airtel

TRAI/FY23-24/61
Dated: 29.12.2023

To,
Shri Anand Kumar Singh
Advisor (CA & IT)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
JawaharLal Nehru Marg,
New Delhi – 110 002.

Subject: Response to Consultation Paper on "Digital Inclusion in the Era of Emerging Technologies"

Dear Sir,

This is in reference to TRAI's Consultation Paper on "Digital Inclusion in the Era of Emerging Technologies" dated 14.09.2023 (16/2023)

In this regard, please find enclosed our response for your kind consideration.

Thanking You,

Yours' Sincerely,
For **Bharti Airtel Limited**

Rahul Vatts
Chief Regulatory Officer

Encl: a.a

Airtel would like to begin by thanking the Authority for issuing the consultation paper, *Digital Inclusion in the Era of Digital Technologies*, and is happy to provide its perspective on the topic.

In this digital age, the ability to navigate online platforms is an absolute necessity. The COVID-19 pandemic has only accelerated the digital transformation and technologies by several years, making the digital skills completely indispensable. Having said that, it is important to note here that a significant portion of the Indian population continues to lack basic digital skills, thereby contributing to what is commonly known as the *'Digital Divide'*. Before reaching a common definition for *digital inclusion,* it is therefore crucial to understand its role in reducing the Digital Divide (the issue) to reach Digital Equity (the outcome).

Issue	Digital Divide
Means	Digital Inclusion
Outcome	Digital equity
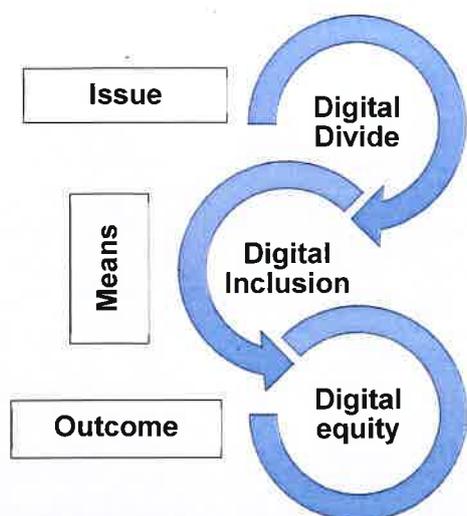
Digital Divide is the gap between those who have **affordable access**, skills and support to effectively engage online and those who do not. It prevents equal participation and opportunity in all parts of life, disproportionately affecting indigenous peoples, households with low incomes, people with disabilities, people in rural areas and older adults.[1]

Digital equity refers to a state in which all individuals have the information technology capacity required for full participation in a society, democracy and economy. It is necessary for civic and cultural participation, employment, lifelong learning and access to essential services.[2]

Digital Inclusion ensures that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs). Digital inclusion, thus, can refer to the efforts and policies aimed at ensuring that all individuals, regardless of their socioeconomic status, geographic location, or other factors, have equal access to and benefit from digital technologies.

Digital Inclusion, thus, can be a means to improve the digital divide (issue) to reach digital equity (outcome).

The definitions of digital inclusion and the initiatives by various countries towards achieving it underscore the shared commitment among governments globally to promote digital inclusion as a means to **foster social and economic development** and to ensure that the benefits of the digital age are **accessible to all citizens**.

This has become critical in the era of digital technologies, applications and services. Today, the digital way of life is pervasive in every socio-economic aspect of human activity. From enterprises to individuals to government services, everything revolves around digital life.

ICTs are key to building people-centered, inclusive, and development-oriented Information Societies, where everyone can create, access, utilise and share information and knowledge, enabling individuals and communities to achieve their full potential in promoting sustainable development and improving their quality of life.

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1 https://www.digitalinclusion.org/definitions/
2 https://www.digitalinclusion.org/definitions/

The definition of digital inclusion should be simple and effective. Too many variables/parameters will dilute its robust implementation. A phase-wise approach which gradually assimilates the relevant KPIs/parameters rather than including them all at once may be the best way to define. It is also important to look at what is relevant for India's needs in view of Indian constraints.

Various global indices like GSMA Mobile Connectivity Index (MCI), A4AI's Affordability Drivers' index, etc. are good measures to use. **However, it is important that the Indian government suitably modify them, keeping in mind the Indian context, socio-economic behaviors and all other related aspects. Adopting these indicators without contextualising to Indian dynamics may lead to a situation of under delivery or irrelevance.**

Digital Connectivity, Digital Affordability, Digital Literacy and Digital Accessibility are factors responsible for Digital Inclusion. Addressing gaps in each of these spheres through a comprehensive strategy is crucial for achieving widespread digital inclusion.

In order to further accelerate the digital connectivity and make it further pervasive, Airtel submits that the time has come to **review and abolish the USO levy**. This will allow TSPs to deploy funds towards expanding and deepening the networks and service rollouts rather than channeling them into limited USO projects. **On the BharatNet project,** its infrastructure in terms of performance and **Service Level Agreements (SLAs)** need to be tighter to ensure that it is used effectively and is also allowed to connect the middle-mile and last mile towers. There is a **need to weave digital equity through existing government schemes** like BharatNet and throughout all broadband programs rather than operating such programs in silos.

Airtel believes that for the purpose of digital inclusion, the **development, tracking and monitoring of a dashboard by the government** should be simple, and **without imposition of any mandates** on the TSPs/ industry. The dashboard should be managed by a central agency. Line ministries / sectoral regulators should provide parameter reporting as they already gather inputs from industries. No new target/regulatory mandate on TSPs should prescribed for the purpose of dashboard nor be linked to it. No new periodic/ smaller duration data sets should be sought to be reported on real-time /short duration basis than what is already obtained presently on a monthly or quarterly basis.

With respect to enabling MSMEs, TSPs already offer competitive and affordable solutions. The effort needs to be put in by other agencies and departments like the Ministry of Commerce and Industry, small-scale industries, state bodies and chambers. **Increasing the digital connectivity of micro, small, and medium enterprises (MSMEs) and broader digital economy will promote the economic development of emerging countries.** Airtel intends this consultation paper as a means to inspire action to address the issue of connectivity, affordability and literacy. A study may be conducted to assess the level of baseline infrastructure available for MSME/enterprise side and future readiness.

To drive better technological participation, the **DPIs should incorporate inclusivity principles upfront** — like vernacularity, affordability and accessibility, along with availability of standardised interfaces for MSMEs and community to build localised solutions.

Airtel submits that due to the evolution of Satellite technology, like LEO constellations, for the first time ever, there is a possibility of bringing connectivity to areas that have hitherto remained unconnected. With the new generations of satellites, there is an opportunity to offer fiber like backhaul and last mile solutions and speeds to TSPs and enterprises (including MSMEs) alike. Further incentives are crucial to encourage pro-people innovations by TSPs.

Additionally, while TRAI has raised some very pertinent questions and we answer them exhaustively, **it is our view and submission that the Authority also needs to consider certain critical aspects when framing its recommendations. We list them over the remaining course of this document.**

In summary:

- *The **definition** of digital inclusion should be **simple and effective** without too many variables/parameters. The definition should be contextualized for Indian dynamics.*

- *Monitoring the key factors through a central dashboard should be the responsibility of the central government agency. The respective ministries / regulators should share various data points they already receive or publish, which can be part of such central dashboard.*

- *Such a dashboard or monitoring mechanism should work as input for any policy support rather than being used as a means to regulate or intervene in the market. No penalty or disincentive should be linked to this.*

- *Any dashboard KPIs for digital connectivity for TSPs should be consistent and in consonance with India's licensed service area (LSA) regime. No additional data collection/reporting should be mandated.*

   Digital Connectivity:

- *Make RoW free for the next 5 years, provide time bound permissions charging only the cost of restoration.*
- *Abolish the USO levy, and USO Fund corpus should instead be funded via government budget/fund/grants.*
- *Incentivize (through USO subsidy) TSPs to roll out fiberisation and FTTH connectivity.*
- *Allow USO subsidy for rollout of Satellite communications for backhaul and end-use.*
- *Make BharatNet available for middle-mile connectivity and to connect the mobile towers/BTSs.*
- *Infrastructure sharing charges be allowed as pass-through while determining AGR for purposes of payment of License Fee (LF) and Spectrum Usage Charge (SUC) in case of Unified License (UL).*
- *The administrative rates of charging for backhaul spectrum e.g. MWA/MWB carriers should be significantly rationalized and not escalate with the increase in the number of carriers; they should be kept uniform.*

   Digital Affordability:

- *Focus on microfinancing schemes, lending propositions to credit customers, including handset subsidies in proportion to TSPs' market share, budgetary support to enable people to get access to affordable devices.*
- *Encourage and emphasise the secondhand market, refurbished market in a better way.*
- *Give vouchers to students to get discounts on their purchases from TSPs or companies.*

   Digital Literacy:

- *Organise awareness workshops by considering the unique needs of women, varied communities and different age groups, along with rural youth and women self-help groups as digital trainers.*
- *Use digital literacy toolkits and it is important to incorporate skill development across education policies.*
- *Fine-tuning learning, technology supported device ecosystem and digital learning as a part of modern curriculum is crucial to bring behavioral change in digital world.*

With this background, we provide our response to the questions raised by TRAI in the consultation paper on *Digital Inclusion in the era of emerging technologies*.

Status of Digital Inclusion

> 1. **What should be the definition of Digital Inclusion? What all parameters should it include to highlight disparities across different segments of society to have a realistic assessment from a policy perspective? Please provide your answer with suitable justification.**

Digital technologies are transforming the world and helping build new industries, deliver better services, and enhance the quality of life of people For governments across nations, it is important to ensure that technological transformations are not limited to technology in isolation, but optimised to build an environment that is socially, politically and economically conducive to inclusive growth, hence recognition of the importance of digital inclusion in promoting economic growth, social equity and overall development.

The present Consultation Paper has highlighted the following definitions of digital inclusion:

a) **World Economic Forum**: Digital Inclusion is 'a movement to ensure that everyone can participate fully in the digital world, and one of the main goals is to ensure that every person can affordably participate in the digital economy.'

b) **UN**: Digital Inclusion is 'equitable, meaningful, and safe access to use, lead, and design of digital technologies, services, and associated opportunities for everyone, everywhere.'

