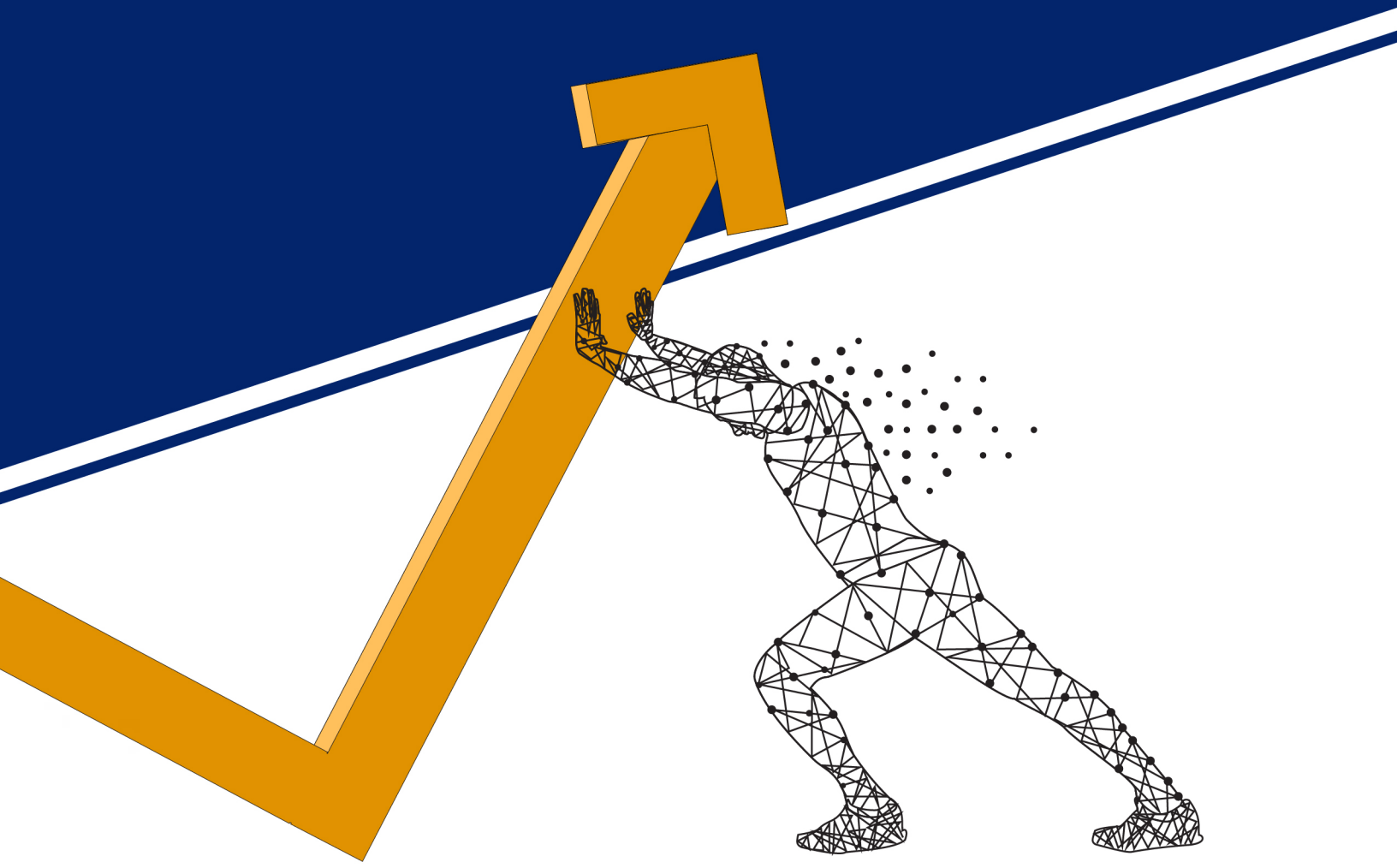
ENABLING A TRILLION DOLLAR DIGITAL ECONOMY

INTERDEPENDENT, INTERCONNECTED AND DIGITAL



ASSOCHAM
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ENABLING A TRILLION DOLLAR DIGITAL ECONOMY

Interdependent, Interconnected and Digital

FOREWORD

VINEET AGARWAL

The telecommunications sector is a critical enabler for Digital India as it will fuel and drive the growth of all sectors of the economy. India is currently the world's second-largest telecommunications market with a subscriber base of 1.6 billion and has registered strong growth in the past decade and a half.

Our Government has been a pivotal force behind India's digital makeover. A series of pro-growth reforms and progressive policies laid the right foundation for growth. Since 2014, the Government has been working on a bold new vision for a Digital India. An aspiration to transition toward 100 Smart Cities and to take electronic manufacturing to a new dimension with the "Make in India" endeavour. The economy witnessed a wind of change with "Start-up India", led by the emergence of a new generation of tech-based Indian start-ups. All of these have been instrumental in embedding a culture of digital In India.

Continuing this momentum, the Government's latest roadmap– the National Digital Communications Policy 2018, is a strategic aspiration to connect, propel, and secure India's digital economy. The transformative policy is a step change that goes beyond telecoms' paradigm to embrace India's thriving digital ecosystem opportunities.

This Report of ASSOCHAM and The Dialogue titled "Enabling a Trillion Dollar Digital Economy" is a step in this direction.

- President,
ASSOCHAM and Managing Director, Transport Corporation of India Limited

MESSAGE

DEEPAK SOOD

India is one of the biggest consumers of data worldwide. As per TRAI, average wireless data usage per wireless data subscriber was 11 GB per month in FY20. It is expected to reach 18 GB by 2024.

Digital technologies are a critical component to achieving the US$5 trillion goal envisaged by India's prime minister. In a 2019 report, the Ministry of Electronics and Information Technology (MeitY) determined that India's digital economy is worth $200 billion. It further estimated the valuation to grow to $1 trillion by 2025.

The digital sector has become a critical asset for Indians in 2020 with a global pandemic severely disrupting business as usual. The COVID-19 outbreak revealed how global emergencies can create an explosive and unforeseen demand for data and digitization of work. The pandemic is forcing more and more people to work remotely to flatten the disease's growth curve. This has resulted in a sharp growth in online traffic both on account of the large adoption of work from home strategy by many companies along with a sizable increase in online entertainment. This pandemic has also accelerated the digitisation rate, which may have lasting impacts on our life and the economy.

Our digital infrastructure needs to be enhanced in order to tackle this phenomenon. Commitment and urgent actions to promote long term growth of the digital economy that are required to improve the health of the industry and the investments in the digital infrastructure. A data-driven economy like India demands continuous cycles of investment. The return on such investment will benefit India from reaping as an economy that can sustain itself digitally, especially in times of global emergencies.

I congratulate team ASSOCHAM and The Dialogue for coming out with this timely and comprehensive report.

- Secretary General, ASSOCHAM

MESSAGE

P. BALAJI

ASSOCHAM through its National Council on Digital Communications has proactively contributed inputs to policy formulation by the Government. The National Council represents each vertical of the Indian Digital Sector- Operators, Tower, Fiber, OEM, IT Companies, etc., providing the Government with a holistic view of the industry and comprehensive recommendations for the growth of the sector. Its initiatives include Knowledge Reports, Annual Telecom Summits which provide a platform for stakeholders to come together and provide recommendations to the government on topics like Ease of Doing Business, formulation of the National Digital Communications Policy 2018 (NDCP 2018). These initiatives are well appreciated and recommendations are taken into consideration for policy making.

The Government's NDCP 2018 policy is wonderfully crafted and captures the three foundational pillars for the success of Digital India, the policy goals under each pillar and the strategies to achieve these goals. The success of this policy will depend on focused and time bound implementation to achieve desired end objectives.

The recent pandemic has underlined the importance of our digital infrastructure, which kept the economy running despite huge shifts and surge in data traffic. The pandemic, though unfortunate, has accelerated digital behaviour of consumers and businesses. This digitalization and its rapid growth in the future necessitates significant enhancement of digital infrastructure and investment in newer technologies to meet the growing demands and expectations from the sector.

A data-driven economy like India demands continuous cycles of investment, particularly to meet the vision of a Trillion Dollar Digital Economy. However, India's telecom sector is in a state of financial stress. While some supportive measures have been initiated by the Government, a much higher level of support is required to ensure that operators have the ability to invest in expanding connectivity and capacity, and upgrading to newer technologies.

This will require a mix of interim regulatory support as well as longer term structural reforms as envisaged under NDCP-2018.

The Report on "Enabling a Trillion Dollar Digital Economy" recognizes that achieving this vision requires focus not only on the telecom sector which will play a foundational role, but also on critical issues related to privacy, data protection, etc. that have come to occupy centre stage in this increasingly data driven economy.

This report highlights some of the very immediate action points to achieve the Goal of a Trillion Dollar Digital Economy. We hope to spark further action both within the Industry and the various stakeholders from the Government for a collaborative approach. We are confident that with the leadership in Government, we will overcome some of the hurdles highlighted in the report to help actualize the digital dream of our Indian citizens.

- Chairman,
ASSOCHAM,
National Council on Digital Communications

FOREWORD

DR. AVIK SARKAR

Over the course of 2020, for many of us our entire world has become restricted within the walls of our homes. As India adopts the 'new normal' which COVID-19 has subjected us to, solutions like working from home seem to be here to stay. At a time when network usage is skyrocketing, I am delighted to write the foreword for The Dialogue and ASSOCHAM's report titled *'Enabling a Trillion Dollar Digital Economy: Interdependent, Interconnected and Digital'*.

Even before the onslaught of COVID-19, there was critical conversation around the telecom industry in India. An industry which has been the bedrock of development and innovation, incepted in the '80s and improved upon with every decade that passed, faces financial challenges today. Therefore, the time is now to drive conversations which leads to actualizing the $1 trillion goal of the digital economy by 2025.

Accounting for voice, messaging, media and other internet services- it is forecasted that in the next five years, it is possible that India will add 500 million users. This will result in significant business opportunities and avenues of employment for citizens, ample scope to drive innovation and enhanced connectivity for important services such as telemedicine and online education. With the changing landscape of employment, innovation and public services- a robust telecom sector is the need of the hour for developing countries.

This report is one step towards highlighting the financial challenges the telecom sector in India is in the midst of. The debt burden on telecom operators proves as an obstacle towards the expansion of networks, creation of jobs, improvement in quality of services, promotion of investment and the adoption of upcoming technologies such as 5G. India's economic growth is linked closely with the success of the telecom sector. The strength of the telecom sector is dependent on reducing its financial stress and promoting competition to keep the spirit of entrepreneurship and investment alive.

The next five years are pivotal for the success of India's economy over the next many decades. Goals under Digital India, Start-up India, Make in India, Stand-up India and other flagship programmes are inextricably linked with the digital ecosystem provided by telecom operators. With the rapid digitization of work, the country needs progressive policies which boost light touch regulation and fair competition. These policies will help India become a data-driven economy by way of realising the goals envisaged in the National Digital Communications Policy, 2018 (NDCP).

Simultaneously, India will continue to work towards making these networks secure and emphasize on privacy- in order to garner investment in network infrastructure. It is my hope that by 2025, India could become one of the largest data economies in the world. The stepping stone towards that goal begins with the telecom sector.

- Visiting Associate Professor,
Indian School of Business

FOUNDER'S NOTE - THE DIALOGUE

KAZIM RIZVI

It is a privilege to present The Dialogue and ASSOCHAM's study 'Enabling a Trillion Dollar Digital Economy: Interdependent, Interconnected and Digital'. I hope that for years to come, this serves us as a guiding document on the regulatory issues to be debated and discussed, in order to enhance the potential of India's digital economy.

The COVID-19 pandemic has only enhanced the rate of adoption of digital services, and the focus is now on the telecom sector to provide a strong backbone which can facilitate the hopes and dreams of India's people. This report is a step towards discussing the Indian government's objectives to promote innovation- such as Make in India, Atmanirbhar Bharat and Digital India, and specifically Vocal for Local with Global Outreach, Smart Cities and National Mission on Education Using ICT'

The financial stress faced by the telecom sector is immense, and we hope that discourse through this report and many others will seek solutions to alleviate this challenge. Our report highlights the importance of the sector in helping India achieve its $5 trillion goal by having the potential to be worth $1 trillion on its own by 2024.

