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Letter No. TRAI/FY22-23/122
Dated: 03.03.2023

To,
Shri Akhilesh Kumar Trivedi,
Advisor (Network Spectrum and Licensing)
Telecom Regulatory Authority of India,
Mahanagar Door Sanchar Bhawan,
JawaharLal Nehru Marg,
New Delhi – 110 002.

Subject: Response to Consultation Paper on "Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing"

Dear Sir,

This is in reference to TRAI's Consultation Paper on "Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing" dated 13.01.2023 (CP No. 2/2023).

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

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Response to TRAI Consultation on
Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing
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Preamble:

Airtel would like to start by thanking the Authority for issuing this important consultation paper.

India has matured as a Telecom market and there are now four players with a pan-Indian footprint in the reckoning. The Indian consumer has also evolved from one that seeks only basic connectivity to one that expects cross cutting bundles, with higher data allowances, unlimited voice, and all sorts of other varied online needs including connected solutions at home. The enterprises and MSMEs meanwhile are also evolving rapidly and have adopted technological solutions to meet customer needs, e.g., Telecom Service Provider (TSP) driven captive private networks. Emergence of 5G, billions of connected devices powered with data analytics - verticals can enjoy enhanced productivities and efficiencies today. The new use cases and massive digital acceleration driven by digital public infrastructure is also happening at same time. With all these the traffic on telecom networks and infrastructure is only set to rise.

Taking into account the present state of the industry, therefore, it is important that growth in infrastructure creation speeds up. In other words, it is important that investments continue apace while opportunities that create more efficiencies for all stakeholders are deployed rapidly and variously. Infrastructure-sharing, of course, is one such important option and over the last decade and a half, starting with passive infrastructure sharing, then with the active infrastructure sharing, and extending into spectrum sharing and trading, India's secondary market has played an important role in expanding the services offered to the common customer at a rapid pace. What is more, the commercial market has functioned very well, and, in Airtel's view, not experienced any competition concerns. In parallel, the market participants have continued to invest in exclusive spectrum through auctions, rolling out more sites, bringing new technology and services and still fiercely competing.

Therefore, Airtel believes that certain aspects of infrastructure sharing and spectrum sharing must be ushered into what is now a liberal, practical and functional framework that allows markets to freely operate and compete, without constraining their competitiveness. However, it is important to recognize the importance of the security aspects of a telecom network and, in view of this, while **Airtel welcomes more infrastructure sharing on the radio access network (RAN) side – *except the core network* –** there are reasons why Airtel believes that core network sharing is not needed, even though it constitutes no more than 5%-10% of overall network investment. The principal issue is not so much investment but more importantly the very fundamental nature of this network element – that it is the brains of the entire network where all subscriber linked and related policies and all security policies are formulated and implemented, giving the necessary trust and confidence to customers of a carrier network. This is the very reason why it is named the "Core" of the network.

As regards the issues concerning **spectrum leasing and sharing (authorised sharing access or ASA) being discussed in this paper, Airtel believes that the time has come to allow more freedom and provide options for the secondary market** since there is no good reason to prevent market forces from creating more efficiency / optimization in spectrum use, and all related concerns should be limited to network rollouts.

As far as intra-circle roaming is concerned, Airtel does not see any reason to make any further interventions or facilitations since it is an option that has been available in the market for almost a decade now and that it has not been universally adopted is simply because it is a very limited utility tool when it comes to addressing coverage needs in cases of severe spectrum deficiency or coverage

challenges. With increasing exclusive spectrum (both access and backhaul) availability, it has automatically found itself out of favour in the market. Although it is still used in the odd case (e.g., in disaster situations), there is neither any market failure nor any regulatory bottleneck that it would be able to provide a solution for.

On the matter of **prescribing mandatory sharing of USO sites, Airtel finds no justification at all for doing so**. A mandate on sharing simply goes against the very core of the issue of USO supported sites and why they came into existence, i.e., the challenge of terrains, the extremely poor economics of the typically sparsely populated area and the fact that the market itself has failed to reach there on its own and has needed external funding support. **A mandatory sharing on a USO site that has been created in a very poor and limited revenue market, where costs (CAPEX and OPEX) exceed revenue potential, will depress and fragment whatever limited basic revenue opportunity there could be for any TSP investing there**.

With regard to passive infrastructure-sharing, Airtel recognises the issue highlighted by the Authority that enabling provisions for passive infrastructure-sharing are present in some specific service authorizations and not others. However, Airtel believes that the intention of the Licensor (DoT) was not to give the benefit of passive infrastructure-sharing to some licensees and not to others. It seems that it was inadvertent rather than intentional that enabling provisions were included in some authorizations and not in others.

In Airtel's understanding, the extant license conditions already permit passive infrastructure-sharing across all telecommunication service licenses/authorizations. What is needed now is to bring some much-needed clarity to the statutes under the licensing, thereby addressing this anomaly.

In summary, Airtel submits there should be the following:

- *Provide clarity regarding passive infrastructure-sharing – Passive infrastructure-sharing is already permitted across all telecom service licenses/authorizations. However, for purposes of predictability clarity about this should be brought in for all licensees under the licensing where not clearly mentioned.*

- *Continue with active infrastructure sharing – The present elements of active infrastructure that already allow for sharing should be continued with. There is no need for any further expansion beyond that.*

- *Disallow core network sharing – Core network elements **should not** be allowed to be shared due to the serious risk of harm posed to the entire network security and policies related to subscribers and network management. Sharing it could make it a single point of failure for the entire network and may cause significant services disruption & impact end user experience*

- *No mandatory sharing of USO Sites – TSPs should be under no mandatory obligation to share infrastructure funded, either partially or fully, by the Government through a USO Fund. It is already a viability gap-funded infrastructure and sharing it will further fragment the already poor revenue economics of the area and defeat the very purpose of interesting the winning party of the tender to invest. Also, capacity and infra feasibility could be a challenge for sharing USO sites with the other TSPs*

