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Subject: Consultation Paper on *Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed*

Ref: Consultation paper: 20 August, 2020

Dear Sir,

This is with reference to the consultation paper on '*Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed'*.

Please find attached GSMA's comments on this consultation as **Annexure-1** to this letter. We hope that our response will merit your kind consideration.

Yours sincerely,

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Enclosed: *ANNEXURE-1(total number of pages – 26).*
        ANNEXURE-2 (RoW Study- 23 Pages)

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

Introduction:

1. The GSMA is pleased to submit its response to the TRAI's consultation '**Roadmap to Promote Broadband Connectivity and Enhanced Broadband Speed'** (CP NO. 06/2020) dated 20th August 2020.

2. Connectivity has never been more important, and the world's reliance on the broadband has never been greater. The COVID-19 pandemic has underscored the importance of the broadband and the critical role of mobile, which is the primary way most people access the internet/broadband. Broadband access and services have helped to ensure the functioning of emergency services, allowed separated friends and families to stay informed and keep in touch, and enabled large parts of the workforce to continue to be productive throughout the crisis.

3. Since 2015, 1 billion people globally have gained access to the internet through a mobile phone – many for the first time. By the end of 2019, almost half the world's population was using mobile internet. Despite this growth, 51% of the population is still not using mobile internet, either because of a lack of mobile broadband coverage or key barriers such as a lack of awareness, affordability, or a lack of literacy and digital skills.

4. Bridging the persistent digital divide and providing mobile internet access to the 4 billion people still not connected is more important than ever in the current context. Meanwhile, it is becoming increasingly challenging as the unconnected tend to be poorer, have lower levels of education and live in rural areas.

5. There has been strong progress over the last five years, with significant increases in mobile internet coverage and adoption. However, if current trends continue, more than 40% of the population in low- and middle-income countries will remain offline in 2025.

6. Increasing access to the broadband is one of the great challenges of our time. Currently, around half of the world's population (46 per cent) is still not online. This restricts access to jobs, education, and healthcare and, more widely, the information needed to fully participate in social, political and economic life. Put simply, the critical benefits of the digital economy are out of reach for far too many. It is therefore vital that the communications industry and policymakers work together to ensure everybody is included in the digital revolution.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed
The State of Mobile Internet Connectivity Index 2020

7. In September 2020 GSMA published its flagship report 'The State of Mobile Internet Connectivity Index 2020' (SMIC Index 20). The report brings forward some key insights, which are as follows:

   1. **Almost half the world's population now use mobile internet**. By the end of 2019, there were 3.8 billion people using mobile internet (an increase of 250 million users since the end of 2018), with three quarters of all mobile internet users living in low- and middle-income countries (LMICs).

   2. **The coverage gap –** those living outside of areas covered by mobile broadband networks – **continues to narrow**. It is now 7% (down from 10% in 2018) and stands at just under 600 million people, compared to 750 million in 2018. **This reduction was driven primarily by South Asia – particularly India, where almost 99% of the population is covered by 4G**, and by upgrades of 2G sites to 3G and 4G across Sub-Saharan Africa.

   3. **4G coverage is catching up with 3G coverage**. It now accounts for more than 50% of mobile connections globally. In 2019, 82% of the population in LMICs were covered by 4G (compared to 90% for 3G). It has taken LMICs around seven years to reach more than 80% coverage for 4G, compared to 10 years for 3G.

   4. **There is still a considerable usage gap**, as coverage continues to grow faster than usage. Approximately 3.4 billion people who live in areas covered by a mobile broadband network do not use mobile internet. **This usage gap is now six times larger than the coverage gap**.

   5. **The rural-urban and gender gaps in mobile internet use remain substantial but are narrowing,** driven primarily by improvements in South Asia. People living in rural areas across LMICs are 37% less likely to use mobile internet than those living in urban areas. Women in LMICs are 20% less likely than men to use mobile internet, meaning around 300 million fewer adult women than men use mobile internet.

   6. **Smartphones have become more affordable, but handset affordability remains the main barrier to mobile ownership in many LMICs**. The average cost of an entry-level, internet-enabled device in LMICs fell from 44% of monthly income in 2018 to 34% in 2019, driven primarily by increased availability of lower cost devices in Sub-Saharan Africa and South Asia.

   7. **Awareness of mobile internet is increasing but is far from universal**. Nearly a quarter of adults are not aware of mobile internet across the LMICs surveyed.
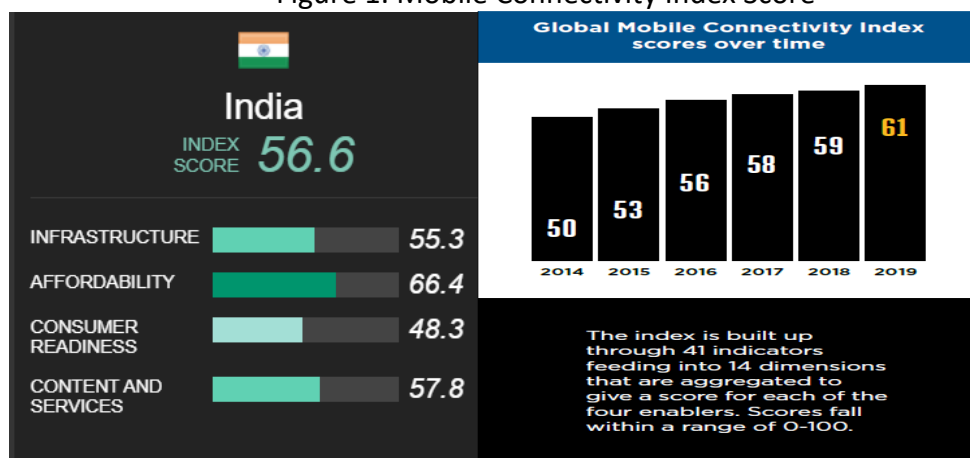
Encouragingly, awareness is growing disproportionately for rural populations and for women.

8. **A lack of literacy and digital skills persists as the main barrier to use** among mobile users who are aware of mobile internet in LMICs surveyed. In 2019, it was reported as the top barrier by a third of respondents, followed by affordability.

9. **In LMICs, mobile users increasingly see mobile internet as relevant to their lives and are using a wider range of services.** While instant messaging and social networking remain the most popular online activities, there was also increased use of mobile internet across a range of services in 2019, including for education, paying utilities, government services, applying for a job, reading the news and healthcare.

8. As per GSMA's SMIC Index 20 India's mobile connectivity index scores was 56.60 whereas global mobile connectivity index scores was 61. The respective scores are depicted in Figure 1

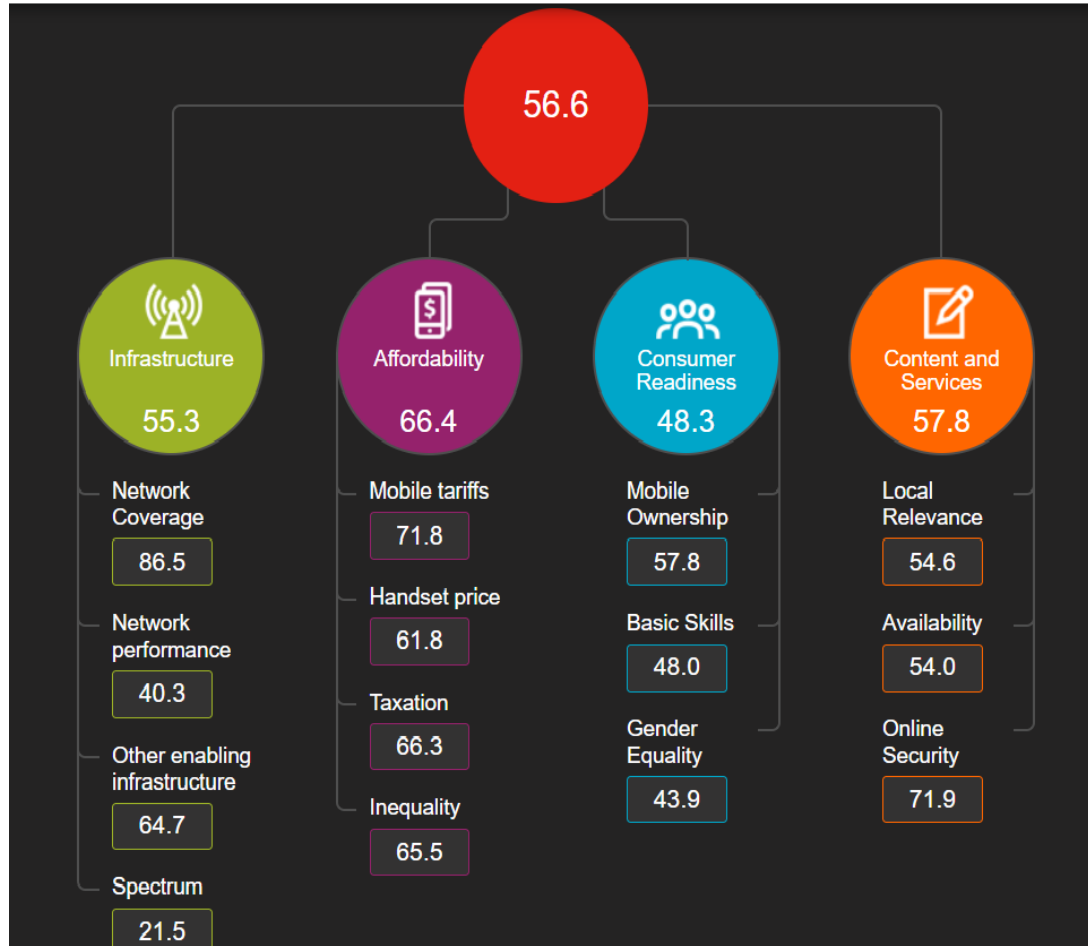<div align="center">Figure 1: Mobile Connectivity Index Score</div>

9. India's mobile connectivity overall Index is grouped in to four over-arching enablers (i.e. Infrastructure; affordability; consumer readiness; and Content and services).The enablers are further grouped in 14 Dimensions, which is depicted in Figure2.

Figure 2. Mobile Connectivity Index's enablers and Dimensions[1] with India's Index scores

National Digital Communications Policy (NDCP)

10. India's National Digital Communications Policy (NDCP) presents a positive vision for the industry and country, with the plan to attract investment of $100 billion to enhance India's digital infrastructure and support the next generation of digital services. The aim is to allow India realise the potential of its digital economy and reach the $1 trillion milestone (contribution by digital economy) set out by the Digital India plan. The government intends to achieve this objective by scaling up digital themes, based on its vision of providing citizens with ubiquitous and affordable internet and digital access. **Mobile will play a central role in realising these ambitions and is crucial in achieving the NDCP's goals to connect, propel and secure India.**
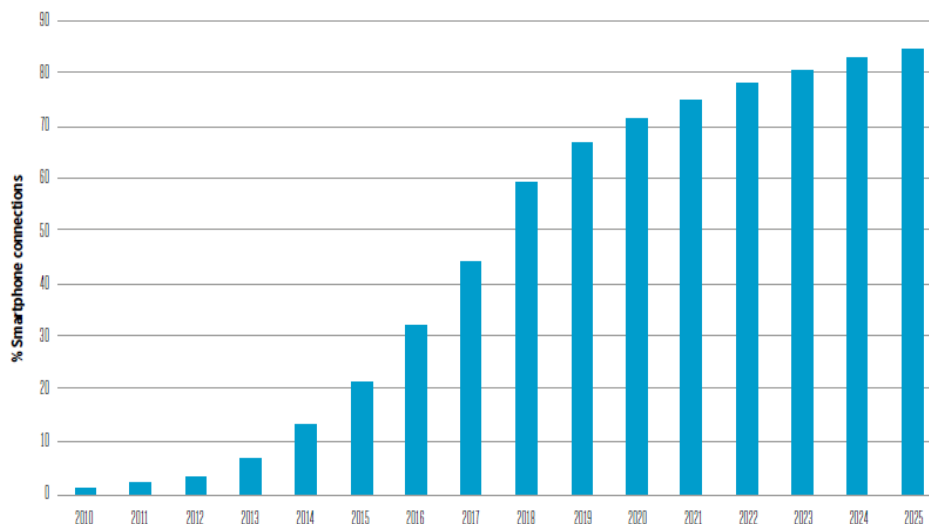
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[1] https://www.mobileconnectivityindex.com/

Subscriber base (Unique) and Smartphone connections in India

11. India had 731 million unique subscribers as of the end of 2019, and another 100 million will be added by 2025. That amounts to more than a fifth of the forecast growth in subscribers globally