Further, it takes into consideration the current NDCP plan, the PDP Bill, Intermediary Guidelines and other government policies before making recommendations approved by experts on the issue and relevant stakeholders.

Our research shows how the telecom industry and the data sector are interconnected – one cannot survive without the other. If both sectors are given the tools and support from the government to grow as per their potential – they will not only aid the $5 trillion goal but also make the Digital India programme a huge success, as envisaged by Hon'ble Prime Minister of India.

- Founding Director

NOTE OF THANKS

The Dialogue's research team would like to express our deep gratitude to Dr. Mahesh Uppal and Mr. Saikat Datta, our research supervisors, for their patient guidance, enthusiastic encouragement and useful critiques of this research document.

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LIST OF ABBREVIATIONS

- AGR/GR- Adjusted Gross Revenue/Gross Revenue
- AP- Andhra Pradesh
- ARPU- Average Revenue per User
- CPD- Critical Personal Data
- DOT- Department of Telecom
- EBITDA- Earnings Before Interest, Taxes, Depreciation and Amortization
- ECIPE- European Centre for International Political Economy
- FY- Financial Year
- GAIL- Gas Authority of India Limited
- GB- GigaByte
- GDP- Gross Domestic Product
- GHz- GigaHertz
- GSM- Global System for Mobile Communications
- GST- Goods and Service Tax
- ICRIER- Indian Council for Research on International Economic Relations
- IL- Intermediary Liability
- IoT- Internet of Things
- IP- Intellectual Property
- i-SARITA- i-Stamps and Registration Information Technology Based Administration
- ISP- Internet Service Provider
- IT/ICT- Information Technology/Information and Communication Technology
- IUC- Interconnect Usage Charges
- JPC- Joint Parliamentary Committee
- LF- License Fee(s)
- LTE- Long-Term Evolution
- MeitY- Ministry of Electronics and Information Technology
- MHz- MegaHertz
- MSME- Micro, Small, and Medium Enterprises
- MUDRA- Micro Units Development & Refinance Agency
- NDCP- National Digital Communication Policy
- NITI Aayog- National Institution for Transforming India Aayog
- OGD- Open Government Data
- OTP- One Time Password
- PDP- Personal Data Policy
- PSU- Public Sector Unit
- Q1- Quarter 1
- Q2- Quarter 2
- Q3- Quarter 3
- Q4- Quarter 4
- RTC- Rights, Tenancy, and Crops
- SPD- Sensitive Personal Data
- SUC- Spectrum Usage Charge
- TOR- The Onion Router
- TRAI- Telecom Regulatory Authority of India
- USO/USOF- Universal Service Obligation/Universal Service Obligation Fund
- VAT- Value Added Tax
- VR- Virtual Reality

EXECUTIVE SUMMARY

Digital technologies are a critical component to achieve the $5 Trillion goal by 2024 as envisaged by the Prime Minister of India. In a 2019 report, the Ministry of Electronics and Information Technology (MeitY) determined India's digital economy to be worth $200 billion. It further estimated the valuation to grow to $1 trillion by 2025.[1]

The digital economy and its underlying digital ecosystem consist of infrastructure and services provided by telecom operators, and the online platforms, apps and devices that collectively provide digital services to customers.

Examples include information technology and business process management (IT-BPM), digital communication services (including telecom), e-commerce, domestic electronics manufacturing, digital payments, and direct subsidy transfers. Without a robust telecommunications network that supports this ecosystem, we cannot achieve a successful digital economy.

The critical nature of the telecom sector has also been recognized in the Report of the Task Force, Department of Economic Affairs, Ministry of Finance on National Infrastructure Pipeline noting the infrastructure deficit in digital sector and highlighting that lower penetration in rural areas, and low data speeds have restricted leveraging full potential of digital technologies such as Internet of things (IoT), cloud, artificial intelligence (AI). The Report has noted that telecom and network connectivity are critical enablers of a nation's socio-economic growth.

The digital sector has become a critical resource for Indians post 2020 with a global pandemic severely disrupting business as usual. The COVID-19 outbreak revealed how global emergencies can create an explosive and unforeseen demand for data and digitization of work. The pandemic forced more and more people to work remotely in order to flatten the growth curve of the disease. This resulted in a sharp growth in online traffic both on account of the large adoption of work from home strategy by many companies along with a sizable increase in online entertainment. This pandemic has accelerated the rate of digitization which may have lasting impacts on our life and the economy.

Currently, India's telecom sector is in a state of financial challenge. Players in the sector faced a cumulative debt of around $103 Billion (₹7.7 lakh crore) as of Financial Year 2018.[2] Under these circumstances, operators have little room to invest in improving existing services, expanding connectivity and capacity, and upgrading to newer technologies.

A slowdown in the growth of the telecom sector will hurt India's economic growth. Additionally, it will affect all stakeholders i.e. telecom operators, infrastructure providers, OTT players, users, and the government. The continued success of the Indian economy, which is facing one of the greatest lean patches in decades due to the Covid-19 outbreak, depends on a robust, healthy and competitive telecom sector.

Our digital infrastructure needs to be enhanced in order to tackle this phenomenon. Commitment and urgent actions to promote long term growth of the digital economy are required to improve the health of the industry and the investments in the digital infrastructure. A data-driven economy like India demands continuous cycles of investment. The return on such investment will be the benefit that India will reap as an economy that can sustain itself digitally especially in times of global emergencies.

The Department of Telecommunications (DoT) and Telecom Regulatory Authority of India (TRAI) play an important role in the sector's revival. In 2019, DoT offered telecom companies a 2-year moratorium on payments for spectrum. Also, TRAI had deferred the implementation of the zero-interconnect usage charges (IUC) by one year. It has also recently revised the International Termination Charges from 30p/minute to a range of 35-65p/minute. TRAI is also currently reviewing the norms for tariffs. These are welcome developments and a similar level of support is necessary for the future. The $1 trillion digital economy goal can be achieved through a combination of progressive regulation and forward looking policies and its implementation.

1 Ministry of Electronics and Information Technology. (2019). India's Trillion Dollar Digital Opportunity. The Government of India. Retrieved from https://meity.gov.in/writereaddata/files/india_trillion-dollar_digital_opportunity.pdf

2 Department of Telecommunications. (2019). Lok Sabha Starred Question No. 123. Retrieved from http://164.100.24.220/loksabhaquestions/annex/13/AS123.pdf

ACTION POINTS

In order to enable the trillion-dollar digital ecosystem, it is incumbent upon the government, as well as players in the market, to revive the debt-ridden telecom sector and ensure competition. Policies that support new technologies and can be deployed with the least number of barriers must be implemented. Following are the recommendations that will help in achieving the goal set by the government.

A) ALLEVIATE THE FINANCIAL STRESS

The burgeoning debt of the telecom sector must be dealt with expeditiously and effectively. TRAI's financial reports have been showing a consistently declining general revenue of the industry as well as falling AGR. Access Revenue fell by as much as 40% between June 2016 and June 2019. The AGR of October 2019 judgment exacerbated this problem further. In response to a question in the Parliament, the DoT revealed that in the last decade the sector debt reached $103 billion (₹7.7 lakh crore) by the Financial year 2018. This level of indebtedness calls for a comprehensive review of the sector's regulatory environment looking at both a revenue uplift as well as a review of the cost environment. Therefore, it is important for the government to revisit their policy structure and make sure that it is designed to ensure maximum growth. (Refer to Section 2)

1. UPLIFT ARPU

Industry Revenues have declined sharply over the last 4 years and are one of the key reasons for the severe financial stress in the telecom sector. There is thus an urgent need to look at options for ARPU upliftment, with regulatory intervention, if required. This step is necessary not only to ensure robust and sustainable competition but also to attract large scale investments into the sector. (Refer to Section 3)

2. REDUCE REGULATORY LEVIES ON TELECOM

There is a need to reduce the burden of regulatory levies on the sector, which, at current levels, is amongst the highest in the world. NDCP-2018 recognizes the need to review the regulatory levies on telecom and these provisions must be implemented expeditiously.[3] To ensure financial stability, relief must be provided to the telcos, and the overall license fee, including the SUC and USOF, should be reduced.[4] They should not exceed more than 1 percent of telecom revenues, which is more in line with global best practices that will help alleviate financial constraints and attract more investments into the sector. (Refer to Section 2)

3. ADDRESS GST ISSUES

The accumulated GST credit of over $ 4.6 Bn (₹33,300 crore) is causing severe cash flow issues in the industry. This credit should be allowed to be refunded/adjusted against future regulatory payments, as is allowed in the European Union, and was also the practice in some Indian states in the earlier VAT regime.[5] Otherwise, a loan against GST credit may also be considered.

GST should not be applied on regulatory payments to the Government. The GST rate of 18 percent for the sector is in contrast with the other countries like Singapore, which has a GST rate of 7 percent, Malaysia having a GST rate of 6 percent and Australia having GST rate of 10 percent.[6] (Refer to Section 2.1)

4. ADDRESS ADJUSTED GROSS REVENUE CONCERNS

The AGR issue has aggravated the financial stress of the sector. Addressing this issue is vital. DoT, recognizing the implications of the judgment on the sector, filed an application in Court seeking a 20 year staggered payment schedule by the Operators, but the Court in its Order dated 1 September 2020, allowed only 10 years. Fair implementation of the judgment is crucial. Demands made on operators must be in consonance with the Supreme Court judgment, including correction of computational errors, wherever required. The judgment itself envisages this as it states that dues are subject to further revisions due to departmental assessments, CAG Audits, Special Audits, Court Cases etc. (Refer to Section 2.2)

5. REVIEW THE CURRENT DEFINITION OF AGR

Going forward, it is requested that the definition of AGR may be revisited by DoT. The new definition should be

3 Department Of Telecommunications. (2018). National Digital Communications Policy – 2018. Retrieved from http://dot.gov.in/sites/default/files/Final%20NDCP-2018_0.pdf (Last visited 23rd Dec. 2019).

4 KPMG. (2017). Accelerating growth and ease of doing business. Retrieved from-https://assets.kpmg/content/dam/kpmg/in/pdf/2017/08/Accelerating-growth.PDF

5 European Commission. (2020, January 9). What is VAT? Retrieved from https://ec.europa.eu/taxation_customs/business/vat/what-is-vat_en

6 COAI. (2017). Impact of GST on Telecom Sector. Retrieved from https://www.coai.com/reports-and-papers/coai-white-papers

fair, rational, proportionate and based on global industry best practices. (Refer to Section 2.2)

B) ADDRESS DIGITAL INFRASTRUCTURE CHALLENGES

The Report of the Task Force on National Infrastructure Pipeline[7] notes that there is an urgent need to fast track the progress, necessitating fundamental changes in the way we operate, specifically with respect to creation of digital communications infrastructure, which faces challenges. This will enable us to reach a stage where digital communications fulfills its potential of becoming a universal platform for equitable and inclusive growth across the country. Several challenges delay the roll out of broadband services to the unserved, underserved, rural and remote regions of India. Investments in infrastructure need to be enhanced and universal last-mile connectivity needs to be promoted.

1. INVESTMENT CRITICAL FOR 5G INFRASTRUCTURE

The government must proactively intervene to reduce the barriers to investments in the telecom sector, ensuring the sector gets ample support to drive future investments. India needs large investments to expand its broadband access across the country and more importantly, India's aspirations in 5G will be realized if it is able to attract large investments in infrastructure. (Refer to Section 3.1).