As per TRAI, in simpler terms, 'Digital Inclusion is the process of bridging the Digital Divide.' While specific definitions may vary, the underlying goal is to **bridge the digital divide** and provide equal opportunities to everyone to be able to participate in the digital age. Similarly, some other definitions of digital inclusion (around the world) are as follows:

a) **Australia** - Australian Digital Inclusion Index[3] defines digital inclusion as 'The ability to **access** and **use** digital technologies effectively.'

b) **United States**

   i) Broadband USA[4] —Digital inclusion means that individuals have access to **robust broadband connections**, Internet-enabled devices that meet their needs; and the skills to explore, create and succeed in the digital world.

   ii) National Digital Inclusion Alliance (NDIA)[5] — The activities necessary to ensure that all individuals and communities, including the most disadvantaged, have **access to and use of Information and Communication Technologies (ICTs)**. It includes:
   - Affordable and robust broadband internet service;
   - Internet-enabled devices;
   - Access to digital literacy training;
   - Quality technical support; and
   - Applications and content designed to encourage self-sufficiency, participation and collaboration.

c) **United Kingdom**'s Department for Digital, Culture, Media & Sport (DCMS)[6] — Digital inclusion is about having the access, skills and motivation to confidently **go online** to access the opportunities of the Internet.

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[3] https://apo.org.au/node/323092#:~:text=Digital%20inclusion%20is%20about%20ensuring,Access%2C%20Affordability%20and%20Digital%20Ability.
[4] https://broadbandusa.ntia.doc.gov/resources/digital-inclusion
[5] https://www.digitalinclusion.org/definitions/
[6] https://www.gov.uk/government/publications/digital-inclusion-and-skills-policy/digital-skills-and-inclusion-policy

d) **Europe** — European Commission[7] defines digital inclusion as an EU-wide effort to ensure that everybody can contribute to and **benefit from the digital world**.

e) **Singapore** — Singapore's Smart Nation initiative[8] includes digital inclusion as a core principle, emphasising the goal of ensuring that **all citizens can benefit** from digital technologies by focusing on promoting digital inclusion by design, i.e., ensuring that all products and services align with international accessibility standards, and encouraging businesses to do likewise.[9]

f) **South Africa** — The South African government, through its National Integrated ICT Policy White Paper[10], recognises digital inclusion as a key component for addressing **historical inequalities**. It focuses on maximising the potential of ICTs to provide support for universal service and access for persons with disabilities, public institutions fulfilling specific public needs, the poor and digital literacy programmes.

g) **International Telecommunication Union (ITU)** — Ensuring inclusive, equal access and use of **information and communication technologies (ICTs)[11] for all**.

International examples and best practices demonstrate the multifaceted nature of digital inclusion, highlighting the need for a holistic approach to ensure that the benefits of the digital era are **accessible to everyone**.

Therefore, the definition of digital inclusion should be **simple and effective**. Too many variables/parameters will dilute the robust implementation or tracking of action items. A phase-wise approach may be better than trying to include every single KPI right from the start. It is important that context that is relevant to India is incorporated, and India's needs in view of Indian constraints are addressed.

While digital inclusion requires efforts and policies aimed at ensuring that all individuals, regardless of their socioeconomic status, geographic location, or other factors, have equal access to and benefit from digital technologies, the definition can look at the following elements:

a) **Government Policies and Regulation:**
   i) Formulating policies and regulatory frameworks that promote digital inclusion, and facilitate network infrastructure rollouts.
   ii) Access to Government Services: Evaluating disparities in access to government services through digital platforms, recognising potential barriers for certain segments.

b) **Broadband Access:**
   i) Universal access to broadband, particularly in underserved and remote and rural areas.
   ii) Geographical Disparities: Examining disparities in digital infrastructure across licensed service areas with a focus on remote or underserved areas.
   iii) Usage gap: As per GSMA, 2021, out of global mobile internet coverage of 95%, only 55% use mobile internet, implying that 40% of the global population is not using mobile internet. [12]
   iv) Gender gap to be addressed.

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[7] https://digital-strategy.ec.europa.eu/en/policies/digital-inclusion
[8] https://www.smartnation.gov.sg/about-smart-nation/transforming-singapore/
[9] https://www.smartnation.gov.sg/files/publications/smart-nation-strategy-nov2018.pdf
[10] https://www.gov.za/sites/default/files/gcis_document/201610/40325gon1212.pdf
[11] https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/about.aspx
[12] https://www.gsma.com/r/wp-content/uploads/2022/12/The-State-of-Mobile-Internet-Connectivity-Report-2022.pdf

c) **Affordability:**
   i) Cost of Devices: Analysing the cost of digital devices and their impact on accessibility, recognising potential disparities in device ownership.
   ii) Income Disparities: Evaluating the affordability of digital devices and services in relation to income levels, considering disparities that may hinder access for low-income populations.

d) **Digital Literacy and Skills:**
   i) Promoting digital literacy skills development to empower individuals to use digital technologies effectively.
   ii) Educational Disparities: Measuring digital literacy levels across different education levels, highlighting gaps in skills between those with varying educational backgrounds.
   iii) Age-Related Disparities: Examining digital literacy among different age groups, acknowledging potential disparities in technology adoption among the younger and older populations.

e) **Inclusive Design:**
   i) Designing digital platforms and services to be inclusive, accessible and user-friendly for diverse populations, including those with disabilities.
   ii) Considering the inclusivity of digital platforms for diverse set of groups (linguistic or cultural).

f) **Community Engagement:**
   i) Engaging local communities in the development, implementation and improvement of digital initiatives.
   ii) Local Empowerment: Examining disparities in community engagement and empowerment in the development and implementation of digital projects.
   iii) Economic Strata: Assessing how digital initiatives may affect different economic strata, recognising potential disparities in economic benefits.

g) **Global Collaboration and Knowledge Sharing:**
   i) Participating in international collaborations, partnerships and knowledge-sharing initiatives to learn from global best practices.
   ii) Benchmarking: Considering global perspectives and comparing disparities in digital inclusion across countries, drawing insights from international best practices while customising to Indian needs.

h) **Privacy and Security:** Ensuring the privacy and security of user data in a digital environment for which safe access is crucial.

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2. **Do you agree that the indices mentioned above and developed by various international organisations for assessment adequately represent the status of Digital Inclusion in the country? What other indices and factors need to be considered to identify the gaps in Digital Inclusion in the country?**

While considering the crucial role of indices in assessing digital inclusion by providing a structured framework to measure various dimensions of accessibility, adoption and the utilisation of digital technologies, it is important to note that it is the telecom industry that provides the infrastructure and services that connect individuals to the digital world.

In other words, **Telecom is the backbone of global connectivity and the pillar on which digitalisation is based.** Additionally, Telecom companies are working ceaselessly to bridge the digital divide and ensure that even remote areas have access to digital services.

ITU estimates that approximately 5.4 billion people – or 67 per cent of the world's population – are using the Internet in 2023. This represents an increase of 45 per cent since 2018, with 1.7 billion people estimated to have come online during that period. However, this leaves 2.6 billion people still offline.[13]
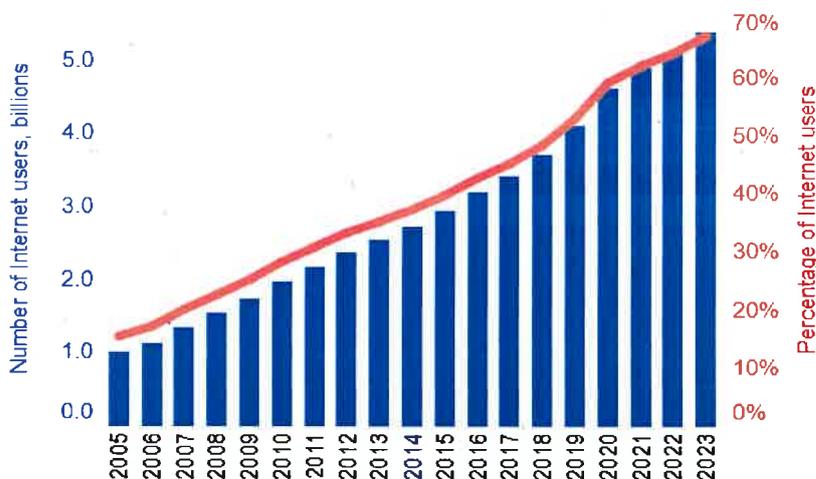

Figure 1 Individuals using the internet (Source: ITU Statistics)

Active Mobile Broadband Subscriptions (Growth rate in per cent, 2014-21)

Country	Growth rate
India	40.8
Indonesia	19.2
South Africa	15.7
China	14.4
Turkey	11.7
Mexico	10.7
Japan	8.6
U.S.A	7.7
Russia	7.6
Canada	7.2
France	6.1
Germany	5.9
U.K.	4.4
Italy	4.2
Brazil	3.8
Australia	2.3
South Korea	1.8

Active Mobile Broadband Subscriptions (% of total broadband subscriptions, 2021)

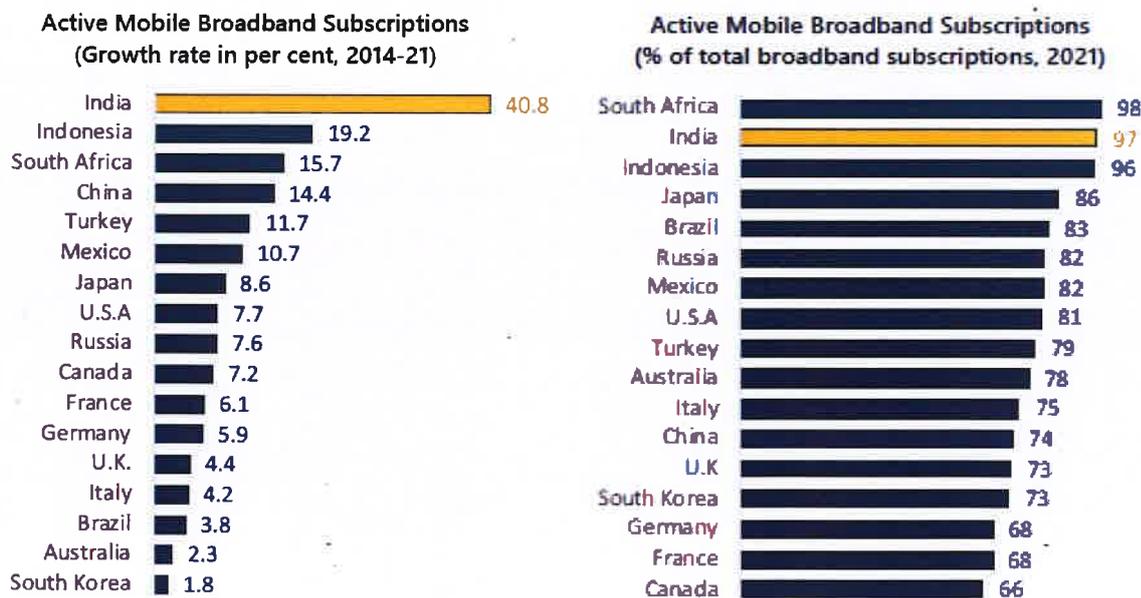| Country	%
South Africa	98
India	97
Indonesia	96
Japan	86
Brazil	83
Russia	82
Mexico	82
U.S.A	81
Turkey	79
Australia	78
Italy	75
China	74
U.K	73
South Korea	73
Germany	68
France	68
Canada	66

Figure 2 Active mobile broadband subscriptions - India (Source: ITU-D ICT Statistics 2021)

With rapid growth in mobile broadband subscriptions in the last decade, India is now the second-largest telecommunications market in the world with a telephone subscriber base of over 1.17 billion (TRAI, 2023[14]). **Between 2014 and 2021, India registered an annual growth rate of 41 per cent, which implies that 3 out of 5 new customers in the global mobile broadband market came from India.** However, with 97 per cent of all broadband subscribers being mobile subscribers, India lags when it comes to fixed broadband penetration.

