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Subject: ISPAI response to TRAI's Consultation Paper on "Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services"

Dear Sir,

We congratulate the Authority to have come out with this Consultation paper on the matter captioned above and sincere thanks for providing us the opportunity to submit our response on this important issue.

We have enclosed our comprehensive response for your consideration.

We believe that the Authority would consider our submissions positively on the subject matter.

Thanking you,

With Best Regards,
For Internet Service Providers Association of India

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Encl: As above

ISPAI response to TRAI's Consultation Paper on "Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services"

We sincerely thank TRAI for the opportunity to provide comments on this consultation paper addressing the spectrum assignment for satellite services which is essential for the proliferation of satellite services in Indian Telecommunication Sector. The satellite services have undergone major technological upgradations with launch of high capacity and low latency NGSO satellites constellations which is of strategic importance and play an important role in enhancing connectivity and reduce digital divide in Indian Telecommunication sector.

While the DoT's reference to TRAI sought recommendations on spectrum assignment and pricing with competition in mind, the current consultation paper lacks focus on ensuring a level playing field between satellite and terrestrial spectrum, especially where satellite services compete directly with terrestrial operators.

It is duly acknowledged that satellite services play a key role in areas where terrestrial networks face challenges, such as remote, rural, or disaster-prone regions. Satellite services complementing terrestrial networks in bridging the digital divide in underserved regions and play a vital role in disaster recovery, defence, maritime, aviation, and government operations.

However, with the rise of NGSO constellations offering broadband, internet, and voice services in urban and remote markets, equitable spectrum pricing is critical to reflect this competition. As satellite technologies, like NGSO constellations providing services and connectivity, increasingly overlap with terrestrial services, spectrum policies must be adaptable to foster competition and innovation. The NGSO constellations with planned deployment of thousands of satellites has significantly expanded satellite services scope, resulting in certain services that directly compete with terrestrial services. This indicates that SatCom is no longer confined to its traditional role of serving rural and remote areas. Instead, it is now competing with services provided by terrestrial networks for retail and enterprises users across India.

Such transformation of satellite services to have the capabilities to compete with terrestrial services underscores the need for spectrum assignment policies that ensure fairness and transparency, recognizing the substantial investments made in spectrum amounting to multiple lakh crores by terrestrial operators. The new services like Direct-to-Device (D2D) connectivity and integration with 5G are accelerating this convergence. These changes underscore the need for adaptable and forward-looking spectrum policies that promote competition and innovation in both sectors.

In our view, while framing the spectrum pricing policy for SatCom, the government must consider satellite services both in their complementary role to terrestrial networks and where they directly compete with existing terrestrial operators.

Satellite communication services (from GSO/NGSO) that do not directly compete with terrestrial networks are intended for specific use cases, including government agencies such as defence and disaster recovery, as well as VPN/CUG-based communication services through GSO satellites, cellular backhaul, long-distance point-to-point links, and non-retail services in rural and remote areas, should be assigned spectrum on administrative pricing. Except the above use cases, for any other use case viz. direct retail customers etc., the VSAT licensee shall not be allowed to provide any service to consumers, directly or indirectly by obtaining any other license such as ISP. The point-to-point links can be provided by having NLD/ILD licenses.

On the other hand, services that directly compete with terrestrial networks, such as (i) satellite-based mobile services (MSS or 3GPP-based), (ii) satellite-based Fixed Wireless Services (FSS or 3GPP-based), and (iii) Enterprise Services through NGSO constellations and any other retail services directly to customers in urban areas, will operate under a GMPCS license, which may be renamed as Satellite-based Access Authorization (SAA). This authorization would cover a broad scope, including Voice, Data, Messaging, Internet Access, IPTV, Internet Telephony through Mobile device or Fixed Wireless Access to Consumers including the Enterprise customers in line with terrestrial Access Authorization. To ensure a level playing field, the Spectrum pricing for these competing services should be aligned and benchmarked with market discovered price of the spectrum for terrestrial networks. Since, MSS band spectrum should be assigned on exclusive basis, possibility of auction to determine the market price can be explored. In case of FSS bands, the spectrum can be assigned on non-exclusive basis, subject to technical feasibility. In case Government decides to assign this spectrum on exclusive basis, the possibility of auction may be explored.

