BROADBAND INDIA FORUM
"Think Tank for Digital Transformation"

Suites- 401 & 410, Avanta Business Centre,
4th Floor, Statesman House, Barakhamba Road,
Connaught place, New Delhi-110001

13 May 2026
Ref. No.TVR/BIF/122/2026

Shri Akhilesh Kumar Trivedi,
Advisor (Networks, Spectrum and Licensing),
Telecom Regulatory Authority of India,
4th, 5th, 6th & 7th Floor, Tower-F,
World Trade Centre, Nauroji Nagar,
New Delhi – 110 029.

Subject: BIF Response to TRAI Consultation Paper on the "Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers"

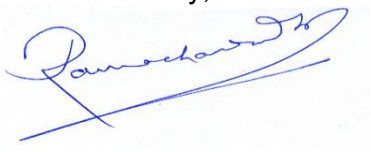
Dear Sir,

Please find attached herewith a copy of BIF's Response to the TRAI Consultation Paper on the "Framework for Satellite Communication Network Authorisation, and Assignment of Spectrum to Satellite Communication Network Providers" for your kind perusal and consideration.

We shall be pleased to provide any further information or clarification that may be required in this regard.

Thanking you,

Yours sincerely,



T V Ramachandran,
President,
Broadband India Forum

BIF RESPONSE TO TRAI CP ON THE FRAMEWORK FOR SATELLITE COMMUNICATION NETWORK AUTHORISATION AND ASSIGNMENT OF SPECTRUM TO SATELLITE COMMUNICATION NETWORK PROVIDERS

Introduction

We wish to thank the Authority for giving us an opportunity to respond to the TRAI Consultation Paper on Satellite Communication Network (SCN) Authorisation and assignment of spectrum to SCN providers.

At the outset, we respectfully submit that this SCN Construct (as proposed in this CP) has some structural flaws and shortcomings, as given below:

i. **Shift to an intermediary-led model:** The proposed SCN framework may push satellite services into a dependent structure requiring business/commercial arrangements with service licensees, potentially raising entry barriers for specialised satellite players and affecting competitive neutrality vis-à-vis terrestrial operators.

ii. **Spectrum assignment at the network layer:** The proposal to allow spectrum to SCN entities departs from the established principle of vesting spectrum with service providers. The new SCN proposal, derived from the Telecommunications Act 2023, aims to "delink the service and network layers," permitting infrastructure providers to hold spectrum without being the service provider themselves. This breaks the established practice where the Access Service Provider/TSP who provides telecom services to the end consumer, holds the spectrum and is responsible for its usage. This proposed SCN framework will create ambiguity in ownership, control and accountability, especially since service rollout obligations are typically linked to spectrum usage. The proposed framework suggests SCN entities could hold spectrum directly or through partner providers, which could blur lines as regards who shall control the usage of spectrum and who shall be responsible for regulatory compliance (roll out obligations) particularly in the situation where spectrum is directly assigned to the SCN provider.

iii. **Practical and structural complexities:** The framework relies heavily on commercial agreements between SCN provider and the service licensees which, based on past

experience (e.g., VNO models), may be ineffective as a business model without strong alignment of incentives and without regulatory oversight and enforcement. Additionally, in case of spectrum sharing between the SCN Provider and the Service Licensees (particularly in case of spectrum in IMT bands for provision of D2D services),issues such as **service-area-based IMT spectrum versus pan-India SCN authorisation** could create operational and regulatory complications.

The question-wise responses below have been given bearing in mind the above mentioned reasons and broader regulatory position that satellite based communication services are more appropriately addressed through a dedicated satellite based Authorisation. That TRAI's recommendations on the Satellite-based Telecommunication Service Authorisation under Section 3(1)(a) were correct and should be accepted by DoT, and that the SCN Authorisation now being designed is a regulatory workaround necessitated by the Government's non-acceptance of that recommendation. Each answer therefore embeds, where appropriate, a reminder of the foundational position while constructively engaging with the SCN design questions as a forced sub-optimal option.

1. What should be the eligibility conditions, area of operation, validity period of authorisation and the scope of the proposed Satellite Communication Network (SCN) authorisation under Section 3(1)(b) of the Telecommunications Act, 2023? Kindly provide a detailed response with justification.

BIF RESPONSE

1.1 As per this paper, Satcom service providers shall obtain permission/authorisation as **Satcom Network (SCN) Providers and tie up with Entities authorised u/S 3(1)(a) of the Telecom Act 2023 viz. Service Licensees to provide Satellite based Services** including to the users in areas with limited or no terrestrial coverage. To enable this, they would be entitled to have ownership of spectrum and purchase spectrum either directly or have spectrum sharing agreement with such entities who are having Service Authorisation u/S 3 (1) (a).

1.2 We wish to respectfully seek consideration for a distinct and standalone Satellite-based Telecommunication Service Authorisation under Section 3(1)(a) of the

Telecommunications Act, 2023, in order to support the balanced and long-term development of India's satellite communications ecosystem in alignment with national connectivity, and space-sector objectives.