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[13] https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx
[14] https://www.trai.gov.in/sites/default/files/PR_No.98of2023.pdf

The rollout of 5G technology, expansion of digital services, rise of fintech and e-commerce growth are all set to further transform connectivity by offering higher speeds and enabling emerging technologies like AI and IoT. The benefits of the digital ecosystem are in no small part due to the massive investments in networks and network quality made by mobile operators across the globe.

This Consultation Paper has highlighted the following indices:

a) **GSMA's Mobile Connectivity Index** – focusses on infrastructure, affordability, consumer readiness and content and services.
b) **Alliance for Affordable Internet's Affordability Drivers Index** – focusses on communication infrastructure and access to the Internet.
c) **Portulans Institute's Network Readiness Index** – consists of 58 indicators including mobile tariffs, handset prices, population covered by at least a 3G network, Internet access in schools, online access to financial account, etc.

All these indices covering aspects such as broadband access, affordability, digital literacy, inclusive design, community engagement, government policies, global collaboration and privacy and security, provide a framework for assessing digital inclusion, they seem to be focused on the network infrastructure part alone and at times too granular.

However, there are additional factors that contribute to a more nuanced understanding of digital inclusion and help identify gaps in digital access by the citizens of a country. Some additional considerations include:

a) **Digital Skills and Literacy:**
    i) Surveys and Assessments: Conduct surveys and assessments to gauge the digital skills and literacy levels of different populations and age groups, inclusivity for women and girls, digital schools.
    ii) Awareness Programmes: Assess the availability and effectiveness of digital literacy programmes.
    iii) Encourage community engagement and conversations around digital inclusion

b) **Device Ownership and Accessibility:**
    i) Device Ownership Surveys: Gather data on the ownership of digital devices (e.g., smartphones, computers) among different demographic groups to understand barriers to device ownership and usage.
    ii) Affordability of handset/devices: This should not be a barrier to broadband access. Policy and regulatory reforms should complement market efforts to reduce the cost of owning a device.

c) **Inclusive Design and Accessibility:**
    i) Digital accessibility: Conduct studies to evaluate the accessibility of digital services, websites and online platforms, especially relevant for people with disabilities.
    ii) User Feedback: Gather feedback from diverse user groups to understand their experiences with digital services and identify accessibility challenges.
    iii) Address gender gap through regular studies.

d) **Digital Financial Inclusion:**
    i) Financial Inclusion Data: Examine data related to digital financial services adoption and work on the gaps related to access to online banking, digital payment systems and other financial technologies.

ii) Barriers to Access: Investigate barriers that prevent certain populations from accessing and using digital financial services.

e) **Government and Public Services:**
   i) Digital Government Services: Assess the availability and accessibility of government services online.
   ii) User-Centric Design: Evaluate the user-friendliness of government websites and applications to ensure they cater to a diverse audience.
   iii) Digital navigators to be developed in the form of outreach materials, websites, etc.
   iv) Digital inclusion asset mapping: As an approach to data collection and documentation of the current state of digital equity, asset mapping is an approach to planning and community development centred on identifying and building on a community's existing resources.

f) **International Benchmarks and Comparative Analysis:**
   i) Benchmarking: Compare digital inclusion metrics with relevant international benchmarks to identify areas where the country may lag behind or excel.
   ii) Document innovations as use cases for reference and to encourage adoption of broadband.

For digitalisation to be transformative and humanity-centred, there is a need to catalyse efforts across sectors and geographies to develop inclusive, equitable and gender-transformative technologies and services.

A few additional indices [15] that could help are:
a) **Digital Inclusion Benchmark (by World Benchmarking Alliance)[16]** — This measures and ranks 200 of the world's most influential technology companies on their responsibility to advance a more inclusive digital society. It highlights the need for companies to step up on data protection, cybersecurity, child online protection as well as ethical and inclusive research and development — issues that are widely recognised as being key for a positive transformation of the digital system such that it accelerates the achievement of the SDGs. More specifically, the benchmark measures what companies are doing to:
   i) enhance universal access to digital technologies
   ii) improve all levels of digital skills
   iii) foster trustworthy use by mitigating risks and harms
   iv) innovate openly, inclusively and ethically.

b) **ICT Development Index (ITU-IDI)[17] ITU** — It was used to monitor and compare developments (from 2009 until 2017) in information and communication technology (ICT) between countries and over time. In September 2023, after several deliberations, version 3.1[18] was submitted for approval by member states.

c) **Global Competitiveness Index (WEF-GCI) World Economic Forum[19]** — It measures the microeconomic and macroeconomic basis of national competitiveness supported by 12 basic pillars since 2005, including technological readiness as one of the pillars. It highlighted the significance of economic digitization[20] and digital skills too.

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[15] https://www.atlantis-press.com/proceedings/icofa-23/125989467
[16] **Digital Inclusion Benchmark**
[17] https://www.itu.int/en/ITU-D/Statistics/Pages/IDI/Background.aspx
[18] https://www.itu.int/en/ITU-D/Statistics/Documents/IDI/IDI_2023_Version3_1_Oct2023.pdf
[19] https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0265045
[20] https://www.weforum.org/publications/the-global-competitiveness-report-2020/digest/#report-nav

d) **Inclusive Internet Index (3i) Meta**[21] — Assesses 100 countries across 4 domains - availability, affordability, relevance and readiness. It is accompanied by a survey—the Value of the Internet Survey (VIS)—of over 4,900 Internet users. It has rightly noted that over the past six years, the nature of the digital divide has shifted from a gap in coverage—marked by insufficient network coverage—to a gap in usage—marked by people unable, unwilling or uninterested in using the Internet.

e) **Digital Economy and Society Index (EC-DESI) European Commission**[22] - It includes country profiles helping EU Member States identify areas for priority action and thematic chapters providing an EU-level analysis in the key digital policy areas.

f) **e-Government Development Index (UNDESA-EGDI United Nations Department for Economic and Social Affairs (UNDESA)**[23] — EGDI is a weighted average of three normalized scores on three most important dimensions of e-government, namely: (1) scope and quality of online services (Online Service Index, OSI), (2) development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII), and (3) inherent human capital (Human Capital Index, HCI).

g) **Global Innovation Index (WIPO-GII) World Intellectual Property Organization (WIPO), INSEAD and Cornell University**[24] — The Global Innovation Index (GII) ranks the innovation performance of some 131 countries and economies around the world, based on 80+ indicators. ICTs also form a part of GII wherein ICT access, ICT use, Government's online service and E-participation is assessed *(Figure 3)*.

GII 2023 rank

India
40

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
35	46	Lower middle	CSA	1,417.2	11,665.5	8,293

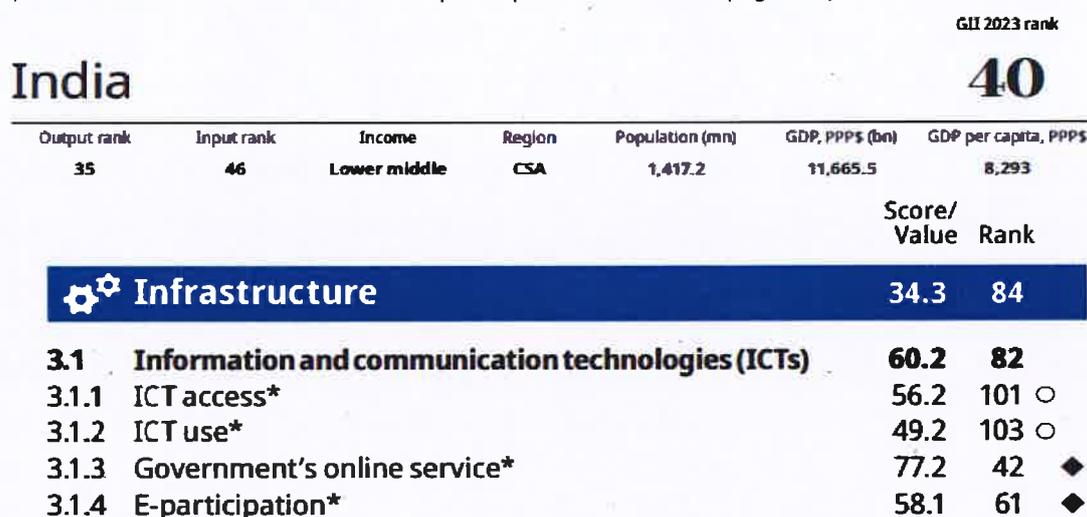|	Score/Value	Rank
⚙ **Infrastructure**	**34.3**	**84**
3.1 Information and communication technologies (ICTs)	**60.2**	**82**
3.1.1 ICT access*	56.2	101 ○
3.1.2 ICT use*	49.2	103 ○
3.1.3 Government's online service*	77.2	42 ◆
3.1.4 E-participation*	58.1	61 ◆