12. India is also seeing rapid migration to mobile broadband. 4G connections have grown from 9% of the total connections base in 2016 to 56% in 2019, and are forecast to reach 82% in 2025. This ongoing shift to 4G reflects the rapid adoption of smartphones in India.By 2025, India is projected to become the second largest smartphone market in the world. GSMA Intelligence forecasts that another 190 million mobile internet users will be come online by 2025. Figure 3

Figure 3. Smartphone Connections as share of total connections in India, 2010-2015[2]

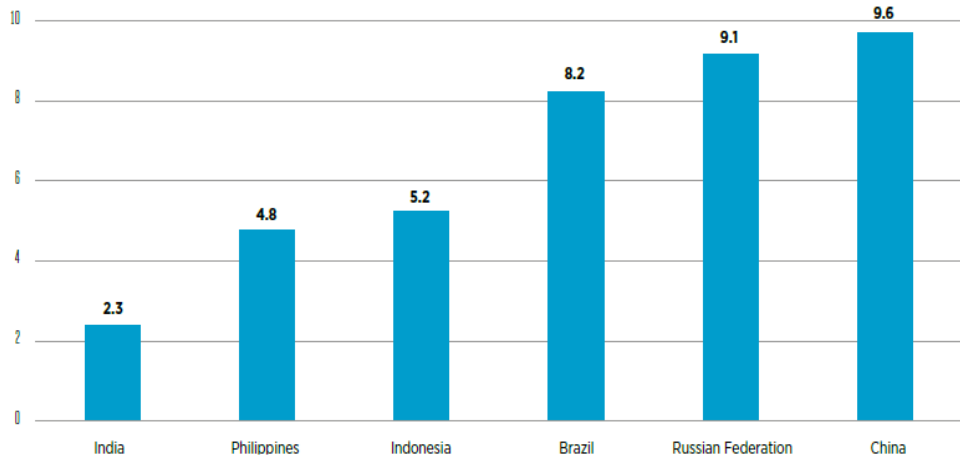**Average Revenue per User (ARPU)**

13. India is one of the least expensive mobile markets in the world, but this means it has some of the lowest ARPU levels in dollar terms. The low ARPU levels in India have mainly been driven by intense competitive pressures reflecting several dynamics, including the fact that India was for several years a highly fragmented market Figure 4

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[2] Source: GSMA Intelligence

![GSMA logo]

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

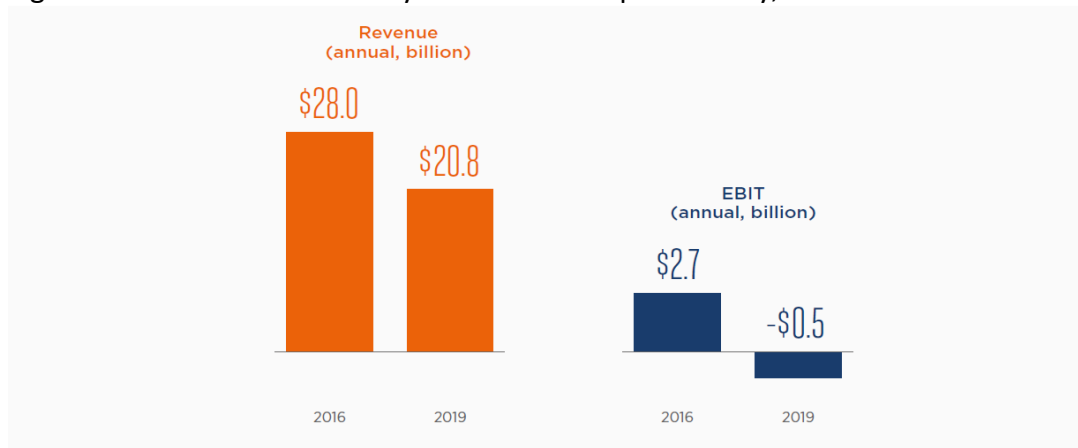Figure 4. ARPU per Unique mobile subscriber

Source: GSMA Intelligence

Revenue and Profitability of Indian Mobile Industry

14. The Indian mobile industry is at crossroads; operators face rising costs and declining ARPUs and revenue growth. At the same time, operators also face onerous fiscal burden that further weigh on sustainable & orderly growth of the mobile industry.

15. The current nature of the market has further compounded pressures on profitability; Indian operators' profit margins have been consistently lower than regional peers. We note that Indian operators are under financial stress due to low average revenue per user (ARPU), substantial network investments, high spectrum costs and significant debt. Annual revenues have declined by 26% since 2016, while annual EBIT has dropped from $2.7 billion to -$0.5 in the same time frame (a swing of over $3 billion). Figure 5.

Figure5. Indian Mobile Industry's Revenue and profitability, 2016-2019

Source: GSMA Intelligence

16. While subject to cyclical variation, falling investment levels (total operator capex declined by 22% annually in the second half of 2019) are a further indicator that the market is on an unsustainable path and in need of rebalancing, including an immediate implementation of the National Digital Communications Policy 2018 (NDCP-18), if India is to become a digital powerhouse.

Proactive, targeted policies are required to support infrastructure investment

17. The rapid upgrade of 2G/3G sites to 4G over the last few years is clear evidence that the mobile industry continues to invest to satisfy ever-greater demand for data. However, bringing coverage to the remaining million peoples mostly living in rural areas will require deployment of a large number of new sites and investment in areas where expected revenues are low. While technology innovation is improving the technical and commercial feasibility of rural deployments, a significant impact can only be expected when policies are in place to support such investments.

A strong, collective effort is needed to address the barriers

18. Connecting the million people that live within reach of a mobile broadband network but remain offline is a challenge that requires a collective effort. It will include improving levels of literacy and digital skills, increasing disposable incomes, creating vibrant, local digital ecosystems and lowering the cost of smartphones. The measures required to effect these changes go far beyond the mobile industry and need action from all parts of government, the local digital sector, global internet companies, civil society and the international development community.

19. COVID-19 has demonstrated how fundamental telecommunications and digital technologies are to societies and economies. The challenges of the pandemic and the collective reliance on the internet have led to a sense of urgency and goodwill, inspiring a unique spirit of collaboration between governments, mobile operators, tech companies and the community. There is now an opportunity to build on this, by implementing innovative ,targeted initiatives and objectives/missions as desired under NDCP-18 and National Broadband Mission that help to bridge the digital divide, empowering more people to adopt mobile internet services and enabling further expansion of robust networks.

Accelerating mobile broadband use and connectivity

20. Strategies to address the barriers preventing people using mobile internet need to be grounded in an understanding of the local context. They also need to factor in the structural issues underpinning disparities in use, such as differences in income and education as well as restrictive social norms. It is important to consider the range of barriers that different segments face. This includes the following:

a. Increasing levels of literacy and digital skills across all segments of the population requires building this into school curricula and life-long learning programmes. Using agent networks to provide training and increase awareness of the benefits of mobile internet can be an effective strategy as well. Digital skills programmes should aim to strengthen confidence in digital technologies and help protect against potential online harms.

b. Investments and facilitating the creation of local digital ecosystems should be pursued to further accelerate the growth in relevant content, applications and services that meet the needs, preferences and capabilities of new users and unconnected individuals.

c. Reducing or removing unnecessary tax and regulatory burdens on internet-enabled devices and data services is key to enabling further digital inclusion of excluded, disadvantaged and vulnerable groups.

d. Reviewing the impact of Universal Service Funds (USFs) on the affordability of mobile and mobile internet services. When administered ineffectively, USFs can be counterproductive in that, by effectively taxing customers, they actually serve to raise the affordability barrier.

Expanding mobile broadband coverage and speed

21. Expanding mobile internet coverage and speed is typically a fundamental economic challenge. Addressing it will require careful collaboration between the mobile industry and policymakers:

a. Industry collaboration, in the form of infrastructure sharing and public-private partnerships, can increase the efficiency of private and public capital and extend the reach and capacity of mobile broadband networks.

b. Proactive policies that target rural areas – such as the use of the current USFs to subsidise infrastructure, providing timely access to public infrastructure, or the exemption of import duties on network equipment for rural areas – are effective mechanisms to increase levels of investment in rural connectivity. Also, including trade-offs between reduced spectrum fees and obligations.

c. Mobile operators should explore the use of innovative technologies that reduce the cost of deploying and operating networks in remote and rural areas. Supported by policies that enable rationalisation of resources, such as spectrum technology neutrality, these innovations have the potential to extend coverage in a commercially viable manner.

d. Mobile Industry needs a significant amount of new harmonised mobile spectrum so defragmenting and clearing prime bands should be prioritised. Regulators should aim to make available 80-100 MHz of contiguous spectrum per operator in mid-bands (e.g. 3.5 GHz) and around 1 GHz per operator in high-bands (e.g. mmWave spectrum). Spectrum is needed across low, mid and high ranges to deliver widespread coverage and Speed.

e. Rationalisation of spectrum prices for access spectrum in all bands for the sustainability of the mobile industry. Recent studies demonstrated higher spectrum prices have played a significant role in slowing the rollout of next-generation mobile networks, had a significant effect in reducing the network quality experienced by consumer, and are associated with higher consumer prices.

f. Allocation of more backhaul spectrum to access providers, but also the provision of simplified and non-discriminatory and timely access to public infrastructure and voluntary infrastructure sharing.

g. Right of Way (RoW) rules should follow a unified procedure and be implemented across India via Single Window Clearance.

h. Rationalisation of Regulatory levies (Spectrum Usage charge should be abolished since presently spectrum has been acquired via auction or market-determined prices) and License fee should be reduced from 8% to 3% (5% USO Levy may be abolished).

i. Reduced mobile-specific taxes and fees, to improve rollout and internet affordability. GST on regulatory levies (i.e. License fee, Spectrum Usage Charge (SUC) and Spectrum payment should be removed. Since Hon'ble Supreme court has settled the issues AGR definition, therefore, AGR definition should be simplified.

The benefits of the mobile internet are available to more people each day. However, in a world increasingly dependent on digital technologies, we cannot afford to leave anyone behind. The responsibility for building an inclusive digital society reaches beyond a single sector. Only by recognising and acting on our shared responsibility to advance mobile broadband coverage and use can we ensure that the internet will benefit everyone.

In the subsequent sections, we submit our answers to the specific questions raised in the consultation paper.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed
Response to individual questions:

Q.1: Should the existing definition of broadband be reviewed? If yes, then what should be the alternate approach to define broadband? Should the definition of broadband be:

a. Common or separate for fixed and mobile broadband?

b. Dependent or independent of speed and/or technology?

c. Based on download as well as upload threshold speed, or threshold download speed alone is sufficient?

d. Based on actual speed delivered, or on capability of the underlying medium and technology to deliver the defined threshold speed, as is being done presently?

Kindly suggest the complete text for revised definition of the broadband along with the threshold download and upload speeds, if required for defining broadband. Kindly provide the reasons and justifications for the same.

GSMA's Response:

We note that the present definition of broadband was notified by DoT on 18th July 2013, which is reproduced below;
"Broadband is a data connection that is able to support interactive services including Internet access and has the capability of the minimum download speed of 512 kbps to an individual subscriber from the point of presence (POP) of the service provider intending to provide Broadband service."

Since 2013, there has been major transformation happened in the technology, consumption of data demand, availability of throughput and speeds and policy definitions of what constitutes true broadband speeds. **Therefore, the existing definition of Broadband is something that can be reviewed as per the global technology and standards' definition.**

However, the definition should be such that it allows access to various services, is comparable with global norms and allows for optimal utilization of the existing infrastructure. Therefore, the first emphasis should be on having a definition to ensure inclusivity and not on raising the minimum download speed availability.

It must be noted that acceptance, adoption and implementation of latest and globally harmonized technologies is more important to provide real benefit to the citizen consumer. The definition of Broadband from a consumer standpoint would be common in both scenarios and different from a provider's standpoint. With more maturity of current physical layer (L1) standards and better efficiencies in IP framework in the core part of the network, the definition is something that is dynamic in nature.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

Kindly find the responses to (Q.1) below:

a.   From mobile and fixed Broadband provider's standpoints, the definition of fixed and mobile broadband should be separate.
b.   While technologies and standards do claim speeds, the guarantee aspect is something that is dependent on many factors including the time of signal transmission, geography, internal or external environment, etc. Further with technology neutral licensing, it may not be appropriate to incorporate a technology specific speed.
c.   The present definition of broadband can be continued with distinction to mobile broadband where minimum speeds cannot be ascertained.

> **Q.2: If you believe that the existing definition of broadband should not be reviewed, then also justify your comments.**

GSMA's Response:
Kindly refer to (Q.1) above.