1.3 In its Recommendations dated 18.09.2024 on the "Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023", TRAI had recommended a standalone "Satellite-based Telecommunication Service Authorisation" under Section 3(1)(a) of the Act. The recommendation envisaged bringing existing satellite-based services such as GMPCS, VSAT-based Fixed Satellite Services (FSS), Satellite IoT and similar services within a unified and specialised satellite service authorisation framework.

1.4 Subsequently, while examining the different authorisation architecture, DoT explored a different approach whereby satellite systems could be permitted under broader Main Service Authorisation categories. In its back-reference dated 14.01.2025, DoT observed that other niche authorisations under the Main Service Authorisations category are generally based on distinct telecommunication services, whereas satellite-based authorisation may also be viewed from the perspective of a technology or transmission medium.

1.5 TRAI, in its response dated 28.02.2025, reiterated its earlier recommendation for a distinct Satellite-based Telecommunication Service Authorisation, while emphasising the specialised characteristics of satellite communications services. Similarly, in its Recommendations dated 17.02.2025 on the "Terms and Conditions of Network Authorisations to be Granted Under the Telecommunications Act, 2023", TRAI proposed a Satellite Earth Station Gateway (SESG) Provider Authorisation under Section 3(1)(b). While doing so, TRAI indicated that a separate Satellite Communication Network (SCN) Authorisation may not be necessary. They also mentioned that since spectrum assignment has historically been linked to service-authorised entities, the authorised network entities may be unable to get their rightful spectrum assignment.

1.6 Thereafter, DoT wrote to TRAI to initiate a Consultation process on Satellite Communication Network (SCN) Authorisation under Section 3(1)(b), enabling provision of SCN-as-a-Service to entities holding authorisations under Section 3(1)(a).

1.7 Accordingly, the Draft Rules presently provide for services using satellite systems under Universal, Access and Internet Service Authorisations, As per DoT's request, TRAI has come out with a Consultation Paper on the terms and conditions for Satellite Communication Network (SCN) Authorisation under Section 3(1)(b), including provisions relating to spectrum assignment for both feeder and user links.

1.8 The proposed framework, therefore, departs from the long-standing regulatory treatment of satellite-based services in India and the rest of the world and also risks constraining the independent development of the satcom sector. In our view, the framework may unintentionally dilute the specialised nature of satellite-based services and create structural dependencies for satcom players that are inconsistent with both the legislative framework and India's broader policy and strategic objectives for the space and communications sector.

Alignment with India's Policy Vision for Satcom and Space Economy

1.9 Satellite communications have consistently been recognised as an important and distinct pillar of national communications infrastructure, particularly for serving rural, remote, border, maritime, aviation, disaster-prone and otherwise underserved geographies.

1.10 The Indian Space Policy, 2023 expressly recognises space-based communication services and envisages participation of both public and private entities in the provision of communication and data services. The policy reflects a broader national vision of enabling space-based services as an integral and independent component of India's digital communications ecosystem.

1.11 Even under the earlier licensing framework under the Indian Telegraph Act, services such as GMPCS, VSAT and satellite-based IoT have operated under specialised licensing structures tailored to the unique characteristics of satellite systems. It is important to note here that there has been no identifiable market failure under the existing regime to warrant a departure from the established position of treating satcom as an independent service category.

1.12 Importantly, satellite communications today serves objectives extending well beyond supplemental connectivity. They increasingly support disaster resilience, continuity of communications, strategic and emergency preparedness, maritime and aviation connectivity, and meaningful digital inclusion in commercially challenging geographies where terrestrial deployment remains difficult or economically unviable. Satellite communications should therefore be viewed not as a substitute for terrestrial networks, but as a complementary and strategic layer within India's broader communications architecture.

Consistency with the Telecommunications Act, 2023

1.13 The Telecommunications Act, 2023 itself recognises the distinct nature of satellite-based services in the First Schedule to the Act, which provides for administrative spectrum assignment for various satellite-based services including Teleports, DTH, HITS, DSNG, VSAT, GMPCS, NLD, ILD and Mobile Satellite Services in L and S bands.

1.14 This reflects legislative recognition that satellite communications operate under a distinct technical and operational framework compared to terrestrial mobile networks. Satellite systems differ fundamentally in:

I. spectrum assignment methodology,
Ii. international coordination requirements,
Iii. network architecture,
Iv. deployment economics,
V. service delivery models,
Vi. operational scale,
Vii. and the public-interest objectives they support.

1.15 In this context, a distinct Satellite-based Telecommunication Service Authorisation may more appropriately reflect the specialised nature of satellite communications as recognised under the parent statute itself.

1.16 TRAI had also observed that such a framework could:

I. encourage specialised investment,

Ii. support focused market development,

Iii. provide regulatory clarity,

Iv. and enable more appropriately calibrated regulatory and financial obligations for a still-nascent sector.