2. ALLOCATE HIGH CAPACITY BACKHAUL

While Fiber is one of the critical components to connect and build a Digital India, Microwave Spectrum acts as an equally important enabler. It does not replace, but complements Fiber and can plug crucial gaps that come up during fiber deployment

At the heart of the future of mobile broadband is the availability of adequate microwave spectrum. Some bands are used more heavily than others - and there is a significant amount of unused spectrum in traditional frequency bands. Microwave deployment is also faster and easier to maintain and can provide higher coverage. Traditional microwave spectrum cannot cater to the large backhaul capacity requirements required to fuel the growth of mobile broadband. New generation microwave technologies can also provide high capacities. Allocation of high capacity backhaul is urgently required to augment capacities and meet high traffic demands. Thus, it is a critical solution to enable expeditious roll-out of high-quality broadband services in remote rural as well as urban areas. (Refer to Section 3.1)

Other measures required to address the digital infrastructure challenges include loosening up on the restrictions on network operators to share core infrastructure, lowering the customs duties on communication equipment and introducing an online portal for right of way approvals. (Refer to section 3)

C) ADOPT A BALANCED AND SUSTAINABLE APPROACH TO DATA PRIVACY AND SECURITY

To drive growth, we request the government to have a balanced approach to security on one hand and facilitating innovation and investments on the other. Burdensome compliance requirements on startups curb innovation and entrepreneurship. Further, we propose that the government may reconsider easing some of the compliance burden to encourage foreign investors, which will enhance growth and competition in the market.

The objectives of security and data protection must be combined with promoting innovation and entrepreneurship. (Refer to section 4.1)

1. ADOPT A PRINCIPLED BASED APPROACH TO PRIVACY, IN LINE WITH THE TEST OF PROPORTIONALITY, EQUITY AND CONSENT

The draft Personal Data Protection Bill 2019 and Draft Intermediary Amendment Guidelines, 2018 should be in consonance with the ***Puttaswamy judgement***, wherein the Supreme Court has stressed that any restrictions to privacy should be qualified by the test of proportionality, equity and consent.[8] It is important that lawful access to data so obtained by the government meets the above-mentioned tests. (Refer to section 4.2)

7 Report of the Task force, National Infrastructure Pipeline, Department of Economic Affairs, Vol. 1, Retrieved from: https://dea.gov.in/sites/default/files/Report%20of%20the%20Task%20Force%20National%20Infrastructure%20Pipeline%20%28NIP%29%20-%20volume-i_1.pdf

8 Bhandari, V., Kak, A., Parsheera, S., & Rahman, F. (2017). An Analysis of Puttaswamy: The Supreme Court's Privacy Verdict. Indrastra Global, 11, 5. Retrieved from https://www.ssoar.info/ssoar/handle/document/54766

2. THE PERSONAL DATA PROTECTION BILL (PDP) 2019 REQUIRES DISCUSSION ON SAFEGUARDS, NON-PERSONAL DATA AND DATA LOCALISATION

The PDP Bill 2019 is an important piece of legislation that will contribute significantly towards India's goal of a trillion dollar economy. In order to operationalise privacy in India, it is crucial that the forthcoming data protection law includes adequate checks and balances, due process and requisite safeguards for access to data for law enforcement purposes. Data access to the government for protecting national security is a legitimate requirement, and this must be backed with adequate checks and balances.

The discussion around data-localisation needs to balance concerns relating to security with the need to protect privacy and to facilitate innovation and investments. Decisions on data localisation should be taken after a cost benefit analysis, and by balancing business and security concerns. Allowing cross-border data flows of sensitive and critical personal data will further the government's own objective of creating a $5 trillion economy by 2025. (Refer to Section 4.2)

3. REVISIT ISSUES IN THE NON-PERSONAL DATA COMMITTEE REPORT

The committee of experts under the chairmanship of Kris Gopalakrishnan submitted its second report on non-personal data for public consultation (Revised NPD Report/ New Report). The Revised NPD Report addresses several important issues and questions which were raised in the first report by the Committee of Experts on a framework for governance of non-personal data (NPD). This includes: recommendation to remove provisions on NPD in the proposed Personal Data Protection Bill, 2019; narrowing down the scope of mandatory data sharing between parties; and introducing safeguards against misuse of the framework. Having said that, the scope of the framework requires further consultations and deliberation before introducing any law on the basis of this New Report. (Refer to Section 4.3)

4. MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY (MEITY) SHOULD REVIEW DRAFT INTERMEDIARY LIABILITY (IL) AMENDMENT GUIDELINES 2018:

Any changes in the framework relating to intermediaries should not create an onerous or impractical burden. The framework should keep in mind the need to facilitate the intermediaries in performing their functions in order to enable the digital economy to grow in line with global trends. It may be appreciated that overly restrictive obligations will stifle the Internet user's experience, curtail the growth of the digital sector, and affect the business of concerned players in the economy. (Refer to Section 4.5)

5. REVISE RESTRICTIONS ON ENCRYPTION IN THE DRAFT INFORMATION TECHNOLOGY [INTERMEDIARIES GUIDELINES (AMENDMENT) RULES] 2018 (INTERMEDIARY AMENDMENT GUIDELINES)

Encryption is important to ensure the privacy, safety, and security of the users and the national security of the State. Any regulation that entails weakening encryption would render the users susceptible to cyber-attacks by rogue actors. Therefore, it is important to revise restrictions placed under the Draft Intermediary Guidelines on encryption and maintain the balance between legitimate state interest and privacy, safety and security of the data principals. (Refer to section 4.5)

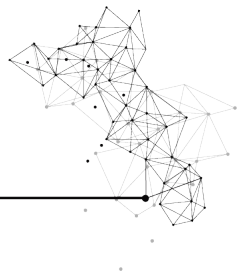
6. INTERNET SHUTDOWN AND ECONOMIC LOSS

The Indian Council for Research on International Economic Relations (ICRIER) has estimated the losses to be $3.04 billion between 2012-2017, for 16315 hours of internet shutdowns.[9] Smaller businesses are worse hit, since they do not have access to alternatives which larger businesses do. The economic impact of internet shut down must be an important consideration before internet connectivity is shut down. Due process and safeguards will also ensure a proportionate response. (Refer to section 4.6)

D) LIGHT TOUCH APPROACH TO REGULATION

Fair and robust competition in the sector is key to promoting consumer interest. It ensures that consumers can

9 Indian Council for Research on International Economic Relations. (2018). The Anatomy of an Internet Blackout: Measuring the Economic Impact of Internet Shutdowns in India. Retrieved from http://icrier.org/pdf/Anatomy_of_an_Internet_Blackout_ppt.pdf



enjoy choice as well as affordable prices.

Government should enable light touch regulation with a progressive digital architecture. Regulators are moving towards a 'light-touch' approach that focuses on the main principles and leaves specific compliance to ex-post measures and general laws relevant to the sector.[10] Digital technologies are changing constantly and a responsive approach instead of an ex-ante rigid approach can better protect the interests of all stakeholders including citizens, businesses and the government while also ensuring flexibility to regulate such changing technologies in the future. This would be in line with the government's stated objective of *'Minimum Government Maximum Governance'.*

Digital India aims to transform India into "a digitally empowered society and knowledge economy"[11], which will be impossible without a financially healthy telecom sector. This will require effective partnership between the digital ecosystem and key government stakeholders such as the Ministry of Communications, Department of Telecommunications (DoT), Telecom Regulatory Authority of India (TRAI) and Ministry of Electronics and Information Technology (MeitY).

E) ROLE OF FAIR COMPETITION AND PREVENTING MARKET ABUSE

The government must reflect the importance of fair competition in their implementation of policies that administer this sector. Fair and robust competition in the sector is key to promoting consumer interest. It ensures that consumers can enjoy choice as well as affordable prices. Regulators and competition authorities have an important role in enforcing and evolving norms for a fair and robust competition in digital markets. (Refer to section 5)

10 Telecom Regulatory Authority of India. (2006). Consultation Paper On Issues pertaining to Next Generation Networks. Retrieved from https://main.trai.gov.in/sites/default/files/cpaper12jan06.pdf

11 Vision and Vision Areas | Digital India Programme | Ministry of Electronics & Information Technology(MeitY) Government of India. (2020). Retrieved 18 March 2020, from https://digitalindia.gov.in/content/vision-and-vision-areas

METHODOLOGY AND STRUCTURE

This study is based on an empirical research conducted by The Dialogue and ASSOCHAM. The research was conducted in two phases. First, an attempt was made to collate all the secondary data and review the existing literature for the purpose of documentary evidence. Afterwards, a focused group discussion was organised in order to collect the inputs and primary data from the various stakeholders of the industry.

This study focuses on the composite digital ecosystem - comprising connectivity infrastructure and data content, applications and services which reside or run on it. The former deals with telecom networks and the latter with inter alia internet content and Over-the-Top (OTT) services etc. Clearly, both aspects are intimately connected and benefit from each other's growth.

Section 1 highlights an opportunity for India to become a trillion-dollar digital economy by 2025 and overview of the role of the data and telecom sector in achieving this target. This section also discusses the current connectivity infrastructure - both physical and network. It points out where the challenges lie and how developing the connectivity infrastructure is the key to helping the ecosystem reach its $1 trillion potential.

Section 2 goes on to discuss the financial health of the sector and how the Supreme Court judgment on AGR impacted the already financially stressed sector to go into crisis. *Section 3* highlights why investments are so crucial in today's day for achieving the potential of the sector. Finally, the section discusses risk to investments in 5G spectrum due to the financial challenges facing telecom operators.

Section 4 delves into various content and application challenges. It dissects the challenges that lie in the PDP Bill, 2019, NPP Governance framework, the risks posed by data localisation and the proposed amendments to the Intermediary Amendment Guidelines 2018.

Section 5 discusses issues that are common to connectivity and content. It underscores the importance of fair and robust competition in the sector and how its absence can be detrimental to the economy, the sector and its players. It highlights how Digital markets pose new challenges for traditional competition regulation and how a light touch approach can better protect the interests of all stakeholders.

1. OPPORTUNITY

Digital services are crucial to achieve India's goal of becoming a $5 trillion economy by 2025. NITI Aayog reports that in order to account for population growth coupled with low productivity employment, India requires almost *80-90 lakh new jobs annually*.[3] The Government's initiatives to address these problems- such as the Make in India Action Plan, Start-up India, Micro Units Development and Refinance Agency (MUDRA) and Stand-up India have *already made a large impact* on their own (Annexure 1), however they now hinge on the development of the digital ecosystem in order to meet their final targets. Telecommunication services enable a range of possibilities- digitizing industries such as agriculture, health, education, startups, small & medium industry, digital payments and even online job portals. The role of telecom in keeping businesses running even in the wake of the COVID-19 pandemic underlines the importance of this sector as foundational to the use of digital and IT tools across a range of industry verticals.

There were 752.09 million wireless internet subscribers by the quarter ending in September 2020, with the average wireless data usage per subscriber in a month at 11.96 GB.[12] – up from 330 million subscribers in the quarter ending June 2016, using 0.16 GB (GSM+CDMA) per subscriber per month. The value of the Indian internet economy was $125 billion (Rs. 9 Lakh Crore) in April 2017 and was expected to hit $250 billion (Rs. 18 Lakh Crore) in FY 2020.[13] To achieve the goal of a trillion-dollar digital economy by 2025, India needs an unwavering focus on the telecom sector- especially wireless technologies- the cornerstone of its digital economy.

The benefits to society of a robust telecommunications infrastructure cannot be emphasized enough. A recent report estimated that a 10 percent increase in internet access can lead to a 3.2 percent increase in the state per capita GDP.[14] To further actualize growth of the GDP through the digital economy, connectivity will play a big role in benefitting sectors such as education, healthcare, financial inclusion, agriculture and Micro, Small and Medium Enterprises (MSMEs)- amongst many others. It has also contributed to creating millions of jobs over various sectors.

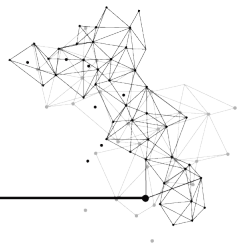
The growth opportunities provided by the telecom and digital sector to all other industries and the general economy cannot be emphasized enough.