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- ▪ ***Allow pass through*** *– The infrastructure sharing charges should be allowed 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.*

- ▪ ***Intra-circle Roaming (ICR)*** *– There is no need to take additional measures to encourage roaming arrangements among TSPs in remote and far-flung areas, as the extant licensing regime already permits roaming arrangements among them, and this should continue on a mutual basis.*

- ▪ ***Encourage inter-band spectrum sharing (IBSS)*** *– IBSS should be encouraged among access service providers with the objective of enhancing spectral efficiency.*

- ▪ ***Allow spectrum leasing*** *– This should be permitted among access service providers since it would help to deploy spectrum efficiently and support use cases. The framework for leasing should not be prescriptive like intervening in the duration set (short/ long term) or putting charges on lessee & lessor.*

- ▪ ***Permit authorised shared access (ASA)*** *– ASA should be permitted between incumbent government primary agencies that hold such spectrum as a primary user and the access services providers who are secondary users. The ASA framework should be simple, practical and be decided separately in discussion with stakeholders, i.e., TSPs, government users like railways, defense, etc.*

- ▪ ***Rely on ex-post mechanism on competition concerns*** *– Airtel does not believe there will be any competition concerns in cases of IBSS or spectrum leasing or ASA, as these options only offer a temporary and incremental support to network services. The Authority can always monitor the market and intervene in an ex-post approach.*

- ▪ ***Remove the 1% transaction charge on spectrum trading*** *– In the interests of creating a robust, liquid and efficient secondary market, Airtel requests the Authority to recommend the removal of the 1% charge currently applied on spectrum trading transactions.*

Keeping these aspects in mind, Airtel provides its question wise response in the subsequent sections.

Response to TRAI Consultation on
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A. Issues relating to Infrastructure sharing

> **Q1. Should passive infrastructure sharing be permitted across all telecommunication service licenses/ authorizations? Kindly justify your response.**

Airtel Response:

It is Airtel's understanding that extant license conditions already permit passive infrastructure-sharing across all telecommunication service licenses/authorizations.

The issue therefore is not about passive infrastructure-sharing but rather about bringing some much needed clarity under the licensing.

Airtel recognises the issue highlighted by the Authority, that enabling provisions for passive infrastructure-sharing are present in some specific service authorizations and not in others. However, it is Airtel's contention that the intention of the Licensor (DoT) was not to give the benefit of passive infrastructure-sharing to some licensees while withholding it from others. It is only inadvertently that such enabling provisions were included in some authorizations and not in others.

In fact, this becomes clearer when other provisions of the licenses are studied. For instance, the generic **clause 33.2 in Part-I of UL** permits all licensees to share active infrastructure. An enabling provision for the same is also present in the specific Access Service Authorisation, but no such provision is present in the Internet Service Authorization (ISPs). It is not the intention of the Licensor to allow active infrastructure-sharing to Access Service Providers and not to ISPs. The generic clause permits all kinds of licensees to share their infrastructure, and it is just a matter of inadvertence that an enabling clause has been left out of a specific authorization. Similarly, the Internet Service Authorization under the UL-VNO permits sharing of passive infrastructure only with other VNO Licensees and not with Unified Licensees. These are not matters of policy but mere anomalies that have crept in because of the compartmentalization of different authorizations at different points in time.

However, in the interests of bringing clarity, Airtel suggests that enabling provisions for passive infrastructure-sharing may be introduced in all individual service authorizations under the UL and UL-VNO. However, at the risk of repeating what has already been said, it is Airtel's contention that this suggestion is made only to remove ambiguity, and that **passive infrastructure-sharing is already permitted across all telecommunication service licenses/authorizations**.

> **Q2. Should other active infrastructure elements deployed by service providers under various licenses/ authorizations, which are not permitted to be shared at present, be permitted to be shared among licensees of telecommunication services?**

Airtel Response:

At present, the Unified Licensees are permitted to share active infrastructure limited to antenna, feeder cable, Node B, Radio Access Network (RAN) and transmission systems only. In addition, sharing of

infrastructure related to Wi-Fi equipment such as Wi-Fi router, Access Point, etc. is also permitted to Unified Licensees. The core network elements such as Mobile Switching Centre, Home Location Register, Intelligent Network, etc., cannot be shared.

Airtel is concerned that if sharing of core network elements is also permitted across all licenses/authorizations, there is a possibility that sufficient infrastructure may not be created and there could be a high level of dependency on shared network elements only. This will potentially lead to competition concerns as well (such concerns from network sharing have been deliberated in some EU markets as well, e.g., Czechoslovakia[1]).

Moreover, sharing the core network will have a direct impact on the quality of service since most of the intelligent network elements are part of these core network elements. There are also some potential risks such as partner conflict, technical incompatibilities, etc. Further, any failure in the shared network elements, particularly the core network elements, could become a single point of failure and may affect the services of all TSPs involved in sharing. These risks far outweigh any potential cost benefits that may accrue due to the sharing of core network elements.

Therefore, Airtel does not agree with any further active infrastructure-sharing and believes that the present scope of access network is sufficient and should be continued with.

Q3. If your response to the Q2 is in the negative, which active infrastructure elements should not be permitted to be shared?

Further, which active infrastructure elements should be permitted to be shared with which licensees'/ authorization holders? kindly provide details for each authorization with detailed justification.

Airtel Response:

Please refer to Airtel's response to Q2 above.

In addition, and specifically, the core network elements should not be permitted to be shared since this will have a direct impact on QoS and network security.

Airtel further submits that the extant active infrastructure-sharing framework, which is limited to the sharing of access network elements only, should be continued with and permitted among all licensees/authorization holders, as is the practice currently.

