



# DIGITAL COMMUNICATIONS

## The force multiplier in India's progress



**Telecom Regulatory Authority of India**  
(IS/ISO 9001-2008 Certified Organisation)

# **How India steered the Transformation**





**Empowering  
the Consumers**

**Ease of  
Doing  
Business  
Initiatives**

**Strategic  
Initiatives**

**Light-  
Touch  
Regulations**

**Framework  
for  
Futuristic  
Telecom  
Services**

**COVID-19  
Pandemic  
Pre-emptive  
Measures**

**Enhancing  
Consumer Choice  
in Broadcasting**

**Harnessing  
the Power of  
Digitization**

One way to look at the telecom revolution of India is to look at the impressive numbers.

Subscribers. Teledensity.  
Data Usage. Tariffs.

Another way is to look at its multiplier effect on the Indian economy and its vast population.  
How it has changed their way of life.

Both are a matter of pride.

And, we will look at both,  
to tell the story of the Indian Telecom  
because TRAI has been in the midst of this.  
Creating the blueprint of this  
extra-ordinary story.

Guiding. Innovating. Building consensus.  
Bringing best practices from the world over.  
And, regulating with a light-touch.





# Transforming Lives



The innovations and the rapid expansion in telecommunications are creating a plethora of opportunities, boosting the Indian economy. The contribution of the telecom sector to the country's GDP increased from 6.1% in 2014 to 6.5% in 2019.



Broadband internet is generating new employment opportunities, particularly in rural and remote areas, enabling a large number of office-goers and employees to work from home.



FDI Inflows into the telecom sector from 2014 to 2020 totalled US \$24.3 billion, improving the country's Balance of Payments position.



### Spreading Knowledge

400 Universities and nearly 19,851 colleges in the country are now connected by the IP-based cloud of BSNL.

Over 250 courses are accessible online in Phase I of National Programme on Technology Enhanced Learning. More than 990 courses in various disciplines of science and engineering are scheduled to go online in Phase II.

Online Education led to uninterrupted learning and prevented loss of education for students during the pandemic.



### Revolutionising rural India

Internet is playing a pivotal role in modernising Indian agriculture and improving the lives of Indian farmers. A multitude of mobile apps are improving the marketability of their farm produce by providing real-time market prices prevailing in Mandis and helping them sell their produce directly to buyers, eliminating middlemen.



### Making healthcare accessible

Development of electronic Healthcare Apps such as mHealth and Telemedicine services helped in fixing appointments and Doctor Consultations through video and audio, a boon during the pandemic.



# **The Indian Numbers**





**1169 Million**

Telephone Subscribers

**4G**

Technological  
revolution

**86.22%**

Teledensity

**8.13%**

increase in  
Gross Revenue of  
the Telecom  
Services Sector

**141 GB**

per Subscriber  
Data usage

**6.5%**

contribution to  
GDP by the  
Telecom Sector

**Rs. 11**

per GB Data cost

**228%**

increase in Rural  
Internet Subscribers

**Rs. 3,25,000  
Crore**

netted by Govt. through  
Spectrum auctions

Urban Internet  
Subscribers up by

**171%**

Buyer's market with

**520.80  
Million**

Mobile Number Portability  
requests till date

**57.29%**

Internet Teledensity

# Extraordinary Achievements of India

- The total subscribers (wireless and wireline) jumped from 922 million in 2014 to about 1169 million in 2020, a rise of 26.75%.
- The total number of Broadband subscribers increased by almost 13 times, from 57 million in 2014 to about 726 million in 2020.
- The overall teledensity increased from 74.50% in 2014 to 86.22% in 2020.

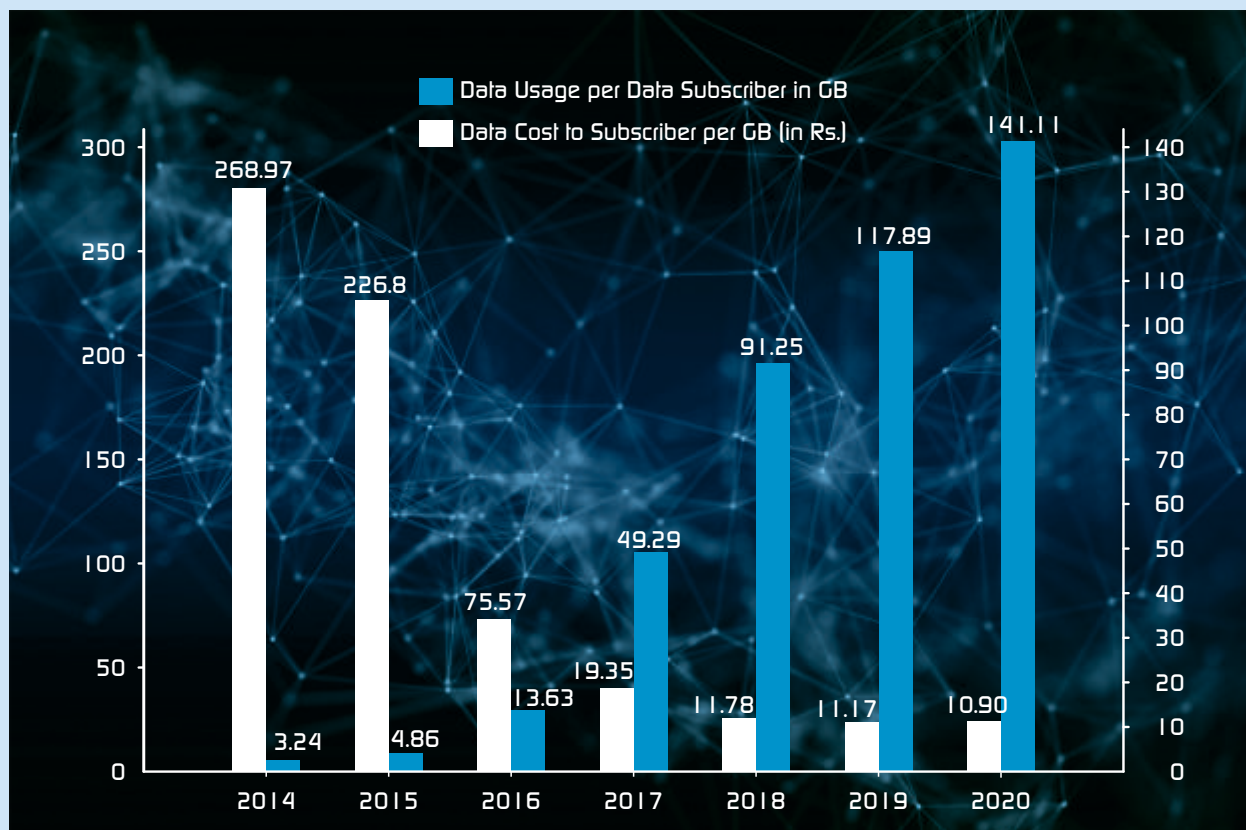
➤ **Data Tsunami:** Per Subscriber Data Usage increased from 3 GB in 2014 to 141 GB in 2020, a seismic growth of 46 times since 2014 !

➤ **Affordable Tariffs:** The data tariffs have fallen steeply from Rs. 269 per GB in 2014 to around Rs. 11 per GB in 2020, a decrease by 25 times ! Our tariffs are one of the lowest in the world, enabled by mega telecom operators and intense competition among them.

## Comparison between Data Usage and Data Tariff







# International Comparison

## Data Cost per GB (Tariff Rate)

Country	Data Cost in Rs. (PPP Adjusted) per GB
India	11.17
UK	286.12
USA	531.43
Global Average	366.46

India has one of the cheapest tariff rates in the world and quality services at reasonable prices. The low tariff rates helped in increasing the internet teledensity in the country, aiding businesses and connecting the vast population, paving the way for growth and development of the economy.

Source : [https://www.business-standard.com/article/pli-stories/india-mobile-internet-rates-remain-lowest-in-world-prasad-119120201245\\_1.html](https://www.business-standard.com/article/pli-stories/india-mobile-internet-rates-remain-lowest-in-world-prasad-119120201245_1.html)

## Data Usage per Subscriber per Month in GB

Country	Data Usage per Sub. in GB per Month
India	11.76
Iceland	11.3
Chile	9.9
Denmark	9.6

India outperforms many OECD countries. Increased data usage adds to revenues and further strengthens the telecom sector to leap forward as compared to other countries.