> **Q.3: Depending on the speed, is there a need to define different categories of broadband? If yes, then kindly suggest the categories along with the reasons and justifications for the same. If no, then also justify your comments.**

GSMA's Response:
In addition to what has been provided in (Q.1), there is a need to create an umbrella of the meaning of broadband and differentiate both mobile and fixed services for now, as per their shown characteristics – leaving this open for future updates.
Other specific applications to specific broadband usage scenarios are still emerging, maturing and so is the need for a robust Mobile Broadband infrastructure.
We believe that at this stage there is no requirement to categorize different categories of broadband and the key focus should be towards ensuring availability of broadband throughout the country.

> **Q.4: Is there a need to introduce the speed measurement program in the country? If yes, please elaborate the methodology to be implemented for measuring the speed of a customer's broadband connection. Please reply with respect to fixed line and mobile broadband separately.**

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed
GSMA's Response:

Taking the above responses into consideration and the GSMA's response to the Consultation Paper on Traffic Management Practices[3] earlier this year and subsequent TRAI recommendations on the topic[4] – as background, we believe that such an exercise would not be helpful as there are multitude of variables in place.

Particularly, Mobile Broadband is highly dependent on Backhaul and Access Spectrum a critical input resource in provisioning the right bandwidth and speeds for the consumer. Having that said, quality of service and further coverage can be better reached with:

a. Assignment of sufficient amounts of access as well as backhaul spectrum to operators in a timely manner;
b. Spectrum, including trade-offs between reduced spectrum fees and obligations;
c. Review of licence terms and conditions that discourage network investment, innovation and increase costs;
d. Reduced mobile-specific taxes and fees, to improve rollout and internet affordability
e. Provision of non-discriminatory and timely access to public infrastructure;
f. Simplified and streamlined planning approval processes to speed-up deployments;
g. Competition policy which supports investment in high quality mobile networks;
h. Encourage infrastructure sharing; and

We believe that there is no need to have a separate regulatory speed measurement programme. There exist various speed test applfications (e.g. Ookla, Speedtest) including TRAI's very own My Speed application. The data from these applications are published openly. We note that TRAI has a defined QoS for Broadband / data and that should be sufficient from a regulatory purpose. Also, TRAI keeps doing Metering &Billing audits, drive tests in various locations across country, so all these existing measures are good enough to give the regulator and the consumer sufficient information in choosing a Broadband service.

> **Q.5: Whether the Indian Telegraph Right of Way (RoW) Rules 2016 have enabled grant of RoW permissions in time at reasonable prices in a non-discriminatory manner? If not, then please suggest further changes required in the Rules to make them more effective.**

GSMA's Response:

We note that despite of the DoT's 2016 RoW rules, there remain multiple challenges at the ground level in rolling out this infrastructure. Such obstacles directly affect the ease of doing business, while adding substantial costs and delays to the service providers. Recently GSMA has conducted a study on RoW along with its member where we have come out with the following recommendations:

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[3] https://trai.gov.in/sites/default/files/GSMA_14022020.pdf
[4] https://trai.gov.in/sites/default/files/Recommendations_22092020.pdf

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

    i.   Single window clearance with deemed approval: all states should implement this system

    ii.   Replace various RoW charges with only a single 'one-time' charge to recover direct cost of restoration and reinstatement

    iii.   A "Dig Only Once" policy to incorporate designing of Utility Duct with implied RoW permission for Telecommunications in all infrastructure projects, building and housing bylaws

    iv.   Make street furniture available across the country at very low or no cost

    v.   Rank and benchmark states on RoW as key parameter, including in Ease of Doing Business (EoDB) rankings

    vi.   Microwave spectrum allocation to support backhaul needs

    vii.   Structured aerial fiber in dense urban environments & difficult areas

    viii.   Immediate need for uniform implementation of the RoW Rules 2016 by all States

    ix.   Closely monitor meeting of Annual Targets under the National Broadband Mission

The copy of the study is **attached here** with for ready reference (Annexure II).

> **Q.6: Is there any alternate way to address the issues relating to RoW? If yes, kindly elucidate.**

GSMA's Response:

We believe that there is an additional, not alternate, way to address the RoW challenges via use of wireless technologies via the **availability of assignment of sufficient amounts of backhaul spectrum to operators in a timely manner - including mmW bands such as E and V bands and**:

- Reduced mobile-specific taxes and fees, to improve rollout and internet affordability
- Provision of non-discriminatory and timely access to public infrastructure;
- Simplified and streamlined planning approval processes to speed-up deployments;
- Competition policy which supports investment in high quality mobile networks;
- Voluntary infrastructure sharing; and
- State intervention only when all market-driven mechanisms have been exhausted.

> **Q.7: Whether all the appropriate authorities, as defined under the Rules, have reviewed their own procedures and align them with the Rules? If no, then kindly provide the details of such appropriate authorities.**

GSMA's Response:

Till now[5], around sixteen (16) states have adopted the RoW rules and formulated their respective policies. These states are:

- o Jharkhand, Rajasthan, Tripura, Odisha, Haryana, Assam, Maharashtra, Tamil Nadu, Arunachal Pradesh, Uttar Pradesh, Uttrakhand, Meghalaya, Madhya Pradesh, Karnataka, Manipur, and Nagaland.

Additionally, fifteen (15) states/Union Territories are a "work in progress" for either aligning their existing policies or have come out with draft policies:

- o Himachal Pradesh, Delhi, Sikkim, Punjab, Chandigarh, Gujarat, Goa, Chhattisgarh, Kerala, Andhra Pradesh, Telangana, Pondicherry, Bihar, J&K, Mizoram,

Another six (6) states / UTs (West Bengal, Andaman & Nicobar Islands, Lakshwadeep, Dadra& Haveli, Daman & Diu, and Ladakh) do not have any uniform policy.

> **Q.8: Whether the RoW disputes under the Rules are getting resolved objectively and in a time-bound manner? If not, then kindly suggest further changes required in the Rules to make them more effective.**

GSMA's Response:

We note that many of the States are currently not aligned to the Central Rules and have their own law, the RoW matters are being resolved at the local level, in alignment with the existing rules and local law. Disputes if any, are being taken to the civil courts accordingly.
We believe there is a need to bring a quick resolution to the RoW disputes than the present mechanisms.

> **Q.9: What could be the most appropriate collaborative institutional mechanism between Centre, States, and Local Bodies for common Rights of Way, standardisation of costs and timelines, and removal of barriers to approvals? Justify your comments with reasoning.**

GSMA's Response:

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[5] As of August 2020

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

We believe that a coordination committee constituting nominees from Centre, States, Local Bodies, and Industry representatives including MNOs should be formed as regards the institutional mechanism to discuss & address all issues related to RoW. This committee could take the shape of a standing coordination committee and could be instituted either at State level or LSA level under the aegis of DoT.

Q.10: Should this be a standing coordination-committee at Licensed Service Area (LSA) level to address the common issues relating to RoW permissions? If yes, then what should be the composition and terms of reference of this committee? Justify your comments with reasons.

GSMA's Response:

Please refer to answer to Q.No.9

Q.11: Is there a need to develop common ducts along the roads and streets for laying OFC? If yes, then justify your comments.

GSMA's Response:

Yes , there is a need to have a Common Duct Policy along the Roads and Streets for laying OFC .This would enable ease of laying fiber, lower costs and fair, reasonable and a non-discriminatory process to provide BB infrastructure. Furthermore, the policy should be 'dig only once' policy.

Q.12: How the development of common ducts infrastructure by private sector entities for laying OFC can be encouraged? Justify your comments with reasoning.
And
Q.13: Is there a need to specify particular model for development of common ducts infrastructure or it should be left to the landowning agencies? Should exclusive rights for the construction of common ducts be considered? Justify your comments with reasoning.
And
Q.14: How to ensure that while compensating the land-owning agencies optimally for RoW permissions, the duct implementing agency does not take advantage of the exclusivity? Justify your comments with reasoning.

GSMA's Response:

No Comment

> **Q.15: What could be the cross-sector infrastructure development and sharing possibilities in India? Justify your comments with examples.**
> **And**
> **Q.16: Whether voluntary joint trenching or coordinated trenching is feasible in India? If yes, is any policy or regulatory support required for reaping the benefits of voluntary joint trenching and coordinated trenching? Please provide the complete details.**
> **And**
> **Q.17: Is it advisable to lay ducts for OFC networks from coordination, commercial agreement, and maintenance point of view along with any other utility networks being constructed?**

GSMA's Response:

Voluntary active and passive infrastructure sharing can be a great policy to enhance MNOs investment capabilities in India if done the right way. For example, Spectrum sharing is that very tool that allows operators to address, respond and be prepared for capacity circumstances that arose in the past or the ones that they anticipate in the future. A good spectrum mix attuned to their respective radios (network) allows for quality coverage and good broadband capacities to offer. Sharing is also able to, when via cross-industry agreements, open up different new applications and benefit consumers.

> **Q.18: What kind of policy or regulatory support is required to facilitate cross-sector infrastructure sharing? If yes, kindly provide the necessary details.**

GSMA's Response:

We believe that The Dig Once Policy, laying of Common Duct Infrastructure are examples of Policy and Regulatory support is needed. The policies that could address any sharing needs are:

- Any agreement should be market-driven and voluntary.
- There should be no additional charges by the government for any type of sharing.
- Any administrative costs need to be re-assessed by the authority and should not be mixed with revenue.
- Government should make any public infrastructure possible available.
- Additional incentives such as lifting taxes and fees can be possible.

> **Q.19: In what other ways the existing assets of the broadcasting and power sector could be leveraged to improve connectivity, affordability, and sustainability.**
> **And**

> **Q.20: For efficient market operations, is there a need of e-marketplace supported by GIS platform for sharing, leasing, and trading of Duct space, Dark Fibre, and Mobile Towers? If yes, then who should establish, operate, and maintain the same? Also, provide the details of suitable business model for establishment, operations, and maintenance of the same. If no, then provide the alternate solution for making passive infrastructure market efficient.**

GSMA's Response:

No Comment

> **Q.21: Even though mobile broadband services are easily available and accessible, what could be the probable reasons that approximately 40% of total mobile subscribers do not access data services? Kindly suggest the policy and regulatory measures, which could facilitate increase in mobile broadband penetration.**

GSMA's Response:

We believe that measures to address the barriers preventing people using mobile internet need to be grounded in an understanding of the local context. They also need to factor in the structural issues underpinning disparities in use, such as differences in income and education as well as restrictive social norms. It is important to consider the range of barriers that different segments face. This includes the following, as a start:

a. Increasing levels of literacy and digital skills across all segments of the population requires building this into school curricula and life-long learning programmes. Using agent networks to provide training and increase awareness of the benefits of mobile internet can be an effective strategy as well. Digital skills programmes should aim to strengthen confidence in digital technologies and help protect against potential online harms.

b. Investments and facilitating the creation of local digital ecosystems should be pursued to further accelerate the growth in relevant content, applications and services that meet the needs, preferences and capabilities of new users and unconnected individuals.

c. Reducing or removing unnecessary tax and regulatory burdens on internet-enabled devices and data services is key to enabling further digital inclusion of excluded, disadvantaged and vulnerable groups.

d. Reviewing the impact of Universal Service Funds (USFs) on the affordability of mobile and mobile internet services. When administered ineffectively, USFs can be counterproductive in that, by effectively taxing customers, they actually serve to raise the affordability barrier.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

In more detail, expanding mobile coverage and speed is typically a fundamental economic challenge. Addressing it will require careful collaboration between the mobile industry and policymakers:

a. Mobile Industry needs a significant amount of new harmonised mobile spectrum so defragmenting and clearing prime bands should be prioritised. Regulators should aim to make available 80-100 MHz of contiguous spectrum per operator in mid-bands (e.g. 3.5 GHz) and around 1 GHz per operator in high-bands (e.g. mmWave spectrum). Spectrum is needed across low, mid and high ranges to deliver widespread coverage and Speed.

b. Rationalisation of spectrum prices for access spectrum in all bands for the sustainability of the mobile industry. Recent studies demonstrated higher spectrum prices have played a significant role in slowing the rollout of next-generation mobile networks, had a significant effect in reducing the network quality experienced by consumer, and are associated with higher consumer prices.

c. Allocation of more backhaul spectrum to access providers, but also the provision of simplified and non-discriminatory and timely access to public infrastructure and voluntary infrastructure sharing.

d. Right of way (RoW)'s rules should be a unified procedure and should be implemented across India via Single Window Clearance.

e. Rationalisation of Regulatory levies (Spectrum Usage charge should be abolished since presently spectrum has been acquired via auction or market-determined prices) and License fee should be reduced from 8% to 3% (5% USO Levy may be abolished)

   Reduced mobile-specific taxes and fees, to improve rollout and internet affordability. GST on regulatory levies (i.e. License fee, Spectrum Usage Charge (SUC) and Spectrum payment should be removed. Since Hon'ble Supreme court has settled the issues AGR definition, therefore, AGR definition should be simplified.