Risks Loss of Critical Operational Independence for Satcom

1.17 The DoT-proposed framework may, in practice, result in satellite service deployment becoming a subsidiary service closely linked to the commercial priorities and rollout strategies of terrestrial access providers instead of having the envisaged status of a Complementary Service. Thus, satellite operators would effectively be relegated to the status of entities providing SCN-as-a-Service to entities holding service authorisations under Section 3(1)(a).

1.18 While partnership models between satellite and terrestrial operators are both valuable and desirable in many scenarios, it may also be important to preserve the flexibility for satellite operators to independently offer services wherever it is operationally, commercially or socially appropriate.

1.19 This proposed SCN framework requires **Satellite Operators to get into commercial arrangements with authorized entities u/S 3 (1)(a) viz. Access Service Providers/TSPs, thereby making Satcom Operators dependent on Access Service providers/TSPs to provide the Satellite based Services to the end user**. This potentially raises entry barriers for specialised satellite operators. Based on past experience as in the case between TSPs and VNOs, such kind of market dependent commercial agreements may turn out to be ineffective due to lack of strong alignment of business incentives and common goals between both the partners.

1.20 This assumes particular significance in rural, remote and difficult geographies where terrestrial rollout economics may remain challenging despite continuing connectivity gaps. Satellite systems are uniquely positioned to address such gaps directly and efficiently.

1.21 **Given that Satellite Communications is the last link to bridge the Digital Divide, the absence of standalone and dedicated satellite service providers as was envisaged earlier and the dependence on partnership with Service Licensees to provide Satellite based services (who have little or no motivation to serve the difficult-to-reach areas) will lead to reduced competition, inferior quality of service and higher consumer prices, besides perpetuating the connectivity gap that Government aims to close.**

1.22 Also as mentioned in the TRAI CP and in the DoT reference to TRAI dated 3rd July, 2025, spectrum could be given to the SCN provider as one of the options. This raises the potential risk of questioning the method of assignment of satellite spectrum besides lack of control and accountability and of service roll out obligations which usually rests with the service provider.

1.23 In India satcom is a relatively nascent sector, with a size and scale of operations only around Rs. 500-600 crores per annum as compared to the terrestrial mobile Services market of around Rs. 370000 crores per annum i.e. satcom is only 0.16% or less than 1/600 of terrestrial mobile. Hence, a well-differentiated and proportionate regulatory approach may better support sectoral growth and investment.

1.24 In particular, requiring satellite operators serving niche or remote geographies to comply with the full set of obligations designed primarily for large terrestrial access networks, would not be proportionate to the scale and nature of satellite operations.

1.25 It may be noted that the sharp difference from terrestrial systems applies to both to main satcom as well as to satellite-based IoT systems. The satellite IoT market is in fact even smaller than satcom and therefore both satellite IoT and satcom warrant a suitably appropriate and distinctive regulatory treatment.

1.26 Further, in satellite communications, the operator of the satellite system is often best positioned to ensure:

- continuity of service,
- capacity planning,

- interference management,
- spectrum utilisation efficiency,
- and service quality management.

1.27 Accordingly, preserving closer alignment between the service layer and operational layer may support both efficiency and accountability. At the same time, satellite operators should continue to retain the flexibility to partner with terrestrial service providers and network operators wherever commercially and technologically beneficial.

1.28 The proposed SCN authorisation appears relatively complex and is fraught with many dependencies between the SCN provider and the service licensees (which are in the domain of uncertainty and may risk delays or sub-optimal rollout of satellite communication services, Mechanisms such as RIOs could become necessary to ensure guaranteed access for standalone dedicated SCN providers.

1.29 **Shift to an intermediary-led model:** The proposed SCN framework may push satellite services into a dependent structure requiring business/commercial arrangements with service licensees, potentially raising entry barriers for specialised satellite players and affecting competitive neutrality vis-à-vis terrestrial operators.

1.30 **Spectrum assignment at the network layer:** The proposal to allow spectrum to SCN entities departs from the established principle of vesting spectrum with service providers. The new SCN proposal, derived from the Telecommunications Act 2023, aims to "delink the service and network layers," permitting infrastructure providers to hold spectrum without being the service provider themselves. This breaks the established practice where the Access Service Provider/TSP who provides telecom services to the end consumer, holds the spectrum and is responsible for its usage.

1.31 This proposed SCN framework will create ambiguity in ownership, control and accountability, especially since service rollout obligations are typically linked to spectrum usage. The proposed framework suggests SCN entities could hold spectrum directly or through partner providers, which could blur lines as regards who shall control the usage of spectrum and who shall be responsible for regulatory compliance

(roll out obligations) particularly in the situation where spectrum is directly assigned to the SCN provider.

1.32 **Practical and structural complexities:** The framework relies heavily on commercial agreements between SCN provider and the service licensees which, based on past experience (e.g., VNO models), may be ineffective as a business model without strong alignment of incentives and without regulatory oversight and enforcement.

