# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>3</td>
</tr>
<tr>
<td>Advantage India</td>
<td>4</td>
</tr>
<tr>
<td>Market Overview</td>
<td>6</td>
</tr>
<tr>
<td>Recent Trends and Strategies</td>
<td>17</td>
</tr>
<tr>
<td>Growth Drivers</td>
<td>24</td>
</tr>
<tr>
<td>Opportunities</td>
<td>34</td>
</tr>
<tr>
<td>Key Industry Contacts</td>
<td>37</td>
</tr>
<tr>
<td>Appendix</td>
<td>39</td>
</tr>
</tbody>
</table>
Executive summary

2. RISING PENETRATION RATE
- Telecom penetration, also known as tele-density, has grown rapidly over the last few years.
- Tele-density increased from 18.23% in FY16 to 88.17% in FY21.
- In July 2021, tele-density stood at 88.51%.

3. SECOND-HIGHEST NUMBER OF INTERNET USERS
- India has the second-highest number of internet subscribers globally.
- The total number of internet subscribers increased to 808.60 million in July 2021.

4. HIGHER INVESTMENT FROM FOREIGN PLAYERS
- European telecom gear vendors such as Ericsson and Nokia are eager to expand their existing operations in India for the global supply chain under the PLI scheme.
- Similarly, other global vendors such as Samsung, Cisco, Ciena, Jabil, Foxconn, Sanmina and Flex have shown interest to set up manufacturing in India for telecom and networking products under the newly announced PLI scheme.
- FDI inflow in the telecom sector stood at US$ 37.97 billion between April 2000 and June 2021.

1. SECOND-LARGEST SUBSCRIBER BASE
- India has the second-largest telecom network in the world.
- In India, the total subscriber base stood at 1,209.45 million in July 2021.

Source: Telecom Regulatory Authority of India (TRAI), News Articles
2. ATTRACTIVE OPPORTUNITIES

• India's 5G subscriptions to have 350 million by 2026, accounting for 27% of all mobile subscriptions.
• The Government of India has introduced Digital India programme where sectors such as healthcare, retail, etc. will be connected through internet.
• For domestic consumption and export, Ericsson will start manufacturing 5G radio products in India.
• The PLI has already triggered entry of several global players manufacturing mobile devices and components.

1. ROBUST DEMAND

• Tele-density of rural subscribers reached 60.33% in July 2021, from 59.14% in July 2020, indicating potential demand growth from the rural sector.
• Also, India is one of the biggest consumer of data worldwide. As per TRAI, average wireless data usage per wireless data subscriber was 11 GB per month in FY20.

3. POLICY SUPPORT

• The Government has been proactive in its efforts to transform India into a global telecommunication hub.
• The Union Cabinet approved Rs. 12,195 crore (US$ 1.65 billion) production-linked incentive (PLI) scheme for telecom & networking products under the Department of Telecom.
• In July 2021, Bharat Broadband Network Limited (BBNL), on behalf of the Department of Telecommunication, invited global tender for the development of BharatNet through the Public-private Partnership model in 9 separate packages across 16 states for a concession period of 30 years. Under this project, the government will provide a maximum grant of Rs. 19,041 crore (US$ 2.56 billion) as viability gap funding.

4. INCREASING INVESTMENT

• In 2021-22, the Department of Telecommunications has been allocated Rs. 58,737.00 crore (US$ 8 billion). 56% allocation is towards revenue expenditure and the remaining 44% is towards capital expenditure.
• Under Union Budget 2021-22, the government allocated Rs. 14,200 crore (US$ 1.9 billion) for telecom infrastructure that entails completion of optical fibre cable-based network for Defence services, rolling out broadband in 2.2 lakh panchayats and improving mobile services in the North East.
• FDI inflow in the telecom sector stood at US$ 37.97 billion between April 2000 and June 2021.

Source: Economic Times, TRAI, App Annie, Department of Telecommunications, PRS Legislative Research
Market Overview
The telecom market split into three segments

- **Mobile (wireless)**
  - Comprises establishments operating and maintaining switching and transmission facilities to provide direct communication via airwaves

- **Fixed-line (wireline)**
  - Consist of companies that operate and maintain switching and transmission facilities to provide direct communication through landlines, microwave or a combination of landlines and satellite link-ups

- **Internet services**
  - Include Internet Service Providers (ISPs) that offer broadband internet connections through consumer and corporate channels

*Source: Sutherland Research*
Expanding telecom subscriber base on the face of government initiatives

- India is currently the second-largest telecommunication market and has the second-highest number of internet users in the world.
- The PLI scheme in telecom and networking products aims to make India a global hub of manufacturing telecom equipment. It is estimated that full utilisation of the scheme funds is likely to lead to incremental production of about Rs. 2.4 lakh crore (US$ 32.01 billion) with exports of ~Rs. 2 lakh crore (US$ 26.67 billion) over five years.
- India’s telephone subscriber base increased to 1,209.45 million in July 2021, from 1,164.00 million in July 2020.
- In India, tele-density (defined as the number of telephone connections for every 100 individuals) stood at 86.03% as of July 2021.
- The total wireless or mobile telephone subscriber base increased to 1,186.84 million in July 2021, from 1,144.18 million in July 2020.