Q4. In case it is decided to permit sharing of any additional active infrastructure elements among licensees,

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[1] Antitrust: Commission sends Statement of Objections to O2 CZ, CETIN and T-Mobile CZ for their network sharing agreement (https://ec.europa.eu/commission/presscorner/detail/en/IP_19_5110)

> **(a)** What precautionary conditions should be put in place to avoid disruption in telecommunication services due to any unforeseen situation? The response may be provided for each active infrastructure element.
>
> **(b)** Whether there is a need to have a provision for permission from/ intimation to the Licensor before commencement of such sharing? If yes, what provisions and timelines need to be prescribed for each active infrastructure element?

Airtel Response:

Please refer to Airtel's response to Q2 and Q3 previously.

Airtel believes that India already has a very liberal framework in terms of active infrastructure-sharing and hence reiterates that no additional active infrastructure elements should be permitted to be shared among licensees. In fact, in Airtel's view, any further sharing will raise concerns among the competition while also disincentivising potential investors from making new investments into such infrastructure creation.

> **Q5.** Whether any other amendment is required to be made in the telecommunication services licenses/ authorizations with respect to the provisions relating to both active and passive infrastructure sharing to bring clarity and remove anomaly? If yes, clause-wise suggestions in the telecommunication services licenses/ authorizations may kindly be made with detailed justification.

Airtel Response:

Please refer to Airtel's responses to Q1, Q2 & Q3.

In the case of passive infrastructure-sharing, Airtel firmly believes that the extant license conditions already permit passive infrastructure-sharing across all telecommunication service licenses/authorizations. However, by way of abundant caution, just to lay to rest the ambiguity highlighted by the Authority, enabling provisions for both passive and active infrastructure sharing could be introduced in all individual service authorizations under the UL and UL-VNO. To maintain uniformity, such enabling provisions may be in line with clause 4.2(i) of Chapter-VIII of the UL.

Further, in case of active infrastructure-sharing, Airtel submits that the extant framework should be continued with and that there is no need to expand the present scope any further.

> **Q6.** Should there be any obligation on telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers? Kindly justify your response.

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Airtel Response:

No.

There should not be any obligation on or mandate for telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through a Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers.

Airtel also does not agree with the contention that USO-funded infrastructure, with no mandatory sharing, would create connectivity islands only meant for subscribers of the respective TSPs.

First, the areas identified for the USOF projects are sparsely populated and located mostly in uneconomic and rural/remote areas. As a result, they have barely any business potential. There are also structural issues like unavailability of roads and power, adverse weather conditions, etc., which make the execution of these projects extremely difficult as well as costly. It would therefore be unviable for TSPs to execute these projects on their own.

Since the USOF subsidy is granted to merely bridge the viability gap, and not to fund the entire capex and opex of the projects, the amount of the subsidy offsets only a small part of the infrastructure development costs in USOF projects. The portion of costs that the TSPs bear themselves is several times the amount of the subsidy. **For instance, Airtel is laying more than 6500 km of Optical Fibre network and installing as many as 350 additional towers as Microwave repeaters, at its own cost, in order to commission USOF sites**.

Furthermore, USO-funded projects are generally awarded to TSPs on a tender basis, i.e., through an open competitive bidding process. The process is completely transparent and fair and all the TSPs have an equal opportunity to participate in it. Any TSP wishing to provide mobile services in the identified areas may submit its bid. On being successful, the TSP is required to enter into an agreement with USOF, and then set up, operate, maintain and manage the respective infrastructure as per the terms and conditions laid down in the agreement. **It is pertinent to mention here that these USOF agreements already contain provisions for mutual sharing of infrastructure among TSPs on a voluntary basis**.

The bidding strategy adopted by a TSP is prepared after considering a variety of factors, including but not limited to the overall costs of the projects, the limited amounts of subsidy, the potential revenue, etc. **Any retrospective application of any mandatory infrastructure guidelines to existing USOF agreements would be highly unfair to the successful bidders**, as it would disturb the whole cost-and-revenue model on which they would have based their bids.

The purpose of the USO fund is to create very basic infrastructure where none exists and do so in a shared manner – hence the viability gap support. **The intent of the USO subsidy is not to bring retail competition into a market where the economics of the subscriber itself are too poor to afford the service, making cost recovery for TSPs challenging**. In any case, in addition to the mutual infrastructure sharing clauses under the tender, the Authority has already mandated that all TSPs provide MNP facilities to all their subscribers.

Any mandatory sharing of USO sites will dis-incentivize the TSPs from actively investing for infrastructure development as the bare minimum revenue available will get fragmented. This will deter TSPs from making ambitious competitive strategies, hurting the very purpose of expanding coverage in such areas

and the interests of consumers, the TSPs, as well as the overall objective of universal connectivity at national level. Thus, Airtel submits that any sharing of infrastructure should continue only on a voluntary basis.

> **Q7. In case it is decided to impose some obligations on telecom service providers to share the infrastructure funded by Government with other telecom service providers, is there a need to provide a broad framework for sharing of such infrastructure? If yes, kindly suggest the key aspects of such framework with detailed justification.**

Airtel Response:

Please refer to the response to Q6 above. Airtel submits that no obligations should be imposed on telecom service providers to share the infrastructure funded by Government with other telecom service providers. USOF agreements already contain provisions for mutual sharing of infrastructure among TSPs on a voluntary basis.

Having said that, Airtel believes that the Authority should let the TSPs know what the assessment of the market and failure of competition was due to, that it resulted in the need to impose a 'mandatory' obligation. Airtel believes that a rigorous regulatory and cost-benefit analysis must be carried out and presented before such a mandate is prescribed.

> **Q8. Any other suggestion to facilitate infrastructure sharing may kindly be made with proper explanation and justification.**

Airtel Response:

To facilitate infrastructure sharing, Airtel suggests that the charges paid by a TSP towards infrastructure sharing should be allowed as a deduction from its Gross Revenue (GR). Further, this should not be limited to USOF projects only, but should be extended to infrastructure sharing in all scenarios.