Source : [http://www.oecd.org/digital/broadband-statisticsupdate.htm?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=whatsnewhealth](http://www.oecd.org/digital/broadband-statisticsupdate.htm?utm_source=newsletter&utm_medium=email&utm_campaign=whatsnewhealth)

# Digital Inclusion

## a) Digital Inclusion:

Total base of internet subscribers increased from a total of 238.71 million to 776.45 million, a rise of 225% !

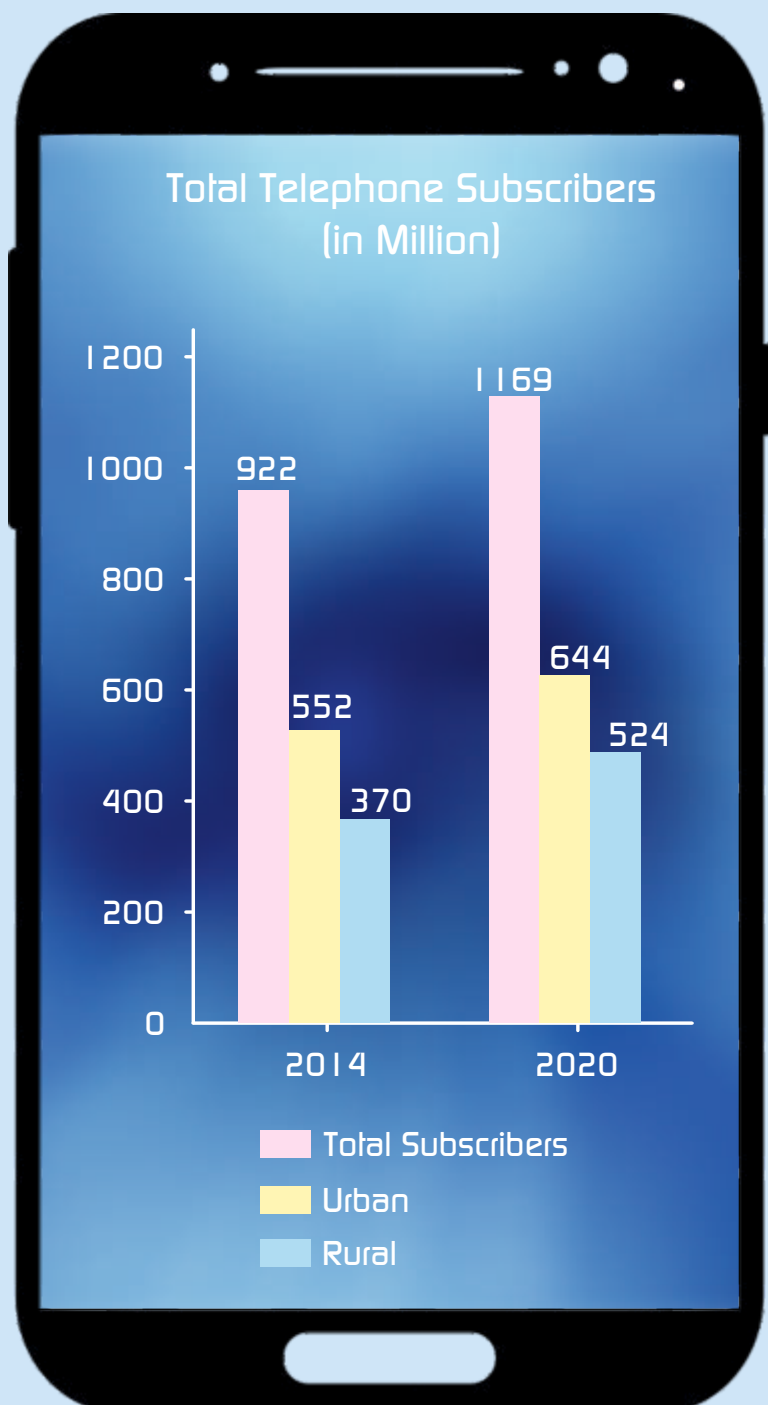
Rural internet subscribers increased from 92.18 million to 302.35 million, a massive 228% increase.

Urban internet subscribers increased from 175.21 million to 474.11 million, an increase of 171%.

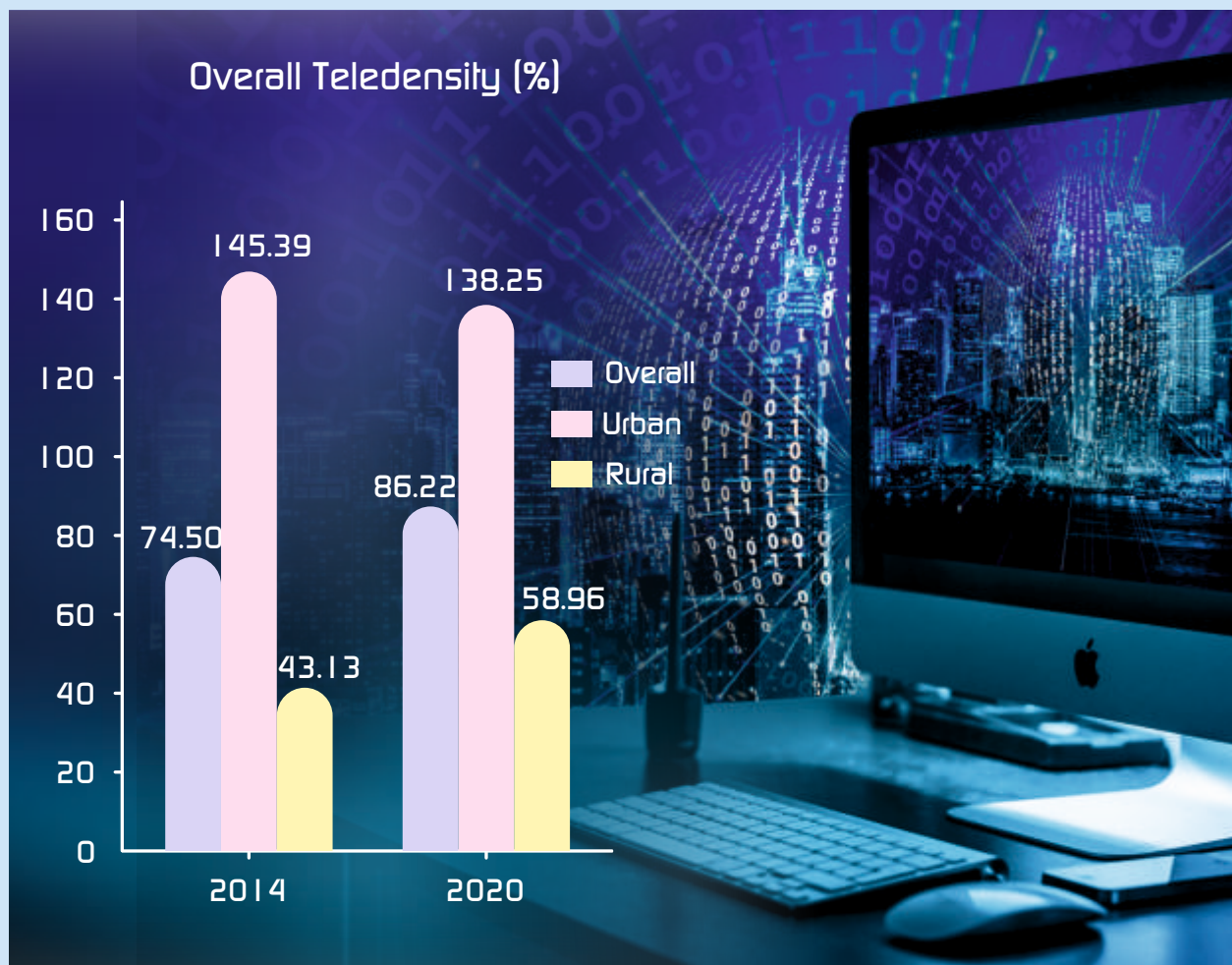
The increase of internet subscribers in rural areas is much higher than the urban areas. This demonstrates digital inclusion and mainstreaming of rural population, especially farmers, artisans, women Self-Help Groups, fishermen, students, etc., in the digital economy. This increase in awareness due to knowledge and information available online and the rise in internet penetration has helped rural and underprivileged communities in many ways. It is bringing global markets to local businesses and broadening the scope for educational opportunities. Rural clinics and hospitals are quickly and securely connecting to larger, urban medical centres with specialists and advanced diagnosis. Moreover, farmers are benefitting from internet service being provided at the Panchayat (village council) office. By regularly visiting the web kiosks, they can easily get weather forecasts, access agricultural data and regular updates on market prices of agricultural produce. The village computer terminals are free of cost and help farmers to negotiate better prices at the local markets.

b) Number of telephone (mobile and fixed) subscribers in rural areas jumped from 370.08 million to 524.39 million, a growth of 42%. In urban areas, the increase is from 551.96 million to 644.26 million, an increase of almost 17%.

c) The share of rural subscribers in total telephone subscribers increased from 40.14% to 44.87%.