Source: Telecom Regulatory Authority of India, News articles
The share of the wireless segment in India’s telecommunications market has increased steadily.

The wireless segment accounted for 98.1% of the total telephone subscriptions in July 2021.

Source: Telecom Regulatory Authority of India
Wireless subscriptions witness robust growth over the years

- Wireless subscription has grown robustly over the past few years.
- The growth in wireless subscriptions has led to a significant rise in wireless tele-density.
- In FY21, wireless subscriptions stood at 1,180.96 million, whereas wireless tele-density reached 86.68%.
- The total wireless subscriber base in the country stood at 1,186.84 million, with a tele-density of 86.85%, as of July 2021.
- The wireless subscriber base of Jio stood at 443.61 million, Bharti Airtel (198.23 million) and Vodafone Idea (119.63 million), as of July 2021.

Source: Telecom Regulatory Authority of India
Strong growth in broadband drives internet access revenues

- Total broadband subscription in the country grew from 149.75 million in FY16 to 778.09 in FY21.
- The number of wired broadband subscriptions stood at 22.75 million in FY21.
- Wireless broadband subscribers stood at 755.32 million in FY21.
- In India, the broadband subscriber base stood at 808.60 million, as of July 2021.
- As of July 2021, the top five service providers (Reliance Jio Infocomm Ltd., Bharti Airtel, Vodafone Idea, BSNL and Atria Convergence) contributed 98.77% to the total broadband subscriber base.

Source: Telecom Regulatory Authority of India;
Number of internet subscribers increasing at a fast pace

- The total number of internet subscribers stood at 808.60 million in July 2021. Of this subscriber base, the number of wired internet subscribers was 24.01 million and wireless internet subscribers was 784.59 million.
- The number of internet subscribers in the country increased at a CAGR of 17.82% from FY16 to FY21 to reach 778.09 million in FY21.
- The number of internet subscribers in the country is expected to reach 900 million by 2025.
- India is likely to have 330 million 5G subscribers by 2026.
- Overall IP traffic is expected to grow four-fold at a CAGR of 30% by 2021.
- Average wireless data usage per wireless data subscriber was 14.6 GB per month in FY21 and is expected to reach 40 GB by 2026.

Note: CAGR - Compound Annual Growth Rate; BSNL - Bharat Sanchar Nigam Ltd, IP - Internet Protocol, FY22*: until April 2021
Source: Telecom Regulatory Authority of India, Business Monitor International
Exponential growth in data consumption

- India holds the distinction of being the largest consumer of mobile data globally.
- Data consumption in the country has witnessed exponential growth over the course of the past few years.
- The total wireless data usage in India grew 1.82% quarterly to reach 25,227 PB in the third quarter of FY21.
- The contribution of 3G and 4G data usage to the total volume of wireless data usage was 2.81% and 96.48%, respectively, in the third quarter of FY21. Share of 2G data usage stood at 0.71% in the same quarter.

Note: CAGR - Compound Annual Growth Rate, PB- Petabytes
Source: Telecom Regulatory Authority of India
The Indian telecom sector’s gross revenue declined from US$ 40.29 billion in FY16 to US$ 35.87 billion in FY20.

Gross revenue of the telecom sector stood at Rs. 68,228 crore (US$ 9.35 billion) in the third quarter of FY21.

Indian telecom sector’s revenue expanded at 5.58% in FY20 on the back of stabilising tariff wars and increased spending by subscribers due to minimum recharge plans.

In August 2021, the Department of Telecommunications (DoT) officials stated that it is working on a package, which includes reducing the revenue share licence fee to 6% of adjusted gross revenue (AGR) of the operators from the current 8%. This would be done by reducing the 5% universal service obligation levy by two percentage points and providing relief of about Rs. 3,000 crore (US$ 403.63 million) annually to the operators.

**Note:** CAGR - Compound Annual Growth Rate, FY - Indian Financial Year (April - March), Source: Telecom Regulatory Authority of India’s Performance Indicator Report
Emergence of tower industry

- A surge in the subscriber base has necessitated network expansion covering a wider area, thereby creating a need for significant investment in telecom infrastructure.
- To curb cost and focus on core operations, telecom companies have been segregating their tower assets into separate companies. For example: Reliance Communications has decided to finalise a deal to sell its stake in Reliance Infratel. The value of the deal is around US$ 3.68 billion.
- Creating separate tower companies has helped telecom companies lower operating cost and improve capital structure. This has also provided an additional revenue stream.
- Inspired by the success seen by Indian players in towers business, most of the operators around the world are replicating the model.
- In April 2021, Bharti Airtel Ltd. announced a new corporate structure by forming a new telecom entity to sharpen its focus on digital assets. The telco has formed a new subsidiary, Airtel Ltd., which will house its telecom business.
  - In the same month, Dixon Technologies (India) Ltd. partnered with Bharti Enterprises Ltd. to make telecom and networking equipment. Under the deal, Dixon will make modems, routers, set-top boxes and IoT devices for telecos including Bharti Airtel Ltd.