Under the current regime, infrastructure sharing among various licensees has been permitted. Further, the UL-VNO permits the infrastructure-sharing charges paid by a VNO to a Network Service Operators (NSO) -TSP to be deducted as pass-through for determining the Adjusted Gross Revenue (AGR) for the purpose of payment of LF and SUC. However, no similar provision exists in the UL for permitting the deduction of the infrastructure-sharing charges paid by one TSP to another TSP. This results in the incidence of double levy in cases of unified licensees – the charges for infrastructure sharing are subjected to LF/SUC not only in the hands of the owner TSP (as part of its revenue), but also in the hands of the other TSP paying these charges (since no deduction is allowed). Hence, the extant regime actually has the effect of discouraging infrastructure sharing.

Thus, **Airtel strongly recommends that infrastructure-sharing charges should be allowed as pass-through while determining the AGR for the purposes of payment of LF and SUC in case of UL, just like UL-VNO**.

B. Connectivity Issues Faced by the Subscribers in Remote and Far-flung Areas of the Country

> **Q9. What measures could be taken to encourage roaming arrangements among telecom service providers in remote and far-flung areas? What could be the associated regulatory concerns and what steps could be taken to address such concerns? Kindly provide details on each of the suggested measures with justification.**

Airtel Response:

Airtel submits that there is no need to take additional measures to encourage roaming arrangements among telecom service providers in remote and far-flung areas.

As noted by the Authority itself, the extant licensing regime already permits roaming arrangements among TSPs and Airtel believes that this should continue on a mutual basis.

It is also pertinent to mention here that Intra-circle roaming (ICR) arrangements are critical for ensuring access to all in case of emergencies. DoT has already made it mandatory for TSPs to enter into ICR arrangements in case of disaster situations. This is being scrupulously adhered to by all TSPs.

To reiterate, Airtel believes that there is no need to take additional measures to encourage roaming arrangements.

> **Q10. What could be the other ways to ease out the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider? Kindly provide detailed response with justification**

Airtel Response:

Please refer to the response to Q6 above.

At the outset, it may be appreciated that there are several factors contributing to the fact that there is no telecom network in remote and far-flung areas even after 25 years of privatization due to high operating costs and low revenue opportunities. These factors include structural issues like difficulty in getting Local/State Govt. approvals, limited availability of electricity, difficult terrains, weather issues, natural calamities, security issues, media unavailability, etc.

In order to ease the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider, Airtel suggests that these structural issues be addressed immediately and effectively. This is a pre-requisite for seamless coverage in such areas.

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C. Issues relating to inter-band spectrum sharing among access service providers

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Q11. Whether inter-band access spectrum sharing among the access service providers should be permitted in the country?

Airtel Response:

Yes.

Inter-band access spectrum-sharing among access service providers should be permitted particularly because, since 2015, spectrum sharing in India is in existence with the sole objective of enhancing spectral efficiency by combining/pooling the spectrum holding.

However, till now, spectrum sharing has only been permitted intra-band. Before this, prior to the deployment of 4G, specific spectrum bands were used for providing 2G and 3G technologies. For example, for GSM (2G) Technology, only 900, 1800 MHz were used, while for CDMA technology, only the 800 MHz band was used. With the maturing of 4G services, and technological innovation and spectrum becoming liberalized, TSPs have started offering the same technology across spectrum bands. For example, 4G can be deployed in multiple bands like 800, 900, 1800, 2100, 2300, etc.. Similar case is with 5G. Since the practice of linking a particular technology with only a specific spectrum band(s) has been discontinued, the time has come to extend spectrum sharing to 'inter-band' as well, not just limiting it to 'intra-band'.

This will be consistent with the objective of further efficient utilisation of spectrum and will lead to better QoS and wider coverage. In fact, with traffic increasing significantly, this is now even more relevant. To cite an **example, over the last 3 years, data traffic has increased by 4X, i.e., 4.5 exabytes in 2018 to 14.4 exabytes in 2022. It is expected that traffic will triple to 21 exabytes by 2025 in future**.

Q12. In case it is decided to permit inter-band access spectrum sharing among access service providers, please provide detailed inputs to the following questions:

(a) What measures should be put in place to avoid any potential adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

Airtel Response:

It is important that first and foremost the driving need for spectrum (sharing) is recognised and acknowledged by all those involved. Spectrum is a finite resource. In this age of digitalisation and the era of industry 4.0, machine-to-machine communications, the Internet of Things, with billions of connected devices including in personal communications, **any exclusively assigned spectrum will end up playing catch-up with the ever-surging traffic and the need for better service quality on the networks. Sharing arrangement opportunities will be what is needed at a very localised level to support the various and ever-increasing present and new use cases (e.g., smart cities, connected mobility).**

Hence, an arrangement that facilitates the pooling of spectrum and brings efficiency in overall customer service, should be encouraged. In this regard, inter-band spectrum sharing would be a welcome step and should be facilitated.

Accordingly, Airtel does not believe that there would be any adverse impact on competition and the dynamics of spectrum auctions if inter-band access spectrum sharing were to be permitted. Therefore, no ex-ante measures are required.

Further, there is no evidence that even similar previous frameworks like intra-band spectrum sharing, spectrum trading, intra and inter-circle roaming, have negatively impacted the competition, consumer or outcome of spectrum auctions.

In fact, the Authority always has the option to assess market developments and intervene with specific measures, should the need arise. This ex-post approach in the matter of spectrum sharing will present far better outcomes for all stakeholders.