- d) The overall Teledensity in rural areas increased from 43.13% to 58.96%.
- e) 4G LTE has brought about a technological revolution in the telecom industry and is fuelling a data boom in the country. With 4G LTE penetration,

consumers are getting uninterrupted connectivity with amazing data speed, easy accessibility of Internet at lower cost and better voice quality making features like streaming media, video calling, etc., a reality.

## Internet Teledensity (%)

Country	Internet Teledensity (%)
India	57.29
Arab Countries	57.1
World (Average)	57
Asia & Pacific (Average)	50.9
Developing Countries Average	46.7

India fares better when compared to the average teledensity of the Asia-Pacific and Arab countries. High internet teledensity is increasing the ease of doing business, adding value to the services sector and contributing to the GDP, aiding India's transition from a developing to a developed country.

Source : <https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2019.pdf>

# Wireless Teledensity

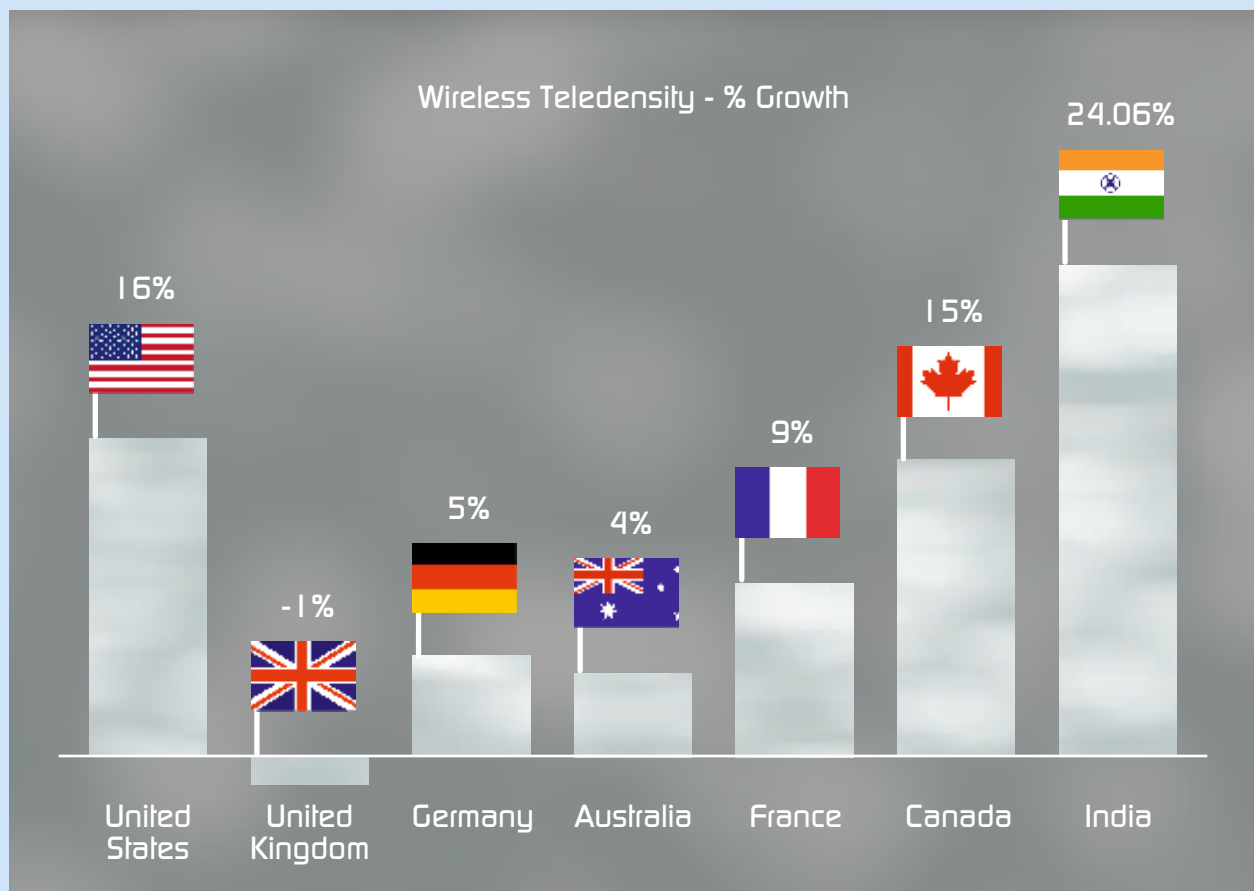
Countries	2014	2019	% Growth
United States	111.56	129.01	16%
United Kingdom	119.93	118.37	-1%
Germany	122.2	128.36	5%
Australia	106.2	110.62	4%
France	101.92	110.61	9%
Canada	80.72	92.53	15%
India*	72.18	89.55	24.06%

Source: <https://data.worldbank.org>

\*[www.trai.gov.in](http://www.trai.gov.in)

In the past 6 years, India's wireless teledensity has grown tremendously by 24.06%, which is even greater than many

developed economies like the United States (16%), Canada (15%), France (9%), Germany (5%) and Australia (4%).





# Wireless Subscriptions

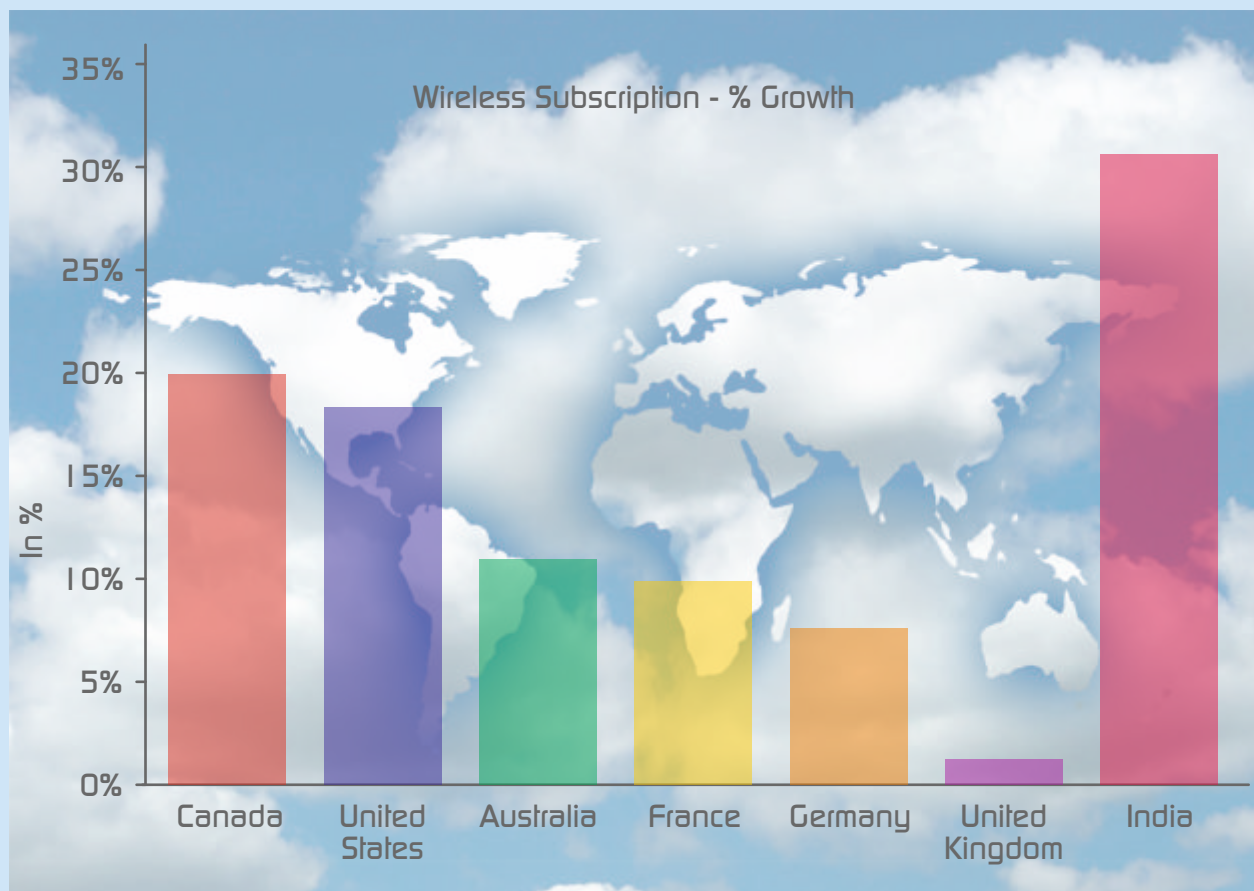
Countries	2014	2019	% Growth
Canada	2,87,89,000	3,46,15,000	20%
United States	35,55,00,000	42,20,00,000	19%
Australia	2,50,60,000	2,78,80,000	11%
France	6,54,25,000	7,20,43,000	10%
Germany	9,95,30,000	10,72,00,000	8%
United Kingdom	7,84,60,684	7,94,72,341	1%
India*	89,33,14,473	1,18,34,03,310	32.47%

