etc. have fueled this situation resulting in a phase of financial stress in the industry.

The telecom industry at this point of time has a debt burden of close to INR5 lakh crores⁹ in its quest to provide state of the art infrastructure and buy spectrum. The current interest coverage ratio is less than one which means the industry's Earnings before Interest, Taxes, Depreciation and Amortisation (EBITDA) is insufficient to repay debt.¹⁰

Debt burden	Amount (In crores) approximately		
	FY-15	FY-16	FY-17
Debt Burden on top 5 operators	70,348	1,17,787	3,54,845

Source: The Indian Telecom Industry's Debt Problem in Three Charts, dated 5 June 2017, <https://www.bloombergquint.com/markets/2017/06/04/the-indian-telecom-industrys-debt-problem-in-three-charts>, accessed on 14 July 2017

Debt (in INR lakh Crores)



Source: Telecommunication industry presentation, IBEF, June 2017 presentation, June 2017⁹

9. Telecom sector reels under heavy debt and falling revenue, dated 17 June 2017, Economic Times India website, <http://economictimes.indiatimes.com/news/company/corporate-trends/telecom-sector-reels-under-heavy-debt-and-falling-revenue/articleshow/59184371.cms>, accessed on 14 July 2017
10. RBI raises red flag over banks' telecom exposure, dated 18 April 2017, The Hindu website, <http://www.thehindu.com/business/Industry/rbi-raises-red-flag-over-banks-loans-to-telecom-players/article18109383.ece>, accessed on 14 July 2017
11. Indian Telecom Sector, dated 14 June 2017, CIANS Academy <http://ciansacademy.com/indian-telecom-sector-reliance-communications-default-tip-iceberg/>, accessed on 14 July 2017
12. Call drops: Telecom companies under heavy debt?, dated 3 May 2016, Gadgetsnow website, <http://www.gadgetsnow.com/tech-news/Call-drops-Telecom-companies-under-heavy-debt/articleshow/52096242.cms>, accessed on 14 July 2017

This debt increase has been primarily driven by high spectrum procurement costs from five successive auctions wherein the highest bid/sale price at one auction acts as a floor price for the succeeding auction. Aggressive participation of service providers in spectrum auctions has significantly increased the debt burden¹¹. The declining trend in the profitability of the TSPs is likely to continue due to various reasons like entry of greenfield TSPs as against the existing brown field operators which will have to undertake huge investments for updating their existing infrastructure, participate in spectrum auctions,¹¹ imposition of multiple taxes and levies such as Spectrum Usage Charges (SUC), Universal Service Obligation Fund (USOF) contribution and license fee.^{12,13}

The government may consider deliberations on the same with TSP's while formulating policies and regulations to address challenges faced by all contributors/ verticals of the sector in its entirety.

Telecommunications, being an underlying service to majority of industries contributes significantly towards their operating costs. Levy of higher taxes (recent increase by 3 per cent putting the telecom sector under the 18 per cent tax slab²⁴) on telecom industry may lead to an overall increase in the cost of doing business for other sectors and may impact affordability for the end customers. Thus, reduction in service tax may be considered by the government.

"The stress in the sector has reached highly unsustainable levels after the entry of new players and launch of free services which led to erosion of topline and EBITDA of the telecom service providers. The data with us suggests that the total EBITDA of the sector on annualised basis is `65,000 crore which is... unsustainable for debt of more than `4 lakh crore,"¹⁴

Arundhati Bhattacharya,
Chairman SBI

13. Spectrum auction blows holes in telcos, govt maths, dated 7 October 2016, The Hindu Business Line website, <http://www.thehindubusinessline.com/info-tech/spectrum-auction-blows-holes-in-telcos-govt-maths/article9198639.ece>, accessed on 14 July 2017
14. SBI wants DoT to help protect banking sector's 4-lakh cr exposure to telecom, dated 1 June 2017, The Hindu Business Line website, <http://www.thehindubusinessline.com/mon-economy-and-banking/sbi-wants-dot-to-help-protect-banking-sectors-4lakh-cr-exposure-to-telecom/article9717919.ece>, accessed on 14 July 2017

Reconsideration of Spectrum Usage Charges (SUC)

SUC is levied from the time when the spectrum was bundled with the license itself. With the introduction of spectrum auctioning, the license and spectrum are now separately granted with the licensee having to bid for the available spectrum at market determined prices. For the spectrum allotted, the TSPs have to pay the price of the spectrum as decided in the auction and annual SUC (a proportion of their Adjusted Gross Revenue – AGR) to the government. Since the purchase price of the spectrum is now market determined and considerably higher than before, SUC adds on to the financial burden of TSPs. Further, since SUC is a fixed proportion of the AGR, the better a TSP performs in terms of revenue, the more they are charged as SUC.

As per GSMA analysis and report “Digital inclusion and mobile sector taxation in India” issued in 2015, the reduction in the license fees and SUC would have significant positive impact on the GDP and the overall taxation revenue of the government in the long run.

The industry is of the view that to ensure financial stability, concessions may be provided to the TSPs and the overall license fee including the SUC and USOF may be reduced in order to attract further investments and making lending to the sector more viable. The below table depicts the total SUC and license fee collections from the operator.¹⁵

In crores			
Total Collection	FY 2013-14	FY 2014-15	FY 2015-16
Total SUC Collections	6,237	6,831	7,242
Total License Fee Collections	14,675	12,528	13,325

Source: Govt revenue from telecom sector decreased due to increasing competition, dated 4 April 2017, medianama website, <https://www.medianama.com/2017/04/223-govt-revenue-from-telecom-sector/>, accessed on 17 July 2017

15. Govt revenue from telecom sector decreased due to increasing competition, dated 4 April 2017, medianama website, <https://www.medianama.com/2017/04/223-govt-revenue-from-telecom-sector/>, accessed on 17 July 2017

16. Universal service obligation, dated 17 February 2016, DOT website, <http://www.dot.gov.in/universal-service-obligation-fund-usof>, accessed on 17 July 2017

17. 62,443 villages out of telecom loop, says Survey, dated 27 February 2017, The Hindu website, <http://www.thehindu.com/todays-paper/tp-national/62443-villages-out-of-telecom-loop-says-Survey/article15460612.ece>, accessed on 17 July 2017

18. TRAI Consultation Paper on ‘Definition of Revenue Base (AGR) for the Reckoning of Licence

Reconsideration of Universal Service Obligation (USO) levy

Expansion of telecom services to remote and rural area in the country involves huge capital investments by the service providers. Also, low returns on these investments (low potential revenues, low commercial activity, etc.) make expansion in these areas less profitable for the TSPs and act as a bottleneck for their investments. Thus, there is a need for change in the market mechanism in order to enable TSPs to bridge the rural-urban divide. This led to the introduction of USOF in April, 2002 which is calculated as a percentage of the revenue collected by TSPs under various licenses¹⁶, aimed at providing connectivity to the over 62,443¹⁷ untapped villages in India. License fee is collected at 8 per cent of AGR of TSPs which includes 5 per cent of USOF as Universal Service Levy (USL).¹⁸

The government intends to use USOF for various initiatives such as providing network infrastructure and connectivity to remote parts of the country. Multiple schemes like BharatNet initiative which is part of “Digital India” campaign would eventually help in carrying out full-fledged roll out of telecom services in rural areas and connecting the unconnected.

GSMA, in their “mobile economy report” highlighted that USO levy of 5 per cent in India as against the 2 per cent in Colombia and Pakistan and 1 per cent levy in Brazil, financially over-burdens TSPs in India. Also, as per DoT’s annual report, the USOF accumulated has not been completely expended. Approximately INR47,000 crore (58 per cent of the total collection) remains unutilised.¹⁹ TSPs suggest that the existing balance is sufficient to meet the requirements in the near future for providing connectivity to the unconnected areas.²⁰ The report also suggests that the Indian government may explore adoption of a more participative approach, with the operators consulted when defining targets and levies.

Further, TRAI also recommends that the government may consider reducing USOF from 5 per cent to 3 per cent of annual revenue for all licenses, so that effectively license fee is reduced to 6 per cent.²¹ TRAI has asked the DoT to consider its past recommendations so that TSPs can focus on providing Quality of Service (QoS) to consumers at affordable prices. Further, in industry view point elimination of the USO contribution from license fee in a phased manner will help in reducing the cost burden on the industry.

Fee and Spectrum Usage Charges’, September 2014, http://www.trai.gov.in/sites/default/files/CPonAGR_31Jul2014.pdf, accessed on 20 July 2017

19. Trai recommends cut in USOF, SUC and 5% GST for telcos, dated 30 June 2017, Economic Times website, <http://telecom.economicstimes.indiatimes.com/news/trai-recommends-cut-in-usof-suc-and-5-gst-for-telcos/59384909>, accessed on 17 July 2017

20. DOT Annual Report 2016-17, dated 1 March 2017, DOT website, <http://www.dot.gov.in/sites/default/files/Annual%20Report&202016-17.pdf>, accessed on 17 July 2017

21. DOT Annual Report 2016-17, dated 1 March 2017, DOT website, <http://www.dot.gov.in/sites/default/files/Annual%20Report%202016-17.pdf>, accessed on 17 July 2017

Resolution of AGR definition

As per NTP 1994, a TSP has to pay fixed license fees annually. With NTP 1999 a revenue share regime was introduced according to which TSPs were required to pay a percentage of their Adjusted Gross Revenue (AGR) as license fee.

The definition of Gross Revenue (GR) and AGR for the computation of license fees continues to be an area of ambiguity for the TSPs and has led to legal disputes around computation of license fee that is to be paid. In the last two CAG audit of six TSPs, understatement of AGR amounting to INR46,046 crores for the period 2006-07 to 2009-10 and INR61,064 crores for the period 2010-11 to 2014-15²² have been reported. The current scenario has resulted in a situation of financial instability amongst TSPs.

Further, TRAI has recommended a modification in the AGR wherein it proposes re-consideration of revenue from some non-telecom sources to be excluded from the AGR computation.