Figure 3 GII 2023 - India

h) **Australian Digital Inclusion Index** – Developed in 2015, it is a relative measure that uses a score of 0 to 100 to compare the degree to which individuals can be considered more or less digitally included over others based on the three dimensions of Access, Affordability and Digital Ability. It uses data from the Australian Internet Usage Survey to measure digital inclusion across three dimensions of Access, Affordability and Digital Ability.[25]

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[21] https://impact.economist.com/projects/inclusive-internet-index/downloads/3i-executive-summary.pdf
[22] https://digital-strategy.ec.europa.eu/en/policies/desi
[23] https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index#:~:text=Mathematically%2C%20the%20EGDI%20is%20a,TII)%2C%20and%20(3)
[24] https://www.wipo.int/global_innovation_index/en/
[25] https://www.digitalinclusionindex.org.au/the-adii/

While various global indices are good measures – however, Indian regulators should suitably modify these keeping in mind the Indian context, socio-economic behaviors and other related aspects. **Additional measures may also include inclusion of guidance prompts for elderly people and accessibility features for differently abled.**

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3. **Are Digital Connectivity, Digital Affordability and Digital Literacy the main factors responsible for Digital Inclusion in the country? Do you agree that by addressing these, Digital Inclusion can be achieved in the country? If not, please suggest any other factors responsible for Digital Divide that need to be addressed to ensure Digital Inclusion?**

Digital connectivity, digital affordability and digital literacy are the core, inter-related pillars that drive digital inclusion in any country. Addressing gaps in each of these spheres through a comprehensive strategy is crucial for achieving widespread digital inclusion. Digital connectivity (**safe and affordable** access to the broadband and digital services), education and training to allow **participation** in the digital economy have to be **bundled with digital accessibility by default** to increase **digital capability.** The preliminary approach should be to assess **digital readiness** for outcome-based impact.

The benefits of the digital ecosystem are in part due to the massive investments in networks and network quality by mobile operators across the globe. Indian Telcos have transformed the lives of over a billion Indians, providing them with access to digitally inclusive growth. This fact was proven globally during the pandemic. During COVID-19, digital approaches kept public services functioning.

However, globally, only 53% of people had access due to which nearly 3.5 billion could not access digital service lifelines and nearly 1 billion children could not continue their education. This indicates that digital shifts need to be infused throughout the population to a greater extent than ever before. In 2002, when governments first recognised the challenge of the digital divide, 1 billion people had access to the Internet. Today, nearly 5.3 billion people are digitally connected, yet the divide persists across regions, gender, income, language and age groups.[26]

In India too, some hinterlands lack access to broadband networks. Albeit government and the TSPs are increasingly putting their efforts together to bridge this coverage gap.

There is another challenge of locally relevant content that is predominantly in English or in non-native language for rural population. Additionally, financial constraints prevent them from owning digital devices and affording broadband subscriptions.

In a gendered digital divide, *women* are more susceptible to it and the resulting digital illiteracy has also deterred women entrepreneurs from moving their businesses into the online marketplace. Further, efforts are needed in democratising digital access for *people with disabilities* and the *trans community* to create an inclusive digital environment. In times of critical emergencies and medical crises or even just to contact family, the **elderly group** have struggled to keep afloat which is also one of the root causes of the digital divide amongst the elderly. Therefore, there is a need to ensure digital inclusion for all, including the most vulnerable.

ICTs could be key to building a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilise and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting sustainable development and improving their quality of life.

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[26] https://social.desa.un.org/sites/default/files/inline-files/our-common-agenda-policy-brief-gobal-digi-compact-en.pdf

Based on the above, in order to have a holistic measurement of digital inclusion, the following dimensions are important:

Dimension	Access	Skills	Use	Conducive environment
Indicators	• Electricity • Telephony and broadband • Points of Access (households, workplaces) • ICT Devices • Web accessibility • Gender gap	• Literacy • Academic life expectancy • Digital skills • Online safety	• Usage gap • Participation • Internet use • Basic online activities • e-Commerce • e-Banking • e-Government • e-Work • Social media • e-Participation	• Device affordability • Legally valid identification • Banking and Financial inclusion • Trust and online privacy • Community engagement • Digital security • Locally relevant Content

Undoubtedly, connectivity, affordability and basic know-how are the three fundamental prerequisites. Progress on these fronts would significantly narrow the wide digital divide in access and usage across demographic groups. Accessible content, design, public private partnership, policy support etc. are equally crucial to ensure digital inclusion in the country. Accessibility as a factor should be built by design. A comprehensive strategy tackling each aspect is essential for an inclusive digital society.

Digital Connectivity

4. **Apart from efforts made by the Government through various Projects for provisioning of broadband connectivity under NDCP 2018 and NBM 2019 and other schemes, what additional measures are required to fulfil the objectives of universal connectivity in India?**

India is on the cusp of a revolutionary shift in the digital space. It has been marked by massive rollout of Telecom networks (4G and 5G), Data Centres and, the digital payments surge that has transformed ~85% of all informal transactions – a sizable portion of the nation's economy — and this has led to India stealing a march on the world in this area for sure. India has solidified its position as a leader in digital payments, notably acknowledged at the G20 Summit as well. Further, the vision statement of Budget 2023 has also talked about **technology-driven and knowledge-based economy.**

The entire bedrock of the Digital India platform is 'connectivity' (rural and urban) by TSPs enabled by 4G and 5G. TSPs provide quality mobile broadband in cities, urban areas, towns and generally in rural areas, but achieving a similar ubiquitous coverage in some rural and remote areas remain a challenge, due to costly backhaul and the economic challenges involved. Fiber rollout is not always feasible, nor it is economically viable.

Hence, **there is a need is to make cost of wireless backhaul affordable** by significantly rationalizing the rates charged administratively for MWA/MWB carriers and E/V band. **Airtel recommends that the rates should not escalate with the increase in the number of carriers, and they should be kept uniform at a minimal level.**

Further, address coverage gaps in such areas, the use of satellites can come in. They have been critical in solving the 'last mile' problem. In fact, the lower latency of LEO satellites offers fresh opportunities for Broadband

penetration and usage in regions hitherto unreached/unconnected. Their low latency and increased bandwidth can help lower financial hurdles for rural coverage by overcoming the geographical and distance factors through the availability of ubiquitous connectivity across all locations at a cost-effective price.

As many digital public services can help in both improving access to services and implementing them at lower costs, governments have a range of opportunities to improve public service delivery through digitalisation. Users need to be able to use the relevant digital services needed, for example, for studying, working, online banking and e-commerce in a reasonable manner.

The Universal Service Obligation Fund (USOF) was meant to be utilized to provide access to telegraph services to people in rural and remote areas at affordable and reasonable prices. It has a huge corpus built over the years that remains under and/or unutilized. In addition, the continuation of 5% USO Levy keeps it as a heavy financial burden on TSPs who could otherwise deploy these into rollout of networks and services.

Adopting the following measures in India would go a long way to achieve universal connectivity in India:
a)   Abolish the USO levy so that TSPs can accelerate rollout in unserved/underserved areas.
b)   Fund and close connectivity gaps through budgetary allocations by Centre and States. Government can find innovative ways to fund consumption & adoption so that rural connectivity is commercially viable for TSPs.
c)   Change the USO model from tendering to funding all operators covering identified rural/ remote areas.
d)   Make Backhaul spectrum affordable by rationalizing its charging rates and be made unform. The rates should not escalate upon increase in carriers.
e)   Make RoW free for the next 5 years in rural areas to ensure swift rollouts. Charge only the cost of restoration. Time bound approvals of RoW permissions will be required for rural areas / Gram Panchayats.
f)   Regulatory impact assessment (RIA) as a base template for all regulatory and policy decisions.
g)   Incentivise TSPs to connect challenging geographies.
h)   Encourage the use of satcom to cover uncovered areas and support it through USO subsidy.
i)   Provide subsidy to TSPs to roll out fiberisation and FTTH connectivity.
j)   Allow handset subsidy to TSPs, and / or budgetary support - in proportion of market share, to enable people to get access to affordable devices.

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5.   **Whether connecting GPs/villages/village institutions through BharatNet has helped in improving digital connectivity in an effective manner? If not, what additional measures are required to ensure universal connectivity across all GPs/villages/village institutions in an efficient and time bound manner?**

AND

7.   **What steps should be taken to encourage service providers for effective utilisation of the BharatNet infrastructure in provisioning of connectivity to Institutions/households/ individuals?**

The Indian TSPs have painstakingly built the world's second **largest telecom network** spanning[27] **~28 lakh BTS, ~7,78,567 Towers, ~6 lakh** villages, across towns and districts, over the last 25 years. Industry has made significant investments with one of the lowest ARPUs in the world. The service the networks were able to relentlessly provide over the Covid-era (2020-2022) demonstrates the resilience and capability of Indian TSP networks — confidently serving as they did the entire socio-economy of 1.2 billion Indians online without disruption.

Despite the efforts of TSPs, the burden of contributing towards USOF continues to lie solely with them. Abolishing the USOF levy will help TSPs accelerate the rollout in unserved/underserved areas as TSPs have met

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[27] DoT Dashboard, https://dot.gov.in/ , as seen on 29th November 2023, and industry estimates

the objectives of the USO Fund without utilising the fund itself and the mobile network footprint today covers ~95% of India's population. Taking funds from TSPs and funnelling it back through USOF is not a sustainable model. The Government can find innovative ways to fund consumption and adoption so that rural connectivity becomes commercially viable for TSPs.

The Government should also provide satellite communications (Satcom) providers with a subsidy through the USO Fund given the emergence of LEO constellations that are set to play an important role in bridging the digital divide in remote, rural areas and enabling Digital India, leaving no one behind.

As regards the BharatNet project, it has been instrumental in the push for digital connectivity with dedicated digital drives across rural areas through its OFC network. The Carrier services operate under agreed-upon Service Level Agreements (SLAs). The competitive nature of the carrier services market ensures adherence to these SLAs, while also meeting the strict QoS norms prescribed by TRAI.

Till date, while over 190K GPs have been connected under the project but the utilisation and uptake is still very low due to challenges around fiber sustainability or due to lack of connectivity to actual end points like CSCs, schools, hospitals, factories & towers. These inhibit TSPs adopting BharatNet fiber for roll-out / site connectivity.