Source: News Research
# Key players in the telecom sector

<table>
<thead>
<tr>
<th>Company</th>
<th>Total Broadband Subscribers</th>
<th>Wireline Subscriber Base</th>
<th>Market Share of Broadband Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELIANCE JIO INFOCOMM LIMITED</td>
<td>446.6 million</td>
<td>4.15 million</td>
<td>55.24%</td>
</tr>
<tr>
<td>BHARTI AIRTEL LIMITED</td>
<td>201.77 million</td>
<td>5.06 million</td>
<td>24.95%</td>
</tr>
<tr>
<td>VODAFONE IDEA LIMITED</td>
<td>123.97 million</td>
<td>0.55 million</td>
<td>15.33%</td>
</tr>
<tr>
<td>BHARAT SANCHAR NIGAM LIMITED</td>
<td>24.26 million</td>
<td>7.98 million</td>
<td>3.00%</td>
</tr>
</tbody>
</table>

*Note: Data as of May 2021*
Notable trends in the Indian telecom sector… (1/4)

1. **Green telecom**
   - The green telecom concept is aimed at reducing carbon footprint of the telecom industry through lower energy consumption.
   - The Government proposed a joint task force between Ministry of New and Renewable Energy (MNRE) and Department of Telecommunication to promote green technology in the sector.

2. **Expansion to rural market**
   - Over 62,443 uncovered villages in India will be provided with village telephone facility with subsidy support from the government’s Universal Service Obligation Fund (thereby increasing rural tele-density).
   - Broadband service provider, Excitel, plans to raise Rs. 200 crore (US$ 28.37 million) in funding as it plans to expand FTTH (fibre to the home) deployment on its network and establish presence in 50 cities by December 2021.

3. **Emergence of BWA technologies**
   - BWA technologies, such as WiMAX and LTE, is among the most recent and significant developments in wireless communication.
   - Bharti Airtel VoLTE and Reliance Jio 4G services are live across all the 22 telecom circles since 2019.
   - India is expected to be the second-largest market in 5G services followed by China in the next 10 years.

4. **Commercial SMS traffic**
   - Due to higher post-pandemic digital adoption, daily commercial SMS traffic in India, currently, has increased by ~20%, even as overall text messaging continues to shrink. At present, ~1.3 billion commercial SMSs are sent every day.

Notes: BWA - Broadband Wireless Access, TRAI - Telecom Regulatory Authority of India
Source: News Articles
Notable trends in the Indian telecom sector… (2/4)

5

Internet of Things (IoT)
- IoT is the concept of electronically interconnected and integrated machines, which can help in gathering and sharing data. The Indian Government is planning to develop 100 smart city projects where IoT will play a vital role in development of those cities.
- Reliance Jio has partnered with Samsung Electronics to set up a nationwide IoT network.
- Jio's IoT platform is ready to be commercially available in 2020.

6

Public Wi-Fi Networks
- In December 2020, the Union Cabinet, chaired by the Prime Minister, Mr. Narendra Modi, approved a proposal by Department of Telecommunications for setting up of Public Wi-Fi Networks by Public Data Office Aggregators (PDOAs) to provide public Wi-Fi services through Public Data Offices (PDOs).

7

Universal Service Obligation Fund
- In December 2020, the Union Cabinet, chaired by the Prime Minister, Mr. Narendra Modi, approved the provision for a ‘Universal Service Obligation Fund (USOF)’ scheme to provide mobile coverage in Arunachal Pradesh and two districts of Assam, namely KarbiAnglong and Dima Hasao, under the Comprehensive Telecom Development Plan (CTDP) for the North Eastern Region (NER).

8

Satellite-based Narrowband-IoT Network
- In December 2020, BSNL, in partnership with Skylotech India, announced a breakthrough in satellite-based NB-IoT (Narrowband-Internet of Things) for fishermen, farmers, construction, mining and logistics enterprises.

Source: Press Information Bureau
Notable trends in the Indian telecom sector… (3/4)

9

Investment in optical fibre network
- In January 2020, HFCL Limited, formerly known as Himachal Futuristic Communications, supplied indigenously designed, developed and manufactured 100,000 Wi-Fi systems in a record time, and stated that Wi-Fi Access Network Interface (WANI) with the government’s ambitious BharatNet initiative would augment broadband uptake in rural India. Reliance Jio Infocomm is going to expand its optical fibre network to over 1,100 cities under its Jio GigaFiber brand.
- On September 21, 2020, Prime Minister, Mr. Narendra Modi launched a project to connect all 45,945 villages in Bihar with optical fibre internet service. This project will be completed by March 31, 2021, at a cost of Rs. ~1,000 crore (US$ 135.97 million); Rs. 640 crore (US$ 87.01 million) of capital expenditure will be funded by the Department of Telecommunications.

10

Consumer spending
- In the first quarter of FY21, customer spending on telecom services increased 16.6% y-o-y, with over three-fourths spent on data services. This spike in consumer spending came despite of the COVID-19 disruption and lack of access of offline recharges for a few weeks.