1.33 Additionally, in case of spectrum sharing between the SCN Provider and the Service Licensees (particularly in case of spectrum in IMT bands for provision of D2D services), issues such as **service-area-based IMT spectrum versus pan-India SCN authorisation** could create operational and regulatory complications.

1.34 **Accordingly,** a standalone Satellite-based Telecommunication Service Authorisation under Section 3(1)(a), as originally recommended by TRAI, may offer a balanced and future-ready framework that is more closely aligned with:

i. India's policy vision under the Indian Space Policy, 2023,
ii. the legislative framework and recognition reflected in the Telecommunications Act, 2023,
iii. the specialised operational characteristics of satellite communications,
iv. the need for regulatory clarity, investment certainty and proportionate compliance obligations, and
v. the broader national objective of accelerating universal and meaningful connectivity.

1.35 **In view of the above reasons, we recommend that satellite-based communication services — including satellite broadband/internet access, GMPCS, VSAT and satellite-based IoT services— be allowed as a distinct standalone Satellite-based Telecommunication Service Authorisation, rather than being subsumed entirely within terrestrial-focused Access or Internet Service Authorisations.** Such an approach would support the orderly growth of India's satcom ecosystem while preserving operational flexibility, encouraging investment and innovation, and complementing

terrestrial networks in advancing the shared national objectives of Digital Bharat, universal connectivity, resilience and the growth of India's space economy.

1.36 **Without prejudice to what has been stated above, in case SCN as an authorisation is considered under Section 3(1)(b), then our response to the question is as follows:**

a. The proposed SCN provider may be termed as 'Netcos' in the unbundled model of separating service cos from Infrastructure Providers . They may be permitted under a light license regime with zero entry barrier and minimum security compliance obligations. The reason we mention this is because under Section 3(1)(b) of the Telecom Act as the CP envisages, these Satellite Communication Networks shall not directly provide services to the end consumers. They are built to provide networks which could be optimally utilised by Telecom Service Providers/smaller or local Internet Service Providers/VNOs/PM-WANI Service Providers(PDO/PDOAs) to provide multi-play services to the end consumers in places/locations where terrestrial networks are either not available nor are techno-economically feasible viz. rural and remote areas, dense forest areas, islands, hilly terrains and areas which are difficult to reach.

b. **Area of Operation for the proposed SCN should be :** Pan-India

c. **Validity Period of Authorisation**: Should be at par with the period for which spectrum is being recommended for satellite based services i.e. 5 years with scope to extend it by a further two years on mutual terms and conditions between the licensor and the licensee or between the sharer and the share in case of spectrum sharing for IMT between the SCN provider and the Access Service Provider (who holds the IMT Spectrum).

d. **Justification of Validity Period of Authorisation for 5 years (extendable further by another 2 years)**

e. The **validity of the network authorization** should be co-terminus with the **period of validity of the satellite frequency assignment** [As per latest TRAI Recommendations of May 2025, the period is 5 years extendable by a further 2 years].

f. Accordingly, the period of validity of spectrum assignment for NGSO based FSS and GSO/ NGSO based MSS should be 5 years, extendable by a further 2 years on mutually agreeable terms and conditions.

g. **Scope: The SCN authorised entity should be permitted to: (a) lease satellite transponder capacity or space segment from authorised satellite operators; (b) establish, operate, maintain and expand gateway earth stations in India; (c) establish feeder links and user links; (d) provide SCNaaS on a wholesale basis to service authorised entities (Section 3(1)(a)) on fair, reasonable and non-discriminatory (FRAND) terms.**

1.37 It is submitted that no matter how the eligibility conditions, scope or validity period of the SCN authorisation are calibrated, the SCN entity cannot provide services directly to end-users. This means dedicated satellite operators, whose entire business proposition is serving end-users in geographies without terrestrial coverage, are permanently relegated to a wholesale-only role. They cannot build direct subscriber relationships, cannot provide billing services and cannot be held accountable under QoS regulations to consumers. The service-layer gap created by DoT's non-acceptance is not remedied by any combination of eligibility conditions or scope of the SCN. A global NGSO operator seeking to enter India as a direct connectivity provider has no pathway under the SCN architecture, it must either partner with or acquire an Indian service authorised entity, introducing structural dependency that does not exist in any other comparable jurisdiction.

Q2. What should be the terms and conditions (general, technical, operating, security related etc.) that should be made applicable for the proposed Satellite Communication Network authorisation? Kindly provide a detailed response with justification.