The following is recommended for effective utilization of BharatNet infrastructure:
a) **BharatNet should be made available on minimal/no tariffs to TSPs, as it has been constituted under USOF.**
b) **BharatNet should also facilitate extending the Last mile to TSPs premises.**
c) **There should be strict SLA defined for BharatNet (99.99%) to increase its uptake and allow TSPs to meet the stringent QoS norms of the TRAI**
d) **It should be made available for middle-mile connectivity and should be leveraged to connect the mobile towers/BTSs.**
e) **The TSPs should be granted subsidies to carry out fiberisation.**

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6. **Will the schemes supported by USOF other than BharatNet suffice the need of universal connectivity in the country? If not, what additional measures or changes in strategy are required to ensure universal connectivity to all unconnected areas? Please provide your answer with suitable justification.**

While mobile towers have been constructed under USOF schemes, their quality of service is, however, impacted due to non-availability or limited availability of State Electricity Board supply. There are many villages, especially in Arunachal Pradesh and other North-East regions which are yet to be electrified.

- Therefore, **schemes are necessary for funding and energizing telecom infrastructure through renewable energy sources. It is recommended that the grid supply and renewable energy through Open access should be taken on mission mode.**

India's tower fiberisation, continues to be low at approximately 35%. One of the reasons for this is that RoW issues have plagued the sector in the past and they take a long time to resolve. Although the GatiShakti Sanchar Portal has been instrumental in bringing down the average number of days to dispose of RoW applications challenges continue at ground level with non-uniform implementation. We are hopeful though, that the new Telecommunications Act 2023 will give necessary legal backing in the enforcement of RoW Rules at local levels.

BharatNet can further help in India's tower fiberisation goals. Fiberization not only ensures that mobile towers would have adequate backhaul bandwidth to offer 4G/5G services in rural villages, but also permits other allied services to be rendered to rural customers in the coming years. Accordingly:

- **BharatNet should be extended to the mobile tower location itself. The extension of BharatNet fiber to the mobile tower will not only significantly increase the utilization of BharatNet but also enable the Government to meet the objectives of increased fiberalization of towers.**

- The Government is issuing the tender for the subsidy to build the mobile towers in specified villages. Since the whole tendering process is time-consuming, the best approach would be **to identify such villages as well as the subsidy to be granted and any operator who shows the interest to cover those villages, should immediately be granted the subsidy.**

Lastly, Satellite communications holds promise for digital inclusion and bridging the digital divide. Accordingly:

- **Satcom should be included and encouraged as part of universal connectivity projects and tenders and be included for the USO subsidy.**

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8. **Is there any need to take steps to make satellite internet a viable option for providing connectivity to remote/ inaccessible areas? If yes, please provide your answer with suitable justification. If not, what are the other alternatives for provision of connectivity in these areas?**

Yes. The satellite communications / internet can bridge the digital divide.

The middle-mile, or backhauling, is the biggest challenge for telecom operators. Backhauling becomes more expensive when it comes to operating rural base stations versus the costs of base stations in urban environments. This is where satellites have been a critical component for solving the 'last mile' problem. Further, lower latency through LEO satellites offers fresh opportunities for BB penetration and usage, in regions hitherto unreached/unconnected. It can lower financial hurdles for rural coverage, by overcoming the geographical, and distance factors through the availability of ubiquitous connectivity across all locations at a cost effective price.

Under the laudable vision of Hon'ble Prime Minister, the space communications sector has been opened up for private participation and great strides have been made in last 3 years in this area. The new SpaceCom Policy, creation of In-SPACe, the new Telecommunications Act 2023 will all bolster the satellite communications bridge digital divide. Since space technology integrates various pillars of economy under one umbrella, the investments made here will have a multiplier effect on overall development of countries and economies when coupled with enabling policy and regulatory environment. LEO players will be able to offer high throughput and low latency backhauling solutions to 4G and 5G base stations. This will enable terrestrial MNOs to upgrade their existing 2G or 3G sites to 4G/5G and extend network coverage to places that could not be connected economically.

Airtel recommends the following measures to increase the adoption of Satellite internet as a viable option to connect the unconnected:
1. **Prescribe zero license fee for satcom services, just like recommended by TRAI for wireline services.**
2. **Provide USO subsidy for satcom connectivity for backhaul as well as end-user.**
3. **Bring out PLI schemes for Satcom as well.**
4. **Ensure that administrative cost of spectrum for satcom is minimal to encourage its adoption.**

> 9. **What measures are required for adopting a collaborative approach to utilise Digital Connectivity Infrastructure created by the service providers or through government-aided schemes to extend connectivity to the people in unserved areas? Please provide your answer with suitable justification.**

In order to utilise the digital connectivity infrastructure created by service providers, a diverse set of measures will need to be adopted involving a mix of private and public entities to address connectivity challenges and promote inclusive access to digital services.

It is pertinent to mention here that sites under USOF agreements already contain provisions for mutual sharing of infrastructure among TSPs on a voluntary basis. This should continue.

To further promote infrastructure sharing, allow the infrastructure sharing charges as pass-through while determining AGR for the purposes of payment of License Fee (LF) and Spectrum Usage Charge (SUC) in case of Unified License (UL), just like UL-VNO.

> 10. **Please suggest the best practices being followed internationally that can be adopted in the country to provide universal connectivity to all individuals, households, and communities?**

Providing universal connectivity to all individuals, households and communities involves a combination of policies, technologies and strategies. While best practices vary across nations based on their different and unique contexts, some common approaches and lessons learned can be identified. Here are several best practices observed internationally:

S. No.	International best practices	Example
a)	**Public-Private Partnerships (PPPs)**	The United Kingdom's Broadband Delivery UK (BDUK)[28] programme is a PPP model that involves collaboration between the government and private sector to extend broadband access, particularly in underserved areas.
b)	**Australian Digital Capability Framework (ADCF)[29]**	It describes the broad digital capabilities required by the Australian workforce which can be used for multiple purposes, thereby aligning and strengthening a wide variety of efforts to build the digital capability of the nation's workforce.
c)	**Subsidy Programmes for Rural Connectivity**	The Malaysian Government's Universal Service Provision (USP)[30] fund subsidises telecom infrastructure projects in rural and underserved areas to ensure affordable access.
d)	**Digital Literacy Programmes**	South Korea's 'Smart Learning'[31] initiative focuses on digital literacy and skills training for all age groups, promoting the use of digital technologies in education.
e)	**Inclusive Regulatory Frameworks**	In Singapore, the Infocomm Media Development Authority (IMDA)[32] maintains a regulatory framework that encourages competition, innovation and ensures consumer protection in the telecommunications sector.

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[28] https://www.gov.uk/government/organisations/building-digital-uk
[29] Australian Digital Capability Framework (ADCF)
[30] https://www.mcmc.gov.my/en/sectors/universal-service-provision#:~:text=The%20Universal%20Service%20Provision%20(USP,Internet%20services%20throughout%20the%20country.
[31] https://unesdoc.unesco.org/ark:/48223/pf0000366729
[32] https://www.imda.gov.sg/regulations-and-licences/regulations/frameworks-and-policies

f)	**Satellite Connectivity for Remote Areas**	Eutelsat OneWeb's satellite communications network[33] provides satellite internet connectivity to Akiak Native Community in Alaska[34]. The OneWeb satellite constellation features more than 630 satellites along 12 carefully synchronised orbital planes 1,200km above, in low Earth orbit (LEO).
g)	**Cross-Sectoral Collaboration**	In Estonia, the government has integrated digital solutions[35] across various sectors, including healthcare, education and governance to create a seamless digital experience for citizens.
h)	**Global Partnerships and Knowledge Sharing**	The Global Connect Initiative[36], led by the United States, seeks to bridge the digital divide globally through partnerships, fostering collaboration and sharing best practices.

Digital Affordability

11. **Whether various measures taken by the Government such as focusing on local manufacturing are sufficient to bring down the prices of smartphones in India? If not, what additional measures explain your answer with suitable justification.**

AND

12. **Whether market for second-hand smartphones is a viable strategy for increasing the affordability of smartphones to the people? Please indicate the opportunities and challenges that may arise due to this strategy.**

Globally, the adoption gap for mobile internet (when people do not use internet despite mobile network coverage being available in their area) is increasing and an estimated 2.7 billion people remain offline. In some cases, in low and middle-income countries, the cost of the smartphone required to access the internet could exceed average incomes, indicating that the crisis of adoption is a significant barrier to digital inclusion.[37]

This crisis denies economic, educational and social opportunities, and it holds back the earning power of less developed nations, particularly for the people already at the margins, especially women and people residing in rural areas.

While governments have taken considerable measures to bring down prices, smartphone exclusion and internet usage numbers continue to suggest that an adoption crisis still exists. According to the ITU Global Connectivity Report 2022, in countries where broadband is affordable, internet users are high in number. Therefore, it is crucial to understand the barriers to device access:

a) **Handset affordability** — Despite the continued decline in the cost of Internet-enabled handsets, retail prices of smartphones vary widely across the globe, driven by factors such as distribution costs and taxes. Some people cannot raise the upfront costs required to purchase a device.

[33] https://oneweb.net/our-network#:~:text=High%20throughput-,low%20latency,low%20Earth%20orbit%20(LEO).
[34] https://oneweb.net/resources/customer-success-story-pdi-alaska-usa
[35] https://e-estonia.com/briefing-centre/services/
[36] https://obamawhitehouse.archives.gov/blog/2016/10/07/global-connect-initiative-catalyzing-internet-access-world-wide
[37] https://www.broadbandcommission.org/wp-content/uploads/2022/10/Strategies-Towards-Universal-Smartphone-Access-Report-.pdf

b) **Unregulated markets** — non-durability of devices purchased from parallel markets, the lack of warranties, the limited repair options and the risk of phone data being stolen through invasive software contribute to the negative perceptions towards smartphones, thereby acting as a barrier to smartphone access.

c) **Last-mile supply chain** — There are fewer retailers of smartphones in rural areas, which limits options for customers, limits competition and complicates the regulation of retail prices. Apart from the challenge of accessing devices, hard-to-reach remote communities also worry about their ability to recharge their devices due to the prohibitive costs of battery charging.

d) **Lack of consumer understanding** — Finding a balance between the price of smartphones and the perceived value from quality is a concern for consumers.

e) **Concerns regarding refurbished phones** — Refurbished devices are becoming increasingly common, with the goal of creating a 'circular economy.' However, consumers remain concerned that refurbished phones may have short lifespans and, therefore, this act as a barrier to device uptake.

f) **Lack of sufficient incentives** — Lack of awareness of the Internet or use cases that create value for the offline user and a lack of relevant (that is, local or localised) content and services.

g) **Digital illiteracy** — Lack of digital skills acts as a barrier to the adoption and use of smartphones by instilling fear of using smartphones and the Internet, which delays adoption. Digital literacy thus determines whether users can achieve meaningful outcomes and make beneficial use of smartphones.