Permitting inter-band access spectrum sharing is just a minor extension of an existing wider (spectrum) sharing framework and it will further improve the customer experience, provide wider coverage and ensure better utilisation of access spectrum. It is, in fact, an asset that a TSP has already paid for in the auction and should be allowed to use more efficiently. Further, such an arrangement will offer incremental benefits that will be particularly useful in areas where TSPs could be facing capacity or coverage constraints.

It should be noted that inter-band spectrum sharing cannot supplement the need for exclusive spectrum for any TSP. Rather, it is a temporary arrangement for focused / limited areas to improve service for the good of the public.

The global success of mobile services has been built on a strong foundation of exclusively licensed spectrum acquired over a period of time, for longer durations as it supports widespread services and the business certainty which is needed for long-term heavy network deployment and investment that results in high-quality of service for customers. Therefore, Airtel believes that TSPs will always prefer exclusive rights of spectrum especially for those bands which are intended for providing deep indoor, rural coverage and those that are being used for enhancing coverage/capacity. Moreover, TSPs will continue to prefer the buying of additional spectrum through the auction route only for the longer term.

Thus, Airtel believes that inter-band access spectrum sharing will play a limited complementary role and operators will continue to invest in acquiring more spectrum as has been witnessed in the country over the last few years.

Since the defined spectrum cap as prescribed in NIA-2022 would also be required to be met by respective TSP's, there will be no impact on competition as well.

The Authority should take in to account the underlying principle that technology life cycles are shortening and this is putting extreme pressure on investments and utilisation opportunities in shortening periods, hence inter-band sharing will only offer temporary and incremental support to mitigate such stresses on the network services.

In any case, the Authority can always have market monitoring and intervene through an ex-post approach. Airtel does not believe any ex-ante regulation is needed at this stage.

> **(b) Considering that surrender of spectrum has been permitted in the country, what provisions need to be included in the guidelines for inter-band access spectrum sharing so that any possible misuse by the licensees could be avoided? Kindly justify your response.**

Airtel Response:

As per extant guidelines, the surrender of spectrum is permitted only after 10 years from the date of acquisition for spectrum acquired through auctions held in 2022. Further, TSPs surrendering partial or complete spectrum are also barred from taking part in the auctions for that LSA-band combination for a period of 2 years from the date of surrender of spectrum. This means operators can only surrender spectrum after year 2032. This leads Airtel to believe that inter band access spectrum sharing has no relation with the surrendering of spectrum.

Inter-band spectrum-sharing will only have incremental benefits for sharers, facilitating as it will the enhancement of bandwidth, improvement of spectral efficiency and quality of service on their existing deployed network and the telecom operator will always rely on its own spectrum for serving its customers. Therefore, Airtel does not foresee any misuse in surrender guidelines by the licensee if inter-band access spectrum sharing is permitted in the country.

> **(c) What should be the broad framework for inter-band access spectrum sharing? Whether the procedure prescribed for intra-band access spectrum sharing could be made applicable to inter-band access spectrum sharing as well, or certain changes are required to be made?**

Airtel Response:

Airtel believes that the broad framework that is being applied for intra-band spectrum sharing should be the one followed for inter-band spectrum sharing as well.

> **(d) What should be the associated charges, and terms & conditions for inter-band access spectrum sharing?**

Airtel Response:

As answered in the response to Q12 (c).

> **Q13. Any other issues/ suggestions relevant to the spectrum sharing between access service providers, may be submitted with proper explanation and justification.**

Airtel Response:

No Response

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D. Issues relating to Authorised Shared Access (ASA) of Spectrum

> **Q14. Whether there is a need to explore putting in place a regime to implement Authorized Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis? Kindly justify your response.**

Airtel Response:

Yes, there is a need to put in place a regime to implement Authorized Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (mainly government agencies and other such user entities) on a dynamic sharing basis.

As rightly indicated in TRAI's consultation paper, in India, a certain quantum of the globally harmonised spectrum bands for IMT services has been assigned/ earmarked for Government use and/ or other services.

Such a critical amount of spectrum so assigned/ earmarked may not be utilised efficiently as the entire amount may not be in use at all places and at all times. Considering the increasing data usage owing to increasing digitalisation, uptake of data hungry applications, proliferation of IoT based solutions, there is certainly a need to explore putting in place a regime for authorised shared access of spectrum, wherein the spectrum assigned/ earmarked for Government/ other users on a primary basis could be used by the access service providers on a secondary basis.

The National Digital Communications Policy (NDCP) 2018 under its 'Connect India' mission recognises 'promoting the co-use/ secondary use of spectrum' as one of the action points in terms of making adequate spectrum available so as to be equipped for the new broadband era. With the advent of 5G and the utilisation of data hungry applications, it is of the utmost importance that operators increase the spectrum footprint via ASA.

Radio spectrum is an extremely valuable natural finite resource that increasingly requires an efficient management to respond to the exponential increase in demand for wireless services. As data traffic is continuously growing, additional frequencies in low, mid and high bands are required for wireless communications. Therefore, alternative solutions like ASA, to access additional spectrum should be considered to optimise the use of underutilised bands.

The main benefit for ASA is that incumbent (Govt. users/other agencies) can continue operations and do not need to vacate the bands. This enables TSPs quicker access to the band which otherwise is either not available to them or is being monopolised by the Government who is taking a long time to vacate. While the Government can continue to work to vacate the spectrum wherever applicable however since the same takes many years, ASA can enable the government to meet the rising demand of broadband more efficiently and effectively.

Also, coexistence of different services is possible in a given band with proper interference management. Exclusion, protection and restriction zones with respect to geographical areas could also be established and the secondary users should not be allowed to have active radio transmitters within these so that incumbent receivers will not be subjected to harmful interference from secondary users.