BIF RESPONSE

2.1 We request that the submissions made in response to Q1 be considered part of the answer of this question.

2.2 Without prejudice to the key concerns that have been flagged therein, our response to the question is as below:

a. **General Conditions**

- **Validity & Scope:** Authorization should be typically for 5 years and be co-terminus with validity of satellite spectrum/landing rights.
- **Applicable Law:** The entity must operate in strict compliance with the Telecommunications Act, 2023, Space Policy, and international agreements (ITU).
- **Entry Requirements:** Reduced financial barriers, including minimum net worth criteria, should be encouraged for better ease of doing business. **Technical Conditions**
- **Spectrum Management:** Efficient, non-exclusive, and shared spectrum usage for user/feeder links.
- **Interference Mitigation:** Strict compliance with technical standards to prevent interference with terrestrial networks.
- **Technical Standards:** Compliance with mandated safety and service quality standards.

b. **Operating Conditions**

- Satellite operators must be permitted to connect Satellite Earth Station Gateways (SESG) to Point-of-Presence (PoP) of service authorised entities via leased lines.
- **Infrastructure Sharing:** Exploration of sharing auctioned spectrum between multiple service authorised entities and between satellite/terrestrial networks.

c. **Security Conditions**

- **Data Sovereignty & Security:** Requirement for security clearances and adherence to, Satellite Communications Norms, Guidelines and Procedures.
- **Contractual Disclosure:** Operators must disclose all details of contracts with parent or foreign space-segment providers.
- **Cyber Security:** Adherence to robust cyber threat mitigation and disaster management protocols.

d. **Other Conditions**

a. **Timeframe:** A defined timeline of no more than 15 days is recommended for spectrum assignment after in-principle approval.

b. Security conditions, like lawful intercept, Equipment Identity Register compliance and traffic discontinuation in restricted areas, vest under the Telecommunications Act with service authorised entities that have direct subscriber relationships. An SCN entity has no subscribers and no direct relationship with the devices on the user link. There should be no security related conditions on the SCN entity, other than conditions of routing of traffic (these are laid down in Chap. 7) Only network-layer specific security conditions, like bar on routing of Indian traffic through foreign locations, should be applicable on the SCN entity.

2.3 If a security direction requires immediate disconnection of a user terminal, the SCN entity can only act through the partnering service entity. If the partnering entity is slow or non-compliant, the security obligation cannot be fulfilled at source. This compliance chain gap is irremediable regardless of how the security terms are worded, It is a consequence of the policy split that has been created due to DoT's reference to TRAI between the network operator (SCN) and the entity that controls the user relationship (service provider), as mentioned explicitly in the Background/Preamble

Q3. Which type of authorised entities should be permitted to seek Satellite Communication Network as a Service (SCNaaS) from the entities holding the proposed Satellite Communication Network authorisation? Whether virtual network operators (VNOs) should also be permitted to seek SCNaaS? Kindly provide a detailed response with justification.

BIF RESPONSE

3.1 We request that the response made in Q1 may be considered part of the answer of this question. Without prejudice to our submission that Satellite Service should be a separate service authorisation under Section 3(1)(a), we submit that the entities holding the new Satellite Communication Network (SCN) authorisation should be permitted to provide wholesale network capacity to other authorized service providers particularly enabling virtual network operators (VNOs) or smaller ISPs or PDOs/PDOAs to operate at the service layer without needing them to build their own infrastructure.

3.2 However, the challenge with the above would be as follows. Even if VNOs and all service-authorised entities are permitted to access SCNaaS, the SCN framework creates a market structure in which every satellite connectivity transaction requires a two entity chain: (1) SCN entity providing the network and (2) a service entity providing the service. This doubles the number of regulatory relationships, commercial agreements and compliance obligations that must align before a single user in a remote village receives satellite broadband. In the existing GMPCS/VSAT framework, a single licensee does both. The SCN framework introduces a permanent structural latency in all aspects of regulatory, commercial and operational matters that no choice of eligible entity categories can remove. Smaller ISPs and VNOs with limited commercial leverage will negotiate weaker SLA terms with SCN entities than large access providers, leading to fragmentation of service quality across the market.

Q4. Whether the SCN authorised entity establishing, operating, maintaining, or expanding the baseband system alongwith SCN should be mandated to extend control, visibility, resource allocation and management of the telecommunication services, being provisioned using SCN to users, to the partnering entity on mutually agreed terms and conditions? Please provide a detailed response with justification.

BIF RESPONSE

4.1 This question itself is symptomatic of the structural problem as mentioned in the Preamble to this response. In a properly structured satellite service authorisation [Section 3(1)(a)[, the service provider owns the baseband or has unambiguous contractual control over it because it is directly accountable to the regulator and to end-users. Under the SCN model, control of the baseband must be mandated by regulation because the natural incentives of the SCN entity (a wholesale provider maximising revenue from multiple service entities) conflict with the service entity's need for unfettered, real-time control over subscriber traffic. No matter how the mandate is worded i.e. by way of 'mutually agreed terms', 'standardised interfaces' or 'non-discriminatory access', it cannot substitute for the structural alignment of incentives that would exist if a single entity was both the network operator and the

service provider. In practice, disputes over the scope of 'control and visibility' will be a permanent feature of SCN-service partner entity relationships, requiring continuous regulatory intervention.