The digital sector has become a critical asset for Indians in 2020 with a global pandemic severely disrupting business as usual. The COVID-19 outbreak revealed how global emergencies can create an explosive and unforeseen demand for data and digitization of work. The pandemic forced more and more people to work remotely in order to flatten the growth curve of the disease. This resulted in a sharp growth in online traffic, both on account of the large adoption of work from home strategy by many companies, along with a sizable increase in online entertainment to make most of the quarantine during lockdown periods. Streaming services and social media platforms have contributed massively to the growth in data traffic placing a huge demand on mobile networks. This pandemic accelerated the rate of digitization which may have lasting impacts on our life and the economy, which prompted a transformation in work dynamics for most firms. Local businesses are swiftly reshaping their business plans to avoid being disproportionately hurt. Some will never reopen in a world where the shift from real to virtual suddenly has gone into overdrive.[15] Rising screen times raise average monthly wireless data usage per consumer and our digital infrastructure needs to be enhanced in order to tackle this phenomenon. It is the commitment and urgent actions to promote long term growth of the digital economy that are required to improve the health of the industry and the investments in the digital infrastructure. A data-driven economy like India demands continuous cycles of investment. The return on such investment will be the benefit that India will reap as an economy that can sustain itself digitally especially in times of global emergencies.

Employment opportunities will also be given a much-needed fillip through focused and forward-looking policy making. The productivity unlocked by the digital economy

12 Telecom Regulatory Authority of India (2021), 'The Indian Telecom Services Performance Indicators July –September, 2020', Retrieved from https://www.trai.gov.in/sites/default/files/QPIR_21012021_0.pdf [Accessed 02 February. 2021].
13 India Brand Equity Foundation. (2018). IBEF E-commerce Report. Retrieved from https://www.ibef.org/download/E-Commerce-Report-Oct-2018.pdf.
14 Growth Dividends of Digital Communications: The Case for India. (2018). Indian Council for Research on International Economic Relations. Retrieved from https://icrier.org/pdf/Digital_Communications.pdf

15 Timberg, C., Harwell, D., Reiley, L., & Bhattarai, A. (2020). The new coronavirus economy: A gigantic experiment reshaping how we work and live. thewashingtonpost.com. Retrieved 27 March 2020, from https://www.washingtonpost.com/business/2020/03/21/economy-change-lifestyle-coronavirus/.



could create 60 to 65 million jobs by 2025, many of them requiring functional digital skills, according to our estimates. Retraining and redeployment will be essential to help some 40 to 45 million workers whose jobs could be displaced or transformed.[16]

This is also reflected in the National Digital Communications Policy, 2018 (NDCP) which was approved by the Union Cabinet on September 26th, 2018. It proposes several measures to strengthen the digital ecosystem through expanding the IoT ecosystem, securing universal broadband access and recognizing spectrum as a key natural resource for public benefit. The policy seeks to propel India to the top 50 Nations in Information and Communication Technology (ICT). It also aims to attract *$100 billion (₹ 7.2 lakh crore)* investments into the digital communications sector while also aiming to push India higher up on the Ease of Doing Business Index. Provisioning of *Broadband for All*, creating 4 million additional jobs in the digital communications sector, enhancing the contribution of the digital communications sector to 8 percent of the GDP, ensuring digital sovereignty etc. are objectives the policy seeks to achieve.

To achieve these goals, the policy laid down the three broad missions:

CONNECT INDIA, PROPEL INDIA AND SECURE INDIA [17]

(i) Connect India seeks to create a robust digital communications infrastructure.

(ii) Propel India aims to promote research and development in digital communication technologies, and

(iii) Secure India stands for establishing a comprehensive data protection regime by developing a comprehensive plan for network preparedness, disaster response, relief, restoration and reconstruction.

A study estimates that the $ 100 billion investment envisioned in the National Digital Communications Policy, 2018 could cumulatively add $ 1.21 trillion to India's income over time. The $1 trillion digital economy rests on these cornerstones. With the possibilities offered by digital infrastructure, research, data protection and security a digital ecosystem is created- which is safe for consumers to trade and innovate within.

Studies show that a 10 percent increase in India's mobile traffic can lift its GDP by 1.6% and a 10 percent increase in India's total Internet traffic delivers on average a 3.1 percent increase in GDP per capita.[18] Efforts towards strengthening digital infrastructure requires action to remove barriers to growth of both network and civil infrastructures.

- Civil infrastructure systems involve the design, analysis, and management of infrastructure supporting human activities, including, power, oil and gas, water supply, transportation, communications, and the buildings that make up both urban and rural communities. [19]
- Network Infrastructure on the other hand, refers to base tower stations, microwave radio equipment, switches, antennas, spectrum, signal transceivers, antennae. It basically is the infrastructure necessary for the reception, processing and/or transmission of telecommunication signals.[20]

The growth in mobile phone technology as also the increasing adoption of 4G has directly resulted in the growth of use in voice and data services making it a daily necessity for Indians. The introduction of 5G technology globally promises a myriad possibility for India to use wireless technologies and infrastructure.[21]

This however requires significant investment in 5G both for coverage and capacity of networks. The estimated investments in 5G has been pegged at $60 to 70 billion by TRAI. There is also a need to migrate consumers to high-

16 McKinsey Global Institute. (2019). Digital India - Technology to Transform a Connected Nation. Retrieved from https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/McKinsey%20Digital/Our%20Insights/Digital%20India%20Technology%20to%20transform%20a%20connected%20nation/MGI-Digital-India-Report-April-2019.ashx

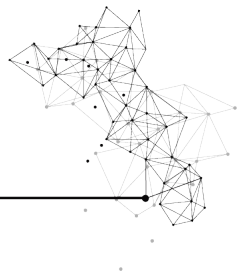
17 Department Of Telecommunications. (2018). National Digital Communications Policy – 2018. Retrieved from http://dot.gov.in/sites/default/files/Final%20NDCP-2018_0.pdf (Last visited 23rd Dec. 2019)

18 Growth Dividends of Digital Communications: The Case for India. (2018). Indian Council for Research on International Economic Relations. Retrieved from https://icrier.org/pdf/Digital_Communications.pdf

19 Civil Infrastructure, University of Delaware, Retrieved from https://www.ce.udel.edu/research/research-overview/civil-infrastructure/

20 Jayant Raghu Ram, When Sharing Isn't Always Caring: Understanding Telecom Infrastructure Sharing In The Multilateral Context, Centre for WTO Studies, April 2017, Retrieved from: http://wtocentre.iift.ac.in/workingpaper/Working%20Paper%2038.pdf

21 5G High Level Forum. (2020). Making India 5G Ready. Retrieved from https://dot.gov.in/sites/default/files/5G%20Steering%20Committee%20report%20v%2026_0.pdf?download=1



er end technologies, e.g. even today that are millions of consumers without smartphones who still rely on 2G networks. [22]

Moreover, there is a need to attract significant investments into the sector to ensure a ubiquitous and robust digital infrastructure that will facilitate the continued growth of the digital ecosystem and eventually, to inclusive economic growth.

National Digital Communications Policy 2018 (NDCP 2018) recognizes many of the issues relating to telecom infrastructure. It lays out ambitious targets in investment, broadband access employment and much more. It also recognizes the need for a review of India's regulatory regime and in particular, a rationalization of operator levies and review of the definition of AGR. The mission 'Propel India' envisaged in the NDCP aims to promote investment, innovation and Intellectual Property Rights (IPR)- which will be helpful in promoting Industry 4.0 by harnessing the power of technologies such as 5G, Artificial Intelligence (AI), Internet of things (IoT), Cloud and Big Data.[23]

22 Telecom Regulatory Authority of India. (2019). Wireless Data Services in India.
23 Telecom Regulatory Authority of India. (2019). Pre-Consultation Paper on Enabling Unbundling of Different Layers Through Differential Licensing. Retrieved from https://main.trai.gov.in/sites/default/files/CP_09122019.pdf8

2. FINANCIAL HEALTH CHALLENGE

The past few years have seen a sharp increase in the voice and data traffic that is a combination of increasing data coverage, adoption of smartphones and a sharp decline in the tariffs. Voice calls and mobile data tariffs in India are amongst the cheapest in the world.[24]

Wireless internet subscribers have doubled from ~330 million in June 2016 to 743 million by the end of September 2020. Minutes of use went 2-3 times from 377 minutes/228 minutes for GSM/CDMA subscribers to 761 minutes per subscriber per month. Data usage per user went up even more sharply from a mere 142MB/month for GSM subscribers and 412 MB per month for CDMA users to an average wireless data use of 11.96 GB per subscriber per month – an increase of 25 to 72 times.

	QE JUNE 2016[25]	QE SEPTEMBER 2020[26]
INTERNET/BROADBAND SUBSCRIBERS		
Total Internet Subscribers	350.48 Million	776.45 Million
percent change over previous quarter	2.28 percent	3.66 percent
Narrowband subscribers	188.42 Million	50.14 Million
Broadband subscribers	162.06 Million	726.32 Million
Wired Internet Subscribers	20.76 Million	24.36 Million
Wireless Internet Subscribers	329.72 Million	752.09 Million
REVENUE & USAGE PARAMETERS		
Minutes of Usage (MOU) per subscriber per month- GSM Full Mobility Service	377 Minutes	-
Minutes of Usage (MOU) per subscriber per month- CDMA Full Mobility Service	228 Minutes	-
Minutes of Usage (MOU) per subscriber per month- Wireless Service (GSM+CDMA+LTE)	-	761 Minutes
Total Outgoing Minutes of Usage for Internet Telephony	271 Million	182.58 Million

24 Ministry of Finance. (2018). Digital India and Telecommunication Infrastructure: An Update. Retrieved from http://ris.org.in/pdf/aiib/03may2018/Background%20Note_Digital%20Infrastructure.pdf

25 Telecom Regulatory Authority of India (2016), 'The Indian Telecom Services Performance Indicators April – June, 2016', Retrieved from https://www.trai.gov.in/sites/default/files/Indicator_Report_05_August_2016.pdf

26 Telecom Regulatory Authority of India (2021), 'The Indian Telecom Services Performance Indicators July –September, 2020', Retrieved from https://www.trai.gov.in/sites/default/files/QPIR_21012021_0.pdf

DATA USAGE OF MOBILE USERS/ WIRELESS DATA USAGE	QE JUNE 2016	QE SEPTEMBER 2020
Total Wireless Data Usage during quarter		25,227 Million GB
Data Usage per subscriber per month- GSM	142.82 MB	-
Data Usage per subscriber per month- CDMA	413.40 MB	-
Data Usage per subscriber per month – Total(GSM+CDMA)	153.82 MB	-
Average Wireless Data Usage per wireless data subscriber per month	-	11.96 GB
Average outgo per MB data for GSM	₹ 0.20	-
Average outgo per MB data for CDMA	₹ 0.09	-
Average revenue realisation per subscriber per GB wireless data during the quarter	-	₹ 10.95

Table No. 1

However, this growth has not translated into a revenue growth for the sector, on account of the sharp fall in tariffs, leading to ARPUs falling from average ARPUs of ₹ 126/month/GSM subscriber to ₹ 75 /subscriber/ month in September 2019 and then rising modestly to ₹ 96.87 in March 2020 – still a far cry from 2016 levels. This also had a similar impact on the Gross Revenues/ Adjusted Gross Revenues, with an over 30 percent fall in AGR between June 2016 and September 2019. In fact, industry ARPU fell for 12 consecutive quarters beginning June 2016, thereafter, seeing a modest recovery in subsequent quarters.

	QE JUNE 2016[27]	QE SEPTEMBER 2020[28]
REVENUE PARAMETERS		
Monthly ARPU GSM Full Mobility Service	₹ 126	-
Monthly ARPU CDMA Full Mobility Service	₹ 99	-
Monthly ARPU of Wireless Service (GSM+CDMA+LTE)	-	₹ 96.87
TELECOM FINANCIAL DATA		
Gross Revenue (GR) during the quarter	₹ 73,344 Crore	₹ 68,228 Crore
Adjusted Gross Revenue (AGR) during the quarter	₹ 53,383 Crore	₹ 45,707 Crore

Table No. 2

The sharply declining revenues, falling Average Revenue per User, was also accompanied by an increase in the costs of the industry, not just in terms of spectrum costs for spectrum acquired through auctions, but also an increase in network investments necessitated to cater to the huge growth in traffic.