Q.22: Even though fixed broadband services are more reliable and capable of delivering higher speeds, why its subscription rate is so poor in India?

GSMA's Response:

The reach and convenience of Mobile Broadband is far more superior than fixed Broadband. Mobile Broadband empowers and provides seamless mobility to the citizen consumer. The aesthetics, features and multitude of device options also plays a greater role in making Mobile Broadband a favourite among the masses.

The logistics of subscribing, maintaining and using Mobile Broadband is also far superior than fixed Broadband- especially when the devices are no longer stationery/fixed installation in nature and range of form size options available.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

The data usage in last three years in the country has reached multi folds due to extensive coverage and use of Mobile Broadband.

Additionally, fixed broadband requires a fibre infrastructure that is at times not available in every region or investments are not done due to economic and physical restrictions. Mobile broadband, on the other side, is increasingly available and more and more reliable every day, especially with the introduction of 5G in the mid-term.

It is worth noting that Mobile Operators have championed the cause of Broadband in the country despite the limited Spectrum available.

In India, from a user perspective, Mobile has been an effective substitute to fixed services. It has brought ease of use, mobility and almost similar if not better, levels of service quality for the consumer. Furthermore, Mobile has been cost effective and affordable for the user, has allowed tariff and service innovations (pre-paid/post-paid, converged services and live content), giving the consumer flexibility to go for highly customised and need based plans. This can be one of the major reasons why fixed BB subscription has remained poor relative to mobile. We believe that with adequate levels of spectrum allocations to access and backhaul (E and V Bands, mid-bands and mmWave bands) in future can further prove the utility of mobile broadband.

> **Q.23: What could be the factors attributable to the slower growth of FTTH subscribers in India? What policy measures should be taken to improve availability and affordability of fixed broadband services? Justify your comments.**

GSMA's Response:

The following measures may be considered to improve growth of FTTH subscribers are:
1. Ease and unification of RoW rules across India
2. Dig Once Policy
3. Common Duct Infra Policy

> **Q.24: What is holding back Local Cable Operators (LCOs) from providing broadband services? Please suggest the policy and regulatory measures that could facilitate use of existing HFC networks for delivery of fixed broadband services.**

GSMA's Response:

No Comments

> **Q.25: When many developing countries are using FWA technology for provisioning of fixed broadband, why this technology has not become popular in India? Please suggest the policy and regulatory measures that could facilitate the use of FWA technology for delivery of fixed broadband services in India.**

GSMA's Response:

FWA, as well as other mobile spectrum applications, requires a large amount of available spectrum is different ranges due to the need for low latency and reliability indoors, as well as investment capabilities from Operators. Please refer to (Q.21) and (Q.29) for a list of best practices that encourage investment and would boost FWA and any other mobile services in India.

> **Q.26: What could be the probable reasons for slower fixed broadband speeds, which largely depend upon the core networks only? Is it due to the core network design and capacity? Please provide the complete details.**

GSMA's Response:
No Comment

> **Q.27: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to contention ratio, latency, and bandwidth utilisation in the core network? If yes, please suggest the details. If no, then specify the reasons and other ways to increase the performance of the core networks.**

GSMA's Response:

There is no need to mandate specific parameters that are subject to variability and at probe points away from the actual user. Use of globally harmonized spectrum bands, technology and widely accepted network topologies should be an assurance in itself for all checks to be in reasonable range.

We believe that instead of bringing such new intrusive mandates at network levels, the regulator and policymakers should rather facilitate high capacity BB network rollouts by removing policy bottlenecks e.g. Free /affordable Rights of Way (RoW), removing excessive compliances, allocating more spectrum at access and backhaul levels (making spectrum allocation a regular feature), encouraging innovations in technology that may help companies scale up and provide better QoS.

The network management should be left to the operators and market forces.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

Please refer to responses (Q.21) and (Q.29) for more measures in detail.

Q.28: Should it be mandated for TSPs and ISPs to declare, actual contention ratio, latency, and bandwidth utilisation achieved in their core networks during the previous month, while to their customers while communicating with them or offering tariff plans? If no, state the reasons.

GSMA's Response:

All the parameters mentioned are dynamic in nature and subject to wide variability depending on the network load and applicability of different usage scenarios.

While not impossible, even if it were to be measured and recorded, the true reference data points with so much subjectivity will lead to challenging and questionable decisions.

Furthermore, as suggested in previous response, in addition to that – the regulator can always seek such data from time to time if it receives complaints/evidences that indicate there are potential specific reasons. An average consumer would not be keen to get so much of technical parameters. At the end of the day, different consumers seek different levels of speed and latency as per operators' commitments or showcase.

In this case, those topics should be driven by market-based movements and used by Operators to inform consumers they believe would be interested/impacted by such information.

Q.29: What could be the probable reasons for slower mobile broadband speeds in India, especially when the underlying technology and equipment being used for mobile networks are similar across the world? Is it due to the RAN design and capacity? Please provide the complete details.

GSMA's Response:

Mobile Operators worldwide use standardized 3GPP technologies in globally harmonized spectrum bands. Mobile Operators design their RAN and capacities to optimize maximum and efficient usage in compliance with Regulatory norms.

We note that there could be various reasons i.e. Network budgets, backhaul capacity and availability, site configuration, radio environment and terrain, traffic volume and type, number of sites, network planning and available spectrum all have a great effect on overall network performance. Lots of these are conflicting financial, practical, and operational

choices and engineering trade-offs. Lots of problems could be solved with unlimited funding, but typically, budget constrains network performance.

Backhaul Spectrum enhances capacity of networks. With increasing loads in times of pandemic calls for allotment of backhaul spectrum including in E & V bands; so that Mobile operators are able to manage current operations and upcoming requirements. The speedy decisions on these unescapable critical matters will only help in usage of judicious use of spectrum for the benefit of citizenry.

It is worth mentioning GSMA's annual Mobile Connectivity Index Report that suggests inadequate allocation of Spectrum. In South Asia region alone, India's score on Spectrum has not been very encouraging. Spectrum is a key dimension within key enabler "Infrastructure" category with a significant weightage.

South Asian Countries Spectrum Score
https://www.mobileconnectivityindex.com/

Country	Spectrum	Other spectrum below 1GHz (MHz per operator)	Spectrum in 1-3GHz bands (MHz per operator)	Spectrum above 3GHz bands (MHz per operator)
Maldives	**66.02**	85.71	96.25	0.00
India	**21.50**	**50.43**	**38.06**	**0.00**
Sri Lanka	**25.23**	50.00	50.78	0.00
Bhutan	**67.50**	100.00	25.00	0.00
Bangladesh	**19.97**	51.71	32.09	0.00
Nepal	**25.02**	60.86	29.50	0.00
Pakistan	**20.14**	60.57	26.75	0.00
Afghanistan	**17.62**	50.21	25.25	0.00

In contrast, top ten countries that score maximum in Spectrum dimension have greater quantity of spectrum per operator in multiple bands. Of these ten, seven (in bold) also find place in top twenty the overall Connectivity Index scores – telling us that **access to good quality spectrum in sufficient quantity holds the key**.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

Top 10 Countries with Highest Spectrum Score

Country	Region	Spectrum	Other spectrum below 1GHz (MHz per operator)	Spectrum in 1-3GHz bands (MHz per operator)	Spectrum above 3GHz bands (MHz per operator)
Philippines	East Asia & Pacific	98.00	100.00	100.00	80.00
Switzerland	Europe & Central Asia	93.33	66.67	100.00	100.00
Finland	Europe & Central Asia	93.08	67.90	98.33	100.00
Japan	East Asia & Pacific	83.91	28.57	94.00	100.00
Germany	Europe & Central Asia	82.88	64.38	100.00	0.00
United Arab Emirates	Middle East & North Africa	82.44	99.71	75.00	100.00
Norway	Europe & Central Asia	82.38	76.19	90.46	0.00
Saudi Arabia	Middle East & North Africa	80.00	66.67	100.00	100.00
Australia	East Asia & Pacific	75.45	86.10	80.21	41.67
New Zealand	East Asia & Pacific	74.93	76.19	98.96	0.00

With identification of new millimetre wave spectrum bands for IMT technologies in WRC-19 and making 100 MHz per Mobile operator available in mid-bands, such as in the 3.5 GHz range – Mobile Broadband will be capable of offering unmatched benefits in terms of speeds, reach and better latency in the short and mid-terms.

Likewise, Spectrum availability in low band (sub 1 GHz), mid-bands (such as 3.5 GHz) and high bands (such as mmWaves) will ensure low latency, high speeds and reliability, with unprecedented benefits.

While the spectrum is a natural and scarce resource, it is special in the sense that it never gets exhausted even if used. Idle spectrum unavailable for the use of citizenry in light of available device eco system is wastage of national resource. For that, some measure can be highlighted:

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

- **Predictable and timely spectrum licensing encourages long-term network investment**. Predictability can be supported when governments publish (i) national broadband plans setting out targets for widespread broadband and (ii) a spectrum roadmap providing a schedule for forthcoming spectrum releases to meet the government's plan as well as other demands on spectrum.

We welcome and note that committee of secretaries has been recently formed to come up with timelines and spectrum roadmap is to ensure that sufficient spectrum meet the requirements driven by changing technology and demand. Information on future spectrum is critical for businesses to prepare investment plans.

- **Competition can be supported by licensing as much spectrum as possible and limiting charges and other barriers to services, including set-asides**. Making available additional spectrum in capacity and coverage bands is key to supporting better quality, widespread, affordable mobile broadband services while setting spectrum aside may create artificial spectrum scarcity and limit the reach of the services by limiting to a separate industry, while MNOs have the expertise to realize those new applications, also via sharing and trading.
- **Spectrum harmonization is needed**. Spectrum harmonization refers to the uniform allocation of radio frequency bands across entire regions — not just individual countries. Uniform allocation comes with many advantages. It minimizes radio interference along borders, facilitates international roaming and reduces the cost of mobile devices. This also mean, the NFAP should be updated to reflect the achieved harmonization.

> **Q.30: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to RAN user plane congestion? What should be such checks? If yes, then suggest the details, including the parameters and their values. If no, then specify the reasons and other ways to increase performance of RANs.**

GSMA's Response:
We believe that there is no need for such regulations at network component levels. The focus of policymakers should be to increase spectrum supply at a reasonable price, lower the cost of network deployments, easier RoW and tower deployment processes etc. Furthermore, such regulations will only cost of compliances for TSPs. Market will drive those developments, when and if needed, and more information of policies to incentivise investments can be seen on (Q.22) and (Q.29)

> **Q.31: Should it be mandated to TSPs to declare actual congestion, average across the LSA, recorded during the previous month over the air interface (e.g., LTE Uu), in the radio nodes (e.g., eNB) and/or over the backhaul interfaces between RAN and CN (e.g., S1-u), while reaching out to or enrolling a new customer? If so, then suggest some parameters which can objectively determine such congestions. If no, then specify the reasons and other ways to increase performance of the RAN.**

GSMA's Response:

We believe that considering the technology development and level of competition in the market, these issues may be left on the market forces. This would create additional complexity and costs to bring up topics where most of the population doesn't have knowledge of. In this case, those topics should be driven by market-based movements and used by Operators to inform consumers they believe would be interested/impacted by such information. At the end of the day, different consumers seek different levels of speed and latency as per operators' commitments or showcase.

> **Q.32: Is there a need of any policy or regulatory intervention by way of mandating certain checks relating to consumer devices? If yes, then please suggest such checks. If no, then please state the reasons.**
> **And**
> **Q.33: To improve the consumer experience, should minimum standards for consumer devices available in the open market be specified? Will any such policy or regulatory intervention have potential of affecting affordability or accessibility or both for consumers? Please justify your comments.**

GSMA's Response:

We believe that consumer devices should be in compliant with globally generally accepted technical standard and interoperable on MNO's network. Consumer devices should not adversely impact the MNO's network.

The devices have a significant role in user experience. Some such instances include degraded experience of the second SIM on dual SIM handsets, un-availability of location based services, non-support of prevalent frequency bands, VoLTE and VoWifi and enhanced Codecs etc.
It is, therefore, important to mandate device certification in the country. The country may adopt GCF certification of devices along with adherence to minimal certification defined for Indian network scenario and services.

GSMA's response on TRAI's consultation paper on Roadmap to promote broadband connectivity and enhanced broadband speed

We believe that consumer devices should be built:

- In full compliance with the 3GPP specification and to a high standard to ensure that they operate well with MNOs networks giving a good user experience. GCF / PTCRB Compliance schemes ensure technical operability between device and network.

- There should be a minimum set of standards that should be defined for any open market smartphone / device to be launched in India
- To a high safety level to ensure no harm comes to the user, either via the radiation omitted (SAR) or through electrical faults within the device or the charging of the battery. CE &/or FCC Regulations compliance ensures a high level of safety for devices

- The devices should be built of sustainable material which can be re-cycled to improve a greener environment.