With satellite services increasingly competing with terrestrial offerings and more players entering the market, maintaining a level playing field in spectrum pricing is essential for healthy competition. A "Same Service, Same Rules" approach to spectrum assignment is vital to prevent market distortions among competing services.

Allowing satellite operators to acquire spectrum at lower costs for offering FSS or MSS services, which compete with terrestrial operators' FWA and mobile services, would undermine substantial investments made by Indian TSPs in terrestrial networks. Therefore, it is crucial to adopt similar spectrum policies for competing satellite and terrestrial services to ensure fair competition. This approach will protect terrestrial operators' investments while promoting satellite service growth where most needed, supporting the success of both sectors in driving India's digital future.

Q.1. Which frequency band(s)/ range(s) should be considered for the assignment to NGSO based Fixed Satellite Services for providing data communication and Internet service? Please provide a detailed response separately for the user link and feeder link.

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Q.2. Which frequency band(s)/ range(s) should be considered for the assignment to GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet service. Please provide a detailed response separately for the user link and feeder link.

Response:

Technological advancements are blurring traditional distinctions between satellite services, such as Fixed Satellite Services (FSS) and Mobile Satellite Services (MSS), as communication networks shift towards technology-agnostic operations. Therefore, frequency bands (L, S, C, Ku, Ka, etc.) should be assigned flexibly to satellite services, in line with ITU Radio Regulations and India's NFAP-2022. This approach encourages optimal spectrum use, allowing satellite operators to innovate and efficiently meet demand.

Q.3. What should be the maximum period of assignment of spectrum for –

a. NGSO based Fixed Satellite Services for providing data communication and Internet services, and

b. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

Response:

Given the rapid evolution of satellite technology, we recommend that spectrum assignments for NGSO-based FSS and GSO/NGSO-based MSS initially be limited to 3–5 years. This shorter term is suitable for satellite communication services (from GSO/NGSO) that do not directly compete with terrestrial networks such as government agencies incl. defence and disaster recovery, as well as VPN/CUG-based communication services through GSO satellites, cellular backhaul, long-distance point-to-point links, and non-retail services in rural and remote areas. This timeframe aligns with international standards, allowing for periodic review to support industry growth and policy effectiveness.

Q.4. For assigning spectrum for NGSO-based communication services, whether every ITU filing should be treated as a separate satellite system? Please provide a detailed response alongwith international practice in this regard.

Response:

For assigning spectrum or NGSO-based communication services, every ITU filing should not necessarily be treated as a separate satellite system. It should depend on the requirements of the respective operators. Accordingly, the operators should only be required to file a written declaration as to which ITU filings will be used by them – thus providing the requisite flexibility for different types of business cases and technologies.

Q.5. Whether the provisions of ITU-RR are sufficient to resolve interference related challenges and coordination issues? If not, what additional conditions should be prescribed while assigning frequency spectrum for –

a. NGSO based Fixed Satellite Services for providing data communication and Internet services; and

b. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

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Q.6. For satellite earth station gateways of different satellite systems operating in the same frequency range, whether there is a need to prescribe a protection distance or any other measures to avoid interference from each other–

a. Between the gateways of GSO and NGSO systems; and

b. Between the gateways of NGSO systems?

If yes, please provide a detailed response alongwith international practice in this regard.

Response:

Although ITU Radio Regulations offer a framework for interference management, they are inadequate for addressing the complexities of the increasing number of NGSO satellites. To reduce interference among frequency-sharing systems, exclusion zones and sufficient separation distances are essential.

This approach ensures optimal coexistence of GSO, NGSO, and terrestrial networks. Strategically placed Gateway Exclusion Zones (GEZs), determined through frequency usage analysis, would enable efficient spectrum use while minimizing system interference.

Q.7. In case the spectrum assigned for satellite gateway links is also assigned to terrestrial networks such as Fixed Service, IMT etc., what protection distance or criterion should be included in the terms and conditions of the assignment of spectrum for satellite gateway links to avoid any interference to/ from terrestrial networks? Please provide a detailed response alongwith international practice in this regard.