Allocation of E band (frequency range of 71 to 86 GHz bands) and V Bands (frequency range of 57 to 71 GHz bands)

An exponential growth in data traffic facilitated by advent of 3G and 4G technologies has significantly burdened the existing backhaul capacity. Constraints in terms of fibre reach as well as number of microwave links originating from one hub site contribute towards the requirement of advanced microwave bands. The present backhaul capacities on traditional legacy MWA carriers will not be able to cater to the large backhaul capacity requirements to fuel growth of mobile broadband and the demands of a Smart City.

E and V bands can act as effective alternates to existing microwave technologies. E Band has a very narrow beam width and re-use of frequencies can be significantly higher, almost five times of the conventional microwave. Allocation of E bands would help decongest the network over very short distances, while traditional microwave will continue to be used for relatively longer distances. These new bands can be used for providing rapid and economical deployment for dense urban routes as last mile solutions because these frequency bands are expected to decrease interference between the mobile sites and reduce pressure on fibre based services to provide backhaul solutions.

As per TRAI, currently India has a total of 31,518 hotspots

as on November 2016, which is much lower than global penetration. In order to reach the global average of one hotspot over 150 people, India will require an additional 0.8 crore hotspots. De-licensing of E and V bands will help in the digitisation of India in the true sense.²⁵

Microwave carriers are support infrastructure for radio spectrum and hence, any delay in their allocation leads to delay in roll out of services. Thus there is a need that all pending/ in-process applications for microwave may be processed without delay, as per existing guidelines/norms. The government should expedite the assignment of MWA and MWB carriers on an exclusive basis for the entire Licensed Service Area (LSA). Considering that Microwave is support infrastructure for radio spectrum, it is important that this be done at nominal rates.

Uniform and seamless implementation of Right of Way Rules across the country

Department of Telecom (DoT) has released a gazette notification G.S.R 1070 (E) of Indian Telegraph Right of Way Rules, 2016[1] on 15 November 2016 to regulate underground infrastructure (optical fibre) and over ground infrastructure (mobile towers). New RoW rules are expected to ease



22. Dua consulting response to TRAI Consultation Paper on 'Definition of Revenue Base (AGR) for the Reckoning of Licence Fee and Spectrum Usage Charges', September 2014, http://www.trai.gov.in/sites/default/files/Dua_Consulting_31_Jul_2014.pdf; accessed on 20 July 2017

23. 'Telecom sector woes on AGR govt awaits favourable SC verdict', dated 18 June 2017, http://www.business-standard.com/article/companies/telecom-sector-woes-on-agr-govt-awaits-favourable-sc-verdict-117061800729_1.html, accessed on 19 July 2017

24. Trai recommends cut in USOF, SUC and 5% GST for telcos, dated 30 June 2017, Economic

Times website, <http://telecom.economictimes.indiatimes.com/news/trai-recommends-cut-in-usof-suc-and-5-gst-for-telcos/59384909>, accessed on 17 July 2017

25. Digital payments and internet connectivity: Here's why India may well be on way to leave dark ages behind, dated 9 March 2017, Financial Express website, <http://www.financialexpress.com/opinion/digital-payments-and-internet-connectivity-heres-why-india-may-well-be-on-way-to-leave-dark-ages-behind/580105/>, accessed on 20 July 2017

concerns of TSPs, IPs and other stakeholders with respect to interacting with local governments for timely RoW clearance, through introduction of time limits and deemed approvals.

The Indian Right of Way Rules 2016 is a major step towards the intent for ease of operations. If the said Rules are adopted and implemented uniformly across states, it will ensure seamless and timely deployment of the required Infrastructure to meet the Digital India vision of the Government of India. The following can help achieve the objective:²⁶

- **Uniform policy across States/ Local Authorities:** To bring about uniformity and standardisation of the policy across the states encompassing various local authorities like corporations, municipalities, panchayats, etc. for installation of telecom infrastructure.
- **Collaborative Approach:** As per the RoW Gazette notification, DoT confers licensed service providers

with responsibility of putting up the underground or over ground telegraph infrastructure, hence involvement of TSPs during state policy formulation may contribute to effective implementation of policy across the state.

Transmit power

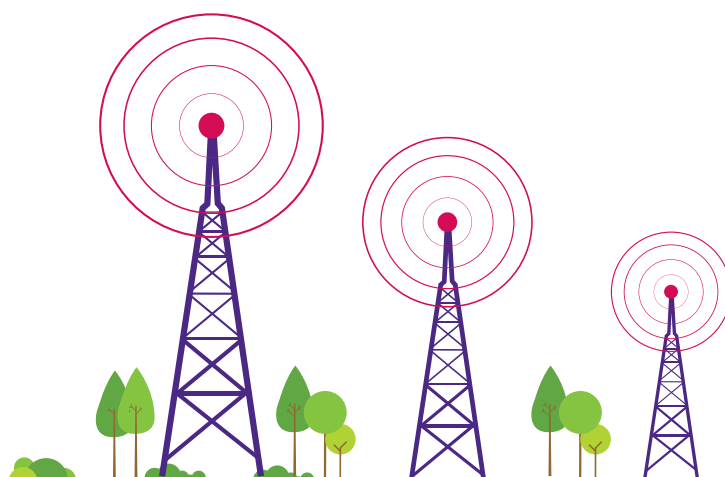
TSPs have been requesting to allow transmission power from BTS to be in the range of 60-80 Watt power instead of presently allowed 20 Watts. The lower transmit power results in suboptimal coverage. The power density in case of GSM is 100 Watts/MHz (20W/0.2MHz) whereas it is 4 Watts/MHz (20W/5MHz) in case of 3G/LTE, which is much lower than GSM. Even 60-80 Watts for 3G/LTE would have much lower power density at 12-16W/MHz. The radiated power from BTSs is already being monitored via the EMF guidelines, which prescribes the maximum power that can be transmitted by a BTS. Thus, TSPs should be allowed to configure transmit power optimally in 3G/4G/LTE while maintaining full compliance to the prescribed EMF norms.²⁷



26. G.S.R 1070(E), MINISTRY OF COMMUNICATIONS (Department Of Telecommunications) NOTIFICATION, dated 15 http://www.dot.gov.in/sites/default/files/2016_11_18%20RoW%20Policy.pdf, accessed on 29 July 2017

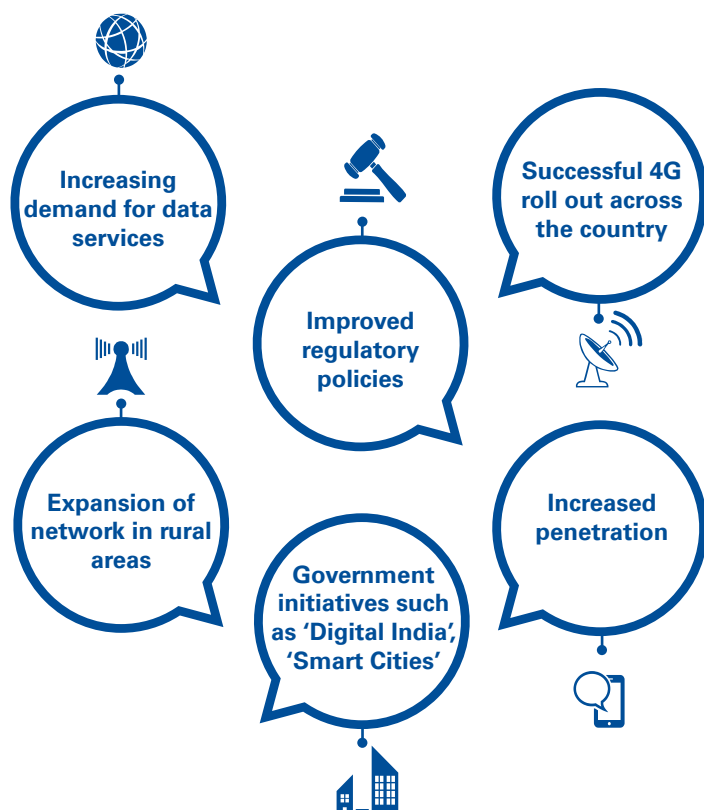
27. COAI Analysis 2017.

Telecom infrastructure providers



India is home to an infrastructure network comprising of over 450,000 towers¹ and over 1.25 million kilometers² of fibre. The Indian tower industry has also been on an upward trajectory owing to the growth of telecom sector, grant of 'infrastructure status' and its unique business model based on 'infrastructure sharing'. The model is meant to drive efficiencies and synergies and the era of multiple operators allowed that to happen very successfully leading to upfront savings in capex and time to market.