11

Rising investment
- Between April 23 and July 16, 2020, Jio Platforms Ltd. sold 25.24% stake worth Rs. 1.52 trillion (US$ 21.57 billion) to various global investors in separate deals involving Facebook, Silver Lake, Vista, General Atlantic, Mubadala, Abu Dhabi Investment Authority (ADIA), TPG Capital, L. Catterton, Public Investment Fund (PIF), Intel Capital, Qualcomm Ventures and Google.
- In November 2020, Google paid Rs. 33,737 (US$ 4.5 billion) for a 7.73% stake in Reliance Industries Ltd.’s digital subsidiary—Jio Platforms Ltd.

Source: ‘Searching for New Frontiers of growth: Indian Banks’- PwC, Reserve Bank of India, Press Information Bureau, News Articles
Notable trends in the Indian telecom sector… (4/4)

12

Consolidation
- Vodafone India and Idea have merged into Vodafone Idea. Vodafone Idea unified assets and completed network integration in June 2020.

13

Mobile banking
- Department of Posts launched mobile banking for its saving account customers.
- As of January 2020, 213 banks were live on unified payment interface (UPI).

14

Digital experience
- In March 2021, Vodafone Idea Ltd. (VIL) announced that the acquired spectrum in five circles would help improve 4G coverage and bandwidth, allowing it to offer ‘superior digital experience’ to customers.

15

Partnership
- In August 2021, Tata Group company Nelco announced that the company is in talks with Canadian firm Telesat to sign a commercial pact for launching fast satellite broadband services in India under the latter’s Lightspeed brand, a move which will pit the combined entity against Bharti Enterprises-backed OneWeb, Elon Musk’s SpaceX and Amazon.
- In March 2021, Advanced Television Systems Committee (ATSC) and Telecommunications Standards Development Society, India (TSDSI) signed a deal to boost adoption of ATSC standards in India in order to make broadcast services available on mobile devices. This allows the TSDSI to follow ATSC standards, fostering global digital broadcasting standard harmonisation.

Source: News Source
Strategies adopted

MARKETING STRATEGY
- Players are using innovative marketing strategies to succeed in this sector.
- Vodafone Idea launched #StrongerEveryHour with an aim to highlight the improved network of Vodafone SuperNet 4G - India’s Data Strong Network.
- Airtel launched a new ad campaign ‘Sab Kuch Try Karo, Fir Sahi Chuno’ and rolled out a new campaign ‘Open to Questions’, highlighting its aim to resolve every single customer query, learn quickly from failures and ensure these are not repeated.

DIFFERENTIATION
- Players differentiate themselves by providing different services to customers.
- Bharti Airtel has already partnered with Amazon Prime and Hotstar and is expected to tie up with Netflix to offer free subscription to Netflix’s content for its mobile customers.
- In September 2020, Reliance Jio partnered with 22 foreign airlines for inflight internet connectivity with plans starting at Rs. 499 (US$ 6.76) per day.
- In September 2020, Airtel and Radware partnered to offer cloud security services to businesses in India.

REDUCED NUMBER OF PLANS
- Players have reduced the number of plans on offer and now offer a limited number of simple tariff plans along with marquee plans.
- This has simplified choosing plans for customers as they can choose the best deals for themselves.

PRICING STRATEGY
- Player's price their products very carefully due to the price sensitive nature of customers and high competition in the sector.

Notes: CDMA - Code Division Multiple Access, GSM - Global System for Mobile Communication
Source: Company website and News Articles
## Key companies in the market

<table>
<thead>
<tr>
<th>Company</th>
<th>Ownership</th>
<th>Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahanagar Telephone Nigam Ltd (MTNL)</td>
<td>Government (56.3%), Life Insurance Corporation (18.8%)</td>
<td>Fixed-line and mobile telephony (in Delhi and Mumbai), data and Internet</td>
</tr>
<tr>
<td>Bharat Sanchar Nigam Ltd (BSNL)</td>
<td>Government (100%)</td>
<td>Fixed-line and mobile telephony (GSM - outside Delhi and Mumbai), data and Internet in 22 circles</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Bharti Group (45.48%), Pastel Ltd (14.79%), Indian Continent Investment (6.65%),</td>
<td>Broadband and mobile (GSM) in 22 circles</td>
</tr>
<tr>
<td>Vodafone Idea Limited</td>
<td>Aditya Birla Group and Vodafone Group partnership</td>
<td>Broadband and mobile (GSM) in 22 circles</td>
</tr>
<tr>
<td>Reliance Jio Infocomm</td>
<td>Reliance Industries Limited.</td>
<td>Broadband and mobile</td>
</tr>
</tbody>
</table>

*Source: Companies’ website, Moneycontrol*
Growth Drivers
Sector benefits from rising income, growing young population

Growing demand

- Higher real income and changing lifestyles
- Growing young population
- Increasing MoU and data usage

Policy support

- Reduction in license fee
- Relaxed FDI norms
- Encouraging firms to expand to rural areas

Increasing investment

- Higher FDI inflow
- Increasing M&A activity

Note: FDI - Foreign Direct Investment, MOU - Minutes of Use per month and per subscriber, M&A - Mergers and Acquisitions
Rising income and growing rural market fuels demand for telecom services

- Incomes have risen at a brisk pace in India and will continue rising given the country’s strong economic growth prospects.
- GDP per capita of India is expected to grow at a CAGR of 7.47% from US$ 1,481.56 in 2012 to US$ 3,273.85 in 2023.
- Increasing income has been a key determinant of demand growth in the telecommunication sector in India.
- The emergence of an affluent middle class is triggering demand for the mobile and internet segments.
- A young growing population is aiding this trend (especially the demand for smart phones).