- Ensuring a good technical and safety standard of devices will add a cost but is good value for money if it gives a better user experience, meaning devices don't need to be changed so frequently which is cheaper over time. Keeps people/users safe and improves the environment for everyone.

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Rights of Way (RoW) in India:

A submission from the GSMA relating to India Mobile Sector

September 2020

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Executive Summary

India aims to become a $5 trillion economy of which US$ 1 trillion expected from the digital economy. It further aims at becoming *Atmanirbhar Bharat* (Self-reliant India), encouraging local products, artisans through '*One District One Product*', leveraging emerging technologies and supporting economic backbone SMEs and MSMEs. Almost all of these goals and visions require high-speed digital highways.

Throughout the pandemic COVID-19, India has remained connected, economy functioning, people and students working from home, thanks to robust and resilient telecom network services. If anything, the pandemic has renewed focus on the value of connectivity. The exploding data traffic on networks is only going to grow with deployment of new technologies and work from home becoming common.

As connectivity emerges as a key component of economic wellbeing and cohesion, the ability of these high-speed networks to carry high traffic require deployment of more fiber, towers and spectrum (Backhaul & Front haul). The Telecom industry depends upon getting timely and affordable approvals for Rights of Way (RoW) permissions from authorities to accelerate infrastructure rollout.

However, industry faces serious challenges in getting the RoW permissions despite efforts by the Union government, hindering infrastructure rollouts at the last mile. This necessitates collaborative role that Union and state governments and industry must play to overcome this challenge.

Apropos, the GSMA has done this study that analyses the specific RoW challenges faced by Indian telecom operators. At the heart of the GSMA's efforts to come out of this study is to drive home the importance of streamlined and uniform RoW policies at the level of states, to help accelerate socio-economic goals and Digital India vision. It offers certain recommendations to address issues such as RoW approval timelines, denial of access (in commercial / residential areas), charges, non-uniformity in RoW approach, centre-state coordination and allocation of backhaul spectrum among others.

We also cover some innovative approaches to RoW followed in a few international jurisdictions that shows efforts of policymakers and governments to accelerate high-speed telecom infra rollout. We hope our examples provide the necessary inspiration by demonstrating how innovative policies and close cooperation among key stakeholders can improve the country's ICT/Telecom competiveness. In this study**, the GSMA provide following recommendations to the governments (Union and state):**

- A single window clearance with deemed approval
- Replacing multiple RoW charges with only a single 'one-time' charge
- A *"Dig Only Once"* policy incorporating designing of *Utility Duct with implied RoW permission*.
- Making street furniture available across the country at very low or no cost at places
- Microwave spectrum allocation to MNOs to cope with surge on mobile networks
- Benchmark states on RoW as a key parameter including in Ease of Doing Business (EoDB) rankings.
- Permitting structured aerial fiber in dense urban environments and difficult areas
- Immediate need for uniform implementation of DoT's RoW Rules 2016 by all States.
- Meeting of Annual Targets of the National Broadband Mission[1]

In short, it offers a blueprint and makes a case for making RoW permissions streamlined across India.

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[1] https://dot.gov.in/national-broadband-mission

Background

The high-speed broadband using fiber and/or spectrum networks are increasingly becoming central to societies, communities, governments and economies. It enhances quality of digital life, augments the sustainability of local communities and economies. These high-speed broadband networks have become the backbone and growth engine of new age economies, and today, act as foundation for Sustainable Development. The telecom networks support recoveries during Disaster Management, as also witnessed in India during recent Odisha cyclone, and now, during the Pandemic-COVID-19. The country remains connected, 1.3 billion citizens entertained, working from home, the education and healthcare delivered through online mode.

India is already the second largest telecom network globally, home to 1.2 billion mobile subscribers and 2nd largest smartphone market. Many flagship programmes of the Government like Digital India, Skill India and Start-up India ride on telecom infrastructure. The success of JAM (Jan Dhan – Aadhaaar – Mobile) trinity has been possible due to mobile networks that today reach nearly 99% of population.

The goal of *Atmanirbhar Bharat* (Self-reliant India) means further deepening of connectedness of people and integrating them with markets and opportunities e.g. various State Government are taking initiatives like '*One District One Product*', to encourage local products, handicrafts and provide artisans the access to wider market. Similarly, **SMEs and MSMEs** are backbone of any economy, more so of India, to not only grow in size and scale by finding new markets and opportunities but also provide more future jobs using power of digitalisation. *Digital India* has succeeded on the back of investment and rollout of 4G networks, and the future digital progress crucially depends upon the rollout of 5G and fiber. Under the five pillars of self-Reliant India, infrastructure has been recognized as an identity of the country. The rural economy needs to be further connected. India is getting ready for 5G, which along-with IoT, Big Data and AI will further play important role as horizontal enabler across verticals and sectors (e.g. Industry 4.0).

This also in line with global developments elsewhere e.g. the European Commission (EC) has just published a Recommendation calling its Member States to boost investment[2] in **very high-capacity broadband connectivity infrastructure,** including 5G, which is **the most fundamental block of the digital transformation and an essential pillar of the economic recovery**. **The timely deployment of 5G networks will offer significant economic opportunities for the years to come, as a crucial asset for European competitiveness, sustainability and a major enabler for future digital services**.

To cater to such varied needs of the economy, citizens and businesses that will generate further massive data, the proliferation of high-speed digital highways / fiber broadband are need of the hour. The means massive investment in high-speed broadband infrastructure, importantly in the fiber and backhaul spectrum infrastructure (enables faster roll out of services in rural and remote pockets as well as dense urban environment).

The National Digital Communications Policy (NDCP) 2018 states '**Broadband Highways**' and '**Universal Access to Mobile Connectivity**', as two of the nine pillars of 'Digital India', lay emphasis on the spread of broadband and mobile connectivity in the country. The NDCP included following key targets to be achieved by 2022**:**

- *Propelling India to the Top 50 Nations in the ICT Development Index of ITU from 134 in 2017*
- *Provide Universal broadband connectivity at 50Mbps to every citizen*

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[2] https://ec.europa.eu/digital-single-market/en/news/commission-recommendation-common-union-toolbox-reducing-cost-deploying-very-high-capacity
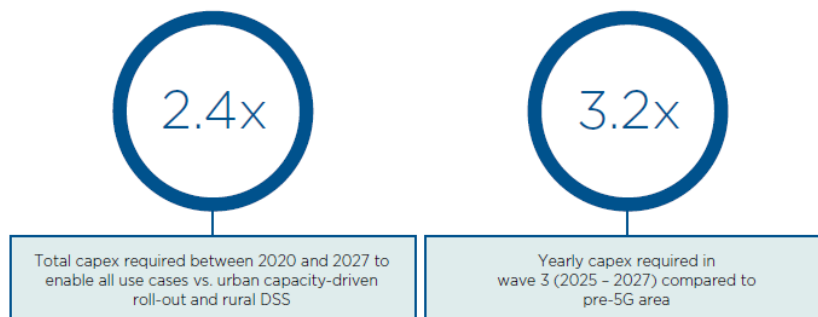
- *Provide 1 Gbps connectivity to all Gram Panchayats by 2020 and 10 Gbps by 2022*
- *Enable 100Mbps broadband on demand to all key development institutions*
- *Enable fixed line broadband access to 50% of households*
- *Achieve 'unique mobile subscriber density' of 55 by 2020 and 65 by 2022*

Today, the overall data consumption in India has reached a massive 700 Crore GB per month fuelling the backhaul requirement for a mobile BTS site from 4 Mbps (earlier) to 300 Mbps.

To sustain such a level of traffic India needs fiberisation and fiber densification. Due to such under-fiberization only 30% of mobile towers and 7% of Indian homes are connected with high speed fiber/ fixed broadband. This requires laying fiber and installing towers at speed across length and breadth of India. Installing duct / fiber (often underground, and majorly on public lands and areas which many a times may already be paved or developed) is an essential part in deploying broadband infrastructure and a significant part of this digging and trenching work requires access to public Rights of Way (RoW) in cities, towns. In the 5G era, the network densification will make RoW a critical enabler in accelerating important government visions such as Industry 4.0, Smart Cities. As per a recent GSMA study[3] investments in the 5G era will be driven by need for large number of small and macro cells.

MASSIVE INCREASE IN REQUIRED INVESTMENTS DRIVEN BY NEED FOR LARGE
NUMBER OF ADDITIONAL MACROS AND SMALL CELLS

2.4x — Total capex required between 2020 and 2027 to enable all use cases vs. urban capacity-driven roll-out and rural DSS

3.2x — Yearly capex required in wave 3 (2025 – 2027) compared to pre-5G area

The GSMA report highlights that cumbersome bureaucratic approval processes typically inhibit timely large-scale deployment of small cells. Some regulators are moving to facilitate next-generation infrastructure investments by streamlining approval processes. These measures include simplified, transparent, and standardised application and review processes for small cell siting, exempting small cells that meet certain set criteria from reviews of environmental and historic site preservation organisations; and accepting declarations of compliance for network operators without requiring routine post-installation measurement of power density.

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[3] REALISING 5G'S FULL POTENTIAL: SETTING POLICIES FOR SUCCESS, MARCH 2020

Accelerating digital infrastructure (5G ready and beyond)

As not only the Union government but also the state governments aim to usher in new visions of 5G, Industry 4.0, Smart Cities, creating local jobs and entrepreneurship; it is of utmost importance that all agencies whether at state level, local level or at union level; facilitate deployment of Telecom infrastructure in a holistic manner, and a very coordinated manner.

India's Department of Telecommunications (DoT) has taken several policy initiatives to facilitate infrastructure growth for delivery of quality services that has resulted in the number of BTSs for 2G/3G/4G-LTE services progressively reaching to 21.87 lakh, and number of towers to 5.94 lakh across the country[4].
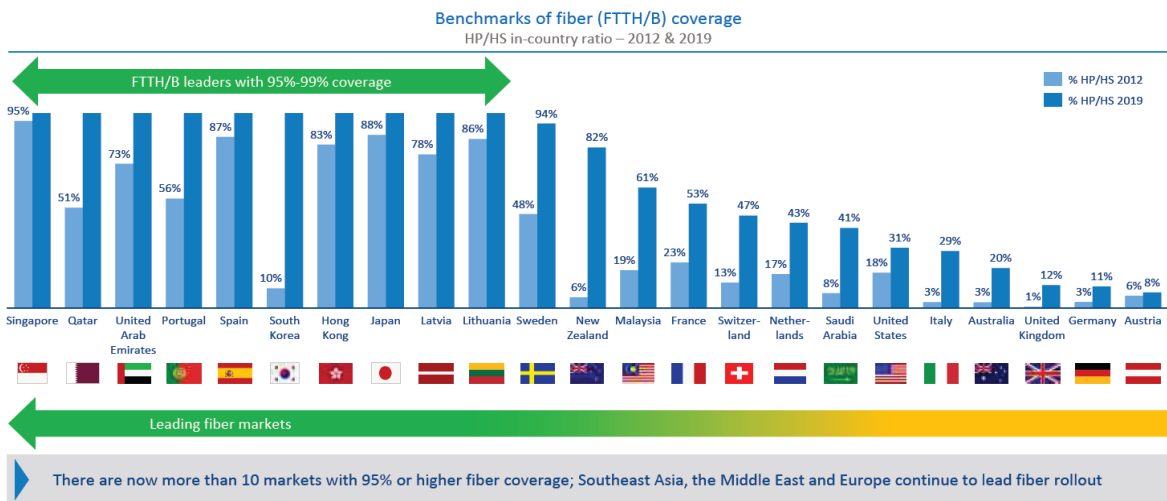
While such policy measures coupled with the efforts of telecom services and infrastructure providers' active participation – have increased the density of telecom towers, the fiberisation in India i.e. mobile towers connected with fiber, and, fiber to the home (FTTH) penetration, have remained poor.

The Government estimates that around 31% of the towers in country are fiberized[5].

In some of the advanced countries, the percentage is said to be in excess of 60%[6]. China, Japan, Korea's massive and deep fiber penetration reaching over 99% of mobile towers, 70% homes and all of private and government buildings has enabled them to lead 5G deployments, usher in innovation, R&D and leveraging power of domestic market through high-speed connectivity and solutions.

A recent report[7] on fibre deployments shows that in a group of countries fiber has become almost ubiquitous – covering more than 95 percent of homes (See chart below) in those markets.