Operators have committed over ₹ 356,000 crores in spectrum auctions since 2010.[29] The cumulative debt of the sector, which stood at a modest ₹ 71,347 cr in FY 08[30], increased to ₹258,876 Crore[31] in FY 2015 and further to ₹ 770,000 Crore by FY 2018.[32]

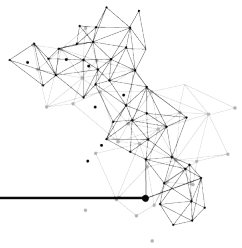
Spectrum auctions have been mandated by the Supreme Court to ensure transparency in allocation; however, the approach to determine the reserve prices of spectrum needs to be revisited as is evident from the amount of spectrum left unsold in successive auctions. The government should look at raising revenues from earnings of the telecom companies rather than from the input costs. High reserve prices have caused several auctions to fail, leaving valuable spectrum idle.

Besides the high spectrum auction costs, the government levies in the telecom sector, estimated to be 30 percent of their revenues, are among the highest in the world. The Department of Telecommunications (DoT) levies three kinds of fees and charges: (i) initial entry fee, which is non-refundable, (ii) annual license fee which includes contribution to universal service obligation, and (iii) spectrum usage charges.

The License Fees (LF) is 8 percent of AGR of which 5 percent is towards the Universal Service Obligation Fund (USOF) and Spectrum Usage Charge (SUC) is 3-5 percent of AGR for telecom operators[33].

The Universal Service Obligation Fund (USOF), set up to expand networks in rural and remote areas, needs to be reviewed on account of nearly $ 6.7 Billion (₹50,000 Crore) of this fund lying unutilized, with a major improvement in access to telephony and internet across India be-

27 Supra Note, 25.
28 Supra Note, 26.
29 Rajat Kathuria, et.al., Evaluating Spectrum Auctions in India, ICRIER, April 2019, Retrieved from: https://icrier.org/pdf/Evaluating_Spectrum_Auctions_in_India.pdf
30 TRAI, Study Paper On Shareholding Pattern, Financing Pattern And Capital Structure Of Indian Private Telecom Access Service Providers, November 2013, Retrieved from: https://trai.gov.in/sites/default/files/Study_Report_Capital_Structure_FINAL-20112013.pdf
31 TRAI, Study Paper On Shareholding Pattern, Financing Pattern And Capital Structure Of Indian Private Telecom Access Service Providers, September 2016, Retrieved from: https://www.trai.gov.in/sites/default/files/STUDY_REPORT_FINAL_08_09_2016.pdf
32 Department of Telecommunications (2017), Lok Sabha Starred Question No. 123, Retrieved from: http://164.100.24.220/loksabhaquestions/annex/13/AS123.pdf
33 Department of Telecommunications. (2019). Lok Sabha Unstarred Question No. 1550. Retrieved from http://164.100.24.220/loksabhaquestions/annex/172/AU1550.pdf



ing driven primarily by private investment.

The SUC, a legacy of the old regime when spectrum was given administratively, is anomalous since the telecom operators have been buying access spectrum in auctions ever since 2010.

The burgeoning debt of the telecom sector is a matter of great concern and needs to be dealt with expeditiously and effectively. TRAI financial reports have been showing a consistently declining general revenue of the industry as well as falling AGR. The AGR judgment has exacerbated this problem further. In response to a question in the Parliament, the DoT revealed that in the last decade the sector debt reached $103 billion (₹ 7.7 lakh Crore). This level of indebtedness calls for a comprehensive review of the sector's regulatory environment including the high regulatory levies, fees and taxes that are imposed on this sector. Therefore, it is important for the government to revisit their policy structure and make sure that it is designed to ensure maximum growth. (Refer to Section 3)

There is a need to reduce the burden of regulatory levies on the sector, which, at current levels, is amongst the highest in the world. NDCP-2018 recognizes the need to reduce the regulatory levies on telecom and these provisions must be implemented expeditiously.[34] To ensure financial stability, relief must be provided to the telcos and the overall license fee including the SUC and USOF should be reduced.[35] They should not exceed more than 1 percent of telecom revenues, which is more in line with global best practices and would help alleviate financial constraints and attract more investments into the sector. The stress in the telecom services sector has also been recognized by the Task Force Report on National Infrastructure Pipeline. The Report has noted:

"In recent years there has been an overall decline in gross revenue (GR), adjusted gross revenue (AGR), profit after tax (PAT), average revenue per user (ARPU) of the telecom service providers (TSPs). The debt exposure of the TSPs has been estimated to be Rs 7.7 lakh crore by the Inter-Ministerial Group (IMG) on Financial Stress in Telecom Sector in its report dated August 31, 2017. As of November 30, 2019, the component of deferred payment liability of spectrum auction of the three major private TSPs amounts to about Rs 2.9 lakh crore. Financial leverage ratios have been further impacted by the Hon'ble Supreme Court AGR judgement of October 24, 2019 consequent to which approximately Rs 135,000 crore towards prior period (2006-07 onwards) licence fee and spectrum usage charges, and interest, penalty and interest on penalty thereon are payable by the TSPs. These dues generally pertain to assessments up till fiscal 2016. Incremental amounts since then would also have to be added. Many of the affected TSPs are now no longer in business. The liability of some of the TSPs is significant, thereby placing these companies in a precarious position, considering that a huge amount is required to meet this liability in a very short time – that too when the financials of these TSPs are already stretched. There are serious concerns about the capability and capacity of some of the companies to meet their contractual commitments."

The Report has highlighted the need for reforms to improve the health of the digital infrastructure sector, noting that the government has come out with a National Digital Communication Policy (NDCP) 2018 for telecom, key objectives of which include providing broadband to all, achieving digital empowerment and improving the wellbeing of the people, which are in line with the government initiatives such as Digital India. It has emphasized that a healthy and vibrant telecom sector is extremely important for the success of these policies.

2.1 GST AND OTHER TAXES

The move to Goods and Services Tax (GST) has- adversely affected the finances of the telecom sector, especially with respect to cash flows. The pass-through deduction allowed in the erstwhile service tax regime has been replaced by the input tax credit allowed in the GST regime.

However, input tax credit poses a major challenge for the industry's cash flows, especially in the situation of below cost tariffs, where operators are not able to avail of the input credit as a result of which Telecom operators have accumulated vast input tax credit from sources such as taxes paid on infrastructure support services, reverse charge on license/spectrum fee and import of capital

34 Department of Telecommunications. (2018). National Digital Communications Policy – 2018. Retrieved from http://dot.gov.in/sites/default/files/Final%20NDCP-2018_0.pdf (Last visited 23rd Dec. 2019).

35 KPMG. (2017). Accelerating growth and ease of doing business. Retrieved from https://assets.kpmg/content/dam/kpmg/in/pdf/2017/08/Accelerating-growth.PDF

goods. Although there is no time limit stipulated by the Integrated Goods and Services Tax Act (IGST) 2017 and the Central Goods and Services Tax Act 2017 for utilizing the credits accumulated by the telecom sector, it is difficult to use them.[36] According to reports, telecom companies have currently accumulated over $4.6 Billion (₹35,000 Crore) in input tax credit putting further strain on funds available for investment.[37]

The accumulated GST credit should be allowed to be refunded/adjusted against future regulatory payments. This should be refunded or adjusted as is allowed in the European Union and was the practice in some Indian states in the earlier VAT regime.[38] Otherwise, a loan against GST credit may be considered. This would be a win-win for all stakeholders as:

- It will not strain government finances
- It will allow the banks to lend in a secure manner against a collateral that is already being held by the government
- Excess funds with banks would be used up to earn interest, instead of RBI paying banks for excess deposits
- The industry would receive much needed liquidity
- It would enable consumers to enjoy the next generation of technologies and services.

Going forward, GST should not be applied on regulatory payments to the government. The GST rate of 18 percent for the sector is in contrast with the other countries like Singapore which has a GST rate of 7 percent, Malaysia having a GST rate of 6 percent and Australia having GST rate of 10 percent.[39]

2.2 IMPACT OF THE SUPREME COURT JUDGEMENT ON AGR

The financial health of the telecom sector received a further setback after the 2019 judgement of the Supreme Court on the definition of "Adjusted Gross Revenue (AGR)", which determines the amount companies pay to the government towards license fees (LF) and spectrum usage charges (SUC). The Court held that the license agreement signed by the companies with the government does not permit them to exclude, from the AGR, revenues derived from activities unrelated to their telecom business. Further, the Court has held that the operators are liable to pay interest, penalty and interest on penalty of the disputed amount. This judgment has raised operator liabilities on account of LF and SUC, which as per DoT stand at around $17.3 Billion (₹130,000 Crore) (including interest and penalties for late payment which account for 63 percent of this amount). This worsens the already precarious health of the telecom sector.

The DoT, recognizing the implications of the judgment on the sector, filed an application in Court seeking a 20-year staggered payment schedule for payments by the Operators. The Court in its Order dated 1 September 2020, allowed only 10 years.

Fair implementation of the judgment is crucial. Demands made on operators must be in consonance with the Supreme Court judgment, including correction of computational errors, wherever required.

The judgment itself envisages this as it states that dues are subject to further revisions due to departmental assessments, CAG Audits, Special Audits, Court Cases etc.

Going forward, the definition of AGR must be revisited. The new definition should be fair, rational, proportionate, and based on global industry best practices. It should include only telecom revenues. There is a need to reduce the burden of regulatory levies on the sector, which, at current levels, is amongst the highest in the world. These should not exceed more than 1 percent of telecom revenues.

To partially address the challenges posed by the high debt levels, the industry increased its tariffs in December 2019. Despite this move, the problem is far from over and will resolve with concerted Government and regulatory intervention and support.

36 SKP (2015). GST Impact on telecommunications sector in India. [online] Available at: https://www.skpgroup.com/data/resource/skp_gst_impact_on_the_telecommunications_sector_in_india_.pdf [Accessed 18 Dec. 2019].
37 Bhargava, Y. (2019). Adjust liability in excess GST credit, COAI to Centre. Retrieved 19 March 2020, from https://www.thehindu.com/business/adjust-liability-in-excess-gst-credit-coai-to-centre/article26177425.ece
38 European Commission. (2020, January 9). What is VAT? Retrieved from https://ec.europa.eu/taxation_customs/business/vat/what-is-vat_en
39 COAI. (2017). Impact of GST on Telecom Sector. Retrieved from https://www.coai.com/reports-and-papers/coai-white-papers

3. INFRASTRUCTURE & NETWORK CHALLENGES

Expanding the reach and capacity of India's digital infrastructure will require large new investments. For instance, India needs large investments to expand India's broadband access across the country. India's aspirations in 5G cannot be realized if it is unable to attract large investments in infrastructure.

There are a variety of barriers to investment in India's communications networks. They stem from inter alia, the challenging financial health of the telecom players, the declining revenues, the high outgo due to government levies, the impact and ramifications of the recent Supreme Court decision which has increased their liabilities, the increasing cost of new technologies and spectrum, etc.

India cannot afford barriers to investments in such a key area of the economy. Without proactive intervention and support, the country will have to compromise on the objectives envisioned in programs and policies such as Digital India and NDCP.

Industry is also facing challenges in expeditiously rolling out infrastructure due to which conducive development of telecom is seriously hindered. These challenges include:

- Delays in granting approvals,
- Exorbitant charges
- Shutting down of operational sites,
- Ground level challenges in implementation of tower installation policies within a state

To address the problems with digital infrastructure, loosening up on the restrictions on network operators to share core infrastructure while allowing pass through charges for payment being made by one licensee to another for usage of such infrastructure, lowering the customs duties on communication equipment and introducing an online portal for right of way approvals are some of the suggested measures.