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> **Q15. In case it is decided to implement ASA technique for secondary use of frequency spectrum assigned to non-TSP primary users, please provide your response to the following questions with detailed justification:**
>
> **(a) What are the potential spectrum bands in which ASA implementation can be considered?**

Airtel Response:

We believe that all potential spectrum bands should be considered for ASA implementation. For example:

   i.   700 MHz band (Uplink: 703 – 723 / Downlink: 758 – 778 MHz)
   ii. 800 MHz band (Govt. holding in Assam, J&K, North-East Uplink: 838.5-843.5 / Downlink: 883.5 – 888.5 MHz)
   iii. 900 MHz band (Railways holdings in 15 circles)
   iv. 1800 MHz band (Uplink: 1765 – 1785 MHz / Downlink: 1860-1880 MHz)
   v.   2100 MHz band (Uplink: 1920 – 1939 MHz / Downlink: 2110 – 2129 MHz)
   vi. 2300 MHz band (2380 – 2400 MHz)
   vii. 2500 MHz band (Full 190 MHz band excluding IMT holding)

Airtel also believes that TRAI should broaden the scope of ASA and include spectrum for non-IMT bands as well for further consultation and deliberations wherein both Incumbents / secondary users can co-exist easily. A few possible examples of non-IMT bands are:

   i.   Ku Band
   ii. Ka Band
   iii. Spectrum bands from 27.5 to 29.5 MHz
   iv. 4800 – 5000 MHz
   v.   5975 – 7125 MHz (near future)

Many of these bands can co-exist under the ASA technique with the primary incumbent's users along with Fixed Satellite services.

> **(b) What measures should be taken to encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique?**

Airtel Response:

The ASA technique could be used in the context of those sharing arrangements where the primary user refers to the different sections of the government (e.g., Defence, Railway). In the past, the government has provided financial incentives to these incumbent operators to vacate the spectrum which was subsequently auctioned. Airtel recognises that these incumbent operators may have to invest in their network (say spectrum interference techniques, dynamic spectrum allocation) and accordingly the Government should consider providing financial incentive / support to these incumbent operators to invest in the required infrastructure essential for spectrum sharing through the ASA technique.

(c) What should be the broad framework for implementation of ASA technique?

Airtel Response:

Since this is a new concept to be discussed in India, and even globally, it understandably has not been mass deployed / used. Given that context, Airtel believes that the framework for ASA should broadly be principle-driven, making the access to unutilised spectrum from government users easier for TSPs to deploy, and without too many prescriptive aspects to negotiate through.

As spectrum management and interference management would be key in ASA and a transparent display of deployed locations/frequencies (being) used would be crucial and critical for secondary users so as to ensure coexistence between both sets of users, **there will have to be a discussion on what the definition of acceptable levels of interference and appropriate broad mitigation strategies would imply. For a dynamic spectrum sharing model (ASA) to be adopted, it would have to be deployed such that the rights of the secondary users would continue to be protected while at the same time ensuring that the legacy incumbent primary systems were also not impacted. It would also need to create a reasonably straightforward opportunity for an entity that wishes to access a shared spectrum to do so in a manner that is neither overly complex nor costly to implement.**

Therefore, since these are early days, Airtel recommends that the TRAI facilitate individual industry discussions with such stakeholder which may include TSPs / licensees, the government stakeholders like railways and defense, and other such parties, to formulate an India relevant framework.

(d) Is there a need for putting in place a mechanism for dispute handling including interference issues in case of ASA? If yes, what should be the framework?

Airtel Response:

Yes. As stated in answer to the previous question, interference management being a critical aspect, it will have to be deliberated upon and inserted in the ASA framework in discussion with related stakeholders.

In-fact, here, the role of Wireless Monitoring Office (WMO) can be very useful for quicker resolution of interference (e.g., in a critical situation the WMO could ask TSPs to down-tilt Antennas for locations near the incumbent's areas of interference. It is important to highlight that the transmitter and receiver characteristics of incumbents Antenna/systems would be required with details of the spectrum mask. Joint testing with the WMO, incumbents and secondary users within 72 hours of reporting for interference will be required to be carried out for swifter resolution).

Hence, Airtel not only agrees but actually recommends that a focused industry discussion be initiated to prepare an ASA framework.

(e) What methodology should be adopted for spectrum assignment to secondary users? What could be the spectrum charging mechanism for such assignment?

Airtel Response:

The secondary assignment to secondary users should be done on an administrative basis. This spectrum cannot be equated with spectrum acquired in auctions since this is not acquired on an exclusive basis and in this instance the rights of the primary holder will always override the rights of secondary users. The secondary users will have to vacate the spectrum in a particular area if the primary user is expanding its network.

(f) Who should be entrusted the work of managing shared access of spectrum?

Airtel Response:

While a separate discussion should be held with relevant stakeholders to prepare an ASA framework in India involving the relevant parties / departments of government and industry, in Airtel's view, this managing and monitoring task should be entrusted with the WPC wing of DoT since there may be various practical technical aspects related to frequency management that would have to be dealt with.

To illustrate, support from incumbent primary users would be desired to identify the exclusion/polygon areas in a .kml format with proper coordinates, elevation and the sq. km. of deployed areas to be excluded for assignment to secondary users. All this should be displayed clearly on a map – with restricted access to WPC and TSPs.

Q16. Whether there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers? If yes,

Airtel Response:

Yes. For the efficient utilisation of spectrum, the ASA technique-based dynamic spectrum sharing among access service providers should be permitted. Dynamic spectrum sharing here would mean sharing with secondary users with their own technology and services rather than providing any sort of sharing/service to primary Incumbent users.

(a) What are the possible regulatory issues involved and what could be the possible solutions?

Airtel Response:

At this stage, there don't seem to be any concerning regulatory issues. ASA is one of the various options available for the efficient utilisation and improvement of spectral efficiency for the public good. And since spectrum is a key natural resource under the control and powers of the Government, it will always be monitored regularly.

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Airtel believes that a TSP will always have primary reliance on its own exclusive spectrum access, and arrangements like ASA would only act as a much needed, limited benefit for incremental coverage/ capacity to serve the public / use cases closer to such areas.