Figure 2:   FTTH/B households passed

Source: Arthur D. Little, FTTH Council Europe, MENA, Asia-Pacific, regulator reports, Discussions with individual telcos, ADL past case work
HS – Households in the country, HP – Households passed by FTTH/B, HC – Households connected by FTTH/B

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[4] http://164.100.24.220/loksabhaquestions/annex/173/as358.pdf, figures by 11th March 2020
[5] http://164.100.24.220/loksabhaquestions/annex/172/au3835.pdf
[6] "*It is worth noting that in India, less than 25% of telecom towers carry fibre optics against the average in the US, China and Korea where it is as high as 65-80%. interestingly, total cumulative fibre deployed to population ratio today in the US is 1.4x, China 0.9x but only 0.1x in India, according to EY data…*" https://telecom.economictimes.indiatimes.com/news/right-of-way-rules-the-effects-of-implementation-delay-on-india-telecom-industry/59855964
[7] The race to gigabit fiber: FTTH opening the adoption of gigabit-speed internet (Arthur D Little, September 2020

As inferred from the report, deployment of high-speed fibre is helping telecom providers offer competitive, better and converged services in these countries.

Comparing the level of fiber penetration of these countries with India, there clearly are gaps. Even the microwave backhaul capacity available to operators seem insufficient to deal with the exponential data growth witnessed on the networks. With the further surge expected in traffic in the 5G and M2M era, this pressure on telecom networks' backhaul requirements is only going to exacerbate if not addressed in time.

In our view, the comparative slow progress in India with regards to fiber, in part can be attributed to the tedious, complex and many a times expensive RoW permissions, procedures at the state and local levels.

Although telecom is a Union government subject, the RoW permission is granted by the state governments (e.g. via local authorities like municipalities) in return for a fee. In many cases these charges have been argued to be high, RoW permissions delayed as local authorities follow their own interpretations and processes while granting such permissions.

 The unfortunate pandemic Covid-19 has proven the critical importance of resilient telecom networks – demonstrating need for the governments to facilitate efficient RoW policies so that digital infrastructure can rollout at the last mile (fiber, towers). For this to happen, the rights of way permissions not only need to be affordable, reasonable if not free, they also need to be fast tracked, simplified, and made part and parcel of various government by-laws, building codes etc.

A recent Finance Ministry Task Force on National Infrastructure Pipeline (April 2020) covers this aspect of Union and state coordination, see below:

"….***Creation of collaborative institutional mechanism between the Centre, states and local bodies for common right of way (RoW), standardisation of costs and timelines***:

With continued increase in demand for data, additional telecom towers need to be installed so as to increase coverage in rural and non-metro cities and to expand capacity in metros. Additional towers take time to be installed mainly due to delay in getting permission from local authorities and other procedural issues.

As per industry estimates, an additional 10 lakh towers need to be established and an 30 lakh km of optical fibre cable (OFC) need to be laid by 2025. Typically, about Rs 50 lakh is the required investment for setting up a tower. Around 30% of the telecom towers in India are fiberized. In order to quicken the process of giving RoW permissions, adoption of India Telegraph RoW Rules 2016 by state/ union territory government and central agencies is required. There is an imminent need to develop innovative implementation models for RoW and to work with states/UTs for having consistent policies pertaining to expansion of digital infrastructure…"

Initiatives in India to facilitate deployment through Rights of Way (RoW)

Considering the importance of RoW to accelerate 5G and network rollouts and to overcome such challenges, the Government of India (Department of Telecom) on 15th Nov 2016 issued a Gazette Notification[8] called 'The Indian Telegraph RoW Rules 2016' to speed-up and regulate the laying of underground (fiber) and over-ground telecom infrastructure (towers) in the country.

The Rules were created to facilitate establishment and maintenance of underground and over-ground telegraph infrastructure. The rules are applicable to the concerned local authorities in states (e.g. municipalities) and gives a framework for the states to follow while formulating their local RoW process. It prescribes that:

o Permission to be obtained from the competent local authority
o Authority to dispose the application within a period not exceeding **sixty days**
o Prescribed Charges/Fee/ Administrative Charges are as under:-
  o Underground: not exceeding Rs. 1000/- per kilometer
  o Overground: not exceeding Rs. 10,000/- (one Time)
  o For installation of towers: Rs 10,000/- per application (one time)

Under NDCP 2018, the Government decided to implement a '*Fibre First Initiative' to take fibre to the home, to enterprises and to key development institutions in Tier I, II and III towns and rural clusters*. This includes:

o According Telecom Optic Fibre cables the status of Public utility
o Promoting collaboration models involving state, local bodies and private sector as necessary for provision of shared duct infrastructure in municipalities, rural areas and national highways
o Facilitating Fibre-to-the-tower programme to enable fiberisation of at least 60% of telecom towers thereby accelerating migration to 4G/5G
o Incentivising and promoting fibre connectivity for all new developmental construction
o By making requirement for telecom installations and the associated cabling and in-building solutions mandatory in all commercial, residential and office spaces by amending National Building Code of India (NBC), through Bureau of Indian Standards (BIS).

- Till now[9], around sixteen (16) states (*refer Annexure- 1*) have adopted the RoW rules and formulated their respective policies. These states are:
  o Jharkhand, Rajasthan, Tripura, Odisha, Haryana, Assam, Maharashtra, Tamil Nadu, Arunachal Pradesh, Uttar Pradesh, Uttrakhand, Meghalaya, Madhya Pradesh, Karnataka, Manipur, and Nagaland.

Additionally, fifteen (15) states/Union Territories are a "work in progress" for either aligning their existing policies or have come out with draft policies:
  o Himachal Pradesh, Delhi, Sikkim, Punjab, Chandigarh, Gujarat, Goa, Chhattisgarh, Kerala, Andhra Pradesh, Telangana, Pondicherry, Bihar, J&K, Mizoram,

Another six (6) states / UTs (West Bengal, Andaman & Nicobar Islands, Lakshwadeep, Dadra& Haveli, Daman & Diu, and Ladakh) do not have any uniform policy.

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[8] https://dot.gov.in/sites/default/files/ROW_2016.pdf?download=1
[9] As of August 2020

- The industry is working on these with the respective state/UT governments, basis need and prioritization. Further, the industry is also exploring central agencies like – Ministry of Railways, Urban Development department, Ministry of Civil Aviation, NHAI, Ministry of Environment & Forest etc. to facilitate RoW under their jurisdictions.

- As per Ministry of communications[10], steps such as consultation with State Governments / Union Territories, holding regional seminars and advocacy workshops have been taken up for facilitating adoption of Indian Telegraph Right of Way Rules, 2016 and roll-out of telecom infrastructure.

- Further, the local operator association COAI under its joint industry group named TIC, with all Mobile operators and Infrastructure providers as its members is steering local level coordination through its circle coordination committees (CCC). Periodically, TIC reviews progress at Pan India level in their meetings regularly and decide on priorities for faster implementation of RoW rules across India.

While, the RoW Rules, introduced in November 2016, aimed at expediting the building of telecom infrastructure, and such efforts, its implementation across States and local levels have not been on expected lines or satisfactory.
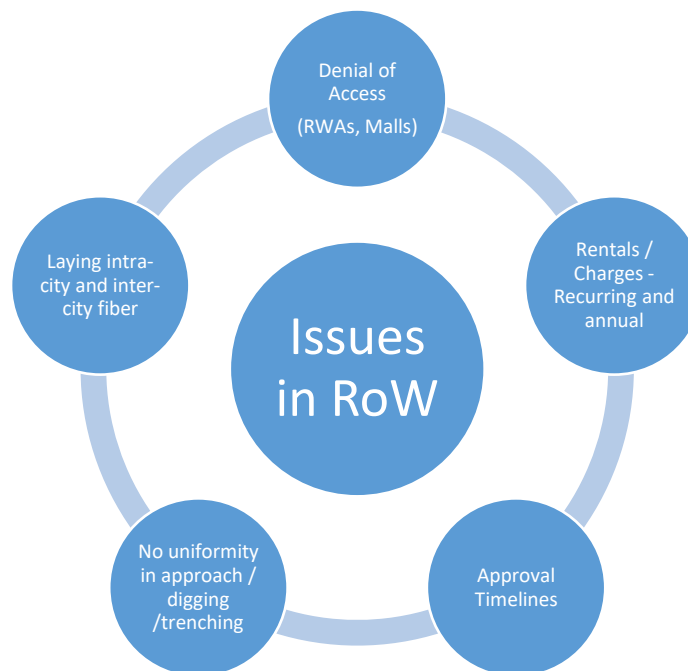
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[10] HTTP://164.100.24.220/LOKSABHAQUESTIONS/ANNEX/173/AU2832.PDF

Challenges to overcome in RoW

The network rollouts need RoW permission from state and local bodies for laying ducts for fiber cables and putting towers on public lands. The major reasons for low fiber penetration in India have been the difficulties, delays and costs associated with the process of obtaining RoW permissions. Different State Governments have adopted different rules, criteria, and timeframes with disproportionately higher charges causing significant amount of effort and delays in getting the necessary clearances. Some of the typical issues involved in the RoW permissions can be understood from the figure below:

As per our discussion with the industry, these concerns can be further explained as follows:

a. In many States, the **policies are not aligned with the DoT rules** and in some cases there are **no policies at all (***covered in previous section***).** This leads to **undue delay** in processing, non-uniform approach ultimately leading to connectivity impact for state and its citizens. The RoW process requires significant documentation. Again, the Finance ministry task force report captures the issue of delay:

*"…With continued increase in demand for data, additional telecom towers need to be installed to increase coverage in rural or non-metros and to increase capacity in metros. Currently, India has ~5.5 lakh towers and the industry believes the country will require additional ~1 lakh towers per year over the next 2-3 years to meet the estimated demand. Further, only ~25-30% of telecom towers are fiberized. India will need to fiberise over 50%-60% of its towers (ideally) before launching 5G. This **requires quick approval by state authorities for laying fibre***, especially in metros and Tier 1 cities. **This issue has resulted in continuing delays for operators in setting up the needed infrastructure…"** [Emphasis Supplied]*
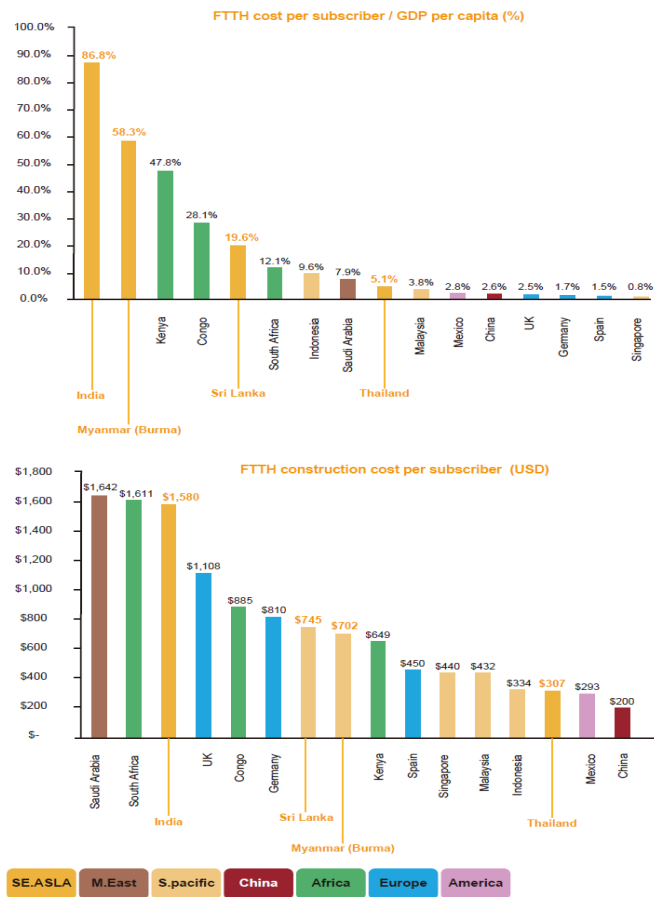
b. **Fee / rentals charged by city / local authorities**. In absence of holistic policy framework within states, these charges vary even within the state from city to city. It is understood that some states take one time charge, some recurring and some both. Basis of charging is also not explained or unclear. While the government encourages installation of BTSs on its buildings – often, the rentals are prohibitory and not prescribed properly. These RoW charges are a significant input cost towards digital connectivity.

A 2016 ITU White Paper[11] highlights the cost implications for FTTH capex for Indian subscriber e.g. "...*These range from USD1,642 US per line in Saudi Arabia down to USD200 per line in China. These differences become even more marked when comparing capex per line relative to GDP per capita* **with India at 86.8 percent** *down to Singapore at 0.8 percent*..."

> ➤ *Exhibit 24: FTTH capex per line and capital expenditure per line/GDP per capita*

Source: Towards a connected Cambodia, Smarter ways to develop broadband, CHEN, KUAN-HONG (Arthur), Director of Fixed network, Huawei

The same paper compares some countries' costs of various components for rolling out broadband infrastructure. It shows India having high to very high cost on account of RoW and civil work.