Smartphone literacy in India is not a big barrier. Most feature phone users have seen/experienced a Smartphone around them and are comfortable with using one. Three major factors continue to slow down upgrades to Smartphones:

a) **Widening price gap between Smartphones and Feature Phones**: A Feature phone starts at INR 700, while a decent quality smartphone is priced upwards of INR 7,000. Further, this price delta has only increased in the last 8 quarters due to Global chip supply constraints.

Considering the typical socio-economic background of the feature phone customer base, this price delta acts as the major inhibiting factor for customers to upgrade to smartphones.

b) **Limited access to credit / lending**: A large part of the Feature Phone customer base in India is underbanked – many of them are new to credit and lack access to financial services. Fundamentally, banking institutions perceive this segment as higher risk, and hence find it difficult to extend credit to it. There is negligible presence of 5G handsets in the <10k price segment.

c) **Smartphone considered a luxury / discretionary spend**: Another key learning from the India market is that current Feature phone users still consider the Smartphone a luxury – i.e., a discretionary spend versus necessary spend. In the wake of the Covid pandemic, there has been significant monetary stress among this customer base – hence, this discretionary spend gets deprioritised. This perception of the Smartphone being a luxury / discretionary spend creates an aversion to purchasing a Smartphone on loan/EMIs among certain sets of target customers. They are more comfortable waiting longer and purchasing the Smartphone at full price rather than availing themselves of a loan.

d) **Global chipset supply shortages -** One of the biggest challenges at present is that due to global chipset supply shortages and price increases, smartphone OEMs do not find the entry-level smartphone segment very profitable. Hence, for most of the OEMs, this part of the portfolio has shrunk – they are focusing more on higher-end phones and also increasing prices for entry-level devices. This adversely impacts affordability and, hence, upgrades have slowed down.

e) **Limited smartphone channel reach** - many of these target customers are in locations with **limited smartphone channel reach,** limited lender presence as well. Ensuring these customers upgrade will require significant go-to-market investment and figuring out the optimal customer journeys for them to upgrade.

Therefore, to address these challenges, and some of the viable solutions can be:

a) **Encourage and emphasise secondhand market/refurbished market in a better way, as rightly highlighted by TRAI as well.**

b) **Increased focus should be given to microfinancing schemes and lending propositions to credit customers.**

c) **Handset subsidies need to be introduced to bridge digital divide. It should be fair, transparent and based on market share. Software platform capabilities could be used to help implement targeted subsidies.**

d) **Striking partnerships with smartphone and e-commerce players to extend propositions like free screen replacement/extended warranty.**

13. **Whether schemes undertaken by various states for distribution of smartphones and laptops to students and support for the connectivity are effective mechanisms to increase Digital Affordability in the country? If yes, what are the measurable parameters to assess the effectiveness of such schemes? If not, what could be the alternative policy interventions/ schemes with measurable outcomes that can support affordability of the devices? Please support your answers with suitable information.**

While there have been awards of such schemes in various states, there is no assessment available on the impact of these schemes on increased digital access/affordability.

Another alternative can also be to provide vouchers that could be subsequently used through TSPs or device manufacturers from the market.

14. **Is there any need for policy interventions to increase Digital Affordability (digital devices and digital connectivity) among specific sections of society, for example, women, students, farmers, fishermen, economically weak, etc.? Please respond with suitable justification.**

AND

15. **What measures should be taken to make digital devices and digital connectivity affordable to the citizens for empowering them to maximize the benefits of an inclusive digital society? Please provide your answer with best practices being followed internationally in this regard.**

The questions pertain to policy interventions to increase digital affordability with respect to digital devices and digital connectivity.

As far as digital connectivity affordability is concerned, no policy intervention is required. The Indian tariffs are already among the lowest globally and TSPs have made their service offerings in a such a way that it serves the entire cross-section of society. Specific mandates on TSPs in this regard are unwarranted.

However, w.r.t digital devices (handsets etc.), there may be a need to look at bringing the price points to affordable levels. To this end, the PLI scheme and Make-in-India scheme to encourage handset manufacturing in India will likely have the desired effect.

Given that both men and women stand to gain from using the Internet, consistent efforts to improve Internet inclusiveness for women could drive women's participation.

TRAI has highlighted certain international practices involving collaboration between various entities. Some other examples in this regard are:

a) Digital Voucher Programmes (Brazil): Brazil has implemented digital voucher programmes where low-income families receive subsidies or vouchers to purchase digital devices or access affordable internet plans. This initiative aims to reduce the financial barrier for citizens to acquire and use digital devices and connectivity.

b) Government Subsidies for Devices (Mexico): Mexico has implemented programmes where the government subsidises the cost of digital devices for students. This initiative aims to ensure that students have access to the necessary tools for digital learning.

Airtel is hopeful that the latest efforts by the government to encourage the design and development of semiconductors in India will also help bring down the cost of devices in India.

Digital Literacy

16. What measures should be taken to engage the industry and academia in promoting Digital Literacy in India? Please provide your answers with suitable justification.

As per TRAI reports, the current rural tele-density stands at 58.15%. It used be <40% (39.5) about a decade back (Jul-12) when 4G was launched. At the same time, urban tele-density seems to be on the decline and there is a very marginal difference in subscriber base split between Urban and Rural (52% Urban and 48% Rural). While traditional broadband infrastructure might be challenging to deploy in remote areas, mobile networks have managed to extend their coverage significantly.

While government initiatives play a pivotal role in advancing digital inclusion in rural India, the concerted efforts of non-governmental organisations (NGOs) and private sector entities have proven equally impactful. As an example, OctaFX, an international broker, collaborated with Community Action for Rural Development (CARD) in August 2023 to set up a computer lab at a rural school in Tamil Nadu to address the digital divide.

While various divisions of the government, ministries are involved in skill development and the programmes initiated by them in this regard could be useful for digital literacy, Airtel proposes that the following measures can be considered to complement digital literacy efforts in India:

a) **Trainings** related to digital literacy should consider the unique needs and preferences of women and what falls within social norms.

b) **Digital skills development** should be incorporated across education policies.

c) From Airtel's experience and high-level understanding of the subject, the following might be crucial:

  i)   Access to the right content through a **technology-supported device ecosystem**.

  ii) Self-discipline and Change management – Individual choices are different from traditional practices. Policy makers, academia, parents will have to play a crucial role.

  iii) Interesting content – In digital mode, human connect is missing, so the content should be **interesting**.

  iv) Modern curriculum – If digital learning can be made a part of the **curriculum** in the early years, it would give the new generation basic skills that they can then build on.

  v)   Rapidly changing ecosystem – **Digital learning, platforms**, content, programmes, applications are advancing with great speed, so keeping abreast with the technological advancements or fine-tuning learning is crucial.

  vi) Addressing language barriers and producing localised content - Creating **localised useful digital content** that ensures information, services and educational resources are accessible and understandable to rural populations.

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17. How can the digital literacy toolkits developed by multiple industry players already available in the market be utilised to improve digital literacy levels in the country, especially for the rural citizens of the country?

Such an activity should continue to be market led and the government should be a heavy user of such market solutions. Already, the technology players, the application developers and creative content creators have created a huge landscape of literacy toolkits, as well as video-content. With new policy efforts like the New Education Policy, and with the states bringing in a lot of services under e-governance or m-governance (e.g., the Umang app), rural citizens are bound to make use of the services and solutions over a period of time.

The existing industry digital literacy toolkits and content could be effectively leveraged to enhance literacy levels especially in rural areas by ways such as:

a) Partner government agencies with organisations to curate parts of available toolkits into the main Indian languages to address gaps in vernacularity.

b) Equip schoolteachers in rural areas with digital literacy toolkits related to EdTech applications so that they cascade benefits to students.

c) Leverage digitally empowered rural youth as knowledge ambassadors, based on data shared by TSPs, to train communities in villages.

d) Build toolkits in mobile apps, web content along with some classroom sessions can enable cost-effective scaleup of programmes.

In essence, a decentralised, focused and demand-driven approach is key for utilising existing digital literacy toolkits. Rural youth and women self-help groups should be mobilised for community level impact.

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18. Please suggest the best practices followed internationally that can be adopted in the country to promote mass digital literacy for different segments of society.

The journey toward bridging the digital divide is not merely about building a robust technological landscape. It is about fostering empowerment, equality and sustainable digital inclusion efforts in every corner of the nation. Some of the best practices adopted across nations are:

a) **South Korea**[38]: Smart Learning initiative focuses on providing digital literacy and skills training through courses and resources for students, adults and seniors, emphasising the integration of digital tools into everyday life. People across South Korea started utilizing Information and Communications Technology, or ICT, in 2005, to strengthen the educational system, to further science and technology and to adapt to the rapid changes in the economy, society and science.

b) **Singapore**[39]: Singapore's Digital Readiness Blueprint, created by an MCI-led workgroup, hopes to improve citizens' access to digital technology and equip them with the skills to use digital technology safely and confidently. It includes targeted programmes for different segments of society, such as seniors, low-income families and individuals with disabilities.

c) **Australia**[40] — Australia's Be Connected programme is designed to improve the digital literacy of older Australians. It offers free online courses, workshops and resources to help seniors build essential digital skills and navigate the online world safely.

d) **United Kingdom**[41] — Learn My Way is a digital inclusion platform in the United Kingdom that provides free online courses to help people develop basic digital skills through courses catering to various skill levels, making it accessible to different segments of the population.

e) **United States**[42] — The Digital Literacy Corps in the United States is a student-empowered nonprofit organization that has to date provided enhanced computer access to dwellings or community centers serving well over 100,000 individuals in several states.

f) **Brazil**[43] — Brazil has established Digital Inclusion Centres (Telecentros) in various communities, providing free access to computers and the internet and offering digital literacy courses and workshops to help citizens acquire essential skills for the digital age.

g) **Kenya**[44] — Ajira Digital Programme in Kenya is a free program open to all young Kenyans who are looking to make a dignified livelihood from digital and digitally-enabled work opportunities. The programme offers online training and mentorship in areas such as digital marketing, graphic design, programming etc.