Notes: CAGR - Compound Annual Growth Rate, *Estimates after 2013, ^Data for 2005, 2006 and 2025 is from BCG’s The New Indian: The Many Facets of a Changing Consumer, for 2017 from IBM-Kalaari Capital’s Imagining a Trillion Dollar Digital India and for 2018 from Redseer Consulting’s Indian Habit of Being Healthy
Source: IMF World Economic Outlook Database April 2018
## Strong Policy Support Crucial To The Sector’s Development… (1/4)

1. **To compensate the consumers in case of call drop**
   - In August 2017, TRAI directed operators to have a call-drop rate of not greater than 2%.
   - The policy measures of TRAI have had a positive impact. Call-drops in the country decreased from 0.94% in 2016 to 0.52% in March 2018.

2. **Standards of quality wireline and wireless services**
   - In 2015, TRAI made regulations to amend the standards of quality of wireline (telephone service) and cellular mobile telephone services. These regulations have been laid down to ensure effective compliance with the quality-of-service regulations and to protect the interest of the customers.

3. **Relaxed FDI norms**
   - FDI in telecom sector has been increased to 100% from 74%. Out this, 49% will be done through automatic route and the rest will be done through the FIPB approval route.
   - FDI of up to 100% is permitted for infrastructure providers offering dark fibre, electronic mail and voice mail.

4. **Telecommunication tariff order**
   - In February 2018, TRAI passed the Telecommunication Tariff (63rd amendment) order, according to which, telecom firms are free to give promotional offers to customers if the offers are transparent, non-predatory and non-discriminatory.

**Notes:** FDI - Foreign Direct Investment, FIPB - Foreign Investment Promotion Board  
**Source:** TRAI, News Articles
Strong Policy Support Crucial To The Sector’s Development… (2/4)

5 International Tie-ups

• On January 15, 2021, India and Japan signed an MoU to enhance cooperation in the field of Information and Communications Technologies. The MoU was signed between the Union Minister for Communications, Electronics and IT, Ravi Shankar Prasad, and the Japanese Minister for Internal Affairs and Communications, Takeda Ryota.
• On November 4, 2020, The Union Cabinet, chaired by the Prime Minister, Shri. Narendra Modi, approved to sign a Memorandum of Understanding (MoU) between the Ministry of Communication and Information Technology and the Department of Digital, Culture, Media and Sports (DCMS) of United Kingdom Government on cooperation in the field of telecommunications/information and communication technologies (ICTs).

6 Financial support

• In August 2021, the Department of Telecommunications (DoT) initiated discussions with banks to address financial stress in the telecom sector, particularly Vodafone Idea Ltd. (VIL) that urgently requires fund infusion to stay afloat.
• The USOF (Universal Service Obligation Fund) is expected to extend financial support to operators providing services in rural areas and encourage active infrastructure sharing among operators.

7 Set up internet connections

• The Department of Information Technology intends to set up over 1 million internet-enabled common service centres across India as per the National e-Governance Plan.
• On August 8, 2016, TRAI made the 10th amendment to the TCPR (Telecom Consumers Protection Regulations) permitting telecom companies to offer data packs having maximum validity of 365 days.

Source: TRAI, News Articles
Indian Mobile Congress

- On December 8, 2020, Prime Minister Narendra Modi inaugurated and addressed the virtual edition of the India Mobile Congress (IMC) 2020.
- The objective of IMC 2020 was to align with the Prime Minister’s vision to promote ‘Aatmanirbhar Bharat’, ‘Digital Inclusivity’ and ‘Sustainable development, entrepreneurship & innovation’ and drive foreign and local investments, encourage R&D in the telecom and emerging technology sectors.

Enhanced spectrum limit

- The prescribed limit on spectrum will be increased from 6.2 MHz to 2x8 MHz (paired spectrum) for GSM technology in all areas other than Delhi and Mumbai, where it will be 2x10 MHz (paired spectrum).
- Telecom players can, however, obtain additional frequency. There will be an auction of spectrum subject to the limits prescribed for the merger of licenses.
- On January 6, 2021, the Department of Telecommunications (DoT) issued Notice Inviting Applications (NIA) for auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1,800 MHz, 2,100 MHz, 2,300 MHz and 2,500 MHz bands. Last date for submission of applications for participation in the auction is February 5, 2021, and auction to commence online from March 1, 2021.

Adequate 5G Airwaves

- In January 2021, the Competition Commission of India (CCI) urged the government to ensure adequate 5G airwaves to be auctioned at affordable rates amid acute financial stress in the debt-laden telecom sector.