Infrastructure providers are the backbone of the entire telecom network and with the advent of new technologies and expansion driven business strategies, they are expected to play a pivotal role in the growth story. Following are the broad factors which can impact the infrastructure providers:



The telecom tower sector has been a partner and complementary industry helping expand the telecom footprint in the country. In the light of declining tariffs and in turn profitability sparked by fierce competition, it is increasingly beneficial for operators to lease towers from infrastructure providers for following key reasons:

Reduced capital expenditures for TSPs on new tower deployments

Reduce capital expenditure

Existing tower infrastructure enabling sharing between TSPs and expediting roll outs in sparsely populated areas

Faster roll outs

Reduced network operating costs

Rationalisation of operational cost due to reserve produced by sharing site rent, power and fuel expenses

Roll out obligation

Allows easier expansion in rural areas

Growth of telecom tower industry

The telecom tower industry in India is growing at a steady pace of approximately 6.8 per cent CAGR over the last four years and has reached INR 254 billion in March 2016.³

Around 66 per cent of India's 454,521 towers are owned and operated by tower companies, a figure which will rise to 82 per cent when the BSNL tower company is inaugurated.⁴ Around 150,000 tenancies and approximately 6,700 new towers were added during 2016-17. Further, around 360,000 Base Transceiver Station (BTS) are expected to be added by 2019⁵ resulting in an increase in tenancy ratio from the current level of 2.6 to approximately 3.5 in 2021.⁵

1. IBEF Telecom industry sector report – March 2017, CRISIL Research Report, "Telecom Towers and Allied Services" 2017; accessed on 20 July 2017

2. KPMG analysis

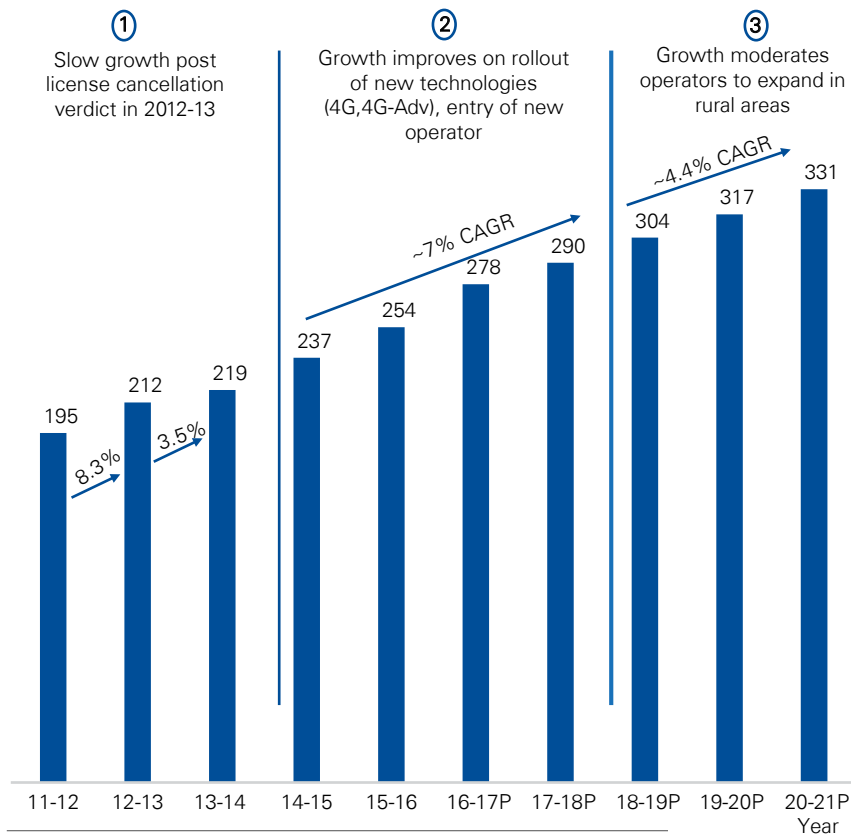
3. CRISIL Research Report, "Telecom Towers and Allied Services" 2017; accessed on 20 July 2017

4. Tower Exchange Asia Dossier, 2016

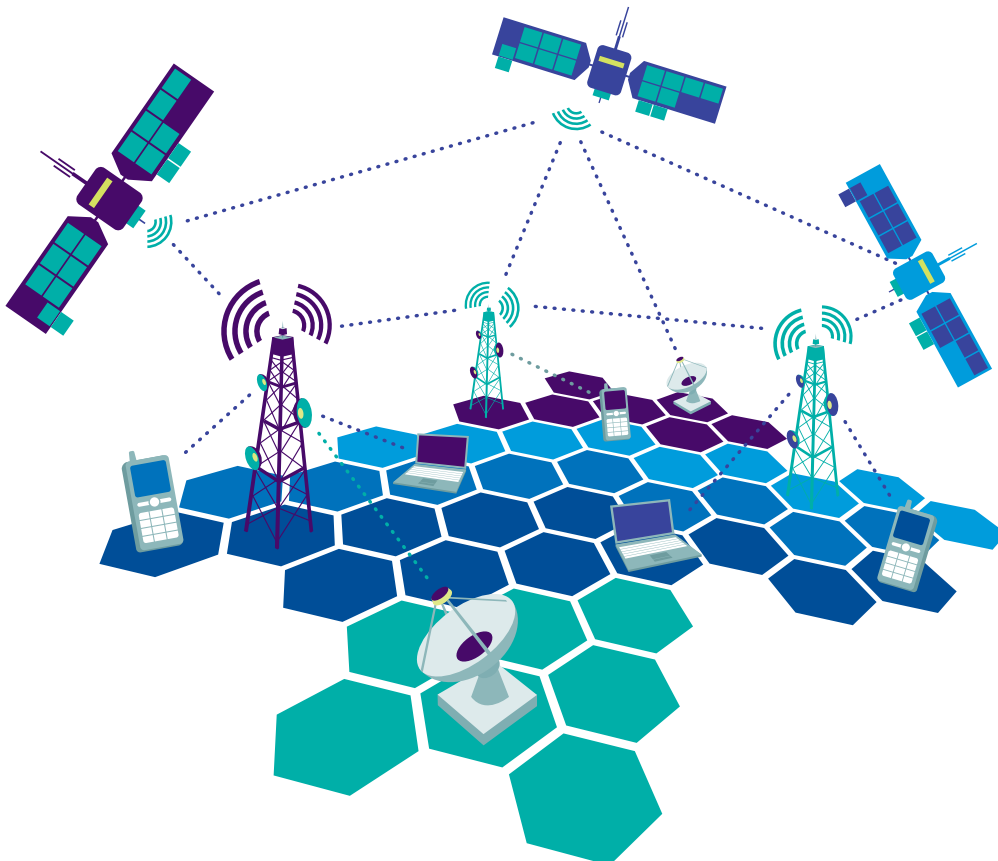
5. CRISIL Research Report, 'Telecom Tower and Allied Services', 2017; accessed on 20 July 2017

The growth in the telecom tower industry can also be grouped into three distant phases as observed in the graph below:

Telecom towers industry revenue



Source: Crisil Research Report, "Telecom Towers and Allied Services", 2017



Key challenges



Challenges in installation of telecom towers

Exclusion of IP-1 in the Indian Telegraph Right of Way Rules

Telecom Service Providers (TSPs)/Infrastructure Providers (IPs) in India spend significant capex on receiving Right of Way (RoW) permissions from local governments and municipal bodies. RoW permissions are a prerequisite for TSPs to be able to deploy optical fibre.

Department of Telecom (DoT) has released a notification G.S.R 1070 (E) of Indian Telegraph Right of Way Rules, 2016⁶

on 15 November 2016 to regulate underground infrastructure (optical fibre) and over ground infrastructure (mobile towers). New RoW rules are expected to ease concerns of TSPs, IPs and other stakeholders with respect to interacting with local governments for timely RoW clearance, through introduction of time limits and deemed approvals.

Currently, IP-1s have not been included in the purview of the notification and are therefore not permitted to provision duct and OFC. The IP-1 companies are of the view that their inclusion in the RoW rules can streamline tower installations and significantly improve the QoS provided to the customers and are thus seeking support from the government with regard to their inclusion in RoW rules. As per the industry,



Designation of nodal officer

All state governments are required to designate a nodal officer for the implementation of the rules



Electronic application process

The authorities are required to start an electronic application process for telecom companies interested in setting up telecom towers or fibre infrastructure within one year of the implementation of the RoW rules



Streamline rules to install telecom infra

After receiving approval for developing infrastructure, the telecom companies need to make the payment or submit a bank guarantee within 30 days, and prior to the commencement of work. While setting up infrastructure, the telecom company needs to take measures to reduce public inconvenience and ensure public safety



Dispute resolution mechanism

According to the new policy, the central government will have to appoint officers to resolve disputes between telecom companies and the appropriate authority within 60 days of the implementation of the RoW rules. The officer designated by the central government will have to resolve disputes within a period not exceeding 60 days in a manner specified by the central government

6. "Indian Telegraph Right of Way Rules" dated 15 November 2016, <http://www.dot.gov.in/circulars/gazette-notification-indian-telegraph-right-way-rules-2016>; accessed on 20 July 2017

this can also help in providing necessary infrastructure and services to TSPs and assist in the smooth implementation of various government initiatives under the Digital India program.

Uniformity in guidelines for telecom tower installation in government premises

Site acquisition is one of the major operational challenges with respect to tower installations. To ease the site acquisition process, the government has rolled out an initiative whereby tower providers will be allowed to install telecom towers on government sites. As government buildings are well spread out in important locations of the country, they can act as a crucial enabler for improving connectivity for mobile phone users.

Some of the states like Kerala, Andhra Pradesh and Assam have already initiated the process of allotment of government premises for tower installation. The industry is also working with the respective state governments to help with the implementation of these guidelines.

While progress has been made in a few states, certain departments have extended and applied the guidelines only to TSPs resulting in IP-1s being overlooked from attaining the benefits of the government initiatives.

A sharper focus on bringing uniformity in guidelines across central, state governments and local municipal bodies is required, enabling ease of installation of telecom towers on government buildings and providing a level-playing field to IP-1s for telecom infrastructure provisioning.

Operating challenges with respect to power

Electricity-related issues

Erratic power supplies/ non-availability of power hinders the smooth operations of telecom tower infrastructure. Around 40 per cent of the telecom towers face load shedding for more than 12 hours per day. To ensure a high degree of reliability and availability of telecom services, the tower companies have invested and deployed solution like DG sets, batteries, etc. thereby increasing the cost of services.⁷

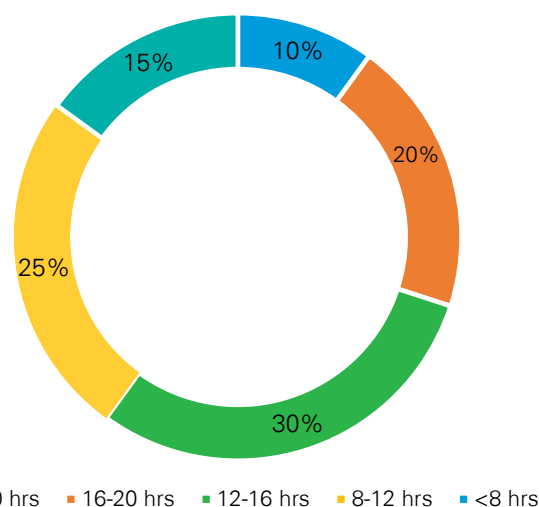
It is critical to ensure that grid connectivity and availability to telecom towers is increased. The government may consider improving the grid electricity provided to telecom towers by prioritising new electric connections, continuous supply at par with emergency services and clarity on tariff structure.