In practice, effective digital literacy programmes must have a **deep understanding of the communities that they serve**, equipping these communities with **relevant digital skills and toolkits**, a greater degree of digital confidence and access to a range of contextually appropriate and **affordable devices and applications**.

Digital Public Infrastructure

19. **What steps should be taken to monitor the impact of DPIs on underserved and vulnerable segments of the society? Kindly indicate the key parameters that need to be monitored to assess such impact and actions required to promote adoption citizen centric services by these segments of the society.**

Please refer to response to Question 3.

[38] https://borgenproject.org/technology-in-south-korean-schools/
[39] https://www.straitstimes.com/tech/digital-readiness-blueprint-launches-to-help-every-last-man-cross-the-digital-divide
[40] https://beconnected.esafety.gov.au/
[41] https://www.learnmyway.com/
[42] https://www.loc.gov/item/lcwaN0014325/
[43] https://asistdl.onlinelibrary.wiley.com/doi/pdf/10.1002/bult.318
[44] https://ajiradigital.go.ke/

> **20. How can emerging technology be leveraged to enhance the digital literacy programmes of the Government? Please give your input with reasons. Best practices being followed by other countries and private sector may also be referred to.**
>
> <div align="center">**AND**</div>
>
> **21. What steps should be taken to ensure that AI and new technologies do not result into further digital divide and every section of the society has access to the new technologies and resultant economic opportunities?**

5G will open up new capabilities and possibilities, primarily low latency, faster downloads and reliability. If AI, IoT and big data are added to this, the possibilities become infinite. Agriculture is another excellent use case, wherein the farmer can remotely understand water requirements, temperature, soil condition, contaminants, etc. and act through drones or autonomous agriculture vehicles.

There is a need to assess AI readiness across industries and communities to identify gaps limiting adoption. Public trust and acceptance would be driven by responsible AI principles through standard bodies focusing on aspects like transparency, bias mitigation and human oversight. Innovative approaches like low-orbit satellites to provide internet connectivity in remote areas are being explored as a means of overcoming infrastructure challenges.

Societal risks that technological changes could pose on employment should be recognised and proactive policy actions on social security schemes and alternative sustainable job transitions taken.

Specific sensitization programs, international engagements should be designed to educate individuals on usage of technology. In addition to the robust technology landscape, fostering empowerment, equality and sustainable digital inclusion efforts across the nation will also be crucial to bridge the digital divide.

Responsible innovation, inclusive access models and capability enhancement at scale should be analysed upfront while advancing AI so the benefits are evenly distributed and risks mitigated in order to avoid any disproportionate impact across society.

The following are the effective practices across different countries that can help enhance digital literacy programmes:

a) South Korea enables youth to train older adults within families under supervised programmes.
b) France provides government accredited digital skill credentials aligned to the European Qualifications Framework.
c) Australia offers digital literacy as a formal part of school curriculum to build early exposure.
d) Brazil encourages partnering startups and companies with NGOs and government for literacy initiatives at scale.
e) UK's online portals provide digital skill tutorials in the Welsh and Gaelic languages tailored to youth and seniors.

In any case, the Government of India has also embarked on national missions on AI and quantum computing among others. The NITI Aayog has also suggested a national AI framework. The ministry of IT and industry players are also in active deliberations on making AI ethical and democratic for people. Once AI becomes mainstream and more applications develop, it is to be hoped that this will also be embedded into digital inclusion efforts.

22. **What should be key performance indicators to measure, monitor and track the progress of the key factors of digital inclusion in the country mentioned below?**
    a. Digital Connectivity
    b. Digital Affordability
    c. Digital Literacy

Please refer to the response to Question 3. Access, skills, use and conducive environment should be the broad parameters around which progress should be tracked.

Measuring, monitoring and tracking the progress of key factors should be the responsibility of a central government dashboard. The respective ministries should share various data points they receive or publish, which can go into such a central dashboard. Similarly, handset devices related data, and their affordability quotient can be mapped onto the same dashboard.

Further, such a dashboard or monitoring mechanism should work as input for any policy support rather than being used as a means to regulate or intervene in the market. No penalty or such disincentive should be linked to these efforts. For example, the Digital India dashboard gives useful insights to government on what is happening on various parameters tracked under DI and is not a tool to penalise or mandate new regulations.

23. **What measures should be taken to provide high-speed broadband connectivity to schools in the country, especially in states with low number of schools having internet connectivity?**

Please refer to the response to Questions 4-6 (measures for improving Digital Connectivity in the country generally will help schools, too).

The wired and wireless network of the TSPs today already spans the length and breadth of India. In rural India, where there are gaps, BharatNet needs to be leveraged for last mile and middle mile connectivity. Also, the (LEO) Satellite Internet can be another complementary solution to connect those schools that hitherto remain unconnected due to techno-commercial challenges.

Additionally, the following can be considered specific to the means to provide high-speed broadband connectivity to schools across the country, especially for states with currently low levels of school internet connectivity:

a) Develop a national digital infrastructure plan for connecting all schools based on gap analysis.
   i) Set up an institutional coordination mechanism between centre, states and districts for school connectivity progress tracking against the national roadmap and for taking corrective actions.
   ii) Conduct proper trainings for effectively leveraging internet enabled learning by focusing on content localisation in the vernacular medium.
   iii) Ensure that TSPs, ISPs are allowed to lay the necessary telecom infrastructure in and around schools, and that these should not be restricted to wired infra only. Permissions of RoW and other connectivity needs be given on priority and free of cost.
b) Create a specific central and state level budget allocation, grant and subsidy programme to fund broadband infrastructure rollout across uncovered government schools as a priority. The TSPs and ISPs should be given such support within a time bound manner.
c) Leverage the BharatNet backbone to deploy low-cost technologies like VSAT, microwave or hybrid networks using Universal Services Obligation Fund subsidies to connect remote schools.

d) Incentivise TSPs through low-cost spectrum, tax sops to adopt schools and invest in connectivity infrastructure through CSR and other initiatives.

e) Demystifying the myths about telecom tower and connectivity (related to health hazards) to all state authorities is another crucial step that should be led by the respective authorities.

f) Allow Satellite internet connectivity under USO subsidy schemes to connect rural areas /schools etc.

24. **How effective is a dashboard as a measure for evaluating and tracking the progress made in respect of the various indicators of the three key areas of digital inclusion? What are the critical parameters and at what level (i.e., at state or district or towns/cities or block or Gram Panchayat levels), such parameters should be captured in the dashboard?**

AND

25. **Who should be responsible to evaluate and track the progress of digital inclusion including development and management of the dashboard?**

Airtel believes that the dashboard maintained by the government should be built on a matrix of inclusion to focus on penetration rates, which should differ across segments. In order for the government to develop such a dashboard, it is crucial to understand tech usage, digital connectedness, active online participation level, access to capital and education, etc.

Further, as far as digital connectivity parameters are concerned i.e. which are telecom operators' specific, any such monitoring and dashboard must be consistent and in consonance with India's licensed service area (LSA) based licensing regime.

It is important that such a dashboard or monitoring mechanism work as input for all policy support, rather than functioning as a means to regulate or intervene in the market. No penalty or any such disincentive should be linked to these efforts. For example, the Digital India dashboard provides useful insights for government on what is happening on the various parameters tracked under DI. It does not function as a tool to penalise or mandate new regulations.

As far as parameters related to the TSPs are concerned, these should be in line with India's telecom licensing framework in the following manner:

a) The Indian telecom market is divided into 22 licensed service areas (LSAs). These LSAs are further divided into four categories viz. Metro, A, B and C. These categories have been decided based upon the socio-economic conditions of these LSAs.

b) The entire network architecture of industry over the years has been planned and built over the years in line with the present licensing framework.

c) It is important, therefore, that these parameters should be persisted with, aligned as they are to this market and licensing reality.

d) Additionally, no new periodic/ smaller duration data sets should be sought to be reported on real-time or on a short duration basis than what is sought presently on a monthly and quarterly basis.

Furthermore, a study should be conducted to assess the level of baseline infrastructure available (on the MSME/enterprise side) and future readiness. Then, users should be identified and mapped to evaluate inclusion across segments (adults, elders and children).

Building on the dimensions identified to assess digital inclusion, following few parameters[45] would be critical:

Dimension	Access	Skills	Use	Conducive environment
Indicators	• Electricity • Telephony and broadband • Points of Access (households, workplaces) • ICT Devices • Web accessibility • Gender gap	• Literacy • Academic life expectancy • Digital skills • Online safety	• Usage gap • Participation • Internet use • Basic online activities • e-Commerce • e-Banking • e-Government • e-Work • Social media • e-Participation	• Device affordability • Legally valid identification • Banking and Financial inclusion • Trust and online privacy • Community engagement • Digital security • Locally relevant Content
Parameters	• Broadband penetration - % of population with access • Broadband subscriber growth trends • Average fixed and mobile broadband download/upload speeds • % of rural areas connected with high-speed internet • Gender-wise device ownership • Percentage of households, work places with broadband access	• % of individuals with digital literacy skills by demographic factors • Enrollment in government digital training programmes • Growth of local-language internet content • Uptake of vernacular apps and interfaces • Volume of data consumption per user	• Uptake rates of digital payments • Utilisation of government e-services • Access to digital education, telemedicine services • E-commerce adoption • Data consumption rates • Internet Users Gap: internet penetration rates across key demographics like gender, age groups, income levels, rural vs urban areas etc.	• Data prices as % of per capita income • Cost of devices as a proportion of average income • Uptake of public WiFi • % of individuals aware of online privacy risks • Perception surveys on safety of online activity • Adoption of encryption by apps/websites • Number of digital transactions per capita • Growth in mobile money accounts • Discussions with community groups for user-centric design of initiatives • Availability of customised insurance, investment products, tailored offerings for women

In order for the government to effectively evaluate and track the progress on digital inclusion including the development of a comprehensive dashboard, the following should be taken into consideration:

a) Define parameters in consultation with all stakeholders, including TSPs, on access, affordability, usage for demographics.

b) Conduct primary surveys across urban and rural areas on device penetration, network coverage, digital adoption of services and applications, subject to India's telecom licensing framework.

c) Analyse sector reports to identify adoption gaps. Ensure that all such gaps and KPIs are consistent with India's LSA based telecom licensing regime.