Source: TRAI, News Articles
Make in India

- Government of India announced the Phased Manufacturing Programme (PMP) to promote domestic production of mobile handsets. This initiative will help in building a robust indigenous mobile manufacturing ecosystem in India and incentivise large scale manufacturing.
- In January 2020, HFCL Limited, formerly known as Himachal Futuristic Communications, supplied indigenously designed, developed and manufactured 100,000 Wi-Fi systems in a record time, and stated that Wi-Fi Access Network Interface (WANI) with the government’s ambitious BharatNet initiative would augment broadband uptake in rural India.
- In March 2020, the Government approved the production-linked incentive (PLI) scheme for Large Scale Electronics Manufacturing. The scheme proposes production linked incentive to boost domestic manufacturing and attract large investments in mobile phone manufacturing and specified electronic components including Assembly, Testing, Marking and Packaging (ATMP) units.

BharatNet Project: Tender Invited for Public Private Partnership

- In July 2021, Bharat Broadband Network Limited (BBNL), on behalf of the Department of Telecommunications, invited global tender for the development of BharatNet through the Public Private Partnership model in 9 separate packages across 16 states for a concession period of 30 years. Under this project, the government will provide a maximum grant of Rs. 19,041 crore (US$ 2.56 billion) as viability gap funding.
- The project will cover ~3.61 lakh villages (including gram panchayats) across Kerala, Karnataka, Rajasthan, Himachal Pradesh, Punjab, Haryana, Uttar Pradesh, Madhya Pradesh, West Bengal, Assam, Meghalaya, Manipur, Mizoram, Tripura, Nagaland and Arunachal Pradesh.

Other Reforms

- In September 2021, the Indian government approved structural and process reforms in the telecom sector to protect and generate employment opportunities, promote healthy competition, protect interests of consumers, encourage investments and reduce regulatory burden on telecom service providers.

Source: TRAI, News Articles
National Digital Communications Policy, 2018

**Connect India**
- Provide universal broadband connectivity at 50 Mbps to every citizen
- Provide 1 Gbps connectivity to all Gram Panchayats of India by 2020 and 10 Gbps by 2022
- Enable fixed line broadband access to 50% of households
- Achieve ‘unique mobile subscriber density’ of 55 by 2020 and 65 by 2022
- Ensure connectivity to all uncovered areas

**Propel India**
- Attract investment worth US$ 100 billion in digital communications sector
- Increase India’s contribution to global value chain
- Creation of innovation led start-ups in digital communications sector
- Train/ re-skill 1 million manpower for building new age skills
- Accelerate transition to Industry 4.0

**Secure India**
- Establish a comprehensive data protection regime for digital communications
- Ensure net neutrality principles are upheld
- Develop and deploy robust digital communication network security frameworks
- Build capacity for security testing and establish appropriate security standards
- Address security issues relating to encryption and security clearances

**Note:** Mbps - Mega bits per second, Gbps - Giga bits per second

**Source:** National Digital Communications Policy, 2018
FDI inflows in the telecom sector stood at US$ 37.66 billion from April 2000 to March 2021. In the same period, FDI inflow in the sector accounted for ~7.11% share of the total FDI inflows in the country.

Between April-July 2020, Jio Platforms sold 25.24% stake worth Rs. 1.52 trillion (US$ 21.57 billion) to various global investors in separate deals involving Facebook, Silver Lake, Vista, General Atlantic, Mubadala, Abu Dhabi Investment Authority, TPG Capital, L. Catterton, Public Investment Fund, Intel Capital, Qualcomm Ventures and Google. This is the largest fundraise by any company in the world.

Most large players see the PLI scheme in telecom and networking products as a growth opportunity. In April 2021, the government pointed out that firms such as Ericsson and Nokia are eager to expand their operations in India and global companies such as Samsung, Cisco, Ciena and Foxconn have expressed interest to set up their manufacturing base in the country for telecom and networking products.

The PLI scheme is expected to bring in investments of about Rs. 3,000 crore (US$ 400.08 million) and generate huge direct and indirect employment.

In April 2021, Elon Musk’s SpaceX has started accepting pre-orders for the beta version of its Starlink satellite internet service in India for a fully refundable deposit of US$ 99. Currently, the Department of Telecommunications (DoT) is screening the move and more developments will be unveiled soon.

**Note:** *- Until December 2020  
**Source:** Department for Promotion of Industry and Internal Trade (DPIIT)
Vodafone India and Idea Cellular merged into ‘Vodafone Idea’ to become India’s largest telecom company as of September 2018.