"Robust Telecom Infrastructure is Critical to Achieve Digital India"

T R Dua,
Director General,
TAIPA

Power availability for telecom towers in India



Source: 'Powering the Tower with Energy Storage: India adopting Energy Storage as new a Solutions', energy storage 2013

Variance on import duty of Lithium-ion Batteries for Electric Vehicle vis-à-vis telecom tower application

The tower companies are looking at alternative solutions to power telecom towers such as DG sets, batteries, etc. in order to ensure continuous availability of telecom services. Further, operators can bring about annual savings of 20-25 per cent on fuel cost by using efficient energy storage applications.

Lithium-ion batteries are a preferred source for power back-up due to fast charging capacities, longer life cycle, enhanced safety, low maintenance costs and the ability to operate in a wide range of environmental conditions for long periods as compared to traditional batteries. However, the import duty on Lithium-ion batteries when used for telecom operations is significantly higher than when it is used to power electric vehicles.

The landed cost for Li-ion module (assuming CIF of INR 100) is INR 106.2 when used in electric vehicles and is INR 129.7 when used in telecom applications.⁸

A uniform import duty for Li-ion batteries across applications and industries will help increase use of these batteries in telecom towers. Use of Li-ion batteries will also help in reducing carbon footprints from telecom towers.

The government may also look at incentivising production of Li-ion batteries in India thus reducing the reliance on imports from other countries.

7. ASSOCHAM Analysis
8. As quoted by TAIPA



Other challenges

Reclassification of common infrastructure

Based on the clarification issued by DoT in November 2016, all IP-1s are mandated to seek Unified License or ULVNO license for provisioning of network elements thereby negating the policy issued earlier which allowed sharing of passive and active infrastructure elements to the licensed Service Providers under Section 4 of Indian Telegraph Act 1885.

This license requirement adds an additional cost burden for the infrastructure providers. Infrastructure sharing elements is critical for implementation of new technologies like In Buildings Solutions (IBS), Distributed Antenna System (DAS), etc. and hence the additional cost burden could potentially bring in cost inefficiencies for infrastructure providers. This cost burden will eventually be passed to the end consumers.

In the current context, with a view to reduce the burden on infrastructure providers, there is a need to re-classify/ redefine 'Common Telecom/ Digital Infrastructure' to include Antenna, Feeder Cable, Node B, RAN & Transmission System, coaxial cable, combiners, splitters, directional couplers and passive antennas etc. The common telecom digital infrastructure must also be allowed to be owned and maintained by IP-1s and shared amongst the TSPs only under its existing registration certificate(s).

Security protection of telecom infrastructure

There have been several instances of disruption of telecom installations in the recent past. Some incident were observed where the building owners or Resident Welfare Associations cut-off the electricity connections to these critical installations just to re-negotiate commercial terms for rent/ right to use.⁹ There have also been numerous issues of vandalism and fibre cuts at various places in the country.⁹

There is a need for defining the security framework for telecom infrastructure assets such as fibre and telecom towers deployed across the country. This framework should allow the assets to be treated as essential infrastructure and stringent penal provisions should be in place to mitigate risk of damage to these assets.

Lack of infrastructure status benefits

The Indian telecom tower industry has been accorded with 'Infrastructure Status' considering its significance in the development of telecom sector and overall economy of the country. However, the benefits derived by infrastructure grantees have not been extended to this sector. Some of the benefits are as listed below

- Availability of Funds at Concessional Rates
- Allowing higher ECB limits to fulfill Working Capital requirements
- Funding for Renewable Energy
- Extending Viability Gap Funding (VGF) facility
- Providing accelerated depreciation and tax holidays
- Lower import duties and excise exemption

The government may consider extend benefits to tower industry which are already provided to other infrastructure players such as roads, ports, airports etc.

Challenges related to taxation structure

Levy of property tax on mobile towers

As telecom towers are connected to the ground, they are often considered as fixed assets and subjected to extra levies such as property tax. Levy of property tax on telecom towers varies in rates/amounts depending on whether it is levied by State Governments, Municipal Corporations and Municipalities. For example, the rate of property tax varies from 40 per cent to 112 per cent in the State of Maharashtra amongst various municipal corporations/municipalities etc.⁹

The Central government should come up with guidelines to ensure property tax is levied at uniform rates and is consistent across various state and regional authorities.

Exclusion of telecom towers from availing CENVAT credit

The current structure of GST tabled on 28 March 2017 has excluded IP-1s from getting benefit on procurement of telecom towers and hence may result in an increase in cost for tower operators. Further, currently, no subsidy is provided by the government on diesel even though it is an operational cost for infrastructure providers. Further, no CENVAT credit is given to the sector for the commercial use of diesel as a power backup.

9. As quoted by TAIIPA



Handset manufacturers



Facilitating a digitally smart India

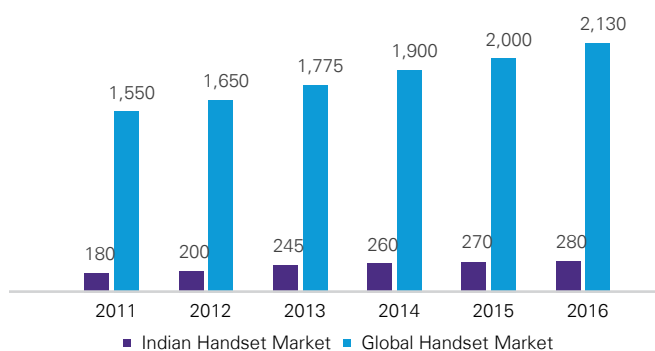
Mobile phone is a tangible gateway for TSPs to reach the end consumers and allows the customers to reap the benefits of an ever evolving telecom service catalogue. Robust growth of the handset market coupled with enhanced connectivity of telecom services have been pivotal in growth of various industries such as retail, manufacturing, IT, e-commerce, etc.

To achieve higher levels of digitisation, enhancing the hardware ecosystem to support the telecommunications service catalogue is an absolute necessity. A wider penetration of feature phones and smart phones would

facilitate seamless application of upcoming technologies such as 5G, M2M, Internet of Things (IoT), etc. and also enable the government in achieving targets that it set under the flagship 'Digital India' initiative.

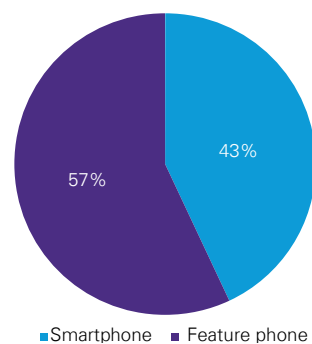
The Indian handset market recorded over 350 million handset shipments in the year 2017¹ compared to 280 million in 2016 and a surge in revenue, from INR111,000 crore in 2015 to INR135,000 crore in 2016.² Smart phones have also gained immense popularity in India in the last four years and constituted 43 per cent of the total handset shipments in 2016³.

Handset shipments trend – India versus global 2016 (in millions)



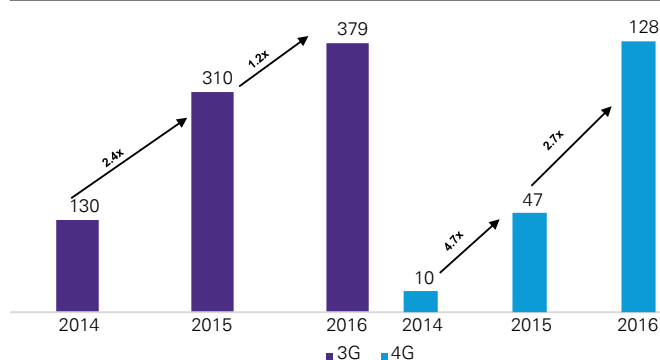
Source: Creating the mobile handset manufacturing ecosystem in India issued by the Indian Cellular Association, created in March 2017 and accessed on 18 July 2017

Mobile phone shipped in India 2016



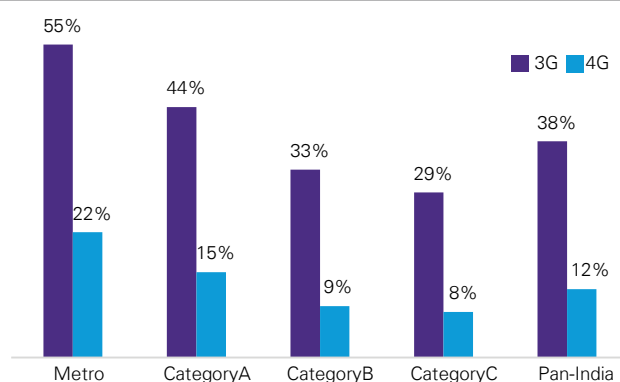
Source: India Mobile Broadband Index 2017 issued by NOKIA in March 2017, accessed on 18 July 2017

3G/4G Device base trend in India (figures in millions)



Source: India Mobile Broadband Index 2017 issued by NOKIA in March 2017, accessed on 18 July 2017

3G/4G Device penetration by Circle category – Dec '16



Source: India Mobile Broadband Index 2017 issued by NOKIA in March 2017, accessed on 18 July 2017

1. Number of users crosses 300 million in India dates 25 Jan 2017 in www.tech.firstpost.com accessed on 18 July 2017
2. Phone market revenue grows 22% to USD 20 billion in India issued by www.telecomlead.com on

28 february 2017, accessed on 18 July 2017
3. India Mobile Broadband Index 2017 issued by NOKIA in March 2017, accessed on 18 July 2017

Various steps have been under taken by the government such as the launch of the 'Make in India' initiative, setting up of an industry driven Fast Track Task Force (FTTF), robust duty differential scheme to encourage domestic manufacturing of handsets and components in India. Under 'Make in India', over 70 new manufacturing facilities have already been established since August 2015 generating over 1 lakh direct employment opportunities.