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[11] Broadband Regulation and Policy in Asia Pacific Region – Facilitating Faster Broadband Deployment, https://www.itu.int/en/ITU-D/Regional-Presence/AsiaPacific/Documents/Events/2016/APAC-BB-2016/Final_White_Paper_APAC-BB.pdf

➤ *Exhibit 23: Cost of various components of broadband infrastructure in for selected countries: Thailand, India, Myanmar and Sri Lanka*

	Item	Thailand	India	Myanmar	Sri Lanka
OSP	Device	Low	Middle	Middle	Middle
	Fibre cost	Middle	Low	High	Low
	Civil work (including ducting deployment)	Low	High +	High -	High
	Fibre splicing	Middle	Middle	High ++	Unknown
	Rights of way	Low	High ++	Middle	High -
ISP	Fibre	Low	Low	Middle	Low
	ONT installation	Low	High	Unknown	Middle
	Civil work	Low	High	Unknown	High

Low/Middle   High -   High/High +/High ++

Source: Industry sources, 2016

The fees or charges often applied to raise revenue for the local / state governments rather than supporting the development of local economy or ease of living of local community. We believe this is a myopic view, antithesis to the development and progress in digital age.

c. Another equally important issue is **denial of access**. It has been observed that many a times, the Residents Welfare Associations (RWAs), owners of commercial properties (buildings/ malls) deny the access to lay fiber or install telecom infrastructure inside the building premises. While it can be argued that aesthetics of the structure should not be deteriorated, the denial of access altogether is as bad as denying a service to a customer. Sometimes, the denial is indirect in form of exorbitant charges for giving permissions.

Service providers face such situations even in cities where fiber is available outside the periphery of such housing societies or commercial complexes thereby denying timely and cost effective connectivity to residential or commercial customers.

Coordination between Union and State Governments: Since the RoW also involves state involvement on public/private properties, the industry has to work with the state governments, local authorities to make sure that the respective rules of federal governments are aligned to the spirit and intent of the Union's RoW rules i.e. to facilitate the rollout of telecom infra at reasonable cost. The Finance Ministry task force, in respect of RoW, notes that:

"Creation of the digital communications infrastructure requires coordination and alignment of the work of multiple stakeholders and agencies - the central ministries and departments, state governments, local/municipal authorities, industry and user communities to achieve the intended objectives. One of the major challenges is implementation of Indian Telegraph Right of Way Rules, 2016. The cost of fibre rollouts remains high in India due to complicated and uncertain right-of-way (RoW) policies across the country..."

We believe that high charges, coupled with inexplicable delays and/or longer duration for granting RoW permissions, is making India miss a cost effective broadband infrastructure deployment and affordable access.
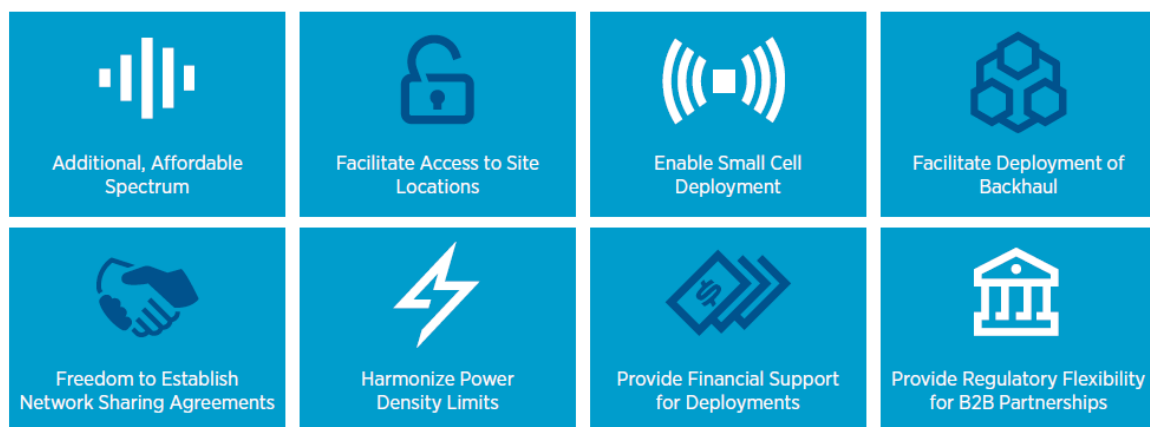
The international deliberations and approaches

In the past, the GSMA identified six regulatory levers that can foster infrastructure investment. Governments around the world have taken concerted steps in most of these but they will need to do more to stimulate full 5G deployment. There are two additional areas in which action by policy makers and regulators can spur the rollout of 5G: providing adequate subsidies for deployments, and providing regulatory flexibility for vertical partnerships. Seizing the full macroeconomic opportunity of 5G requires concerted commitments from policy makers and the industry in all of these areas.

REGULATORY LEVERS TO ACCELERATE 5G INFRASTRUCTURE

Additional, Affordable Spectrum	Facilitate Access to Site Locations	Enable Small Cell Deployment	Facilitate Deployment of Backhaul
Freedom to Establish Network Sharing Agreements	Harmonize Power Density Limits	Provide Financial Support for Deployments	Provide Regulatory Flexibility for B2B Partnerships

The GSMA believes that processes and procedures are required to facilitate network deployment. As per a recent GSMA report[12], 5G presents an increasing need for densification, particularly in hotspots such as shopping centers, transport hubs, public facilities, and stadiums, where small cells are often the only viable solution to provide additional capacity. In many markets, local regulations make gaining access to site locations difficult, but some policy makers are now moving to make access easier.

 *"**The IMDA in Singapore** has required "mobile installation spaces"—typically rooftop spaces reserved for telecommunication equipment—be provided to network operators by building developers and owners free of charge.[19] **In Japan,** operators can install 5G base stations on 208,000 traffic lights across the country.[20] Moreover, the Japanese government has proposed that the costs of using the traffic lights for 5G deployments be shared between operators and local administrations.[21] In a move to further its smart city infrastructure, the government also plans to equip traffic lights with communication functions for traffic data collection and processing and emergency communication. The UK's Electronic Communications Code facilitates operators' access to macro and small cell infrastructure on public and private land.*

Granting access to public buildings and street "furniture," such as bus stop shelters, lamp posts or traffic lights, owned by municipalities, at low or no cost removes a significant hurdle to site deployment. New street infrastructure that is manufactured and installed deployment-ready means operators can attach their equipment and connect to backhaul and energy networks." [*Emphasis supplied*]

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[12] Realising 5g's Full Potential: Setting Policies For Success, March 2020

- While the above are in context of facilitating the access to site locations, as regards enabling the Small Cell Deployments, the GSMA report highlights:

"…In 2018, the US FCC issued infrastructure rules aimed at streamlining and removing barriers at the federal, state, and city levels.[22] These include the establishment of two new "shot clocks" for the reviewing of small wireless facilities deployments: 60 days for collocation on pre-existing structures and 90 days for new construction. Similarly, the EU has launched a consultation on light deployment regime for small cells, which will likely lead to regulation updates in the intermediate term.[23] The Danish Energy Agency is exploring guidelines (including best practice examples) for public authorities on how to deal with applications for permission to set up telecommunications infrastructure.[24]"

- Many other markets too consider RoW as an important parameter for Telecom infrastructure developments, more so in 5G era. Some examples:

o **In Australia**, the Telecommunications companies have some powers to enter land and install and maintain some types of telecommunications facilities[13,14], and some immunities from some state and territory legislation. These laws are designed to strike the right balance between the community's need to access reliable, affordable telecommunications services and ensuring that property owners, local governments and communities have a say in the deployment of infrastructure that affects them.

o It is said that **Spain's[15]** FTTH strategy (established in 2012) has become a model for cost-effective and fast FTTH deployment in Europe. Policies of the Spanish government have contribute to this success. Since 1998, the Spanish government has required that communications pipelines to be constructed for each new building, to provide the communication service. Since 2000, the government has stipulated a legal framework for cooperation between public utility companies and operators in terms of pipelines.

o **Austria** has a very good approach to RoW, termed as Wayleave Right under the Telecommunications Act 2003. Under the Act[16], the providers of a communications network can exercise wayleave rights on public property, such as streets, footpaths, public places and the airspace above, **free of charge**

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[13] HTTPS://WWW.COMMUNICATIONS.GOV.AU/POLICY/POLICY-LISTING/CARRIER-POWERS-AND-IMMUNITIES

[14] E.G. low-impact facilities include some radiocommunications facilities, underground and above-ground housing, underground and some aerial cables, public payphones, emergency and co-located facilities….these low-impact facilities are needed for telecommunications networks to provide wider coverage and services. the strict type, size, colour and location limitations of low-impact facilities means that carriers can rollout networks with as little disruption to the community as possible during installation or operation. *See* HTTPS://WWW.COMMUNICATIONS.GOV.AU/POLICY/POLICY-LISTING/CARRIER-POWERS-AND-IMMUNITIES

[15] http://www-file.huawei.com/~/media/CORPORATE/PDF/white%20paper/Gigaband-Network-EN.pdf (See Section 3.4.1 –e.g. *By the end of 2015, the FTTH deployment had covered 30 million households (including repeated coverage of multiple operators) and more than 3 million subscribers. Spain plans to achieve 100% household coverage by 2020…* ***The Spanish government allows cable layout on the facades of buildings, reducing the home connection costs by about 20%.*** *The Spanish government requires that the communications pipeline owners open the pipelines to all operators at a unified price. This encourages operators to use existing pipelines, improving the FTTH deployment efficiency...*

[16] See section 2, Infrastructure Use, Wayleave Rights https://www.rtr.at/en/tk/TKG2003/Telecommunications_Act_2003__unofficial_.pdf

and without special authorisation[17], [18]. The specific exercise of this right must be coordinated with the administrator of the public good (eg the municipality). Since the end of 2015, it has also been possible to apply for a decision from the Telekom Control Commission if no agreement can be reached[19]. Importantly, the providers of public communication networks shall have the right to claim wayleave rights to private property subject to certain conditions[20].

o **In China,** the government's national broadband strategy in 2013 made FTTH as the main part of the broadband network[21]. Even provincial governments/ municipalities work towards its success e.g. Shanghai Municipal government has created broadband construction policies centered on FTTH deployment (e.g. new residential buildings), works closely with operators to determine the development goals and even helps with the FTTH publicity activities. China has also used a co-deployment[22] models to lay and utilize ducts/fiber with various sectors e.g. Highways, high-speed railways. This model also saves a huge amount of cost.

o The **German Telecommunications Act**[23] entitles operators of public telecom to use (a right of use) Trafficways free of charge. Further, under the Act[24], the owner of a property cannot prohibit the setting-up, operation and renewal of telecommunications lines on his property subject to certain conditions.

o **The EU** recently adopted regulations[25] to accelerate 5G network installations by simplifying the deployment of small cell antennas that provide the last mile for 5G networks. The regulation defines the physical and technical characteristics of small cells, setting strict limits on their size and power, exempting them from planning permits (while retaining national oversight) and addressing their appearance to make them less visible. In a report for European Parliament, titled "*5G Deployment: State of Play in Europe, USA and Asia* "[26] in the factors considered for 5G success - in terms of ranking, after the technology capability, the key factor was reported as the ease with which a large number of small cells can be deployed in densifying the network.