### Foreign investment in India

<table>
<thead>
<tr>
<th>Target</th>
<th>Acquirer</th>
<th>Acquisition price (US$ million)</th>
<th>Division acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>ValueFirst</td>
<td>Twilio</td>
<td>NA</td>
<td>100% stake</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Singtel (as of February 2019)</td>
<td>367.15</td>
<td>Increase in stake to 48.90%</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Singtel (2018)</td>
<td>411.02</td>
<td>Increase in stake to 27.08%</td>
</tr>
<tr>
<td>Ascend Telecom Infrastructure Pvt. Ltd.</td>
<td>IDFC Alternatives (2017)</td>
<td>54.29</td>
<td>33% stake</td>
</tr>
<tr>
<td>Telenor</td>
<td>Bharti Airtel (2017)</td>
<td>N/A</td>
<td>Infrastructure and Contracts</td>
</tr>
<tr>
<td>Bharti Airtel's operations in Burkina Faso and Sierra Leone</td>
<td>Orange SA (2016)</td>
<td>900</td>
<td>100% stake</td>
</tr>
<tr>
<td>MTS</td>
<td>Reliance Communication (2015)</td>
<td>736.98</td>
<td>8 - 10% stake</td>
</tr>
<tr>
<td>Augere Wireless</td>
<td>Bharti Airtel (2015)</td>
<td>21.3</td>
<td>100% stake</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Singtel (2013)</td>
<td>302</td>
<td>Increases stakes to 32.34%</td>
</tr>
<tr>
<td>Bharti Airtel</td>
<td>Qatar Foundation Endowment (2014)</td>
<td>1,260</td>
<td>PE deal - 5% stake</td>
</tr>
<tr>
<td>Vodafone India Ltd</td>
<td>Vodafone International Holdings (2014)</td>
<td>1,641</td>
<td>Increases stakes to 100%</td>
</tr>
<tr>
<td>Ascend Telecom</td>
<td>Ascend Telecom Infrastructure Pvt Ltd</td>
<td>54.29</td>
<td>33% stake</td>
</tr>
</tbody>
</table>

Notes: M&A - Merger and Acquisition, PE - Private Equity
Source: Thomson Banker, Deal Tracker, Grant Thornton
Opportunities across segments in the industry

1. Increasing mobile subscribers
   - India’s mobile subscriber base is expected to reach 1,420 million by 2024 from 1,200 million in 2018.
   - By 2022, the 4G user base is expected to reach 820 million.

2. Untapped rural markets
   - Tele-density of rural subscribers reached 60.33% in July 2021, from 59.14% in July 2020, indicating potential demand growth from the rural sector.

3. Rising internet penetration
   - Internet penetration is expected to grow steadily and is likely to be bolstered by Government policy.
   - Number of broadband subscribers reached 687.44 million in FY20.
   - To encourage cash economy, Indian Government announced to provide free Wi-Fi to more than 1,000 gram panchayats.

4. Development of telecom infrastructure
   - TRAI has made several recommendations for the development of telecom infrastructure, including tax benefits and recognising telecom infrastructure as essential infrastructure.

5. Growth in MVAS
   - Indian Mobile Value-Added Services (MVAS) industry is expected to row at a CAGR of 18.3% during the forecast period of 2015-2020 and reach US$ 23.8 billion by the end of 2020.

6. Telecom advertising market
   - According to a Zenith Media survey, India is expected to become the fastest-growing telecom advertisement market, with an annual growth rate of 11% between 2020 and 2023.

7. Growing Cashless Transactions
   - In order to overcome the cash related problems being faced by people, due to demonetisation, Paytm launched a service through which consumers and merchants can pay and receive money instantly, without an internet connection.
   - Payments on unified payments interface (UPI) hit an all-time high of 2.30 billion (by volume), with transactions worth ~Rs. 4.31 lakh crore (US$ 59.08 billion) in January 2021.

Source: KPMG, TRAI, Press Information Bureau, Government of India, NPCI
Mobile application market: fast-growing segment

- In 2020, India accounted for 14% of the global app installs.
- In 2019, India surpassed the US to become the second-largest market in terms of number of app downloads.
- App downloads in the country increased from 12.07 billion in 2017 to 19.00 billion in 2019 and is expected to reach 37.21 billion in 2022F.
- India has witnessed a 195% growth in app downloads in the past three years.
- Indian users spent around US$ 370 million through app stores in 2019.
- The segment’s growth is expected to be driven by increasing mobile connections and availability of low-range smartphones.
- Over 100 million apps are downloaded every month across different platforms such as iOS and Android.

**Notes:** F - Forecast, *As per latest data available, *Combined iOS App Store, Google Play and third-party android, Q1- Jan to March

**Source:** Gartner, Deloitte, Assorted News Articles, App Annie
<table>
<thead>
<tr>
<th>Agency</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Association of Unified Telecom Service Providers of India (AUSPI)</td>
<td>Address: B-601, Gauri Sadan 5, Hailey Road, New Delhi - 110 001, India</td>
</tr>
<tr>
<td></td>
<td>Tel: 91 11 23358585</td>
</tr>
<tr>
<td></td>
<td>Fax: 91 11 23327397</td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.auspi.in/">http://www.auspi.in/</a></td>
</tr>
<tr>
<td>Association of Competitive Telecom Operators (ACTO)</td>
<td>Address: UGF-74, World Trade Centre, Babar Road, Connaught Place, New Delhi-110 001</td>
</tr>
<tr>
<td></td>
<td>Tel.: 91-11- 43565353/ 43575353/ 9899242273</td>
</tr>
<tr>
<td></td>
<td>Fax: 91 11 43515353</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:info@acto.in">info@acto.in</a>, <a href="mailto:tapan@acto.in">tapan@acto.in</a></td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.acto.in">www.acto.in</a></td>
</tr>
<tr>
<td>Internet and Mobile Association of India (IAMAI)</td>
<td>Address: 232-B, Ground Floor, Okhla Industrial Estate, Phase III, New Delhi 110020</td>
</tr>
<tr>
<td></td>
<td>Tel: 91 11 46570328</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:kalyan@iamai.in">kalyan@iamai.in</a></td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.iamai.in">www.iamai.in</a></td>
</tr>
<tr>
<td>Cellular Operators Association of India</td>
<td>Address: 14, Bhai Vir Singh Marg, Sector 4, Gole Market, New Delhi - 110001, India</td>
</tr>
<tr>
<td></td>
<td>Tel: 91 11 2334 9275</td>
</tr>
<tr>
<td></td>
<td>E-mail: <a href="mailto:contact@coai.in">contact@coai.in</a></td>
</tr>
<tr>
<td></td>
<td>Website: <a href="http://www.coai.com">www.coai.com</a></td>
</tr>
</tbody>
</table>
Glossary