Source: <https://data.worldbank.org>

\*[www.trai.gov.in](http://www.trai.gov.in)

In the past 6 years, India's wireless subscriptions have grown by a whopping 32.47%, higher than many developed

economies like Canada (20%), the United States (19%), France (10%), Australia (11%), Germany (8%) and UK (1%).

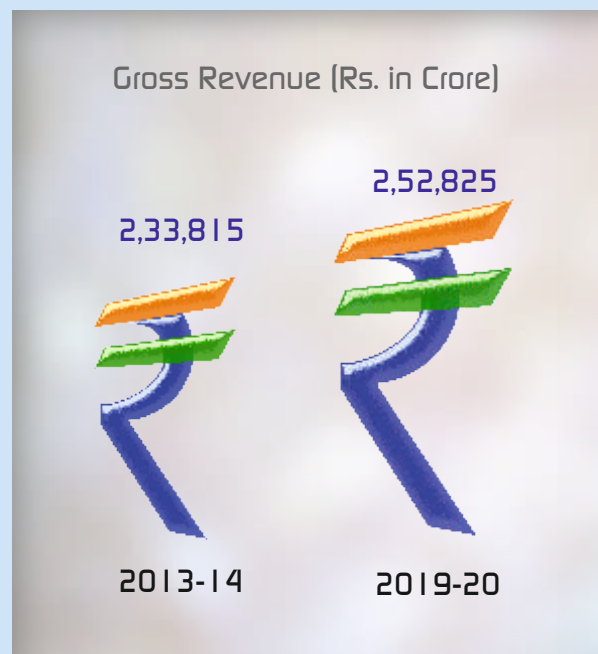


# Other paradigm shifts in Consumer satisfaction

- a) Wide choice – due to varied tariff offerings by the Service Providers.
- b) Buyers' Market – intense competition in the market and Mobile Number Portability (MNP) provided across India (a provision introduced by TRAI in 2015). Since 2014, 408.86 million subscribers submitted their requests for MNP. The cumulative MNP requests increased from 111.94 million in 2014 to 520.80 million in 2020.
- c) Telecom inclusion leading to Financial inclusion – the Unstructured Supplementary Service Data rate regulation by TRAI, in consultation with the Reserve Bank of India, empowers consumers to perform bank transactions on a feature phone without access to internet.

## Revenue and GDP contribution of the Telecom Sector

- a) Gross Revenue of the telecom services sector increased from Rs. 2,33,815 crore during FY 2013-14 to Rs. 2,52,825 crore during FY 2019-20, a growth of 8.13%.
- b) The contribution of telecom sector to GDP increased from 6.1% in 2014 to 6.5% in 2019. As per the media reports, the telecom sector enabled 30% of the GDP during COVID-19 pandemic.
- c) The telecom spectrum auctions, based on the recommendations of TRAI, have netted more than Rs. 3,25,000 crore to the Government.





# **The Recommendations**



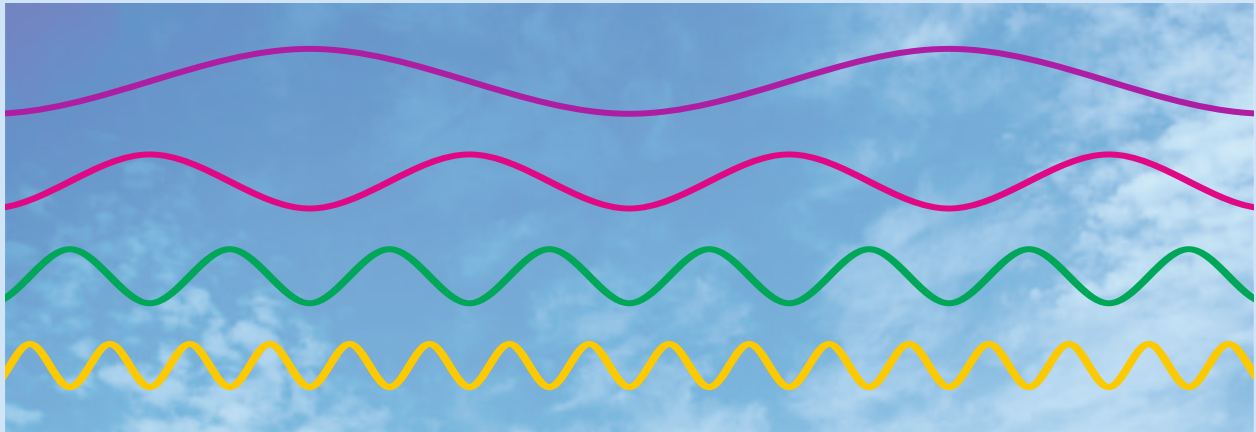
Over the last 6 years, TRAI made many recommendations to the Government – well-researched and deliberated extensively by subject experts.

The approach was to let human ingenuity and competitive market forces steer the evolution of digital communications... with a light-touch of regulations and the consumer always in focus.

The Government accepted most of TRAI's recommendations and let the sector grow in an orderly, just manner.

Next we will discuss some of TRAI's recommendations for various verticals of the digital communications' sector that are in effect and are making far reaching positive impact.

# Ease of Doing Business Initiatives



## Investor-friendly Spectrum Management

### Allowed Spectrum Trading in 2015

- Based on TRAI's recommendations, the Government allowed Spectrum Trading on 12th October 2015.
- A secondary market for Spectrum was thus created, and it provided an exit option removing the exit barrier.
- This increased Spectrum availability in the market and its efficient utilization.

### Allowed Spectrum Sharing in 2015

- Based on TRAI's recommendations, the Government allowed Spectrum Sharing on 24th September 2015.
- It permitted many operators to share Spectrum in the same band. This led to efficient and increased utilization of Spectrum, improving the Quality of Service for consumers by giving better coverage and higher speed.

# Removed Entry Barriers

## Introduction of Virtual Network Operators (VNOs)

- Based on TRAI's recommendations, the Government issued guidelines for grant of Unified License (Virtual Network Operators). **'Introducing Virtual Network Operators in Telecom Sector'** guidelines dated 1st May 2015 permitted the entry of service delivery operators who do not own the underlying core network(s). VNOs help the customers by providing innovative and customized services

at affordable prices. VNOs are instrumental in serving niche segments and narrowing the digital gap between the urban and rural areas by offering services mainly in unconnected/underserved areas. Currently, there are 238 VNO operators providing internet services in the country. There are 8 VNO operators providing Access Service. Input Tax Credit methodology has been adopted for calculation of the license fee for VNO operators, and this has facilitated its growth.