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[45] https://www.atlantis-press.com/article/125989467.pdf

d) Develop an automated dashboard with key visualisations on parameters like internet penetration, tele-density, download speeds, etc. by LSA.

e) Conduct Focus Group Discussions, along with TSPs, across regions with village communities, women, trans community, elderly people, people with disabilities to understand the awareness gap.

f) Hold awareness workshops and training sessions, in collaboration with TSPs, to close the gaps.

g) Convene joint reviews on progress across ministries and agencies responsible for connectivity, digitising government services and literacy initiatives.

h) Initiate timely interventions with the states and districts that are lagging behind.

Digital Inclusion for MSMEs

26. **What efforts are required to provide reliable digital connectivity to MSMEs at affordable costs to empower them through new technologies for effective participation in the digital economic activities?**

AND

27. **Whether the schemes of fibre connectivity in villages and rural areas such as BharatNet can be leveraged to provide the digital connectivity to MSMEs at affordable costs? If yes, please suggest the steps to be taken to extend such connectivity?**

Please refer to the responses to Questions 4-6 as well (measures for improving Digital Connectivity in the country generally will help MSMEs too).

At the outset, Airtel submits that **digital connectivity for MSMEs is already competitive from a cost perspective. The TSPs' offerings to such enterprises are competitive** given the fact that they face competition from regional/ local players as well.

However, the challenge is not at the level of the cost of connectivity. It is elsewhere. Today, while about 65 to 70 % of India's ~100 million MSMEs or small businesses have internet connectivity, only 5 to 6 % can sell on digital platforms, and even fewer get meaningful business online. Sellers, particularly in rural areas, lack either the digital access or the knowledge to confidently use digital platforms for trade. Even those interested in selling online are deterred by the prohibitive costs of digitalising inventory and sorting out or paying for related infrastructure such as warehousing and logistics. They struggle to access the capital required to modernise and expand—the credit gap for MSMEs in India is about $300 billion, driving about 60 percent of business owners to opt for informal credit at prohibitive costs.[46]

The data highlights that even while India's digital space is undergoing a revolutionary shift, MSMEs are continuing to face challenges viz. access to finance, adoption of new technology, access to new markets, availability of connectivity infrastructure and information, affordability of internet and devices, proficiency in digital skills, having to forego the advantage of GST threshold exemption if they sell products online, facing difficulties in building trust with consumers and cataloguing products.

India's MSMEs account for 90% of enterprise in the country and nearly half of GDP. But their growth remains perpetually limited by a dependence on cash due to which the transactions too are inevitably limited. It is pertinent to note that the fate of small businesses and national economies are intertwined. Over time, ONDC could also power India's digital economy to emerge as a vibrant digital commerce universe making it meaningfully **bigger, broader and more inclusive.**

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[46] TransUnion, *Empowering credit inclusion global report: A deeper perspective on credit underserved and unserved consumers,* April 2022; BLinC Invest, *MSME lending report 2022,* December 2022.

With this in mind, Airtel has partnered with the **National Small Industries Corporation (NSIC)** to accelerate the digital transformation of MSMEs — something that is key to the Government's vision of 'Atma Nirbhar Bharat' for enabling MSMEs to scale up faster by adopting digital ways of doing business.[47] A few of Airtel's solutions for MSMEs include:

- Airtel Mobile: Corporate Mobile Plans with bundled G-Suite
- Airtel Cloud: Private, Public and edge cloud solutions
- Airtel Secure: Integrated security solutions for businesses.

Airtel Payments Bank has also launched 'Suraksha Salary Account' — an innovative salary account for the MSMEs for making cashless payments and providing a financial security blanket to their employees, aimed at driving digital financial inclusion in the country.[48]

The following measures can be adopted by government to ensure digital inclusion for MSMEs:

a) Satellite Communications can be an enabler for MSMEs' digital inclusion hence Satcom should be provided subsidy from USO fund to connect the end-user MSMEs and also for providing backhaul.

b) Awareness about the importance of adopting tech can be provided by TSPs to the ~16.37mn MSMEs registered on the Udyam Portal. Increased awareness of the importance of MSME connectivity is needed to drive a sustained effort to close the knowledge gaps and tackle barriers.

c) Taxes and duties on connectivity and devices must be weighed against the benefits of increased affordability.

d) A focused programme on Big Data/AI/ML can be planned for MSMEs.

e) Availability of a robust telecom infra by TSPs for a Micro and Small Enterprises Cluster Development Programme (MSE-CDP) can further enable digital inclusion.

f) Government funding for SMEs investment in robust ICT can be made through pre-registered telecom partners.

g) All efforts should be made to inclusively end the digital gender divide and provide opportunities for all excluded communities to participate in the digital economy.

h) **The BharatNet project** in India is a national initiative aimed at bridging the digital divide by providing broadband connectivity to rural and remote areas, including empowering MSMEs. It could do so in the following ways:

   i) Improved connectivity in rural areas will benefits MSME by providing them with access to a broader market, online services and digital tools.

   ii) MSMEs in rural regions can explore digital entrepreneurship opportunities, access online training and participate in the digital economy.

   iii) MSMEs in far-flung areas can overcome connectivity barriers, enabling them to connect with customers, suppliers and government services.

   iv) Public-private partnerships can contribute to the development of tailored solutions, services and training programmes for MSMEs, enhancing their digital capabilities.

i) Under the BharatNet project, the following additional steps could be undertaken to extend digital connectivity to MSMEs:

   i) Focus on extending broadband infrastructure to areas where MSMEs are concentrated.

   ii) Form partnerships with **Satcom operators and telecom operators** to leverage existing networks and infrastructure. Public-private partnerships can facilitate the efficient rollout of connectivity solutions.

   iii) Provide government (central and states) budgetary support on connectivity packages specifically designed for the needs of MSMEs, considering factors such as data requirements, scalability and affordability.

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[47] https://www.airtel.in/press-release/01-2021/nsic-and-airtel-join-forces-to-accelerate-digital-transformation-of-indian-msmes#:~:text=New%20Delhi%2C%20January%2011%2C%202020,NSIC)%2C%0A%20Government%20of%20India

[48] https://www.airtel.in/press-release/06-2020/airtel-payments-bank-launches-suraksha-salary-account-solution-for-india-msmes

iv) Explore mobile and satellite connectivity solutions, especially in regions where fixed-line infrastructure may be challenging to deploy.

v) Conduct awareness campaigns and educational initiatives, in collaboration with TSPs, to inform MSMEs about the benefits of digital connectivity.

vi) Regularly track adoption rates, user satisfaction and any challenges faced by the businesses.

vii) Encourage collaboration of TSPs with government to facilitate the virtual networking of MSMEs by creating online platforms or networks where MSMEs can connect with each other, share experiences and explore collaborative opportunities. Regular dialogue sharing amongst MSMEs can also lead to development of wider use cases.

Furthermore, MSME connectivity should be assessed after considering the elements of the UN imperative for universal and meaningful connectivity: access, affordability, relevance, knowledge and digital skills, and safety and security.[49]

According to the **UN Department of Economics and Social Affairs (DESA)**, MSMEs can help to **promote all 17 SDGs**, in particular Goal 1, ending poverty by creating employment; Goal 5, achieving gender equality through ownership of an MSME or employment; Goal 9, through MSMEs promoting innovation; Goal 8, focused on creating jobs and economic growth (with a specific focus on the growth of MSMEs); and Goal 10, reducing inequality by promoting economic inclusion.[50]

28. **How DPIs can be used to allow the marginalised communities and MSMEs to access new technologies?**

Digital Public Infrastructures (DPIs) can play a crucial role in enabling marginalised communities and Micro, Small and Medium Enterprises (MSMEs) to access modern technologies.

a) Open Data Infrastructure — DPIs like government open data platforms, digital identity and payments architectures allow small businesses to easily plug into such frameworks to build innovative services targeted for such communities in a scalable way.

b) Enhanced participation — DPIs focused on open APIs, sandbox environments and community collaboration help developers from disadvantaged backgrounds to build relevant solutions for local problems faced by marginalised groups.

c) Partnerships with National Small Industries Corporation, a Government Enterprise, can make it easier for millions of small businesses to get access to Connectivity, Conferencing, Cloud and Security solutions.

d) Creation of infra for digital schools— This can help ensure inclusion at the preliminary level.

e) Regulations — These need to evolve with time to strengthen the norms.

To drive better technological participation, DPIs should incorporate inclusivity principles upfront — like vernacularity, affordability and accessibility, along with availability of standardised interfaces for MSMEs and community to build localised solutions.

ONDC is one such example wherein a network that connects various stakeholders in the digital commerce value chain, including manufacturers, suppliers, logistics providers and consumers, by offering features like secure payments, logistics support and customer analytics, enables businesses to deliver a seamless and personalised shopping experience.

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[49] https://www.broadbandcommission.org/wp-content/uploads/2023/09/Making-Digital-Connectivity-Work-for-MSMEs-Broadband-Commission-WG.pdf
[50] https://openknowledge.worldbank.org/entities/publication/67235b78-6436-44a6-b374-ec30f4c7ebde

By adopting these digital imperatives, MSMEs can flourish amidst the rapid evolution of the digital landscape, charting a path of sustainable growth and prosperity.

29. **What efforts can be made to increase awareness and digital literacy levels, especially in 5G, Big Data and AI/ML, to the business owners and employees of the MSMEs? What kind of framework is needed in this regard? Please provide your answers with suitable justification.**

Please refer to the response to Questions 26, 27 and 28.

This is a very fundamental question that is bound to emerge in a post AI world. While 5G is a connectivity network technology and will be leveraged though collaborative efforts as more and more use cases and applications are developed over a period of time, the access to affordable AI solutions for MSMEs —solutions that are not biased and are ethical— will be an important consideration.

The government (Ministry of Commerce, Small Scale industries, etc.) and trade bodies, associations of SMEs and MSMEs will have to work collaboratively to have affordable access to such AI/ML solutions. Organising workshops in this regards may be helpful. Additionally, entrepreneurs and start-ups will have to develop simple and effective solutions, lest it would be the preserve of a few big firms alone.

30. **Stakeholders may also suggest any other measures not covered in the consultation document to improve Digital Inclusion in the country with suitable justification.**

No Comments