(b) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

Airtel Response:

Airtel does not believe there will be any adverse impact on competition and the dynamics of spectrum auctions for any allocation of spectrum under Authorized Shared Access (ASA) since the operator would like to invest in the exclusive spectrum.

Further, since such sharing will work under a mutual discussion and framework (and not be mandatory) between two parties (i.e., primary user and secondary user) on a need basis, any regulatory concerns will also be mitigated to that extent.

Q17. In case it is decided to permit ASA technique-based dynamic spectrum sharing among access service providers in the country, please provide your response to the following questions with justification:

(a) Whether there is a need for prescribing any framework for such shared use? If yes, what should be the framework?

Airtel Response:

As indicated previously, Airtel strongly urges the TRAI to hold individual discussions with relevant stakeholders including the TSPs and primary user agencies like the railways and defense ministries to deliberate upon and come up with an appropriate framework for ASA in India. Having said that, broadly the framework should accommodate the following in it:

1. Authorised Shared Access (ASA) should be allowed only between UASL / UL holders with access service authorizations between TSPs (private and public both) and government users.
2. If additional bands are added for government users in future or spectrum auctions, the same should automatically be allowed to be shared among TSPs under ASA.
3. Both the entities (primary and secondary users) should be collectively responsible for complying with any interference resolution mechanism.

(b) Whether access service providers should be required to obtain approval or intimate to DoT before entering into such arrangement?

Airtel Response:

Yes, the ASA arrangement should be completed with the prior approval of the DoT since it requires a lot of coordination between primary and second users with the support of WPC.

> **(c) Whether any fee (one time, or recurring), should be prescribed on the spectrum sharing party(ies)? If yes, what should be the fee and who should be liable to pay such fee?**

Airtel Response:

There can be a one-time, non-refundable administrative processing fee for the ASA. The same can be paid either by primary or secondary user. The fee should be reasonable and no more than the recovery cost of application processing.

> **(d) What should be the treatment of spectrum shared through ASA technique for the purpose of computation of spectrum cap?**

Airtel Response:

As described above in the Response to Q17 (a), a spectrum cap should be applied as per extant guidelines and NIA-2022.

However, for the ease of justifying and correct approach, Airtel believe for any ASA spectrum cap, the calculation should have 4 slabs, i.e., 25%, 50%, 75%, 100%.

This means that if areas >= 25% are to be excluded for secondary users, then the spectrum cap will be calculated w.r.t. spectrum held divided 3 i.e., 75% of the area wherein secondary users shall be using spectrum.

Similarly, for <25% and >=50%, it shall be divided by 2, i.e., 50% of the area wherein secondary users shall be using spectrum and so on.

> **(e) Whether there is a need for an independent entity for managing spectrum access? If yes, who should be entrusted this work? If not, how should the spectrum access be managed?**

Airtel Response:

Pl. refer to the response to Q15 (f), Airtel suggests that the WPC wing of DoT should be entrusted this work.

> **(f) Is there a need for putting in place a mechanism for dispute handling including interference issues or should it be left to the access service providers? If yes, what should be the framework?**

Airtel Response:

Please refer to the response to Q15 (d).

(g) What other terms and conditions should be applicable for the sharing parties?

Airtel Response:

No additional comments.

Q18. Suggestions on any other spectrum sharing technique(s), which needs to be explored to be implemented in India, may kindly be made along with the relevant details and international practice. Details of likely regulatory issues with possible solutions, interference management, dispute handling etc. may also be provided.

Airtel Response:

No comments

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E. Issues relating to Leasing of Spectrum

> **Q19. Where there is a need to permit spectrum leasing among access service providers? Kindly justify your response.**

Airtel Response:

Having an effective and robust secondary market for spectrum is important for a vibrant spectrum management framework. Any opportunity in the market that brings buyers and sellers of services, whether on an exclusive basis (e.g., trading), a partial basis or a limited basis as lessee and lessor, i.e., through leasing or through sharing, should be permitted to enhance effective market outcomes.

Apropos, Airtel recommends that spectrum leasing among access service providers should be permitted.

Today, operators are investing significantly in acquiring access spectrum and building networks. Based on business, market and technological developments and needs, a licensed TSP should have the flexibility to better utilize the scarce resource to the best available opportunity rather than keeping it idle or underutilised.

Leasing can provide a flexible opportunity to meet the specific spectrum demands of industrial or enterprise customers, rural telecoms providers or other mobile operators to catalyze the Industry 4.0. In fact, since DoT has already permitted spectrum leasing from TSP to CNPN Licensees, this should be extended to TSP-TSP leasing as well.

The guidelines should also address the possibility of intermittent or temporary requirements of a much larger bandwidth by one licensee to meet some special event like sports, etc. Thus, it is Airtel's request that spectrum leasing policy be overarching and holistic.

With 5G's progress, this will likely accelerate many such use cases and needs and create opportunities to offer services in new geographies or at places with high data consumptions.

Therefore, the Authority and the Government should maintain their unwavering focus on ushering in further liberalizing and ease of doing business measures to enhance the sustainability of the sector via spectrum leasing.

> **Q20. In case it is decided to permit spectrum leasing among access service providers, please provide detailed response to the following questions:**
>
> **(a) Whether spectrum leasing should be permitted for short term period only, or for both short-term as well as long term?**

Airtel Response:

The duration of leasing the spectrum should be left to market forces as there is no one-size-fit-all solution and TSPs would need this discretion to support varied use cases / market needs depending upon requirements, which may be served under different durations.

Additionally, it will be a complex exercise to determine what would be a short duration and what would be a longer one. Certain use cases may require long-term leasing and some may just need short-term leasing (e.g., sports events, disaster recovery or specific strategic missions). Hence, any ex-ante restriction on the duration will unnecessarily constrain the development of the leasing market.