## Review of Terms and Conditions for registration of Other Service Providers (OSPs) (2019):

- Based on TRAI's recommendations, the Government issued new guidelines in September 2020, which removed the technical, financial and regulatory barriers in the expansion of the OSP sector, with an aim to qualitatively improve the Ease of Doing Business of the IT Industry, particularly Business Process Outsourcing (BPO) and IT-Enabled Services. The new guidelines reduced the compliance burden of the BPO industry tremendously.

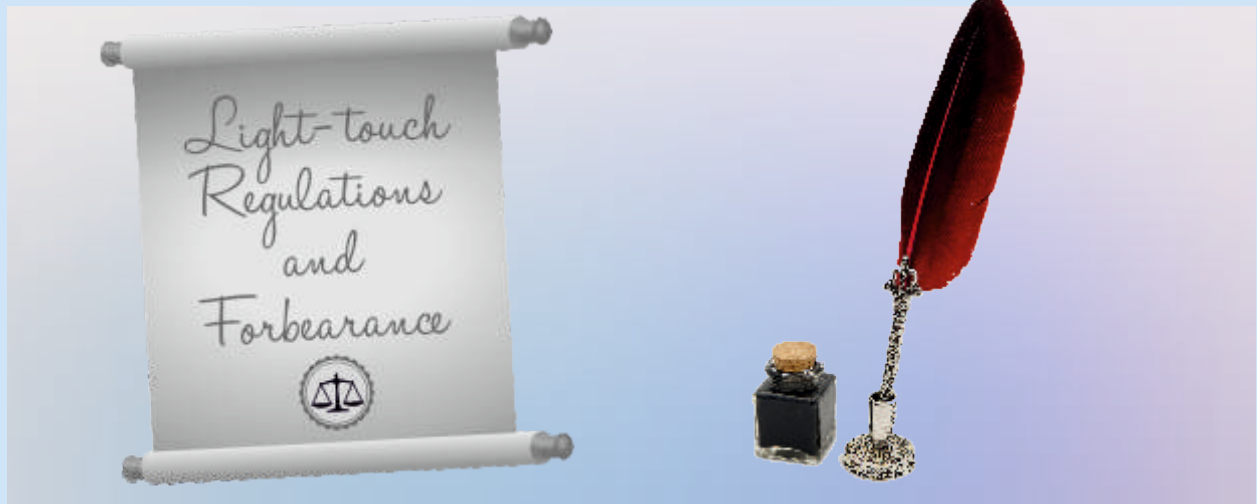
The new OSP framework enabled faster growth of the IT industry and made India one of the most competitive IT jurisdictions in the world. The new guidelines removed unnecessary restrictions and encouraged increased investment in the industry to fulfil the vision of **'Atmanirbhar Bharat'**. It will lead to growth in employment and will also encourage investments in India leading to enhanced ICT contribution to the GDP.



## The International Telecommunication Cable Landing Stations Access Facilitation Charges and Co-Location Charges (Amendment) Regulations, 2018:

These Regulations dated 28th November 2018 were an amendment to the Principal Regulations on the issue. The Principal Regulations prescribed the upper limit for Access Facilitation Charges, Co-location Charges, and other charges which were payable by an eligible TSP to the Owner of Cable Landing Station (CLS) for accessing the facilities at the CLS.

The prescribed charges are now way below the charges levied earlier by the OCLS on other TSPs for accessing facilities at CLS. This brought down the charges for access facilitation and access to submarine cable became more affordable. This reduced the overall cost of international bandwidth, including Internet connectivity.



# Providing an efficient Regulatory framework

'Regulatory forbearance' is about enforcing regulation where it is needed and withdrawing from those parts of the market where it is no longer necessary. In simple words, regulatory forbearance means the ability of a Regulator to forgo direct action at any point of time on the basis that the desired outcomes are already being achieved.

Over the years, TRAI has moved from fixation of tariffs to 'Forbearance with prior Approval stage,' and finally to a 'Forbearance regime with post-facto reporting obligation' with regulatory oversight. Currently, except for the ceiling tariffs for **national roaming, fixed rural telephony, international private leased circuits, domestic leased circuits, unstructured supplementary services, data and mobile number portability charges**, tariffs for all other telecommunication services are under forbearance.

In accordance with the policy of 'light-touch regulation' being followed, the tariff framework gives the TSPs, including

Internet Service Providers, the freedom to design the tariffs according to the prevailing market conditions. This has resulted in emergence of new and innovative products in the market that are designed to provide telecom services at affordable and competitive prices to the consumers.

A TSP has the flexibility to decide various tariff components for different service areas of their operation subject to the reporting requirement and adherence to other regulatory guidelines in vogue. Flexibility given to the TSPs by tariff forbearance is a core feature of the current tariff framework. At the same time, several regulatory principles have been laid down to ensure protection of consumer interests and orderly growth of the sector. The primary responsibility to ensure consistency of tariff with the regulatory principles, directions and guidelines now rests with the TSPs. The tariff filing provision plays a critical role in this regard, enabling TRAI to monitor the prevalent tariffs and effectively intervene, wherever required.

Notwithstanding the forbearance, TRAI has taken various regulatory measures for protection of subscribers against hike in tariffs. However, TRAI has intervened in terms of tariff ceilings sparingly.

Forbearance, however, does not imply “No Regulation” or “Nil Regulation”. Tariff forbearance for a service does not mean end of regulation for that particular service; it is simply the application of the economic rationale that price regulation is not necessary when the markets are functioning in a competitive manner. However, even under forbearance, tariff for the service continues to be monitored and appropriate regulatory measures are put in place so that the interests of the consumers are protected.

**There are already precedents wherein TRAI had stepped in to determine tariff in respect of services which were initially kept under forbearance, e.g., tariff for National Roaming Services fixed in 2002.**

There are two other important aspects or features of forbearance. First, the power to

forbear may be exercised in whole or in part. Second, the decision to forbear does not prevent the regulatory agency from exercising its jurisdiction under different circumstances. That is, the exercise of forbearance is not irreversible. It is always open to TRAI to withdraw, wholly or partly, from the forbearance regime, if the situation so demands. For this purpose, TRAI closely watches the developments in the market.

Since the time TRAI took up the responsibility of regulating tariff for telecommunication services, there was a continuous downward trend in the tariff levels, and, therefore, there was no compulsion for TRAI to revert and forgo the policy of Forbearance. As and when substantial reversal in the trend of tariff takes place and/or there is evidence of inadequate competition in any segment leading to high prices, TRAI would be fully justified to intervene and even to set the prices for various telecommunication services.

Allowing forbearance or free market functioning has given the following benefits:

1

Adoption of new technologies by TSPs to outperform their competitors

2

Tariff reduction due to price competition brought in new demand and increased customer reach as affordability went up. Bigger customer base also provided benefits of scale to TSPs and helped them to enhance revenue and profits.

3

Adoption of new technologies, e.g., fiber transfer, 4G+, etc., increased the quality of service and helped to meet customer expectations.



# Telecom... connecting rural India to new opportunities





## Apps, Big Data, AI, Drones, IoT... the new Agricultural tools for farmers

i. Several Indian startups are revolutionizing Indian agriculture with mobile apps for farmers. Applications like **NaPanta**, **RainbowAgri Market**, **Mandi Trades**, **Agri App** and **Farmitra** facilitate farmers to book agri-equipment rentals and sales from their own farmland. These marketplaces also help farmers to sell their farm produce to customers without any middlemen and with their choice of pricing. By using such free mobile apps, a farmer can access real-time and dynamic information of daily Market Prices of 3300+ Mandis and 120+Agri commodities along with their 3-year price trend using a simple mobile internet connection.

ii. Various technological innovations like **Big Data** and **Artificial Intelligence (AI)** have the potential to benefit farmers. Big Data gives farmers the knowledge needed to produce high quality, desirable crops. Farmers use data to determine the best seeds and other agri-products to be used for optimum results. AI helps them to predict weather conditions and strategize accordingly.

iii. Recently in Rajasthan, **agricultural drones** have played a significant role in shielding agricultural produce from locust attacks. Apart from surveillance capabilities, drones perform a vast number of tasks that previously

required human labour: planting crops, fighting pests and infections, agriculture spraying, crop monitoring, etc. Using drones for real-time cattle tracking also helps farmers reduce staffing expenses.