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Q.8. In case the spectrum assigned to the satellite user link is also assigned to terrestrial networks such as Fixed Service, what criterion should be included in the terms and conditions of the assignment of spectrum for satellite user links to avoid any interference to/ from terrestrial networks? Please provide a detailed response alongwith international practice in this regard.

Response:

Current terrestrial networks, such as MWA and MWB, can operate interference-free under WPC guidelines, in accordance with NFAP-2022 and ITU regulations. A flexible approach to spectrum assignment is crucial as satellite constellations now support both backhaul and direct-to-device services. With satellite and terrestrial networks increasingly using similar bands, this strategy allows operators to reduce interference and maximize spectrum efficiency, keeping pace with advancing technologies.

Q.9. Whether there is a need to prescribe any conditions to mitigate the risk of scarcity of satellite gateway sites? If yes, please provide a detailed response alongwith international practice in this regard.

Response:

An optimal size for Gateway Exclusion Zones (GEZs) is needed to limit terrestrial transmissions within a specified radius around satellite gateways, reducing interference while maintaining terrestrial coverage. This exclusion radius should be defined based on coexistence analysis to optimize feeder link spectrum use. Strategically positioned GEZs will support growing satellite demand for gateway sites, minimize interference, and protect terrestrial network coverage. Coordination between the operator and DoT's WPC wing can further refine GEZ locations to achieve minimal interference.

Q.10. In addition to the roll-out conditions recommended by TRAI for satellite-based Telecommunication Service Authorisation through its recommendations on the Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023 dated 18.09.2024, whether there is a need to impose certain additional roll-out obligations for the assignment of frequency spectrum for –

c. NGSO based Fixed Satellite Services for providing data communication and Internet services;

d. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response alongwith international practice in this regard.

Response:

Roll-out obligations should be established to ensure satellite service providers deploy their networks promptly and effectively. Gateways must be operational within one year of spectrum assignment, followed by set timelines for achieving nationwide coverage. Extensions may be granted for delays due to regulatory or environmental challenges. These requirements will secure operator commitment and broaden access to satellite services across the country.

Q.11. Whether there is a need to introduce a provision for surrender of frequency spectrum prior to the expiry of the period of validity of spectrum assigned for –

c. NGSO based Fixed Satellite Services for providing data communication and Internet services;

d. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

If yes, what should be the process, and associated terms and conditions such as minimum period of spectrum holding, notice period, surrender fee, etc.? Please provide a detailed response with justifications.

Response:

Satellite service providers should have the option to surrender spectrum before expiration with sufficient notice, without incurring additional fees.

Q.12. Whether there is a need to prescribe timelines for processing the applications for the assignment of frequency spectrum for-

c. NGSO based Fixed Satellite Services for providing data communication and Internet services;

d. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response with justifications.

Response:

A stringent two-month timeline for processing applications related to spectrum assignment, network licenses, and uplink permissions should be enforced. This measure would ensure the timely deployment of satellite-based services and foster sector growth.

Q.13. Whether there are any other suggestions related to assignment of spectrum for-

a. NGSO based Fixed Satellite Services for providing data communication and Internet services;

b. GSO/ NGSO based Mobile Satellite Services for providing voice, text, data, and Internet services?

Please provide a detailed response with justifications.

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Q.14. Should spectrum charges for NGSO-based FSS providing data communication and Internet services, be levied:

i. On a per MHz basis,

ii. On a percentage of Adjusted Gross Revenue (AGR) basis, or

iii. Through some other methodology?

Please provide a detailed justification for your answer.

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Q.15. In case it is decided that spectrum charges for NGSO-based FSS providing data communication and Internet services should be levied on a per MHz basis, should these charges be calculated based on:

i. The Department of Telecommunications (DoT) order dated December 11, 2023, or

ii. An alternative approach (please specify)?

Please provide a detailed justification to support your answer.