4.2 Satellite Communication Network is being primarily enabled as a complementary service to terrestrial networks, so as to connect the unconnected and under -connected regions of the country. While the authorised service providers who may enter into provision of satellite services , may not be so focussed to connect the rural and remote regions of the country, to meet the national targets of broadband for all and achieve inclusivity and reach underserved areas and to bridge the digital divide, the SCN providers should, therefore, be permitted to directly provide Satellite Communication Services to the end consumers (B2C) by being allowed to take Service Authorisation u/s 3 (1) (a) besides Network Authorisation u/s 3 (1) (b) .

4.3 Subject to the above, to answer the specific question, we submit that access to the SCN network should be made available to other partners (like VNOs/small/local ISPs, PDO/PDOAs, M2MSPs) on a non-discriminatory, mutually agreed commercial terms and conditions. In order to ensure participation by all for providing service to end users at remote places, there must be a reference RIO that must be mandated with the condition that the same will be applicable, in case there is no mutual agreement within a certain time frame. Mandating control of a satellite network be extended to the partnering entity is not possible. Control of the satellite network may lie outside of India and the satellite operator is under an obligation to its filing administration to retain control of its network.

Q5. What provisions should be included in the terms and conditions of Satellite Communication Network (SCN) authorisation considering the policy/ Act in the Space sector? Kindly provide a detailed response with justification.

BIF RESPONSE

5.1 We request that the response to Q1 be considered part of the answer of this question.

5.2 The Indian Space Policy 2023 paves the way for India becoming a leader in the SATCOM industry in the South Asian region by laying out a roadmap to encourage Indian entities to provide their services outside of India.

5.3 Specifically, the following clauses of the Space Policy mentioned under the head 'Non-Governmental Entities' need to be highlighted:

"NGEs would be encouraged to:

1. *offer national and international space-based communication services, through self-owned or procured or leased GSO/NGSO communication satellites.*
2. *…*
3. *use Indian Orbital Resources and/or Non-Indian Orbital Resources to establish space objects for communication services over India and outside India.*
4. *…"*

5.4 The Indian Space Policy gives adequate recognition to the fact that satellite networks are inherently international. The same transponders are used to provide services in multiple countries. Further, just one SESG/SNP is capable of serving huge areas. It is, therefore, neither technically nor legally required that a satellite operator establish an SESG/SNP in every country it wishes to serve.

5.5 In this regard, the SESGs/SNPs established in India, too, could be capable of providing feeder-link connectivity to satellites as far as 2500 km from their locations, including satellites overseas. This means that an operator may be able to provide connectivity to all its customers – not just within the territorial boundaries of India but potentially the majority of the South Asian region.

5.6 In fact, even the Authority, in its Recommendations dated 18th September 2024 on the 'Framework for Service Authorisations to be Granted Under the Telecommunications Act, 2023', has recommended that operators should be permitted to use the SESGs/SNPs established in India for providing service in foreign countries after obtaining the Central Government's permission. Subsequently, DoT also published draft guidelines on the issue, for stakeholder comments. However, the final guidelines are still awaited.

5.7 **In line with the vision of the Government of India encapsulated under the Space Policy as well as the Authority's Recommendations, the SESGs/SNPs established in India should be permitted to be used for providing feeder-link connectivity to satellites that provide connectivity to customers outside of India – under an enabling framework with no unnecessarily onerous requirements. Needless to say, the connectivity services in these other countries would be provided subject to their respective and applicable licensing/regulatory frameworks. Therefore, the SESGs/SNPs established in India should be allowed to be used to provide feeder-link connectivity to satellites that are providing connectivity to customers outside of India.**

5.8 In addition, it may be noted that the Indian Space Policy 2023 explicitly and repeatedly recognises satellite communication as a **service.** For example, Section 4 of the Policy, which governs Non-Governmental Entities, opens with the statement that NGEs shall be allowed to undertake "end-to-end activities in space sector through establishment and operation of space objects, ground-based assets and **related services, such as communication, remote sensing, navigation, etc.**

5.9 Section 3 (Strategy) of the Policy, which articulates the Government's overarching approach to the space economy, states that Indian consumers of space technology or services (such as **communication**, remote-sensing, data-services, launch-services, etc), whether from public or private sectors, shall be free to directly procure them from any source. The bracketed list explicitly includes communication alongside "data-services" and "launch-services", all of which are unambiguously services in the economic and regulatory sense. The phrase "directly procure" is the language of the consumer-service relationship where a consumer procures a *service*, not a technology.

5.10 This recognition in the Indian Space Policy 2023 directly undermines DoT's position that satellite communication is "only a technology" and not a service requiring separate authorisation.

5.11 The Space Policy, which is the overarching government framework for the sector and was approved by Cabinet, takes the opposite view as shown above. If satellite communication were merely a technology, the Indian Space Policy, 2023 would then be without any basis.

5.12 DoT's contention that satellite is a technology medium permissible within any existing terrestrial service authorisation is therefore inconsistent with the Cabinet approved Space Policy, which treats satellite communication as a distinct *service* category with its own authorisation pathway (through IN-SPACe at the space segment level) and its own regulatory governance (through DoT at the service level). TRAI's recommendation of a standalone Satellite-based Telecommunication Service Authorisation under Section 3(1)(a) is, in this light, not only legally sound but also aligned with the highest level government policy document governing the space sector, a point TRAI should explicitly make when reiterating its previous recommendations.