Initiatives taken by both the public and the private sector have partially been able to help manufacturers explore the capabilities of the market. However, key players are still facing challenges which, if not addressed in due time, may be detrimental to the overall growth of the market. The industry is of the view that fewer benefits available with regard to export incentives, lack of a direct tax exemption regime, significant challenges related to massive gaps in skill and competency, along with stringent regulatory mandates such as restriction on imports of second hand equipment, high e-waste collection targets, etc. are making the current ecosystem unfavourable and uneconomical for business.

Current landscape and key challenges

Export incentives schemes, tax holidays and subsidies

Indian handset exports flourished from 2008 to 2012 going up to INR12,000 crores but were interrupted by a decline of almost 30 per cent in two subsequent years.⁴ Accompanied by a parallel fall in handset manufacturing, downfall of handset manufacturing industry became a major area of concern for the government.

In order to revive the industry, it is imperative to boost handset manufacturing in India. The FTTF, set up in 2014 has a target of increasing count of handsets manufactured in India to 500 million and handset exports to 120 million by 2020.⁵ Further, 'Make in India', 'Skill India', and other initiatives taken by the government played a pivotal role to achieve an 85 per cent growth in handset manufacturing recorded in the year 2015-16 (INR54,000 crores) over the previous year,⁵ which in 2016-17 grew to INR90,000 crores

Despite the rise in handset manufacturing, exports have not yet been kick started and may be encouraged by an appreciable export promotion regime in place.

Currently, the only export incentive available to handset manufacturers is a two per cent incentive under the Merchandise Exports from India Scheme (MEIS) introduced in the Foreign Trade Policy 2015-20. The industry is of the view that the government may increase the MEIS incentive and introduce new incentives such as freight equalization subsidy

and to enhance duty draw back to 3 per cent to attract more players in the market and to encourage the existing players to ramp up manufacturing which would also create more jobs in India.

Secondly, zero import duty is applicable on few capital goods such as SMT lines etc. used for manufacture of handsets. However, various other capital goods used for manufacture of handsets and components are still not covered under zero import duty regime. Therefore, full import duty is currently levied on various capital goods used in manufacture of handsets and components. Though, under the new GST framework, manufacturers⁷ will be able to avail input credit for the equipment imported, imported equipment still add significantly to the overall cost of manufacturing in India.⁷ Also, import of second hand capital goods has been restricted by the Ministry of Environment, Forest and Climate Change and clearances for imports takes a long period of time to complete. Therefore, the possibility of a cost effective alternative to import the new capital goods is virtually eliminated. The government may consider expanding the existing list of capital goods used for manufacture of handsets and components (as per the PMP roadmap upto 2020-21) and relaxation of restrictions imposed on import of second hand equipment for manufacturing purposes.

Countries such as Vietnam and China, offer significant incentives by way of direct tax holidays which provide a very cost effective platform for handset manufacturers to set up production facilities. Vietnam provides tax exemptions to players for the first four years of revenue generation and levies only 10 per cent for the next 11 years, which may be extended to 26 years on approval of the Vietnamese Prime Minister.⁸ These initiatives by governments of other countries make those countries favourable for market players to undertake manufacturing, raising their global competitiveness.

With the primary objective of making the handset manufacturing market favourable for existing players and attracting new players, the government may consider introducing reforms with regard to tax exemptions, favourable rates and incentives, etc.



"Strenuous and visionary efforts are on to make India the global hub for mobile phone and components design and manufacturing".

**Pankaj Mohindroo,
Chairman,
Fast Track Task Force (FTTF) and National
President- Indian Cellular Association**

4. Mobile phone exports from India may drop to zero in 2015 dated 24 December 2014 by www.gadgets.ndtv.com, accessed on 18 July 2017

5. File no. W-12/40/2014-IPHW, issued by the Ministry of Communications and IT and the DeitY on 8 December 2014, accessed on 18 July 2017

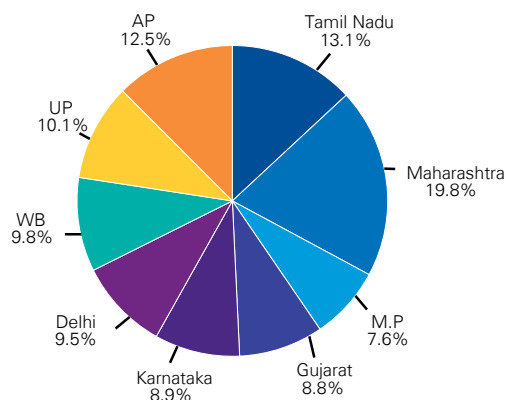
6. Is India the new mobile manufacturing hub, www.businessworld.in, dated 6 March 2017, Accessed on 18 July 2017

7. Creating the mobile handset manufacturing ecosystem in India issued by the Indian Cellular Association, created in March 2017 and accessed on 18 July 2017

8. Accessing Vietnam's tax incentive policies dated September 2016 in www.vietnam.oxfam.org, accessed on 19 July 2017

9. India's e-waste growing at 30% annually, issued by The Hindu business line on 3 June 2017, accessed on 19 July 2017

State wise e-waste produced in India – 2015



Source: Electronic waste in India report issued by the Ministry of electronics and information technology (MeitY)

E-waste in India grew by about 30 per cent

India contributes about 12 per cent to the global e-waste production

India recycles less than 2 per cent of the e-waste it produces

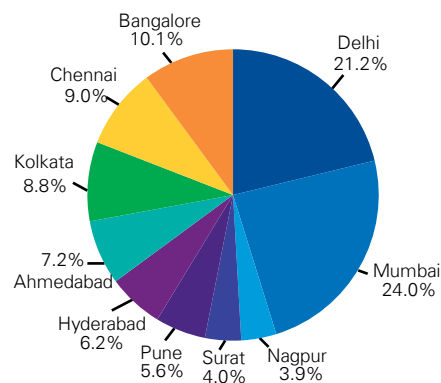
Reconsideration of clauses defined in the E-Waste (Management) rules, 2016

India is the fifth largest producer of e-waste in the world and discarded approximately 18 lakh metric tonnes of e-waste in 2016 (12 per cent of global e-waste).⁹ Recent studies by the United Nations have predicted that by 2020, e-waste in India from old computers and old mobiles will rise by about 500 per cent and 1800 per cent respectively, as compared to the levels in the year 2007.¹⁰

Given that India recycles less than two per cent of the total e-waste it produces annually¹¹, the Ministry of Environment, Forest and Climate Change rolled out the E-waste (Management) Rules in 2016 with the aim of reducing e-waste production and increasing recycling in the most efficient manner. Under these rules, the government introduced Extended Producer's Responsibility (EPR) which makes producers liable to collect 30 per cent to 70 per cent (over seven years) of the e-waste they produce.

The industry is unable to cope up with these targets as majority of the e-waste collected in India is managed by an unorganised sector. Also, informal channels of recycling/ reuse of electronics such as repair shops, used product dealers, e-commerce portal vendors, etc. collect a significant proportion of the discarded electronics for reuse and cannibalisation of parts and components. Accompanied by the huge size of the population and rising electronics users in the country, managing an unorganised sector to achieve such high targets may not be feasible. Thus, the industry suggests that the government may look at collaborating with the industry to draw out formal/standard operating procedures and a phased approach towards the agenda of reducing e-wastes to the lowest.

City wise e-waste produced in India - 2015



Alternatively, the government may also refer methods adopted by other countries for efficient collection and recycling of e-wastes. For example, South Korea, one of the largest producer of electronics managed to recycle 21 per cent of the total 0.8 million tonnes of e-waste that it produced in 2015. Seoul recycles all the e-waste that it produces. It has set up the Seoul Resource Centre which receives 20 per cent of the Seoul's e-waste for extraction of valuable metals such as gold, copper, etc.¹² The remaining 80 per cent of Seoul's e-waste is used entirely for landfilling. The government may also evaluate privatisation of recycling like in the United Kingdom wherein a private company, 'Concept' governed by the public body, Electrical and Electronic Equipment (WEEE) Directive has been handed over the responsibility of collecting and recycling e-wastes in the UK.

Registration of mobile handsets under Compulsory Registration Scheme (CRS) Order

The Department of Electronics and Information Technology (DeitY) issued an Order in 2015 that all mobile handsets are to be submitted to a Bureau of Indian Standards (BIS) recognised lab for testing and subsequent registration of the handset. No handset is to be launched in the market without obtaining approvals from the BIS lab.

In the telecom handset industry, competitive advantage comes from product development and faster time to market. The process for obtaining approvals from the BIS takes an average of two to three months. As a result, the handset manufacturer loses the competitive advantage it would have gained by the timely launch of products globally and also impacts exports.

To enhance the ease of doing business and to enable manufacturers in timely launch of products, the industry suggests introduction of 'umbrella approvals' - registration of brands and manufacturing facilities as a whole rather than of individual handsets. Alternatively, the government may explore the possibility of devising processes to reduce the average lead time for obtaining approvals to 10 to 15 days.

10. E-waste management in India current scenario report issued by the United States Environmental Protection Agency (EPA)

11. India's e-waste growing at 30% annually, issued by The Hindu business line on 3 June 2017,

accessed on 19 July 2017

12. South Korea launches initiatives to recycle more e-wastes at local level report issued by www.ideaonline.org, accessed on 19 July 2017.