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Q.16. If it is decided that spectrum charges for NGSO-based FSS providing data communication and Internet services should be levied on a percentage of AGR basis:

i. What should be the appropriate percentage of AGR?

ii. Should a minimum spectrum charge be specified to address the issue of inefficient utilization of spectrum? If yes, what methodology may be used to determine the amount of the minimum spectrum charge?

iii. Is there an alternative approach that could be followed to address the issue of inefficient spectrum utilization?

Please provide a detailed justification for your answers.

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Q.17. Considering the Adjusted Gross Revenue (AGR) based charging methodology currently followed for Commercial VSAT and in view of the enhanced scope of the Satellite service authorisation, what should be the spectrum charge, as a percentage of AGR, that should be levied on GSO-based FSS? Or,

Should some alternative spectrum charging methodology be used for determining spectrum charges for GSO-based FSS?

Please provide a detailed justification for your answer.

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Q.18. Should spectrum charges for GSO and NGSO-based MSS that provide voice, text, data, and Internet services be levied:

i. On a per MHz basis,

ii. On a percentage of AGR basis, or

iii. Through some other methodology?

Please provide a detailed justification for your answer.

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Q.19. If it is determined that spectrum charges for GSO/NGSO-based MSS providing voice, text, data, and Internet services should be levied on a per MHz basis, should these charges be calculated based on:

i. The Department of Telecommunications (DoT) order dated December 11, 2023, or

ii. An alternative approach (please specify)?

Please provide a detailed justification to support your answer.

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Q.20. If it is decided that spectrum charges for GSO/NGSO-based MSS providing voice, text, data, and Internet services should be levied on a percentage of AGR basis:

i. What should be the appropriate percentage?

ii. Should a minimum spectrum charge be specified to address the issue of inefficient utilization of spectrum? If yes, what methodology may be used to determine the amount of the minimum spectrum charge?

iii. Is there an alternative approach that could be followed to address the issue of inefficient spectrum utilization?

Please provide a detailed justification for your answers.

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Q.21. Whether there are any other issues/suggestions relevant to the spectrum charging for:

i. NGSO/GSO based FSS providing data communication and Internet services.

ii. NGSO/GSO based MSS providing voice, text, data, and Internet services.

The response may be submitted with proper explanation and justification.

Response:

The consultation paper should address the crucial need to establish a level playing field between satellite and terrestrial access services, especially in urban areas. With the convergence of these networks, particularly through advancements like NGSO systems, a fair and consistent regulatory approach is essential.

The SUC/revenue share regime can be applied for satellite communication services (from GSO/NGSO) that do not directly compete with terrestrial networks which are intended for specific use cases, including government agencies such as defence and disaster recovery, as well as VPN/CUG-based communication services through GSO satellites, cellular backhaul, long-distance point-to-point links, and non-retail services in rural and remote areas.

On the other hand, services that directly compete with terrestrial networks, such as (i) satellite-based mobile services (MSS or 3GPP-based), (ii) satellite-based Fixed Wireless Services (FSS or 3GPP-based), and (iii) Enterprise Services through NGSO constellations and any other retail services directly to customers in urban areas, will operate under a GMPCS license, which may be renamed as Satellite-based Access Authorization (SAA). This authorization would cover a broad scope, including Voice, Data, Messaging, Internet Access, IPTV, Internet Telephony through Mobile device or Fixed Wireless Access to Consumers including the Enterprise customers in line with terrestrial Access Authorization. To ensure a level playing field, the Spectrum pricing for these competing services should be aligned and benchmarked with market discovered price of the spectrum for terrestrial networks. Since, MSS band spectrum should be assigned on exclusive basis, possibility of auction to determine the market price can be explored. In case of FSS bands, the spectrum can be assigned on non-exclusive basis, subject to technical feasibility. In case Government decides to assign this spectrum on exclusive basis, the possibility of auction may be explored.

A comparable spectrum pricing policy for competing satellite services protects terrestrial operators' investments while fostering fair competition between satellite and terrestrial services. This approach ensures a level playing field, promoting innovation and equity. Consistent pricing prevents any service from gaining an unfair advantage, allowing both sectors to succeed in shared markets.