**Agricultural Drones**

iv. An Indian conglomerate ITC set up village internet kiosks – **e-Choupals** - which give real-time, up-to-date, relevant information on weather, price discovery, agri know-how and best practices, etc.

The kiosks are managed by trained local farmers who help the local agricultural community to access the information in their local languages.

In twenty years, 6,100 ITC e-Choupals were set up across 10 states, reaching out to over 4,000,000 farmers in 35,000 villages. The price realization of their produce is up by 20%, and transaction costs are down to 2% from 8%.

With digital infrastructure and associated human and



organizational capacities, ITC e-Choupal has become rural India's largest internet-based intervention, enhancing rural quality of life and making rural India a competitive source for products and services globally.

- v. Small Farmers Agribusiness Consortium (SFAC) implemented



National Agriculture Market or **e-NAM**, a central government programme envisaged as a pan-India electronic trading portal which networks the existing Agricultural Produce Market Committees (APMCs) and other market yards to create a unified national market for agricultural commodities. It was operationalised in 2016.

Over 90 commodities, including staple foodgrains, vegetables and fruits are currently traded on the platform. A total of 1.69 crore farmers, 1.55 lakh traders and 1844 Farmer Producer Organizations (FPOs) are registered on e-NAM in 18 States & 3 Union Territories and are selling their produce.

- vi. Delhi Kisan Mandi: SFAC also



launched a Kisan Mandi at Delhi in September 2014, with the objective of linking farmers and FPOs to wholesale and retail buyers in fruits and vegetables. It is a platform for

direct sale of fruits and vegetables to organized retailers and institutional buyers. As on 30th Sept., 2020, through Delhi Kisan Mandi, a total volume of 22878 MT of fresh produce has been sourced directly from farmers and FPOs and marketed to wholesale buyers, organized retailers, hotels and caterers etc with a total value Rs. 4447 lakh during the pandemic period (23th March to 30th September, 2020).

- vii. Ministry of Agriculture and Farmers' Welfare has also launched various digital initiatives to boost farm income and narrow the digital divide, namely:

a) **mKisan Portal:** 4.23 crore farmers are registered and experts/scientists from different departments like IMD, ICAR, State Governments and State Agriculture Universities send information to farmers in local languages. Weather information about likelihood of rainfall, temperature, etc. enables farmers to make informed decisions in the choice of seed varieties, decide on timing of sowing and harvesting. They can also make informed decisions to sell produce at the right price and at the right time. This helps to reduce distress sales by farmers due to market supply fluctuations.

b) **Farmers' Portal:** Farmers' Portal is a one stop shop for farmers where a farmer can get relevant information on a wide range of topics including seeds, fertilizers, pesticides, credit, good practices, dealer network and availability of inputs etc.

c) **Kisan Suvidha :** Kisan Suvidha mobile app is used to provide relevant information to farmers through a mobile phone. Information on the following parameters can be made available to the farmers; Weather, Market Prices, Plant Protection, Agro-advisory, Extreme Weather Alerts, location of Dealers of Seeds, Pesticides, Fertilizers and Farm



Machinery, etc. It is available in 7 languages: English, Hindi, Tamil, Gujarati, Oriya, Punjabi and Marathi. The farmers can download Kisan

Suvidha app through Google Play Store and access all the information free of cost.

## Improved yields... reduced costs

As per a study by ResearchGate, **bio-technology** has the potential to increase yields and lower pest control costs. The adoption of bio-technology helps increase cotton and soybean yields by 22% and 20%, respectively.

It also helps to reduce pest control costs of cotton and soybeans by an astonishing 60% and 45%, respectively.

The spread of internet helps the farmers to enrol for online bio-technology sessions,

read more literature, and communicate with experts.



The cumulative effect is an increase in the income of farmers.

## Telemedicine... taking healthcare far and wide

An enterprising kiosk operator sent pictures of an elderly woman's eyes to n-Logue, an Internet Service Provider incubated to offer internet services in the villages of India. They were forwarded to doctors at a hospital in a neighbouring city. The doctors used video-conferencing to examine the patient, and this became the start of an internet-based eye-care programme for rural areas. Remote Shared Medical Appointments (SMAs) enable multiple patients having similar medical needs to meet with the clinician together remotely. The biggest advantage of such an

arrangement is that patients spur one another to engage more and ask more questions.

Owing to the digital revolution, India is well poised to ramp up telehealth now. Data plans are cheaper in India than anywhere. It is possible to get 1.5 GB of data a day for a few hundred Rupees a month. Digital consultations with doctors are common now. According to **Inc42's The State of Startup Ecosystem Report 2018**, there are a total of 4,892 startups in the Indian health-tech space. 2018 saw an increase of 45.06% in investments in health-tech startups. Overall, health-tech startups in India raised a total of US\$ 504 million between 2014-2018.

A survey conducted by **World Health Organization (WHO)** in 105 countries in July, 2020 showed that essential health services were disrupted in a majority of countries during the Covid-19 pandemic.



An acceleration in the use of digital technologies has mitigated the impact of Covid-19 to some extent.

**Practo**, a private digital health platform, has been witnessing a surge in traffic since the beginning of March 2020. As per media reports, teleconsultations have been growing at an average of over 100 per cent week-on-week. Also, there is almost a 50 per cent increase in the number of doctors joining Practo. Like Practo, many other healthcare startups are seeing an unprecedented surge in demand. Unlike the past, people are increasingly willing to pay for digital health services.

In August 2020, India announced the **National Digital Health Mission (NDHM)** to support universal health coverage with a budget of INR 4.7 billion. The NDHM will have health IDs, personal health records, Digi Doctor, and a health facility registry.

The Indian Government's **e-sanjeevani** platform offers both, provider-to-patient and provider-to-provider interactions where patients visit smartphone equipped community health officers in rural health and wellness centres; these in turn connect to different practitioners and specialist doctors. It has been implemented in 15 states so far. As of October 2020, e-Sanjeevani OPD completed 5 lakh tele-consultations since its launch.

According to **RedSeer Consulting**, India's digital health market will expand to \$4.5 billion in this financial year, compared to \$1.2 billion in FY20. The consultancy has upped its estimate of the digital health market to \$25 billion in FY25, compared to its pre-covid estimate of \$19 billion. Medicine delivery will continue to comprise a large majority of the market, according to RedSeer.

# How Telecom technology improves quality of living indices

The results are based on a report by Department for International Development (UK) after a survey in Rural Gujarat.

Methodology used: Index regression.

Education access index, locality security index and quality of Government services indices were regressed one by one with access to telecom index as an explanatory variable. The regression results are:

## 1. Education Access Index

Coefficient of telecom index is 0.84. This means a one unit rise in telecom access index improves Education access index by 0.84. A rise in telecom services, i.e., voice and data services increase access to online classes, e-books, etc.

## 2. Locality Security Index

Coefficient of telecom index is 0.56.

This means a one unit rise in telecom access index improves locality security index by 0.56. Access to internet helps in installation and monitoring of CCTVs and spread of telecom helps in better and timely access to security personnel and police.

## 3. Quality of Government services Index

Coefficient of telecom index is 0.1. This means a one unit rise in telecom access index improves quality of government service index by 0.10. Access to internet leads to online filling of government forms and applying for important documents like Aadhar, driving license, etc. It saves time, removes intermediaries, and lowers corruption.

# Strategic Initiatives



## Augmenting Connectivity

### Implementation of Single Number based Integrated Emergency Communication and Response System

- Based on the recommendations of TRAI, a single pan-India number, '112,' was notified by the Government in 2016 for all emergency services. Hence, consumers are not required to remember different numbers for different emergencies like Police, Fire, Ambulance, women helpline, etc.