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[17] The term "free of charge" as defined in this provision shall not affect the legal bases for the collection of charges in existence already on 1 August 1997. ***Source:*** https://www.rtr.at/en/tk/TKG2003/Telecommunications_Act_2003__unofficial_.pdf

[18] The TKG 2003 grants management rights to private property as well as to public property (such as streets, footpaths, public places and the airspace above). In contrast to those over private property, management rights over public goods are even free of charge. https://www.rtr.at/en/tk/Infrastrukturnutzung

[19] https://www.rtr.at/en/tk/Infrastrukturnutzung

[20] "…unless public considerations stand in the way of such rights and if 1. the designated use of the property is not (or is only marginally) limited by the exercise of such rights; and 2. the sharing of systems, lines or other facilities pursuant to Article 8 Par. 1, 1c or 2 is not possible or practicable…." ***Source:*** https://www.rtr.at/en/tk/TKG2003/Telecommunications_Act_2003__unofficial_.pdf

[21] http://www-file.huawei.com/~/media/CORPORATE/PDF/white%20paper/Gigaband-Network-EN.pdf (see section 3.4.3. e.g. "…*by May 2016, the number of FTTH users has reached 180 million, and 446 million households have been covered. Operators achieve this success with strong support of the government*…")

[22] https://www.unescap.org/sites/default/files/Building%20Synergies%20through%20Co-deployment.pdf

[23] See Part VIII –Use of Trafficways , Section 50 Principles for the Use of Public Ways, https://germanlawarchive.iuscomp.org/?p=692

[24] §57 Detriment to Property: (1) The owner of a property which is not a trafficway within the meaning of §50(1) sentence 2 cannot prohibit the setting-up, operation and renewal of telecommunications lines on his property insofar as 1. a line or installation on the property which is secured by a right is also used for the setting-up, operation and renewal of a telecommunications line and the usability of the property is not thereby additionally restricted on a lasting basis, or 2. the property is not or is only insignificantly affected by such use. **Source**: *https://germanlawarchive.iuscomp.org/?p=692*

[25] https://ec.europa.eu/digital-single-market/en/news/commission-adopts-implementing-regulation-pave-way-high-capacity-5g-network-infrastructure

[26] https://www.europarl.europa.eu/regdata/etudes/idan/2019/631060/ipol_ida(2019)631060_en.pdf

The European Commission's recent Recommendation[27,28] calls upon Member States to boost investment in very high-capacity broadband connectivity infrastructure, including 5G by reducing deployment costs through harmonised measures such as to:

- o Support simpler and more transparent permit-granting procedures for civil works;
- o Improve transparency on existing physical infra, so that operators can access more easily all relevant information on the infra available in a certain area, and facilitate permit-granting procedures, through a single information point in the administration of public authorities;
- o Expand network operators' rights to access existing infrastructure controlled by public sector bodies (i.e. buildings, street lamps and those belonging to energy and other utilities) to install elements for network deployment;
- o Member States should exchange and agree on best practices to ensure that fees charged for the granting of permits for civil works that are needed to deploy very high capacity networks are objectively justified, transparent, non-discriminatory and proportionate to their intended purpose, and that they cover only the administrative costs incurred for the provision of such permits.

- o **The United Kingdom** last year consulted[29] to permit development rights to support the deployment of 5G and extend mobile coverage. The result of the consultation published in July 2020[30] validates the importance of mobile infrastructure, and **takes forward certain in-principle proposals** (primarily, changes pertaining to deployment of taller and wider masts, building-based masts located nearer to highways etc.) which will be codified in various town and country planning Orders and legislations. The outcome also shows the coordinated Whole of Government approach taken among various regulators, governments and agencies to achieve the outcome[31]

- o **In USA,** the US House of Representatives, Democrat Anna Eshoo of California and Republican David McKinley of West Virginia have proposed a ***Nationwide Dig Once Act of 2020***[32]. As per some reports[33], this "...*will reduce costs drastically and increase access for communities across the country*," making it "*easier for states and broadband providers to enter new and underserved markets*…".

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[27] https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1603

[28] Refer streamlining permit granting procedures https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=69383

[29]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/827162/proposed_reforms_to_permitted_development_rights_to_support_the_deployment_of_5g_consultation.pdf

[30]"…These changes will benefit communities and businesses and provide greater certainty to incentivise investment in mobile infrastructure…"
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902836/Government_Response_Mobile_Planning_Consultation.pdf e

[31] "…*In developing the technical consultation, we will work with mobile industry representatives, other government Departments and relevant regulators – including Defra, DfT, MoD and Ofcom, representatives of local planning authorities and those representing protected areas, to ensure that the appropriate environmental protections and other safeguards are in place to mitigate the impact of new mobile infrastructure. This includes strengthening the Code of Best Practice on Mobile Network Development in England (the Code of Best Practice), which provides guidance to mobile network operators and local planning authorities…" [Para 10, Executive Summary]*

[32] https://eshoo.house.gov/media/press-releases/reps-eshoo-mckinley-announce-nationwide-dig-once-act-2020 (e.g. *as per the Act the* "..dig once requirement" means a requirement **designed to reduce the cost and accelerate the deployment of broadband** by minimizing the number and scale of repeated excavations for the installation and maintenance of broadband conduit or broadband infrastructure in rights-of-way…" [Emphasis Supplied]

[33] https://arstechnica.com/tech-policy/2018/03/dig-once-rule-requiring-fiber-deployment-is-finally-set-to-become-us-law/
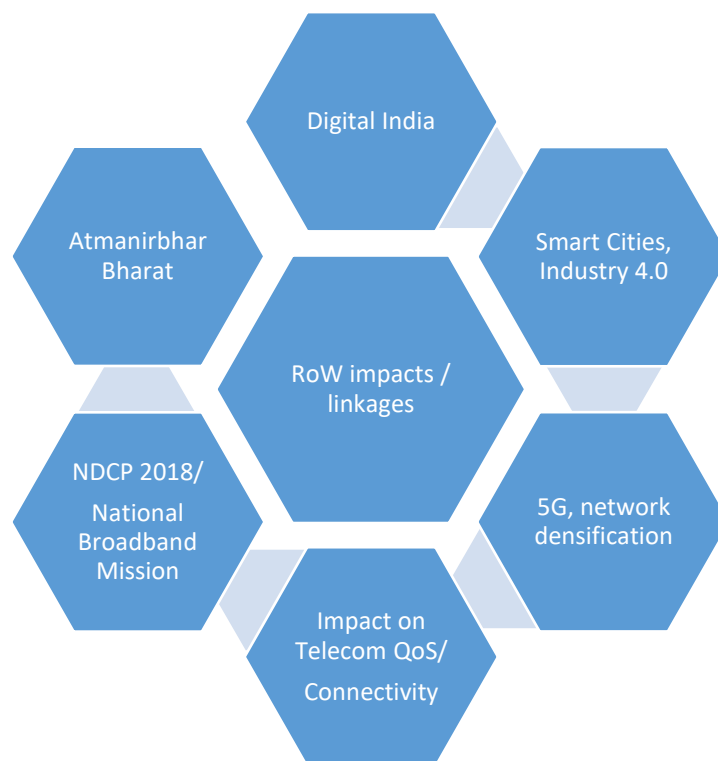
A well laid out RoW process on ground is fundamental to realise national and local aspirations

"Public rights-of-way are too valuable to be assigned haphazardly. Municipal officials should use all the tools at their disposal to manage these assets carefully, ensuring that their cities will have the broadband capacity they need for years to come.[34]"

The critical importance of having a uniform and affordable public RoW policy at local level is fundamental to having good digital connectivity. Its impact can be understood from the figure below:

The Finance Ministry task force report recognises the importance of **connectivity**:

"... 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 several hurdles. This will enable us to reach a stage where digital communications is able to fulfil 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."

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[34] https://www.kandutsch.com/articles/local-management-of-public-rights-of-way

Looking at the challenges faced by the telecom service providers in RoW, the following can be argued:

- The RoW for establishing telecommunication infrastructure for a digital socio-economy is as important as Spectrum for mobile networks.

- As various visions of the governments – be it union or state – ride on the telecom infra, it should be duty of the government to Right to RoW as part of their approvals processes just as it gives right to spectrum.

- Devising a reasonable, affordable and enabling charging framework for RoW permissions is important. While ideally RoW should be provided free of cost, as it enables indirect local economy due to improved and enhanced connectivity; if that is not possible then a fair, transparent and non-rent seeking charge should be prescribed.

- The equally important factor of telecommunication network services is the backhaul spectrum whose current allocation is insufficient to cater to industry's growth requirements. To adequately deal with service and network quality at backhaul level, the network operators should be allocated wide and high capacity bands in existing Microwave Access (MVA) and E & V bands, as recommended by the Regulator (TRAI) in 2014.

We believe there is a pressing need to address these requirements so that India does not lose on the important national visions as indicated above.

Recommendations

We note that since under the five pillars of self-Reliant India, infrastructure is recognized as an identity of the country, the government has to recognise the importance of RoW policies for enhancing the digital connectivity, rolling out of tower and fibre infrastructure to support I4.0. The need is to bring a sense of urgency to hasten the digital infrastructure rollouts at the local levels and at affordable costs with consistency and uniformity. In view of international benchmarks and practices discussed above, it is clear that India needs to do more on the RoW front.

We therefore recommend the following specific measures to accelerate the Rights of Way (RoW) for quicker deployment of broadband infrastructure in the country:

- **Single window clearance with deemed approval:** All states should implement a single window clearance system with well-defined and monitored timeframe (e.g. 30 days) of granting all the RoW permissions. An unexplainable delay beyond the 30 days should be deemed approved. The Ministry of Communications / DoT can play the facilitative role for these approvals with state governments. These approvals should be fully automated and online (easy to navigate and user-friendly interface) in a unified national portal integrated with states.
- **Replace various RoW charges with only a single 'one-time' charge to recover direct cost of restoration and reinstatement** of the surroundings to their original state. There should be no other charges. This will accelerate broadband infrastructure deployment, boost investments and generate employment that can leapfrog India to the league of digital economies.

- **A *"Dig Only Once"* policy to incorporate designing of *Utility Duct with implied RoW permission* for Telecommunications in all infrastructure projects, building and housing bylaws.** Standardized provisions and specifications for installing utility duct/optical should be part of the construction design policies of all Central, State level authorities and agencies in-charge of all infrastructure approvals and projects whether private or public (e.g. NHAI/Urban Development Ministry/Housing Ministry/Public Works and local development authorities). In-fact, for the purpose of issuance of completion certificate of the building/infrastructure this can be a mandatory requirement.

- **Make street furniture available across the country** at very low or no cost at places such as bus stop shelters, lampposts or traffic lights, owned by municipalities, to help small cell site deployment. New street infrastructure that is manufactured and installed deployment-ready means operators can attach their equipment and connect to backhaul and energy networks

- **Microwave spectrum allocation**– the government usher in a more liberal usage policy and allocate more MW bandwidth to MNOs to cope with surge on mobile networks and to also being able to cater to further exponential data growth expected. The high capacity MW backhaul (i.e. E Band) should be allocated to industry at the earliest to deliver quality services to consumers and business.

- **Rank and benchmark states on RoW as key parameter including in Ease of Doing Business (EoDB) rankings** for broadband readiness, assessing their competitiveness, and attractiveness for investors and companies. The ease, duration and cost of getting timely RoW permissions in states and even districts (DHQs) can be part of the assessment (e.g. an annual / half yearly review).

- **Structured aerial fiber in dense urban environments & difficult areas:** Permit the cost-effective means of fiber deployment such as structured aerial fiber to enhance the backhaul capacities in dense urban and difficult geographies, with due consideration to aesthetics of surroundings.

- **Immediate need for uniform implementation of the RoW Rules 2016 by all States.** The states should issue their policies on underground and overhead infrastructure at the earliest, and consistent with 2016 rules issued by the DoT.

- **Meeting of Annual Targets of the National Broadband Mission[35] :** Closely monitor the progress of work under this Mission through a centralised monitoring dashboard created by the DoT. This will help in effective and efficient tracking progress and reporting of the status of mission's annual targets.

By implementing these recommendations, we believe India can leapfrog into a Digital Society with much lesser social cost and massive benefits in healthcare, education, governance, and commerce.

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[35] https://dot.gov.in/national-broadband-mission

Annexure 1

RoW Rules 2016 – Present Status as on August 2020

Policies notified		
S.No	**State**	**Notified / Cabinet Approval Date**
1.	Jharkhand	4th Dec 2015
2.	Rajasthan	6th Feb 2017
3.	*Tripura Govt.order	6th Sept 2017
4.	Odisha	14th Sept 2017
5.	**Haryana	6th Oct 2017
6.	Assam	16th Feb 2018
7.	Maharashtra	17th Feb 2018
8.	*Tamil Nadu Govt.order	18th Feb 2018
9.	Arunachal Pradesh	10th May 2018
10.	Uttar Pradesh	15th June 2018
11.	Uttarakhand	13th Sept 2018
12.	Meghalaya	20th Dec 2018
13.	Madhya Pradesh	8th Mar 2019
14.	**Karnataka	29th May 2019
15	Manipur	28th Nov 2019
16.	Nagaland	2nd December 2019
Detailed Policy is under discussion		
**Some clause not aligned with RoW Rules*		

S. No.	Draft Policies released	S. No.	Existing Policy Under Advance Discussion	S. No.	No Uniform Policy
State / UT					
1	Mizoram	1	Chandigarh	1	West Bengal
2	Punjab	2	Gujarat	2	Andaman & Nicobar
3	Himachal Pradesh	3	Goa	3	Lakshadeep
4	Jammu & Kashmir	4	Chhattisgarh	4	Dadar & Nagar Haveli
5	Kerala	5	Andhra Pradesh	5	Daman & Diu
6	Sikkim	6	Telangana	6	Ladakh
7	Delhi	7	Pondicherry		
		8	Bihar		

Acknowledgements

For the purpose of this study, the GSMA had constituted a Committee (a task force based approach) to seek inputs on Rights of Way (RoW) issues from our operator members in India.

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We would also like to thank the industry association COAI for providing their valuable inputs.