3.1 INVESTMENTS CRITICAL FOR 5G INFRASTRUCTURE

The 5G technology is 100 times faster than existing 4G LTE and offers lower latency and greater efficiency in the use of spectrum than is available in existing networks. 5G is also a key enabler of the Internet of Things (IoT) that extends connectivity beyond humans to diverse objects, devices, machines, appliances and much more.[40] It is also one of the key components of the Industrial Revolution 4.0. In a market reliant on data-intensive machine applications such as manufacturing, the high speed and low latency of 5G is required for effective use of automatic robots, wearables, and VR headsets, shaping the future of smart factories. Advanced and high speed internet infrastructure is crucial for the development and growth of- digital services such as e-commerce, FinTech etc. However, the ecosystem is hindered by cumbersome policies and regulations, combined with uneven compliance requirements that result in slower growth rates. It is important to correct these anomalies to achieve India's vision to be a trillion-dollar digital economy.

5G needs a robust digital infrastructure supported by fiber penetration and wire-free networks that will need significant investments in infrastructure.[41] Since the technology is deployed using spectrum in higher frequency bands, it needs many more towers which must also be connected with fiber between themselves, thus requiring large investments in infrastructure, estimated by TRAI, to be in the range of $ 60 to 70 Billion.[42]

Additionally, 5G rollout will be impossible without large scale spectrum reforms. Clearly, rules for spectrum auctions, allocations and sharing, as well as those for rollout, service provision, will play an important role in roll out of 5G services, including their timing and scope. The high reserve price of spectrum will inevitably deter investors and hurt roll out of the service. High entry costs or regulatory levies will similarly hurt investments in important technological development and in turn, impact users and the economy, at large.

The government must proactively support and intervene to reduce the barriers to investments in the telecom structure. India needs large investments to expand India's broadband access across India and more importantly, India's aspirations in 5G cannot be realized if it is

40 Qualcomm. (2020). What is 5G? | Everything You Need to Know About 5G | Qualcomm. Retrieved 19 March 2020, from https://www.qualcomm.com/invention/5g/what-is-5g

41 Deloitte. (2018). 5G: Reshaping the industries. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/technology-media-telecommunications/deloitte-cn-tmt-5g-industry-application-en-181214.pdf

42 TRAI, White Paper on Enabling 5G in India, 22nd February 2019, Retrieved from https://trai.gov.in/sites/default/files/White_Paper_22022019_0.pdf

unable to attract large investments in infrastructure.

IMPORTANCE OF MICROWAVE SPECTRUM

While Fiber is one of the critical components to connect and build a Digital India, Microwave Spectrum acts as an equally important enabler. It does not replace but complements fiber and can plug crucial gaps that come up during fiber deployment. In addition, it enables faster roll out of services in deep rural and remote pockets as well as dense urban environments.

Microwave deployment is also faster and easier to maintain and can provide higher coverage. New generation microwave technologies can also provide high capacities. Thus, it is a critical solution to enable expeditious rollout of high-quality broadband services in remote rural India. In urban areas, microwave spectrum can enable high capacity-high speed to backhaul for mobile broadband. Specifically, it is essential for:

- Rural Connectivity: Right microwave spectrum allocation to Telecom Service Providers can enable expeditious connectivity for all 250,000 Gram Panchayats within one year, with ample capacity to run Digital & E-Governance programs.
- High Speed Broadband in Urban Areas: Allocation of high capacity Microwave spectrum to Telecom service Providers can accelerate connected Homes with Fiber like speeds.
- Smart Cities and IOT: Dedicated microwave spectrum for street level backhaul connectivity can catapult smart city connectivity (e-governance, e-administration, e-surveillance with cameras and sensors etc.) as well as IOT.

Given India's diverse and expansive geography coupled with high population, timely allocation of the right Microwave spectrum will enable expeditious delivery of broadband services to achieve the country's digital objectives and complement the efforts underway for a deep fibre rollout.

In the last two decades, overall data consumption in the country has grown from almost zero to 700 Crore GB per month. Correspondingly, backhaul requirement for a mobile site has grown from 4 Mbps to ~450 Mbps.

However, while during this period, allocation of Radio spectrum and unlicensed spectrum (WiFi) has grown by 8 times and 5 times respectively, there has been limited progress in the allocation of backhaul microwave spectrum, which has seen limited policy initiatives/reforms despite a sea change in the traffic environment. Therefore, it is imperative that DoT guidelines of 2015 [43] are revised to encourage the use of the microwave spectrum.

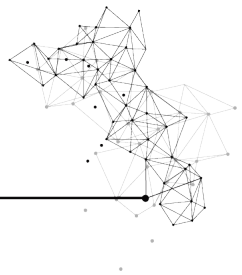
As of today, a large part of the Microwave backhaul spectrum in India remains underutilized – 70% of Microwave Access (MWA) spectrum is unallocated across 13GHz, 18GHz and 21GHz bands.

Allocation of microwave backhaul spectrum is urgently required to augment capacities and meet high traffic demands and to fuel the growth of mobile broadband.

PROPOSED POLICY RECOMMENDATIONS

- Microwave Spectrum Strategy/Policy– Move from 'restricted usage' to 'maximized usage' stance and encourage microwave usage and allocation for mobile access services.
- Adopt a Light licensing approach - Being a backhaul resource, microwave spectrum has limited potential to generate 'direct revenue' – we suggest that this be allocated without any direct spectrum fees. Any onerous conditions which bind TSPs to any unknown future payouts, may be removed.
- Quality of service is paramount - The resource must be interference free at all times.
- Early E band and V band allocations can revolutionize 5G and High Speed wired broadband. As recommended by TRAI, access to E and V bands must be liberalized and the spectrum released without further delay to ensure its optimal use.
    - E band must be allocated to TSPs now to prepare for 5G with 2 x 250MHz paired not only for meeting the demand of a 4G high capacity network (m-MIMO / TDD) but to prepare for 5G as well.
    - V Band must be released speedily to facilitate

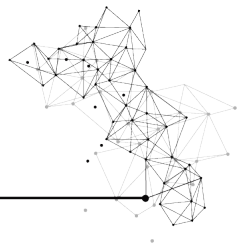
43 Department of Telecommunications, Guidelines on Microwave Access, Ministry of Communications and Information Technology, 16th October 2015, Retrieved from: https://dot.gov.in/sites/default/files/Guidelines%20Dated%2016th%20October%202015%20for%20Interim%20allotment%20of%20MWA%20and%20MWB%20Carriers%20.pdf



its use for, inter alia, backhaul connectivity of street infrastructure for e-governance and e-administration.

- Wider spots of 56 MHz / 112 MHz be allowed in existing bands of 13GHz, 15GHz, 18GHz and 21GHz to deliver high speeds and better experience to users. This will help in immediately enhancing the bandwidth of the network by almost 2x. If this step is taken along with harmonization of the spectrum, this will help maximize the gain
- Two spots of 112 MHz paired in 18 GHz and/or 21 GHz band may be allocated immediately at no additional charge to facilitate backhaul of mobile /fixed line broadband/ FTTH.
- Harmonize Microwave Spectrum - India already has nearly 6 Lacs+ Microwave links. Operators must be allowed to harmonize the Microwave spectrum at no cost, to make the best of existing equipment and eliminate unnecessary import burden on the country by minimizing change of equipment. On an immediate basis, operators should have the option to harmonize adjacent allocations to use the microwave spectrum in a more efficient manner.
- Sharing of Microwave Spectrum - In both, active infrastructure sharing (wherein spectrum is not shared only the active radio element is shared) as well as spectrum sharing, the two operators come together to have a common Radio Access Network. Both also require a corresponding increase in backhaul bandwidth. Since the RAN is allowed to be shared, it is desirable that microwave/backhaul spectrum assigned to the two operators should also be allowed for sharing. This may be incentivized, and sharing should be allowed at no extra costs.

4. CONTENT AND APPLICATIONS CHALLENGE



Access to digital infrastructure is slowly but surely becoming a critical need for every consumer in India. With an estimated 829 million internet user base by 2021,[44] Digital infrastructure is crucial for the socio-economic health and wellbeing of the country. Currently, consumers are already using the digital infrastructure to access a wide range of services such as-

- Telecommunication in the form of voice and video calls, messaging services wedded to internet and data services, communication through email and social media accounts.
- Applications requiring digital payments under the mission of a cashless India and the purchase of all kinds of goods and services through e-commerce websites and mobile apps. This includes, but is not limited to, shopping for groceries, movie tickets, clothing, train and plane tickets, gadgets and appliances etc.
- Entertainment industry that is moving towards primarily online platforms for watching movies and other videos, listening to music, watching sports etc.

Access to relevant content and applications is therefore as important as the access to the underlying networks. A robust digital ecosystem must enable access to the widest diversity of content and applications. It must reconcile the rights and interests of consumers in e.g. safety, privacy, choice and security, and balance them with those of the market players and the state. We discuss below several challenges in meeting these objectives.

Users experience digital infrastructure through the services, applications, and content that the network can support. The value of the infrastructure to the end user, or the economy at large, depends critically on what they can do with it. For example, with a shift towards online payments, where both data services are needed to access apps as well as phone service is required for second factor authentication such as One Time Password SMS or verification calls, access to the digital infrastructure is vital. A progressive policy for content, applications, and services can therefore incentivise not just their producers but also those who invest in the underlying infrastructure. Conversely, inappropriate barriers and restrictions to content, applications and services, or their creators, can reduce incentives for investors and players in infrastructure as well.

4.1 SECURITY

The various facets of cyber security include:

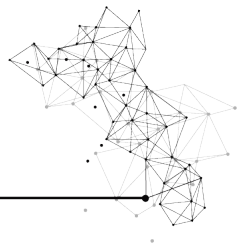
- Protecting network infrastructure and devices. This involves continuously improving standards, deploying better versions of technology, identifying risks and reducing vulnerabilities, testing networks for weaknesses and building capacities to detect and deter malicious attacks on networks and devices.

  Effective measures for security require close cooperation between all stakeholders. This will help deploy security measures that reflect ground realities such as the large size of networks, millions of devices, the over billion subscribers, the mix of technologies and equipment, the number of trained compliance officials etc. Testing all networks or devices on a regular basis may be impractical, wasteful and expensive for all stakeholders. Similarly, removing non-compliant devices poses complex problems. Stakeholders, working together, are in the best position to identify the nature and scope of testing to meet security objectives.

  Telecom players have highlighted the need to have testing infrastructure fully in place before any large-scale mandate is imposed for in-country testing. There is an urgent need for harmonization with global standards and tests. Otherwise, companies will be faced with costly product redesign, significantly delaying availability and increasing cost of equipment for Indian telecom networks.

- Protecting Consumers. This will entail protecting consumers from fraud as well as ensuring their privacy. Fraudulent attacks take many forms, such as identity theft, financial fraud, phishing, etc., where victims are tricked to reveal sensitive personal information and service access credentials. Customer impersonation could grant criminals fraudulent access to services at the expense of genuine users or the network operators. This can be mitigated by robust customer authentication protocols to prevent the use of networks to commit fraud and the use of devices to harm consumers.

44 Indian Ecommerce Industry Analysis | IBEF. (2019). 19 March 2020, Retrieved from https://www.ibef.org/industry/ecommerce-presentation



- Protecting consumer privacy requires that information, including personal data, is not accessible or disclosed to unauthorised individuals, entities or processes, and that it is maintained, complete and available, throughout its life. This issue is being addressed through the Personal Data Protection Bill. There is however a need to strike a balance between data protection and innovation – also recognized in NDCP-2018. Cross border transfer of data should be looked at in this context.

  There is also a need to increase the education and awareness of consumers of ICT products and services enabling them to make informed security related decisions.

  Public safety is another important element of security. Mobile networks are considered to constitute critical national infrastructure in many jurisdictions, and they play a key role in protecting the public, for example by enabling people to call emergency services.