### Next Generation Public Protection and Disaster Relief (PPDR) Communication Networks

- The Government considered TRAI's recommendations and enhanced the PPDR plan for India in NDCP-2018. The plan mentions establishment of a pan-India network for PPDR and also about making necessary spectrum available for it, including establishing an INSAT satellite-based mobile communication system. PPDR Communication supports a wide

range of services related to daily life of people such as maintenance of law and order, protection of life and property, disaster relief and emergency responses.

### Augmentation of Telecom Services in Andaman & Nicobar Islands and Lakshadweep Islands through Submarine Cable

- The Government undertook laying of submarine cable from the Mainland to the islands in accordance with a two-pronged strategy recommended by TRAI through its recommendations in 2014. The submarine cable from the Mainland to the Andaman & Nicobar Islands was launched on 10th August 2020 and is in operation. Further, the Union Cabinet gave its approval for Provision of Submarine Optical Fibre Cable Connectivity between Mainland (Kochi) and Lakshadweep Islands (KLI Project) to cover the total of 11 islands at an estimated cost of Rs. 1072 crore (including operational expenses) for 5 years.



**Submarine Cable**



## Provisioning of INMARSAT/Satellite Phone Services:

- Based on TRAI's recommendations, a gateway was established by BSNL for provisioning of INMARSAT/Satellite Phone Services under 'sui generis' category of license to provide continuity to the existing users. This service is mainly used by Government entities such as military

and security agencies in areas where there are no other means of telecom connectivity.



## NET NEUTRALITY



- On 8th February 2016, TRAI issued Prohibition of Discriminatory Tariffs for Data Services Regulations, 2016, prohibiting charging of different tariffs for data services based on the content accessed, transmitted or received by the consumer.
- TRAI followed up the same with 2017 recommendations for:
  - amendment in licence to explicitly provide for non-discriminatory

treatment of content, with reasonable exemptions and exclusions;

- setting up a multi-stakeholder body for monitoring and enforcement.

- The unambiguous regulatory framework is recognized world-wide as India's policy on the subject.

## ENVIRONMENT PROTECTION



- The Government issued directions in 2019, which are based on TRAI's recommendations, simplifying the calculation of Carbon Emissions and provide steps to enhance the use of RET and reduction of carbon emissions. The target for reduction in Carbon Emissions has been set as 30% by the year 2019-20 taking the base year as 2011-12 and

40% by the year 2022-23. As per the latest directions, the reduction in carbon emissions is now monitored by DoT.

- The reduction in carbon footprint in the telecom sector is contributing to the overall carbon reduction of the country and thus contributing towards the UN Sustainable Development Goals.

# Framework for futuristic Telecom Services

## Machine-to-Machine (M2M) communications

- Based on TRAI's recommendations, the Government has implemented a separate 13-digit numbering scheme for SIM-based M2M devices. Instructions were also issued for Know Your Customer (KYC) for SIM embedded M2M Devices to address the identification and traceability of M2M devices and permitted the use

of e-SIM with both single and multiple profile configurations.

Many M2M and IoT players have deployed their systems in India in the field of Smart Meters, Smart Grid, Smart City, surveillance and monitoring, street lighting, utility management, healthcare, agriculture, etc.



Welcome aboard...  
to Inflight  
Connectivity !

## In-Flight Connectivity (IFC) Services

- In-Flight connectivity facilitates provision of network coverage to customers while on board aircrafts. Prior to 2018, in-flight services in the Indian airspace were not allowed. Based on TRAI's recommendations, the Government released Flight and Maritime Connectivity Rules, 2018, wherein provisions for providing in-flight and maritime network facilities have been made. As per the framework, these facilities are provided through creation of a

separate category of "IFC Service Providers" who are registered with the Government.

- Earlier, in case a flight was scheduled to India from a foreign land where IFC was permitted, customers had to switch off their services on reaching the Indian airspace, but now in-flight communication facility is being offered to passengers by Vistara Airlines in India, whereas SpiceJet Airlines is very close to launching the same.

# Empowering the Consumers

Protecting Consumers' Freedom of Choice



## Strengthening Mobile Number Portability (MNP)

- In 2015, the mobile subscribers were allowed to retain their mobile number, even when they changed their location to a different Licensed Service Area (LSA), making MNP more potent by allowing the consumer complete freedom to choose a telecom service provider. MNP has benefited subscribers and increased the level of competition between the service providers, rewarding the operators with better customer service, network coverage, and service quality.



## Reduction in ceiling tariff for Per Port Transaction Charge and Dipping Charge facilitating MNP

- In 2019, TRAI amended its 2009 Regulations resulting in decrease in

the ceiling tariff that could be charged from subscribers by the recipient operator for availing MNP services, from Rs. 19/- to Rs. 6.46/-. Hence, further facilitating porting.

## Provision of In-Building Access by Telecom Service Providers

- To curb monopolistic practices, wherein large building / society / complex owners enter into exclusive agreements with one of the TSPs for providing telecom services to residents, TRAI suo moto made recommendations on 'In-Building Access by Telecom Service Providers' in 2017. Based on TRAI's recommendations, the Government issued an advisory to the TSPs for sharing of in-building infrastructure in November 2019. Further, the Government has also taken up the matter with the Ministry of Housing and Urban Affairs for creating provisions for Common Telecom Infrastructure in the Building bye-laws.



## Protecting Consumers from **'BILL SHOCKS'** in International Roaming



### Protecting Consumers

#### Directions on Publication of Tariffs and Prohibition of misleading advertisements

- TRAI issued revised Directions in September 2020 on the subject while seeking prominent disclosure of essential information on all tariffs.

In order to balance the requirements of providing information to the consumer and the creative liberty of service providers to present information, TRAI has withdrawn the earlier mandated prescribed formats for giving information and merely defined essential information to be provided, leaving the manner of presentation to the TSPs.

#### Regulation of International Mobile Roaming (IMR) Services

- Most of the instances of bill shocks pertain to IMR Services.

After following a consultation exercise, TRAI amended its Telecom Consumer Protection Regulations to provide a comprehensive regulatory framework relating to various aspects of IMR Services, viz., selection of tariff, data usage and availing services not covered under the subscribed tariff, etc.

**926**  
Registered  
TV Channels

**235**  
SD Pay  
Channels

**70.26  
Million**  
DTH  
Subscribers

**98**  
HD TV  
Channels

And, now here's a Report  
on a sector that informs  
and entertains India...  
the Broadcasting sector

**103  
Million**  
Cable TV  
Subscribers

**370**  
Private FM  
Radio  
Stations

**1,648**  
Multi-  
System  
Operators

**290**  
Community  
Radio  
Stations



**1902.75  
Crore**  
FM Radio  
Advertising  
Revenue

**32,000  
Crore**  
Indian  
TV Industry  
Advertising  
Revenue

**46,800  
Crore**  
Indian  
TV Industry  
Subscription  
Revenue

# Broadcasting and Cable Services



Broadcast & Cable Services	2014	2020	% Growth
Total Number of Channels registered with Ministry of Information & Broadcasting (MIB)	793	926	16.77%
Number of SD Pay Channels	187	235	25.67%
Number of HD Pay Channels	34	98	188.24%
Number of Private FM Radio Stations	242	370	52.89%
Number of Community Radio Stations (Operational)	161	290	80.12%
Number of Multi-System Operators registered with MIB	144	1648	1044.44%
Total Active DTH Subscribers (in Millions)	37.19	70.26	88.92%
Number of Cable TV Subscribers (in Millions) *	99	103	4.04%
FM Radio Advertisement Revenue (Rs in Crore)	1406	1902.75	35.33%
India Television Industry Subscription Revenue (Rs in Crore)*	28,100	46,800	66.55%
India Television Industry Advertisement Revenue (Rs in Crore)*	13,600	32,000	135.29%

\* FICCI-EY report on India's media and entertainment industry



## Policy Recommendations for the Broadcasting Sector



➤ Through its recommendations on the **Implementation of Digital Addressable Cable TV Systems in India dated 5th Aug 2010**, TRAI provided a framework of implementation of digitization with addressability and the time frame for digitization of Cable TV networks and licensing issues. As a result, DAS implementation was completed throughout the country in 2017. This ushered in a new era of digitization in Cable TV.