Telecom equipment manufacturers



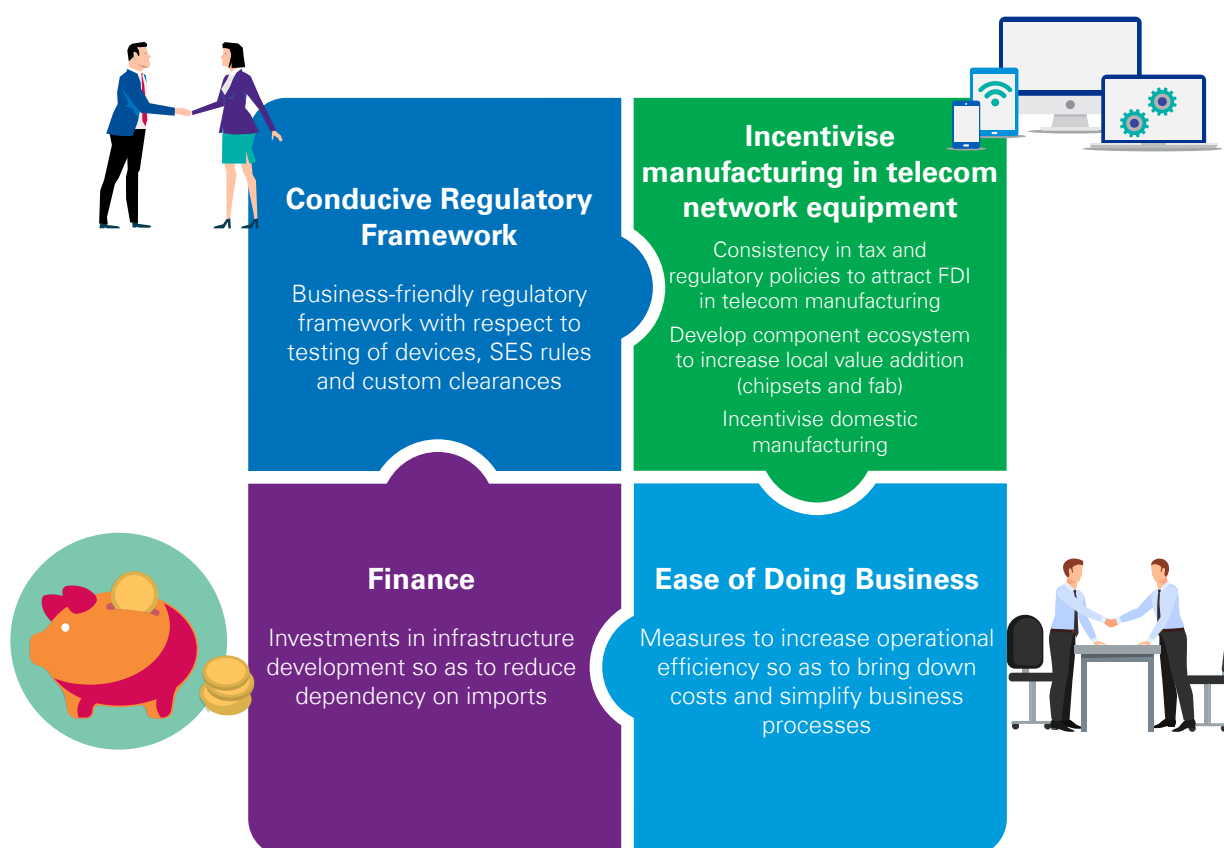
Telecom equipment manufacturers play a critical role in the Indian telecom growth story. Rising demand of broadband services coupled with Government Initiatives such as “Smart Cities” and “Digital India”, is driving connectivity in urban and rural areas. This has led to an all-time high focus on telecom equipment manufacturers – both domestic and international. While government has taken a number of steps to incentivise local manufacturing of telecom equipment, at the same time, imports continue to play a major role in the telecom equipment market. Consistency in tax policies coupled with conducive and predictable regulatory framework would attract more FDI in telecom equipment manufacturing. Strengthening the existing eco-system would help increase domestic value addition.

Government may consider simplification of procurement and supply of telecom equipments – both from the perspective of equipment imports and the development of an ecosystem for domestic equipment provider.

Trade barriers may act as a deterrent for development of the sector. Imposition of Basic Custom Duty (BCD) increases the capex burden on the sector.

OEMs have committed to manufacturing of telecom equipment in India by setting up state of art manufacturing facilities. The operating margins at manufacturing facilities vary across companies. Sustainability of business plays a pivotal role in manufacturing. Unless the economies of scale come in to play with large scale production for export, besides the domestic consumption, the state of art manufacturing facilities would not be self-sustainable.

With the growing demand for telecom services, the procurement and supply of telecom equipment need to be simplified – both from the perspective of equipment imports and the development of ecosystem of domestic equipment provider.



Key challenges



Levy of custom duty on telecom network equipment

The government of India had proposed 10 per cent BCD on all network equipment (including those used for 2G, 3G and 4G). To cater to the ever increasing need for data, telecom operators are investing heavily on 3G and 4G equipment – BCD will further increase their CAPEX as the OEMs would pass on the increased duty to telecom operators and eventually to the end consumers.

While large global OEMs have been manufacturing telecom products in India since many years, domestic production of telecom equipment is still at a nascent stage due to non-availability of raw-material and associated global supply chain challenges. From a global supply chain perspective, it is not economically feasible for any global OEM's to manufacture all the products from one manufacturing unit in India or from any one country. Hence, some of the low volume products may have to be imported from different location.

For India to become a center for telecom equipment manufacturing, there are certain issues that need to be tackled realistically. The government may look at holistically promoting the overall manufacturing eco-system within the country which can be plugged into the global supply chain.

While levying duties on telecom products or considering Preferential Market Access (PMA), the government may review some key areas such as domestic raw material availability, employment creation, tax contribution etc.

It is imperative that India aligns its perception on ITA-1 with the global view and also promotes uniformity in trade practices which otherwise would be detrimental to FDI in the country and ease of doing business.

Preferential Market Policy, 2012

The Ministry of Electronics and Information Technology (MeitY) had outlined Preferential Market Access (PMA) to be critical for procurement of electronic and telecom equipments by government owned entities. The policy mandates that public sector companies need to do at least 30 per cent of telecom equipment procurement from domestic manufacturers, thereby, promoting domestic manufacturing.¹

PMA policy restricts the use of latest technology and equipment by state owned operators. Hence state owned operators are at a disadvantage compared to private peers, who are not under such restriction. Major components required in telecom are semiconductor fabrication units (FAB) and chipsets and need to be imported since they are not locally available. The local ecosystem is under-developed which needs to be nurtured through the FDI or domestic route.

There is an inconsistency in the policies for local value addition among various government departments. While one department considers all components used for manufacturing of bare PCB part of 100 per cent local value addition and permits import of these components, if not locally available, the other department does not agree to this theory. Equipment manufacturers with Intellectual Property Rights (IPR) registration in India but designing and manufacturing done overseas will be PMA compliant with 60 per cent



"Today India is at the centre of world's attention and thanks to the vision and initiatives undertaken by the present government. Key national initiatives like Digital India, Make-In-India, Smart Cities, Skill India has given an impetus to the Indian economy and has brought lot of confidence to both domestic and foreign investors."

Chandan Kumar,
Co-Chairman,
ASSOCHAM National Council on
Telecom and Convergence

value addition criteria. However, equipment manufacturers promoting local manufacturing will not be PMA compliant and receive about 27-32 per cent local value addition as they import Fab/chipset for manufacturing. The government may look at bringing consistencies in the local value addition criteria and also incentivise domestic manufacturing.¹

Proposal for mandatory testing of telecom equipment

The Government of India has mandated that crucial telecom equipment need to be tested and certified by labs within India. The proposed mandatory testing and certification of telecom equipment may cause certain supply chain bottlenecks and also impact the ease of operations for OEMs whose products are produced and tested based on the global standards and specifications. These products also undergo rigorous testing process at globally reputed laboratories, where the test reports are submitted to TSPs as part of the RFP compliances and to TEC as well during interface approval certifications.

Analysis of global practices such as FCC, USA is simplifying the testing regime through its notification dated July 14, 2017 that states “Replacing these two process (self-approval & verification) with one will provide a unified process for the authorization of those RF devices that are well suited for self-approval; i.e. equipment that has a strong record of compliance and for which there is minimal risk of harmful interference”²

FCC also stated that the existing Supplier Declaration of Conformity (SDoC), at the EU, where a responsible party must prepare a European Commission SDoC, when introducing an RF product to the market. The proposal states that the responsible party for equipment would test equipment for compliance to specified standards or requirements and self-certify to public by way of a statement supplied with the product that the equipment complies with the rules.

Mandatory testing of equipment in Indian premises in addition to the testing by vendors or internationally accredited labs will pass burden to the telecom operators, increase time to

market and add to regulatory complexities, which may in turn delay investments.

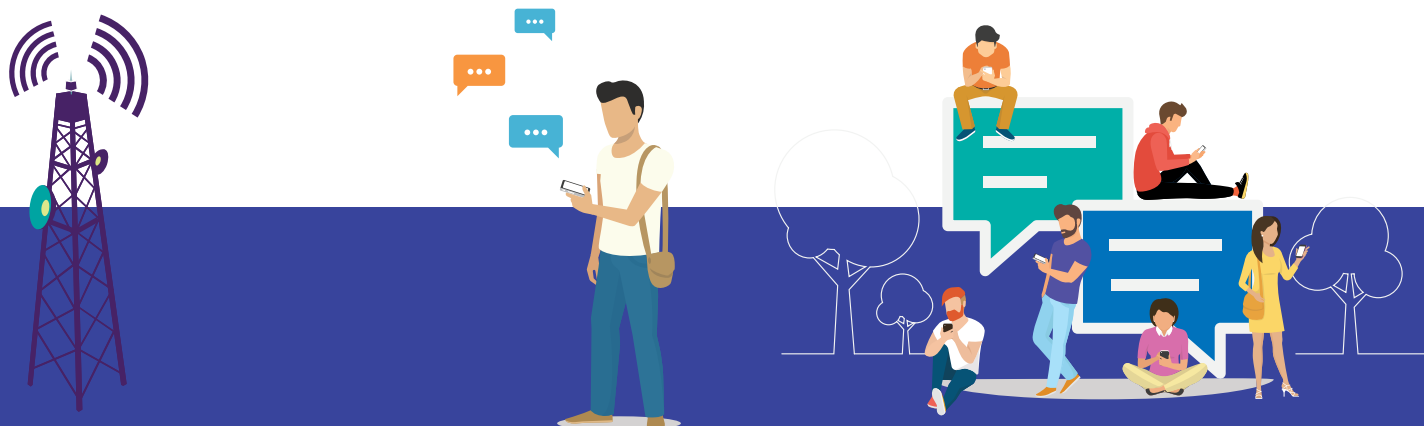
ASSOCHAM Members have requested the DoT, Government of India to reconsider the proposal to implement mandatory testing of telecom equipment, prior to sale/ import/ use in the country. It is recommended that this proposed requirement for mandatory testing is done away with and consider an SDoC regime in line with US FCC and EU as an option (or its variant after reviewing its feasibility), where the vendors undertake to certify the compliance to the standards and requirements as specified by the Government, validity of those declarations can be verified by the authorities at any point of time. These steps would help avoid duplicity of testing which is against the ease of doing business initiatives and can be detrimental to growth of the industry.