- Need for International Multi-Stakeholder Cooperation. Given that risks are dynamic and not confined to national borders, sustained, international multi-stakeholder cooperation is key in all areas of security to manage risks. Furthermore, robust security measures must be adopted by the entire digital value chain.

4.2 ASPECTS RELATED TO THE PERSONAL DATA PROTECTION BILL, 2019

The recently tabled Personal Data Protection Bill, 2019 is a step in the right direction to legislate the right to privacy in India. The Bill must have adequate checks and balances for government's access to data, which will enhance India's prospects of entering into bilateral/multilateral arrangements for data transfers and law enforcement access to data. The addition to the sector will be sizable, not just in terms of the direct costs of employing such measures, but due to the trust this will enhance in end users.

The bill introduces a new subset of data fiduciaries called Social Media Intermediaries ("SMIs") and extends the obligations of significant data fiduciaries on such social media intermediaries as well.[45] Categorisation in a data protection law which should apply horizontally to all organisations may be less relevant here.

Additionally, the bill also mandates for voluntary verification of the social media accounts of which the procedure of verifying the accounts still remains unknown. Although it is important to ensure that social media is regulated to prevent proliferation of misinformation, at the same time, we also need to ensure that the internet provides a platform for people to express their views and opinions.
For a personal data protection bill, non-personal data should be treated outside its ambit, specially when a separate committee is looking into it.

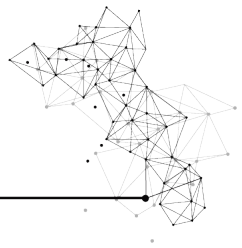
Additionally, the definition of sensitive personal data (SPD) in the bill includes financial data. As processing of SPD is subject to additional restrictions, classifying financial data as Sensitive Personal Data may affect financial inclusion, which is a key focus area of the government. Bill must also provide an exhaustive definition as to what consists of sensitive personal data as the definition of SPD includes 'any other data' that can be notified by the central government. This will lead to an open ended-ness and uncertainty.

4.3 CHALLENGES UNDER THE NON-PERSONAL DATA COMMITTEE REPORT

NPD governance is a new area of technology policy, and a regulatory measure for mandatory sharing of NPD is globally unprecedented. Any proposed framework for NPD governance must carefully evaluate whether such a framework would meet the intended objectives of the government, and be based on exhaustive consultations and strong evidence.

The revised NPD Report has addressed several open-ended questions raised in the first iteration of the report. However, the revised report also poses several questions and concerns which need to be addressed prior to arriving at any formal regulatory framework.

45 Ministry of Law and Justice, The Personal Data Protection Bill, 2019. (2019, December 24). Retrieved January 20, 2020, from http://prsindia.org/billtrack/personal-data-protection-bill-2019



Considering that the proposition of the New Report is to "unlock" value in data, it is important to note the costs and benefits. In addition, the risks and impacts of the proposed framework have to be considered to assess whether such an outcome is likely by way of the interventions that are envisaged. Before introducing a framework for mandatory data sharing, there needs to be detailed assessment of costs and benefits of such a framework. These would include business costs, long term costs in terms of the impact of incoming investments, as well as regulatory costs (enforcement, monitoring and adjudication). A data sharing framework, if any is considered relevant to introduce, would first need setting out a risk impact assessment process which embodies a set of principles, such as proportionality, transparency and accountability.

The revised NPD Report proposes that the NPD Framework will govern data sharing for public good purposes. However, 'public good' is a subjective term and unless its scope is clarified, could mean that data is mandated to be shared for a wide-range of purposes.

The list of public good purposes set out for identification of High Value Datasets (HVDs) is extremely wide including the creation of new businesses and encouraging innovation. The open-endedness of this definition is concerning, given that some of the listed categories- such as the creation of new and high-quality jobs, creation of new businesses, creation of newer value-added services/ applications and others- amount to 'business purposes' which would be in direct competition with the data businesses whose data assets have been appropriated into the HVDs. Additionally, by leaving a residuary 'and others' in the list of public good purposes, the New Report broadens the ambit of the term even further.

The revised NPD Report also recommends registration of certain data businesses and imposes an obligation on them to share meta-data. Meta-data often contains proprietary and sensitive information such as platform dependency of data, categories of data being potentially relied upon for generating operational and strategic insights, etc. Further, companies can earn significant revenue based on decisions made using meta-data, which makes the processing of meta-data a commercially relevant activity. In this context, the mandatory sharing of meta-data may have serious repercussions on business interests and may disincentivize businesses from creating non-generic formats of meta-data categorization.

The revised NPD Report assessed the interaction between the NPD Framework and intellectual property laws. However, there are still possible areas of conflict which need to be deliberated upon. While copyright protection may be granted to an organization which has input some non-trivial skill and creativity in organizing and compiling the database, it is important to appreciate that each database would have its own level of originality and the originality of each database would need to be assessed on an individual basis. Whether or not individual databases fulfil the criteria of originality (and thus obtain copyright protection) may lead to litigation.

Original datasets enjoy copyright protection under the current national laws and also international conventions that India is a signatory to. Having said that, there are widespread concerns that a mandatory sharing regime and democratizing data might create market disruption. Many companies that hold these insights and data for a competitive edge might lose out and this could create an adverse economic impact.[46] Therefore, it is important that data sharing mechanisms with the private entities should be based on the principle of voluntariness.

The New Report conceives the scope of trade secret protection only to cases where the act of compiling or processing the NPD leads to an inherently non-public and secret compilation of data and that the scope of protection under the trade secrets framework is unlikely to include a proprietary right over data which can prevent the eminent domain of this data. Notwithstanding the fact that trade secrets are not protected under a statutory framework in India, protection for trade secrets flows out of the common law action of "breach of confidence" as recognised under Section 16 of the Copyright Act, 1957.

Thus, further study is called for in respect of designing the NPD Framework in a manner that aligns with legally established principles and jurisprudence in other laws,

46 Karthik V, Ayush T, Harsh B, Submission on the Report by the Committee of Experts on Non Personal Data Governance Framework, The Dialogue, Retrieved From:: https://thedialogue.co/wp-content/uploads/2020/09/NPD-Submission-_-The-Dialogue.pdf

notably intellectual property laws.

4.4 CHALLENGES POSED BY RESTRICTIONS ON CROSS-BORDER DATA FLOWS

Localization has become one of the most debated subjects in India in light of the recent policy move towards enforcing domestic storage of personal as well as other types of data. While there has been some relaxation in the 2019 Data Protection Bill with respect to the localization norms, concerns still remain. The primary concern is the burden and the enormous cost of compliance on the fiduciaries which will eventually impact the investments and growth of startups.[47]

The Personal Data Protection Bill 2019 has categorized data into three parts i.e. Personal Data, Sensitive Personal Data and Critical Personal Data (to be notified by the government)[48]. The bill provides for processing of critical personal data only in India, whereas sensitive personal data may be processed outside India based on explicit consent but must continue to be stored in India.

A mandate to companies to locally store and process the data, will raise costs and make it more difficult to do business in India.

A notable side effect of data localization is in its economic costs, with the fluid nature of data in today's age of globalization and multinational corporations, localization will have a sizable impact on enterprise expenses.

The impact of localization will depend on the type of data and the varied rules that apply to that. However, an estimate of economic costs can be quantified through a spectrum-based analysis as done by ECIPE, where depending on the industry that is being impacted, the costs can go from-0.1 percent to- 0.8percent.[36] Its biggest impact would be on India's already struggling GDP growth rate, with an estimated impact of negative 20 percent, losses in the welfare sector alone can be in the range of $3.1 Billion- $14.5 Billion.[49]

Consequently, this would create entry barriers and is likely to distort competition in the market. It is incumbent on the government to revisit the bill and come up with a more proportionate legislation where the concerns of fiduciaries are addressed.

Security of citizen's data is a legitimate requirement of the state. The government should seek to make the data protection law interoperable with other global jurisdictions, and allow for easy transfer of data between India and other countries, based on bilateral and multilateral treaties. This will not only ensure that our citizen's data gets the highest forms of privacy and security, it will also allow for data transfer to take place which will drive growth of India's digital economy, along with ensuring that the state gets adequate access to data for law enforcement purposes.

4.5 CHALLENGES POSED BY DRAFT INTERMEDIARY GUIDELINES

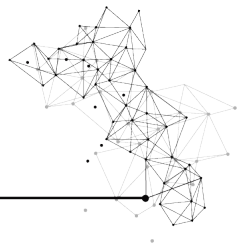
The Information Technology Act defines intermediaries as any person who on behalf of another person receives, stores or transmits that record or provides any service with respect to that record and includes telecom service providers, network service providers, internet service providers, web-hosting service providers, search engines, online payment sites, online-auction sites, online-marketplaces and cyber cafes.

Intermediary liability refers to the extent of an intermediary's accountability for third party content hosted on its platform. In India, intermediary liability is limited due to the safe harbour provision contained in section 79 of the IT Act.

This provision shields intermediaries from liability for the third-party content they host if they comply with the notice and takedown regime and other requirements provided therein.

The overall consensus amongst lawmakers is that since intermediaries neither create nor modify content, it would be inequitable to take away their shield under Section 79 and hold them responsible for content generated by their

47 Likhi, K. (2019). India's data localization efforts could do more harm than good - Atlantic Council. Retrieved 19 March 2020, from https://www.atlanticcouncil.org/blogs/new-atlanticist/india-s-data-localization-efforts-could-do-more-harm-than-good/
48 Ibid 42.
49 The European Centre for International Political Economy. (2014). The Costs of Data Localisation: A Friendly Fire on Economic Recovery. Retrieved from https://ecipe.org/publications/dataloc/



users.[50] However, India has introduced the Draft Information Technology [Intermediaries Guidelines (Amendment) Rules] 2018 which exceeds the scope of Section 79 and erodes the safe harbour protection it provides. For instance, draft rule 3(9) on proactive monitoring makes intermediaries responsible for identifying and removing unlawful content generated by their users through the use of automated tools. Moreover, draft rule 3(5) compels intermediaries to intercept or trace content, even though such a requirement is not within the purview of Section 79. This provision requires intermediaries to trace out the originator of information on its platform should the government require it for the purpose of law enforcement. It should provide such information and any such assistance required by legally authorized government agencies within 24 hours of communications. While law enforcement is an important task, the government and intermediaries must collaborate to ensure that the internet is not abused by anti-social elements.

The traceability requirement might pose challenges to the much needed investment in the sector. One of the biggest consequences of enabling this tracing mechanism is the challenge placed to end to end encryption. In simple terms, for intermediaries to trace content, they would have to know what the content is, which may threaten what end-to-end encryption stands for. It is important to note that there are openly available open source technologies which can be used for anonymous communication. For example, networks like the onion router (TOR) can be used to conceal identity.

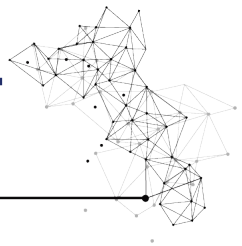
Any changes in this framework relating to intermediaries should not create an onerous or impractical burden and should also keep in mind the need to facilitate the intermediaries in performing their functions in order to enable the digital economy to grow in line with global trends. It may be appreciated that overly restrictive obligations will stifle the internet user's experience, curtail the growth of the digital sector, and affect business of all the players in this economy.

4.6 ECONOMIC LOSSES AS A RESULT OF INTERNET SHUTDOWNS

The economic impact of internet shut down must be an important consideration before internet connectivity is shut down. Research states that smaller businesses are worse hit, since they do not have access to alternatives which larger businesses do. For instance, freelancers offering their services online rely entirely on their internet connectivity. Sectors such as the media, tourism and travel and IT services are also disproportionately hit. Due process and safeguards will also ensure a proportionate response.

50 Software Freedom Law Centre. (2019, March). Intermediary Liability 2.0: A Shifting Paradigm, Pg. 6 Retrieved from https://sflc.in/sites/default/files/reports/Intermediary_Liability_2_0_-_A_Shifting_Paradigm.pdf (Accessed on 23rd Dec. 2019).