➤ **Recommendations on FM Radio Broadcasting dated 20th February 2014** which inter-alia provided Migration of FM Radio Operators from Phase-II to Phase-III of FM Radio. Private FM broadcasters operating in Phase-II migrated to Phase-III of FM radio enabling continuity of operations/services for Phase-II operators.

➤ **Recommendations on Guidelines for Television Rating Agencies dated 11th Sep 2013** were accepted by the Government and resulted in the formation of an industry-led body called Broadcast Audience Research Council (BARC) for Television Audience Measurement. BARC got registered under guidelines issued by Ministry of Information and Broadcasting and commenced operations in 2015. This brought in an independent agency for TRP measurement.

After digitization and implementation of Digital Addressable Cable TV Systems in India, addressability, capacity and quality of signal of cable TV networks improved. However, the real benefits of digitization, such as choice of selecting channels on à la carte basis and the availability of multimedia services, did not reach



the subscribers. Hence, the need for a comprehensive framework was recognised. Therefore, on 3rd March 2017, TRAI issued a new regulatory framework for the broadcasting and cable services which came into effect from 29th December 2018.

The components of the new Regulatory framework for Broadcasting and Cable Services are as under:



➤ **The Telecommunication (Broadcasting and Cable) Services (Eighth) (Addressable Systems) Tariff Order, 2017 dated 3rd March 2017.**

This order enabled channel pricing by broadcasters in a transparent manner and gave consumers freedom to select channels of their choice and pay accordingly.

➤ **The Telecommunication (Broadcasting and Cable) Services Interconnection (Addressable Systems) Regulations, 2017 dated 3rd March 2017.**

These regulations enabled transparency in business transactions between broadcasters, DPOs and LCOs. It led to reduction in litigations between broadcasters and DPOs.

➤ **The Telecommunication (Broadcasting and Cable) Services Standards of Quality of Service and Consumer Protection (Addressable Systems) Regulations, dated 3rd March 2017.**

These regulations enabled availability of information to consumers about channel pricing and other services in a transparent

manner. This resulted in rationalization of installation and activation charges.



➤ **The Telecommunication (Broadcasting and Cable) Services Register of Interconnection Agreements and All Such Other Matters Regulations, 2019 dated 4th September 2019.**

These regulations enabled filing of information regarding the interconnection agreements by the broadcasters and DPOs in a transparent manner.

The implementation and enforcement of the new regulatory framework brought in transparency, non-discrimination, non-exclusivity for all stakeholders in the value chain; adequate and real choice to subscribers / customers and alignment of commercial interests of broadcasters and distributors of television channels to enable the distributors of television channels to recover their network and distribution cost, and the broadcasters to monetize the cost incurred by them in producing the programmes.

The new regulatory framework has been quite successful in establishing harmonized business processes in the sector, a level playing field, bringing-in transparency in TV channel pricing, reducing litigations among stakeholders and providing equal opportunities to smaller Multi-System Operators (MSOs). As a result, there is a pronounced reduction in disputes among the stakeholders as well as elimination of entry barriers.

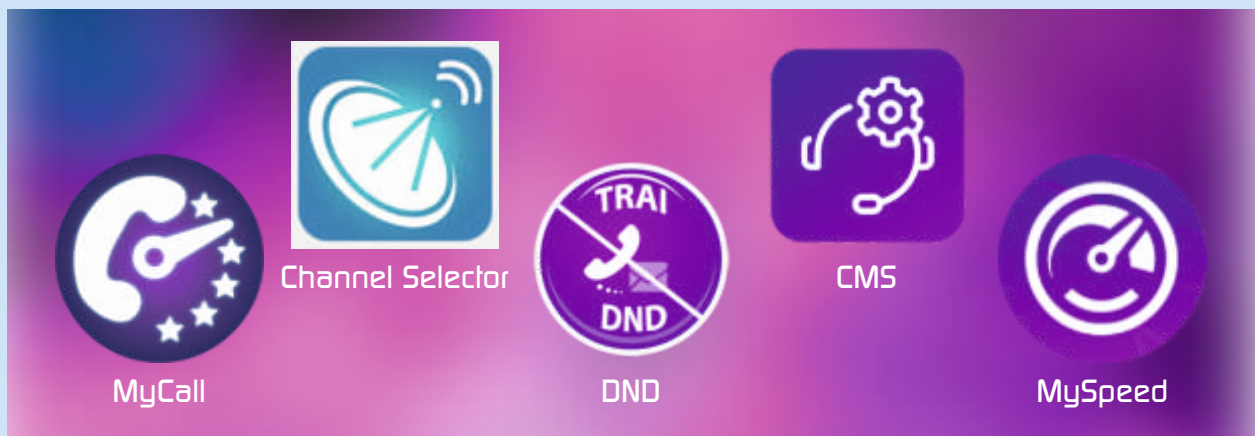
# Harnessing the Power of Digitization

➤ **Online Tariff Filing and Review System** – TRAI implemented a portal with effect from January 2019 for online filing of tariffs, cutting down on the usage of paper and hence saving resources.

➤ **Other Apps/portals for consumers** – TRAI launched many apps / portals to deal with issues such as measurement of data speed,

c) **DND App:** This application facilitates registration for DND and complaints against Unsolicited Commercial Communication (UCC) Calls and SMSes.

d) **MyCall App:** The app provides a platform to all telecom subscribers in India to give their opinion through call quality feedback rating process.



Do-Not-Disturb (DND) directory service, testing QoS parameters, consumer complaint system, etc. Some of the important apps are:

a) **Channel Selector App:** The App lets consumers view their DPO's offerings, fetch existing subscription details, choose and optimize channel and bouquet selection, modify existing choices and set their selections with respective DPOs.

b) **MySpeed App:** This application allows users to measure their data speed experience and send the results to TRAI. The application captures and sends coverage, data speed and other network information along with the nature of device and location of tests.

e) **CMS App:** For redressal of complaints related to Value Added Services (VAS), the Complaint Management System app enables consumers to fetch details of VAS services activated on their phones. Where double consent for VAS has not been recorded by TSPs, the consumers are able to raise claims for the cost of VAS for one month and the claims, if any, are settled by the respective TSPs.

f) **TRAI Apps:** It is a single platform where all the TRAI Apps, i.e., MySpeed, DND, MyCall, CMS and Channel Selector are available.



# COVID-19 Pandemic pre-emptive measures



Robust COVID-19 pandemic pre-emptive measures were undertaken to ensure continuity of services and protection of consumers. As reported by the media, the telecom sector enabled 30% of the GDP during COVID-19.

- Directions to Service Providers to ensure uninterrupted services during lockdown: TRAI issued directions to the service providers to ensure uninterrupted services to pre-paid subscribers who may face difficulty in recharging their mobile phones.

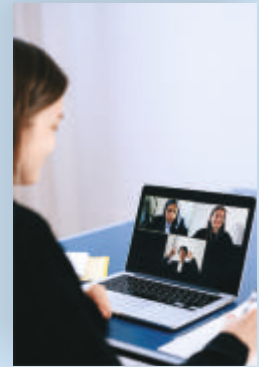
The TSPs responded by extending the validity period to allow affected consumers to receive incoming calls and crediting talk time to allow outgoing calls.

- Advisory to public to prevent bill shocks due to joining of online conference platforms through audio calls: In the wake of the pandemic, the online conferencing platforms gained prominence. TRAI took cognizance of the instances of bill shocks faced by some consumers when they joined

online conferencing platforms, inadvertently dialling international telephone numbers. To prevent such a situation, TRAI issued an advisory at an early stage to the public detailing the concerns and requesting the public to exercise due care while joining online conference platforms through audio calls.

- Initiation of online Open-House Discussions: TRAI has been following a consultative process to change the regulatory framework.

The consultation process includes issue of consultation papers, receipt of comments and counter comments and conducting Open-House Discussions. To ensure fulfilment of its commitment to transparency and yet play its role in preventing the spread of pandemic, TRAI held its first online Open-House Discussion in May 2020 and has since then held four more such discussions with excellent participation and feedback from various stakeholders.





**TRA I**

**Telecom Regulatory Authority of India**

(IS/ISO 9001-2008 Certified Organisation)

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