WPC import licenses

Equipment installed in the service providers network requires mandatory WPC import licenses if these have been imported in India and licenses are issued by the various Regional Licensing Offices (RLOs). Issuance of license is time consuming and leads to a delay in the import of the shipment resulting in higher demurrage charges and delays in overall network roll outs.

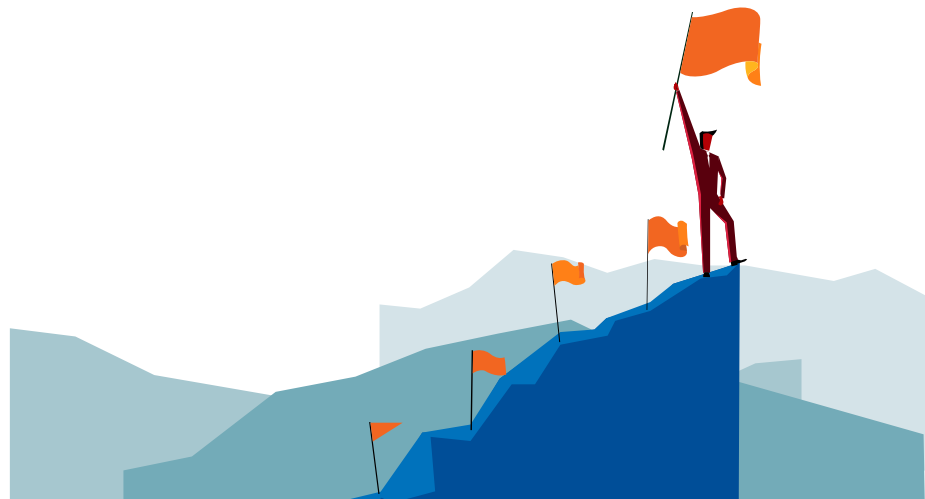
Currently, licenses are required every time a shipment is delivered in India. The equipment may land at different ports at different times for the same Purchase Order (PO) or different purchase order but for the same operator.

The Government may consider issuance of a one-time license to the operator for the entire PO that operator places on the OEM. This will help reduce time delays at various ports and enable faster roll out of networks. Further, the industry can submit detailed report on import of equipments to ensure availability of most updated information to the government.



1. ASSOCHAM Analysis
2. FCC Updates rules related to the authorisation of radiofrequency devices, dated 13 July 2017, http://transition.fcc.gov/Daily_Releases/Daily_Business/2017/db0713/DOC-345777A1.pdf, Accessed on 28 July 2017

Conclusion



The technological transformations along with digital initiatives are designed to create a competitive advantage for the industry while empowering citizens. Telecom acts as a backbone for multiple key sectors of the economy and with the ongoing explosion in data, the outlook for the sector remains positive. As per the IBEF telecom industry sector report, India will emerge as a leading player in the virtual world by having greater than 700 million internet users of the 4.7 billion global users by 2025¹

The industry, in collaboration with the government and regulatory bodies has been playing its part for development of the sector as well as furthering the government's welfare initiatives. However, for the industry to contribute in the process more effectively, certain key steps would require to be taken to ensure efficiency as well as sustainability.

Key recommendations

Reduction in financial stress

- High reserve price of spectrum may need to be revisited in light of the financial stress the industry faces in the current scenario
- Financial stress on the sector can be reduced to a great extent by considering a reduction in spectrum usage charges as well as license fees
- Ambiguity around components of AGR to be resolved by clarification on the same. As per the industry, only core components to be included in computation of the same
- As per TRAI recommendation, the government might consider reducing USOF from 5 per cent to 3 per cent of annual revenue for all licenses, effectively reducing license fee to 6 per cent
- The government may consider uniformity in import duties on Lithium-ion batteries across industries to facilitate affordability of green sites
- All associated benefits as part of infrastructure status may

be extended to telecom infrastructure companies

- The central government can consider coming up with guidelines to ensure property tax is levied at uniform rates and is consistent across various state and regional authorities
- Authorities may consider extending GST benefits to IP-1s for procurement of telecom towers as well as subsidisation of diesel cost since it forms a part of operational costs for infrastructure providers
- The government may explore the possibility of lowering duty on imports of critical equipment and also evaluate lessening the restrictions imposed on the import of second hand equipment.
- Till the time the BCD is removed, BCD exemption should be given to OEMs for supply to DTA, which manufacture in SEZ based in India to help keep capex in check.

Ease of doing business

- Skill development programmes may be created with a focus on creating skilled manpower as well as re-skilling of existing manpower in order to be ready for emerging technologies
- As per the Indian Telegraph Right of Way rules, IP-1s have not been included under the purview of the same. Inclusion of IP-1s under the same will help increase efficiencies in laying down infrastructure across the country
- There is a need for defining a security framework around telecom infrastructure allowing it to be treated as essential infrastructure and stringent penal provisions need to be in place to mitigate risk of damage to these assets
- The industry is of the view that the government may increase the MEIS incentive and introduce new incentives

1. IBEF, Telecommunication industry presentation, June 2017; Accessed on 20 July 2017
 2. Government May Extend Spectrum Fee Payment Tenure, Cut USO Levy to Help Telcos', Communications Today, July 2017, accessed on 20 July 2017

to attract more players in the market and to encourage the existing players to ramp up manufacturing. Implementation targets of e-waste collection need to be reviewed, as against the current requirement, to ensure compliance across the industry.

- ASSOCHAM recommends reconsideration of TEC testing of telecom equipment in favor of an SDoC regime.

Key policy changes

- The government may consider making E and V bands available in order to provide better last mile connectivity to subscribers.
- In order to reduce the burden on infrastructure providers, industry recommends classification of common telecom/ digital infrastructure under a common umbrella and be allowed to be shared amongst licensed TSPs under existing registration certificates.

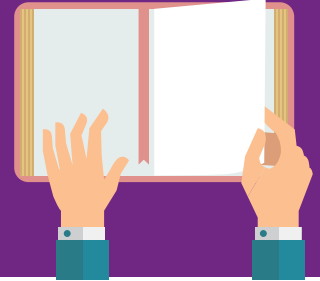
- Approval process for handsets may be streamlined to ensure competitive advantage does not get lost for handset manufacturers while launching new products.
- Preferential Market Access (PMA) policy may be revised to ensure level playing field for local and global telecom equipment manufacturers.
- Uniform and seamless implementation of Right of Way Rules 2016, across central, state governments and local municipal bodies will help ease deployment of overground and underground infrastructure and provide a level-playing field for telecom infrastructure provisioning.

These recommendations, if considered for implementation would help industry in coping with the financial burden currently faced, helping improve business performance as well as prepare for the next wave of growth in terms of new technologies such as IoT, M2M, 5G etc. and continue in the path of connecting the country and helping the government achieve the digital dream and inclusive development.



Glossary

3G	Third Generation	FDI	Foreign Direct Investment
4G	Fourth Generation	FTTF	Fast Track Task Force
5G	Fifth Generation	FAB	Fabrication
AGR	Adjusted Gross Revenue	FCC	Federal Communications Commission
ARPU	Average Revenue per User	GDP	Gross Domestic Product
ASSOCHAM	Associated Chambers of Commerce and Industry of India	GMS	Global System for Mobile communications
AUSPI	Association of United Telecom Service Providers of India	GOI	Government of India
BCD	Basic Customs Duty	GPON	Gigabit Passive Optical Networks
BIS	Bureau of Indian Standards	GR	Gross Revenue
BSNL	Bharat Sanchar Nigam Limited	GSMA	GSM Association
BTS	Base Transceiver Station	GST	Goods and Service Tax
CAG	Comptroller and auditor	IBEF	India Brand Equity Foundation
CAGR	Compounded Annual Growth Rate	IBS	In Buildings Solutions
CAPEX	Capital Expenditure	ICA	Indian Cellular Association
CALA	Central and Latin America	ICRA	International Credit Rating Agency Limited
CDMA	Code Division Multiple Access	IDC	International Data Corporation
C-DOT	Centre For Development of Telematics	IOT	Internet of Things
CENVAT	Central Value Added Tax	IP-1	Infrastructure Provider
CIF	Cost, Insurance and Freight	IPR	Intellectual Property Rights
CMIE	Centre For Monitoring Indian Economy	IT	Information Technology
COAI	Cellular Operators Association of India	ITA-1	Information Technology Agreement
CRISIL	Credit Rating Information Services of India Limited	ITU	International Telecommunication Union
DAS	Distributed Antenna System	KPI	Key Point Indicators
DeitY	Department of Electronics and Information Technology	LTE	Long Term Evolution
DG	Diesel Generator	M2M	Machine to Machine
DIPP	Department of Industrial Policy and Promotion	Mbps	Megabits Per Second
DOT	Department of Telecommunications	MEIS	Merchandise Exports from India Scheme
DTA	Domestic Tariff Area	MEITY	Ministry of Electronics and Information Technology
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation	Mena	Middle East and North Africa
ECB	External Commercial Borrowings	MISTT	Mobile Internet Skills Training Toolkit
EU	European Union	MNC	Multi-National Corporation
EPR	Extended Producer's Responsibility	MRA	Mutual Recognition Agreement