• BWA: Broadband Wireless Access
• CAGR: Compound Annual growth rate
• DoT: Department of Telecommunication
• FDI: Foreign Direct Investment
• FTTH: Fibre To The Home
• FY: Indian Financial Year (April to March)
• IMF: International Monetary Fund
• Rs.: Indian Rupee
• IPTV: Internet Protocol Television
• M&A: Mergers and Acquisitions
• MoU: Minutes of Use per month and per subscriber
• MPEG: Moving Picture Experts Group
• OFC: Optical Fibre Cable
• TRAI: Telecom Regulatory Authority of India
• USOF: Universal Service Obligation Fund
• US$: US Dollar
• VAS: Value-Added Services
• WiMAX: Worldwide Interoperability for Microwave access telecommunications

Wherever applicable, numbers have been rounded off to the nearest whole number
## Exchange rates

### Exchange Rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rs. Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004-05</td>
<td>44.95</td>
</tr>
<tr>
<td>2005-06</td>
<td>44.28</td>
</tr>
<tr>
<td>2006-07</td>
<td>45.29</td>
</tr>
<tr>
<td>2007-08</td>
<td>40.24</td>
</tr>
<tr>
<td>2008-09</td>
<td>45.91</td>
</tr>
<tr>
<td>2009-10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010-11</td>
<td>45.58</td>
</tr>
<tr>
<td>2011-12</td>
<td>47.95</td>
</tr>
<tr>
<td>2012-13</td>
<td>54.45</td>
</tr>
<tr>
<td>2013-14</td>
<td>60.50</td>
</tr>
<tr>
<td>2014-15</td>
<td>61.15</td>
</tr>
<tr>
<td>2015-16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016-17</td>
<td>67.09</td>
</tr>
<tr>
<td>2017-18</td>
<td>64.45</td>
</tr>
<tr>
<td>2018-19</td>
<td>69.89</td>
</tr>
<tr>
<td>2019-20</td>
<td>70.49</td>
</tr>
<tr>
<td>2020-21</td>
<td>73.20</td>
</tr>
</tbody>
</table>

### Exchange Rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rs. Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>44.11</td>
</tr>
<tr>
<td>2006</td>
<td>45.33</td>
</tr>
<tr>
<td>2007</td>
<td>41.29</td>
</tr>
<tr>
<td>2008</td>
<td>43.42</td>
</tr>
<tr>
<td>2009</td>
<td>48.35</td>
</tr>
<tr>
<td>2010</td>
<td>45.74</td>
</tr>
<tr>
<td>2011</td>
<td>46.67</td>
</tr>
<tr>
<td>2012</td>
<td>53.49</td>
</tr>
<tr>
<td>2013</td>
<td>58.63</td>
</tr>
<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016</td>
<td>67.21</td>
</tr>
<tr>
<td>2017</td>
<td>65.12</td>
</tr>
<tr>
<td>2018</td>
<td>68.36</td>
</tr>
<tr>
<td>2019</td>
<td>69.89</td>
</tr>
<tr>
<td>2020</td>
<td>74.18</td>
</tr>
<tr>
<td>2021*</td>
<td>73.58</td>
</tr>
</tbody>
</table>

**Note:** As of September 2021  
**Source:** Reserve Bank of India, Average for the year
Disclaimer

India Brand Equity Foundation (IBEF) engaged Sutherland Global Services Private Limited to prepare/update this presentation.

All rights reserved. All copyright in this presentation and related works is solely and exclusively owned by IBEF, delivered during the course of engagement under the Professional Service Agreement signed by the Parties. The same may not be reproduced, wholly or in part in any material form (including photocopying or storing it in any medium by electronic means and whether or not transiently or incidentally to some other use of this presentation), modified or in any manner communicated to any third party except with the written approval of IBEF.

This presentation is for information purposes only. While due care has been taken during the compilation of this presentation to ensure that the information is accurate to the best of Sutherland Global Services’ Private Limited and IBEF’s knowledge and belief, the content is not to be construed in any manner whatsoever as a substitute for professional advice.

Sutherland Global Services Private Limited and IBEF neither recommend nor endorse any specific products or services that may have been mentioned in this presentation and nor do they assume any liability, damages or responsibility for the outcome of decisions taken as a result of any reliance placed on this presentation.

Neither Sutherland Global Services Private Limited nor IBEF shall be liable for any special, direct, indirect or consequential damages that may arise due to any act or omission on the part of the user due to any reliance placed or guidance taken from any portion of this presentation.