5.13 Para 2.62 of the CP mentions that in May 2024, the IN-SPACe issued 'Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities (NGP)'. The relevant extract of the Chapter IX of the NGP is reproduced below:

"IN-SPACe Authorization is not required for setting up of gateways or hubs ***supporting satellite communication services*** *such* ***as Direct-to-Home (DTH), TV Uplink, Digital Satellite News Gathering Service (DSNG), Very Small Aperture Terminal (VSATs), broadband, Inflight and Maritime connectivity (IFMC), etc****. Establishment and operations of such gateways/ hubs including those required for supporting the operations of the high throughput GSO or NGSO satellites/ constellations shall be governed by the prevailing licensing/ approvals process by the respective government departments/ ministries. …"*

Thus, even the NGP explicitly mentions VSAT, GMPCS, broadband, IFMC as services.

5.14 Therefore, **it is submitted that the question framed in this manner is contrary to the fundamental basis of Indian Space Policy, 2023 and respective NGP. If we ignore this aspect, then the response to this question and all other questions will be against the framed policy framework of the Government of India.**

5.15 Without prejudice to the above, we submit that no cross-referencing conditions between the SCN authorisation and IN-SPACe rules can eliminate the coordination risk between SCN, service authorised entity and IN-SPACE For example, if the IN-SPACe authorisation of the space segment provider is revoked or modified, the SCN entity's authorisation is affected, which in turn affects the service entity's ability to serve its subscribers, with no direct regulatory pathway between IN-SPACe and the end-service provider. This regulatory chain has no equivalent in terrestrial telecom and cannot have any solution within the SCN framework.

Q6. Whether there is any need for mandating a reference agreement between the entities holding the proposed Satellite Communication Network authorisation and the authorised entities providing telecommunication service? If yes, what should be the salient features of the reference agreement between such entities? Kindly provide a detailed response with justification.

BIF RESPONSE

6.1 We request that the response made in Q1 above may be considered part of the answer of this question. Without prejudice to the key concerns that have been flagged therein, we wish to respond to the question as below.

6.2 As explained in response to Q1, there would be a need for establishing regulatory oversight and control over commercial agreements required to be established between the SCN provider and the Access Service Provider through a RIO for the following reasons:

i) **Shift to an intermediary-led model:** The proposed SCN framework may push satellite services into a dependent structure requiring business/commercial arrangements with access service providers, potentially raising entry barriers for specialised satellite players and affecting competitive neutrality vis-à-vis terrestrial operators.

ii) **Spectrum assignment at the network layer:** The proposal to allow spectrum to SCN entities departs from the established principle of vesting spectrum with service providers. The new SCN proposal, derived from the Telecommunications Act 2023, aims to "delink the service and network layers," permitting infrastructure providers to hold spectrum without being the service provider themselves. This breaks the established practice where the service licensee holds the spectrum and is responsible for its usage.

This creates ambiguity in ownership, control and accountability, especially since service rollout obligations are typically linked to spectrum usage. The new proposal suggests SCN entities could hold spectrum directly or through partner providers, which could blur lines as regards who controls the usage and who is responsible for regulatory compliance

iii) **Practical and structural complexities: The framework relies heavily on commercial agreements between SCN entities and service providers, which, based on past experience (e.g., VNO models), may not be effective without strong alignment of incentives.** Additionally, issues such as **service-area-based IMT spectrum versus pan-India SCN authorisation** could create operational and regulatory complications.

6.3 Overall, the proposed structure appears relatively complex and is fraught with many dependencies between the SCN provider and the Authorised Service Providers which are in the domain of uncertainty and may **risk delays or sub-optimal rollout** of satellite communication services. **Mechanisms such as RIOs would therefore become necessary to ensure access.**

6.4 It can also happen that given the essential facility nature of satellite network infrastructure in remote and rural areas, the SCN entity will have significant bargaining leverage over smaller service entities, particularly smaller ISPs and VNOs, that have no

alternative connectivity option for those geographies. Unregulated commercial negotiations will systematically disadvantage such smaller service entities.

6.5 It is reiterated that this need is arising because of structural lacuna of not recognising satellite communication as a service. This workaround , with so many ifs and buts, will not be needed if a separate service authorisation for satellite communication is prescribed.

Q7. With respect to the interconnection with the proposed Satellite Communication Network Authorised Entities, whether there are any other issues in addition to those raised in TRAI's consultation paper on 'Review of existing TRAI Regulations on Interconnection matters' dated 10.11.2025, which require to be addressed in this consultation process? Please provide a detailed response with justification.

BIF RESPONSE

7.1 We request that the response made in Q1 may be considered part of the answer of this question. Without prejudice to the key concerns that have been flagged therein, we wish to respond to the question as below.