5. IMPORTANCE OF FAIR COMPETITION IN THE DIGITAL ECONOMY



Fair and robust competition in the sector is key to promoting consumer interest. It ensures that consumers can enjoy choice as well as affordable prices.

In India and elsewhere consumers can choose between network providers, services, applications and business models. However, digital markets, with their new business models, e.g. free services in 2-sided markets, pose new challenges to regulators as they seek to ensure fair competition. In these dynamic and evolving digital markets, regulators would need to take timely steps to identify and prevent potential market abuse - such as predatory pricing or price gouging. They will need to build much more capacity in multiple disciplines and also the resources to acquire it.

Government should enable light touch regulation with a progressive digital architecture. Regulators are moving towards a 'light-touch' approach that focuses on the main principles and leaves specific compliance to ex-post measures and general law relevant to the sector.[51] Digital technologies are changing constantly and a responsive approach instead of an ex-ante rigid approach can better protect the interests of all stakeholders including citizens, businesses and the government while also ensuring flexibility to regulate such changing technologies in the future. This would be in line with the government's stated objective of '*Minimum Government Maximum Governance*'

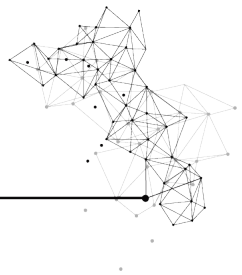
5.1 THE CHALLENGE IN PREVENTING MARKET ABUSE

Regulators and competition authorities have an important role in evolving and enforcing norms for fair and robust competition in digital markets. However, this may not be easy. Digital markets pose new challenges for traditional competition regulation. As technology develops, the law needs to develop along with it. Rapid convergence and multi-sided markets are making it increasingly difficult to define "relevant markets"[52]. Business models can often involve free services to one or more sets of target customers and reliance on advertisements for revenues, thus challenging the conventional approach which regarded below-cost pricing as predatory. As competition issues become more complex, the challenge will be to ensure that the bodies addressing them have the requisite independence as well as adequate capacity in multiple disciplines including e.g. economics, technology, finance.

51 Telecom Regulatory Authority of India. (2006). Consultation Paper On Issues pertaining to Next Generation Networks. Retrieved from https://main.trai.gov.in/sites/default/files/cpaper12jan06.pdf

52 Organisation for Economic Co-operation and Development. (2012). Market Definition 2012, Policy Roundtable. Retrieved from https://www.oecd.org/daf/competition/Marketdefinition2012.pdf

6. CONCLUSION



A robust digital ecosystem for India's citizens will depend on the country's ability to address the challenges faced by two broad sets of players viz. those responsible for creating network infrastructure and those involved in creating the content and applications that ride on the network. creating- a robust digital ecosystem will require urgent steps to fix the financial crisis facing network operators. It will also require a more nuanced and forward-looking approach to issues such as privacy and security that affect both types of players. Effective competition can deliver choice and affordable services. This will require regulatory bodies with independence and capacity. Proactive steps by the government to address these challenges and create a future fit framework that facilitates innovation and encourages investments is the need of the hour.

ANNEXURE 1

Refer to Section 1

Examples of National and State Schemes Benefited by Digital Infrastructure[53]

SCHEME BENEFITED	IMPACT
Open Government Data (OGD) Platform India- data.gov.in	More than 213,698 resources from 135 departments uploaded on the portal, which has recorded 17.1 million-page views and 6.2 million downloads [54]
Andhra FiberNet	By 2016, AP State FiberNet had laid 23,000 kilometers of aerial fiber and enrolled over 12,000 local cable operators and 1,200 multi-system operators as business partners.
Bhoomi, Karnataka [Land Records Digitization]	• 20 million Records of Rights, Tenancy, and Crops (RTC) of 6.7 million farmers have been digitised • Average time required for obtaining RTCs reduced from 2.5 days (5 visits) to ~1 day (~1 visit) • Time taken for initiating mutations reduced from 31 days to 2 days • Total cost of obtaining single transaction of mutation reduced from $47 to $1.80 • 80 percent of people have to meet only one person at the kiosk compared to manual system, under which 61 percent of the people met 2–4 officials • 50 percent of bank branches in the state integrated with Bhoomi • All land acquisition offices integrated with Bhoomi [55]
i-SARITA, Maharashtra [Land Records Digitization]	All 480 sub-registrar offices in the state of Maharashtra are functional Registration time has fallen to 1 hour (aspiration is 20 minutes) from days [56]
eGovernments Foundation	• 72 percent increase in property tax revenue collection in Delhi ($43.9 million in 2008–09 to $55.3 million in 2013–14) • Time taken to issue birth and death certificates reduced from 2–3 days to 15 minutes in Karnataka • 100 percent increase in efficiency of works/project management in Nagpur [57]

53 Ministry of Electronics and Information Technology, supra note 1 at 1

54 Open Government Data (OGD) Platform India, April 25, 2018.

55 PricewaterhouseCoopers (2014), 'Electronic integration of BHOOMI with stakeholders-Karnataka', National Informatics Centre and the Government of Karnataka Revenue Department Retrieved from https://darpg.gov.in/sites/default/files/Case%20Study%20-%20Bhoomi.pdf

56 Ministry of Electronics and Information Technology, supra note 1 at 1

57 eGovernments Foundation.

ANNEXURE 1

SCHEME BENEFITED	IMPACT
Kanyashree Online 5.0, West Bengal	• 15,826 registered institutions • Over $600 million disbursed • 9 million applications sanctioned out of 9.4 million applications received • Caters to 4.2 million girls[58]
Smart Energy Infrastructure and Revenue Administration System, Bihar	• Covers 9.8 million rural consumers across Bihar • Monthly revenue has grown from about $53 million in 2014–15 to more than $98 million in 2017–18 • Energy bill distribution on time increased revenue by $297 million annually

Table No. 3

58 Kanyashree Online 5.0 Dashboard statistics, Retrieved from https://www.wb-kanyashree.gov.in/kp_4.0/dashboard.php

ANNEXURE 2

TELECOM SUBSCRIBERS (WIRELESS +WIRELINE)	Q.E. 31 MAR-2019 [59]	Q.E. 30 SEPTEMBER-2020 [60]
Total Subscribers	1,183.51 Million	1,168.66 Million
Percentage change over the previous quarter	-0.79 percent	0.70 percent
Urban Subscribers	669.16 Million	644.26 Million
Rural Subscribers	514.35 Million	524.39 Million
Market share of Private Operators	88.71 percent	88.61 percent
Market share of PSU Operators	11.29 percent	11.39 percent
Teledensity	90.11	86.22
Urban Teledensity	159.96	138.25
Rural Teledensity	57.47	58.96
WIRELESS SUBSCRIBERS		
Total Wireless Subscribers	1,161.81 Million	1,148.58 Million
Percentage change over the previous quarter	-1.21 percent	0.69 percent
Urban Subscribers	650.49 Million	626.16 Million
Rural Subscribers	511.32 Million	522.42 Million
Market share of Private Operators	89.74% percent	89.35 percent
Market share of PSU Operators	10.26 percent	10.65 percent
Teledensity	88.46	84.74 percent
Urban Teledensity	155.49	134.37 percent
Rural Teledensity	57.13	58.74 percent
Total Wireless Data Usage during quarter	15,850 Million GB-	25,227 Million GB
WIRELINE SUBSCRIBERS		
Total Wireline Subscribers	21.70 Million	20.08 Million
Percentage change over the previous quarter	-0.79 percent	1.34percent
Urban Subscribers	18.67 Million	18.10 Million
Rural Subscribers	3.02 Million	1.98 Million

59 Telecom Regulatory Authority of India (2019), 'The Indian Telecom Services Performance Indicators January –March, 2019', Retrieved from https://www.trai.gov.in/sites/default/files/PIR_10072019.pdf

60 Telecom Regulatory Authority of India (2020), 'The Indian Telecom Services Performance Indicators July – September, 2020', Retrieved from: https://www.trai.gov.in/sites/default/files/QPIR_21012021_0.pdf

ANNEXURE 2

	Q.E. 31 MAR-2019 [59]	Q.E. 30 SEPTEMBER-2020 [60]
Market share of Private Operators	33.58 percent	53.65 percent
Market share of PSU Operators	66.42 percent	46.35 percent
Teledensity	1.65	1.48
Urban Teledensity	4.46	3.88
Rural Teledensity	0.34	0.22
No. of Village Public Telephones (VPT)	1,30,376	68,606
No. of Public Call Office (PCO)	2,55,268	1,55,182
TELECOM FINANCIAL DATA		
Gross Revenue (GR) during the quarter	₹ 58,414 Crore	₹ 68,228 Crore
Percentage change in GR over the previous quarter	-0.98 percent	2.05 percent
Adjusted Gross Revenue (AGR) during the quarter	₹ 35,932 Crore	₹ 45,707 Crore
Percentage change in AGR over the previous quarter	-0.34percent	3.58 percent
Share of Public sector undertakings in Access AGR	9.57 percent	7.02 percent
Monthly Average Revenue Per User (ARPU) for Access Services	₹ 72.49	₹`103.87
INTERNET/BROADBAND SUBSCRIBERS		
Total Internet Subscribers	636.73 Million	776.45 Million
Percentage change over previous quarter	5.38 percent	3.66 percent
Narrowband subscribers	73.42 Million	50.14 Million
Broadband subscribers	563.31 Million	726.32 Million
Wired Internet Subscribers	21.68 Million	24.36 Million
Wireless Internet Subscribers	615.05 Million	752.09 Million
Urban Internet Subscribers	409.72 Million	474.11 Million
Rural Internet Subscribers	227.01 Million	302.25 Million
Total Internet Subscribers per 100 population	48.48	57.29
Urban Internet Subscribers per 100 population	97.94	101.74
Rural Internet Subscribers per 100 population	25.36	33.99

ANNEXURE 2

	Q.E. 31 MAR-2019 [59]	Q.E. 30 SEPTEMBER-2020 [60]
BROADCASTING & CABLE SERVICES		
Number of private satellite TV channels permitted by the Ministry of I&B for uplinking only/ downlinking / uplinking	902	911
Number of Pay TV Channels	328	327
Number of private FM Radio Stations	356	367
Number of Pay Subscribers Registered with Private DTH Operators	72.44 Million	70.70 Million
Number of Operational Community Radio Stations	251	310
Number of pay DTH Operators	5	4
Number of teleports permitted in India	90	-
REVENUE & USAGE PARAMETERS		
Monthly ARPU of Wireless Service (GSM+CDMA+LTE)	₹ 71.39	₹ 96.87
Minutes of Usage (MOU) per subscriber per month- GSM Full Mobility Service	692 Minutes	761 Minutes
Minutes of Usage (MOU) per subscriber per month- CDMA Full Mobility Service	228 Minutes	-
Total Outgoing Minutes of Usage for Internet Telephony	197 Million	182.58 Million
DATA USAGE OF MOBILE USERS/ WIRELESS DATA USAGE		
Data Usage per subscriber per month- GSM	142.82 MB	-
Data Usage per subscriber per month- CDMA	413.40 MB	-
Data Usage per subscriber per month – Total(GSM+CDMA)	153.82 MB	-
Average Wireless Data Usage per wireless data subscriber per month		11.96 GB
Average outgo per MB data for GSM	₹ 0.20	-
Average outgo per MB data for CDMA	₹ 0.09	-

ANNEXURE 2

	Q.E. 31 MAR-2019 [59]	Q.E. 30 SEPTEMBER-2020 [60]
Average revenue realisation per subscriber per GB wireless data during the quarter	-	₹ 10.95
TELECOM SUBSCRIBERS (WIRELESS +WIRELINE)		
Total Subscribers	1,183.51 Million	1,168.66 Million
Percentage change over the previous quarter	-0.79 percent	0.70 percent

Table No. 4
Source: TRAI Performance Indicators Reports

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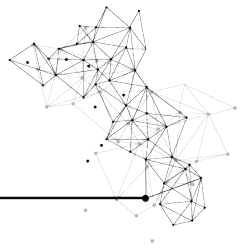

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