In view of the above, the TRAI should let the flexibility with TSPs determine spectrum leasing durations, more so since the operators have paid the auction-determined price of spectrum to be leased.

(b) In case only short-term leasing is to be permitted, what should be the maximum duration for such spectrum leasing? Should there be any restrictions on renewal of such short-term lease?

Airtel Response:

As stated above, the duration / period of spectrum leasing should be left to TSPs based on their business requirements.

(c) In case it is decided to permit long term leasing, please provide your response to the following questions with justification:

(i) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?

(ii) Whether there should be a maximum duration for which spectrum leasing may be permitted?

Airtel Response:

As stated earlier, the duration whether long term or short term should be left to TSPs. Spectrum leasing amongst TSPs would allow them to enhance their data connectivity, capacity and coverage requirements thus improving the overall efficiency of the telco ecosystem.

As regards the adverse impact on competition or the dynamics of spectrum auctions, there should not be any cause for regulatory concern. The government and the regulator always have mechanisms to monitor and review market dynamics and they can intervene and remedy matters should the evidence-based assessments suggest any competitive distortion.

In fact, India already has a spectrum trading and sharing regime and, even including the ICR arrangement, there have been no known instances of competition or auction dynamics concerns.

Hence, Airtel does not believe there is any immediate need to define prescriptive rules relating to leasing.

(d) What should be the applicable roll-out obligations for the Lessee (the access service provider which takes spectrum through leasing arrangement from the Lessor)? Whether the spectrum leasing should have any effect on the rollout obligations applicable for the Lessor (the access service provider which

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has leased out the spectrum)? Whether the provisions for roll-out obligation require to be different for short-term and long-term spectrum leasing?

Airtel Response:

In spectrum leasing there is no transfer of legal rights between the two licensees. Further, the leased spectrum can only be for a limited period and specific geography rather than the entire circle. Hence, Airtel believes there should be no additional requirement of rollout obligations for the Lessee, and only the Lessor should be required to conduct rollout obligations for the spectrum it has acquired through respective auctions and should be governed w.r.t the respective auctions NIA.

However, in the event that the Lessor is leasing the entire spectrum to the Lessee for the entire service area, the applicable rollout obligations should be transferred to the Lessee in line with the practice being followed in spectrum trading.

(e) Should the spectrum leasing charges be levied on similar lines as applicable for spectrum trading? If no, what charges should be made applicable in case of spectrum leasing?

Airtel Response:

No. Airtel recommends that no charges should be applied on spectrum leasing. Spectrum leasing is just another offshoot of a welcome and robust secondary market created to drive efficient utilisation of spectrum and deploy it for the public good and/or innovative productive use cases.

Since the TSPs willing to lease spectrum have already paid the market determined price via auctions, and any revenue accretion would give incremental AGR share to the exchequer, there is no need to add any further additional charge/fee.

Additionally, only the administrative charges for processing leasing applications on an actual basis or a maximum of INR 50,000/- should be applicable for every spectrum leasing.

In fact, Airtel further recommends that even the 1% charge on the trading value should be removed, and the secondary market should be left entirely for the market to deal with subject to spectrum caps alone.

(f) Should there be a lock-in period, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading? If yes, what should be the lock-in period post which, spectrum holder would become eligible to lease it to another access service provider?

Airtel Response:

Yes, Airtel believes that there should be a lock-in period after acquisition of spectrum to become eligible for spectrum leasing.

Accordingly, Airtel proposes that spectrum leasing should be permitted after 2 years from the date of acquisition of spectrum by the spectrum holder. This is also consistent with trading guidelines.

> **(g) Whether there is a need for an approval from, or intimation to DoT before the proposed leasing of spectrum? If yes, whether prior approval/ prior intimation requirement be different for long-term and short-term spectrum leasing? What should be the timelines for approval from, or intimation to DoT in each case?**

Airtel Response:

For faster processing and ease of doing business, an advance joint intimation form should be submitted by the lessee and lessor TSPs. DoT should provide its consent to TSPs leasing spectrum with any observation/objections/obligations within 45 days of this intimation. This timeline should be followed irrespective of whether it is short-term or long-term leasing.

> **(h) Whether the spectrum held by an access service provider on short-term, or long-term lease be included to calculate compliance to spectrum caps?**

Airtel Response:

The spectrum cap guidelines should remain in force throughout the currency of the leasing period. However, there is no need to impose a spectrum cap in instances of small duration (say a few days or weeks), where arrangements need to be made for event specific requirements (e.g., sports).

> **(i) Considering that surrender of spectrum has been permitted in the country, what provisions need to be created in the guidelines for leasing of spectrum between access service providers so that any possible misuse by the licensees could be avoided?**

Airtel Response:

Since the surrender of spectrum is permitted only after 10 years of the spectrum acquired through the 2022 auction, Airtel does not foresee any linkage between spectrum surrender and leasing and therefore contends that there is no need to prescribe any ex-ante restrictions/provisions on this count.

> **(j) What other terms and conditions need to be prescribed in respect of spectrum leasing between access service providers?**

Airtel Response:

In the spirit of the ease of doing business, facilitating the secondary market for spectrum and its efficient utilisation, the spectrum leasing regime should not be prescriptive or overregulated, e.g., in terms of duration and charges. These finer business details should be left to mutually agreed commercial terms between both parties.

Further, since both parties will be UASL/UL holders, there is no need to prescribe any separate compliance requirements as both will be required to comply with their own license requirements.

Similarly, the roll out obligations should always reside with the primary TSP, i.e., the lessor.

Q21. Any other issues/ suggestions relevant to the spectrum leasing, may be submitted with proper explanation and justification.

Airtel Response:

In the interests of a robust, liquid and efficient secondary market, Airtel requests the Authority to remove the 1% charge currently applied on spectrum trading transactions.