MWA	Microwave Access
NASSCOM	National Association of Software and Services Companies
NKN	National Knowledge Network
NTP	National Telecom Policy
OEM	Original Equipment Manufacturers
OFC	Optical Fibre Cable
PCB	Printed Circuit Board
PMA	Preferential Market Access
PO	Purchase Order
PPP	Public-Private Partnership
QoS	Quality of Services
RAN	Radio Access Network
RLO	Regional Licensing Offices
RoW	Right of Way
SBI	State Bank of India
SEZ	Special Economic Zones
SIM	Subscriber Identification Module
SMT	Surface Mount Technology
SPV	Special purpose vehicles
SUC	Spectrum Usage Charge
SDoC	Supplier Declaration of Conformity
SSA	Sub Saharan Africa
TAIPA	Towers and Infrastructure Providers Association
TEC	Telecommunication Engineering Center
TRAI	Telecom Regulatory Authority of India
TSP	Telecom Services Providers
TSSC	Telecom Sector Skill Council
UL	Unified License
UL-VNO	Unified License - Virtual Network Operator
US	United States
USL	Universal Service Levy

USOF	Universal Service Obligation Fund
VGf	Viability Gap Funding
WEEE	Waste Electrical and Electronic Equipment
WIFI	Wireless Fidelity
WPC	Wireless planning and Coordination
WPC	Wireless Planning Commission

About ASSOCHAM

A knowledge architect of corporate India

Evolution of value creator

ASSOCHAM initiated its endeavour of value creation for Indian industry in 1920. Having in its fold more than 400 Chambers and Trade Associations, and serving more than 4,50,000 members from all over India. It has witnessed upswings as well as upheavals of Indian Economy, and contributed significantly by playing a catalytic role in shaping up the Trade, Commerce and Industrial environment of the country.

Today, ASSOCHAM has emerged as the fountainhead of Knowledge for Indian industry, which is all set to redefine the dynamics of growth and development in the technology driven cyber age of 'Knowledge Based Economy'.

ASSOCHAM is seen as a forceful, proactive, forward looking institution equipping itself to meet the aspirations of corporate India in the new world of business. ASSOCHAM is working towards creating a conducive environment of India business to compete globally.

ASSOCHAM derives its strength from its Promoter Chambers and other Industry/Regional Chambers/Associations spread all over the country.

VISION

Empower Indian enterprise by inculcating knowledge that will be the catalyst of growth in the barrierless technology driven global market and help them upscale, align and emerge as formidable player in respective business segments.

MISSION

As a representative organ of Corporate India, ASSOCHAM articulates the genuine, legitimate needs and interests of its members. Its mission is to impact the policy and legislative environment so as to foster balanced economic, industrial and social development. We believe education, IT, BT, Health, Corporate Social responsibility and environment to be the critical success factors.

MEMBERS – OUR STRENGTH

ASSOCHAM represents the interests of more than 4,50,000 direct and indirect members across the country. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with

management skills and expertise of professionals to set itself apart as a Chamber with a difference.

Currently, ASSOCHAM has more than 100 National Councils covering the entire gamut of economic activities in India. It has been especially acknowledged as a significant voice of Indian industry in the field of Corporate Social Responsibility, Environment & Safety, HR & Labour Affairs, Corporate Governance, Information Technology, Biotechnology, Telecom, Banking & Finance, Company Law, Corporate Finance, Economic and International Affairs, Mergers & Acquisitions, Tourism, Civil Aviation, Infrastructure, Energy & Power, Education, Legal Reforms, Real Estate and Rural Development, Competency Building & Skill Development to mention a few.

INSIGHT INTO 'NEW BUSINESS MODELS'

ASSOCHAM has been a significant contributory factor in the emergence of new-age Indian Corporates, characterised by a new mindset and global ambition for dominating the international business. The Chamber has addressed itself to the key areas like India as Investment Destination, Achieving International Competitiveness, Promoting International Trade, Corporate Strategies for Enhancing Stakeholders Value, Government Policies in sustaining India's Development, Infrastructure Development for enhancing India's Competitiveness, Building Indian MNCs, Role of Financial Sector the Catalyst for India's Transformation.

ASSOCHAM derives its strengths from the following Promoter Chambers: Bombay Chamber of Commerce & Industry, Mumbai; Cochin Chambers of Commerce & Industry, Cochin; Indian Merchant's Chamber, Mumbai; The Madras Chamber of Commerce and Industry, Chennai; PHD Chamber of Commerce and Industry, New Delhi and has over 4 lakh Direct / Indirect members.

Together, we can make a significant difference to the burden that our nation carries and bring in a bright, new tomorrow for our nation.

About KPMG in India

KPMG in India, a professional services firm, is the Indian member firm affiliated with KPMG International and was established in September 1993. Our professionals leverage the global network of firms, providing detailed knowledge of local laws, regulations, markets and competition. KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune and Vadodara. KPMG in India offers services to national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

KPMG International

KPMG is a global network of professional services firms providing Audit, Tax and Advisory services. We operate in 152 countries and have 189,000 people working in member firms around the world. The independent member firms of the KPMG network are affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity. Each KPMG firm is a legally distinct and separate entity and describes itself as such.

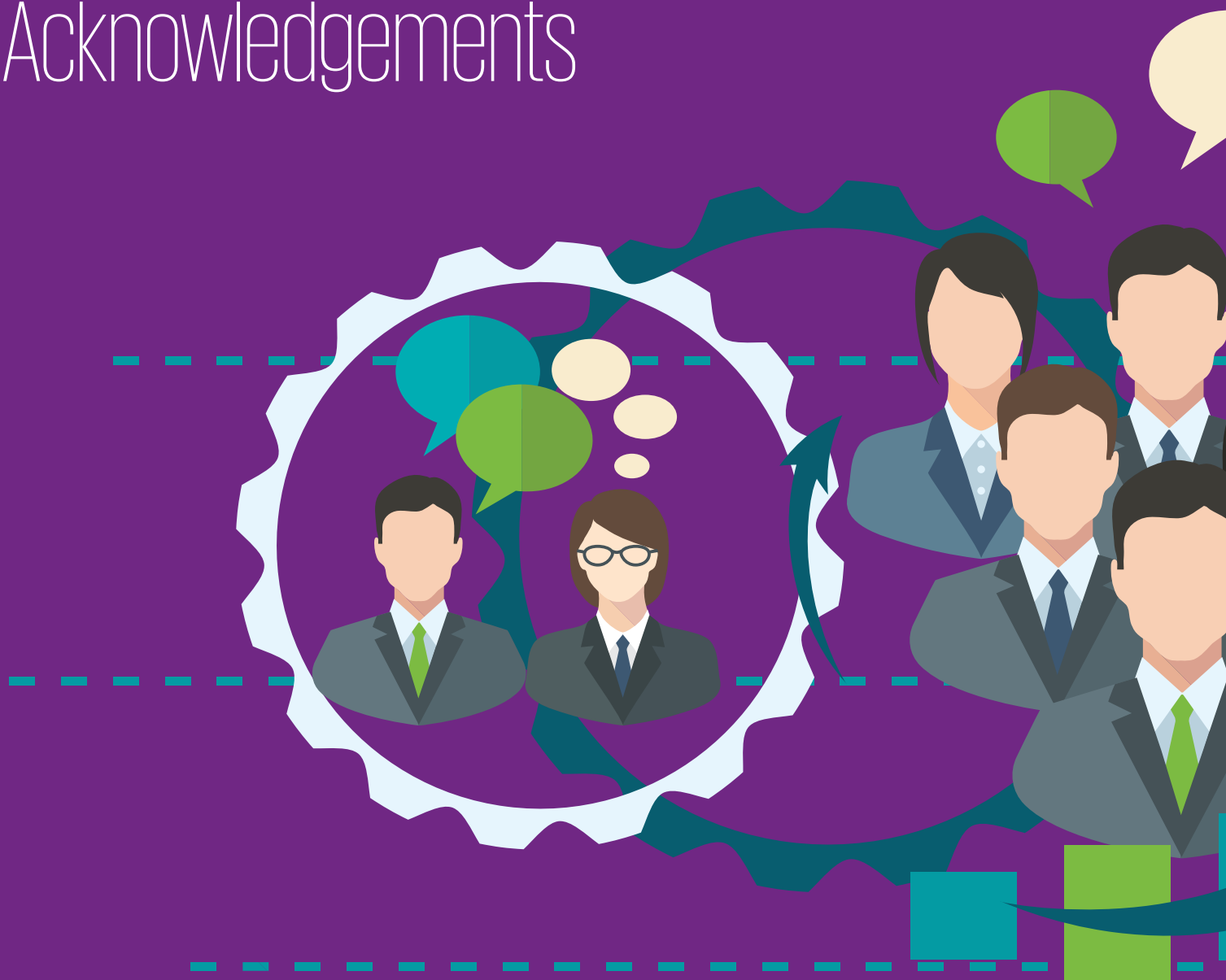
The KPMG Audit practice endeavours to provide robust and risk-based audit services that address member firms' clients' strategic priorities and business processes.

KPMG's Tax services are designed to reflect the unique needs and objectives of each client, whether firms are dealing with the tax aspects of a cross-border acquisition or developing and helping to implement a global transfer pricing strategy. In practical terms that means, KPMG firms work with their clients to assist them in achieving effective tax compliance and managing tax risks, while helping to control costs.

KPMG Advisory professionals provide advice and assistance to help enable companies, intermediaries and public sector bodies to mitigate risk, improve performance, and create value.

KPMG firms provide a wide range of Risk Consulting, Management Consulting and Deal Advisory services that can help their clients respond to immediate needs as well as put in place the strategies for the longer term.

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