7.2 Interconnection obligations under the TRAI Act vest on entities providing telecommunication services which will be service-authorised entities under Section 3(1)(a). The SCN entity, holding only a network authorisation, is not a service provider and therefore cannot be a party to interconnection in the regulatory sense. Traffic originating from SCN served users must travel to an Indian gateway, be handed off to the service entity, and then be interconnected with PSTN/internet through the service entity's interconnect arrangements. If the service entity's interconnect arrangements fail or are suspended, the SCN entity has no direct legal right to maintain connectivity for users, it can only operate through the service entity. This gap means that interconnect related service continuity for satellite-served users is always one commercial relationship removed from the entity that controls the physical network. No interconnection framework question in this consultation can remedy this.

7.3 **Subject to the above , if such interconnection is considered to be allowed under the law to be regulated under TRAI Act, then** several key issues regarding the interconnection with Satellite Communication Network (SCN) Authorised Entities require attention in addition to general interconnection matters.

7.4 These issues, which address the unique nature of satellite-based telecommunications, include:

a. **Distinct Frameworks for Satellite Types:** Evaluation of whether separate, distinct interconnection frameworks are required for Mobile Satellite Service (MSS) and Fixed-Satellite Service (FSS) networks when connecting with terrestrial mobile and fixed-line networks.

b. **Nature and Location of Points of Interconnect (POIs):** Determining the technical specifications, nature, and physical location of POIs, particularly where satellite earth station gateways connect to traditional terrestrial networks.

c. **Interconnection with VNOs:** Virtual Network Operators (VNOs), Smaller ISPs (Tier 2 & 3), PMWANI players (PDO/PDOAs) should be permitted to access Satellite Communication Network-as-a-Service (SCNaaS) provided by SCN entities.

d. **Operational Control and Resource Allocation:** Ensuring SCN entities provide partner entities (terrestrial operators) with sufficient control, visibility, resource allocation, and management capabilities at the point of interconnection, while primary control remains with them.

e. **Adoption of Global Best Practices:** Identification of specific regulatory models from other countries that have successfully addressed interconnection challenges between satellite and terrestrial networks.

Other Broader Issues Impacting SCN Interconnection:

- **Revised Timelines & Procedures:** Reviewing port provisioning, augmentation processes, and disconnection procedures tailored for the faster, sometimes automated deployment of satellite gateways.

7.5 Some of these issues were highlighted in response to the consultation process initiated on November 10, 2025, to update the existing interconnection framework to ensure the regulation is ready for satellite-based telecommunications networks.

7.6 Additionally, we wish to highlight the need for a **separate satellite service authorisation** as the preferred framework. If at all considered, treat SCN authorisation as a **limited construct and not a substitute for direct access to end consumers by satellite players**; ensure **clear service vs. network separation**; **spectrum vesting with service-authorised entities** (as a default principle); **non-discriminatory access safeguards**; and account for potential risks to **competition and efficient rollout**.

Q8. Any other inputs or suggestions relevant to the proposed Satellite Communication Network authorisation may kindly provided with detailed justification.

BIF RESPONSE

8.1 It is humbly submitted that no set of 'other inputs' can cure the foundational structural deficiency. The SCN Authorisation framework, by design, prevents satellite network operators from having a direct relationship with users . SCN is an incomplete regulatory instrument for the satellite sector. The appropriate 'other input' is to reiterate that the 18.09.2024 TRAI recommendation for a Section 3(1)(a) satellite service authorisation remains the correct foundation complying with Telecom Act and IN-SPACE Policy.

Q9. Which of the following services should be permitted to be provided by using the SCNs established by the proposed SCN authorised entities: (a) Fixed Satellite Service (FSS); (b) Mobile Satellite Service (MSS); (c) Direct-to-Device (D2D) Service via satellite by using MSS spectrum; (d) Direct-to-Device (D2D) Service via satellite by using IMT spectrum? Kindly provide a detailed response with justification.

BIF RESPONSE

9.1 We request that the response made in Q1 may be considered part of the answer of this question. Without prejudice to the key concerns that have been flagged therein, we wish to respond to the question as below.

(a) Yes- Fixed Satellite Service (FSS)-should be permitted for traditional VSAT-type fixed, high-capacity, or broadband services.

(b) Yes- Mobile Satellite Service (MSS) should be permitted for mobile terminals and suitable for direct satellite-to-mobile connectivity.

(c) Yes- D2D using MSS Spectrum should be permitted so as to extend satellite connectivity to standard smartphones without immediately requiring IMT spectrum. This would essentially be in the L & S bands.

(d) D2D using IMT Spectrum: This should wait for outcome of WRC-27 to ensure spectrum, regulatory and technical compatibility with terrestrial networks.

9.2 Due to reasons mentioned in the Preamble and in earlier responses, permitting FSS, MSS, and D2D services through the SCN does not resolve the accountability gap for each service type. For FSS (including enterprise VSAT and broadband), the user terminal is associated with the service entity's authorisation, not the SCN entity's. If the service entity changes, the SCN entity's VSAT terminal registrations must be migrated, a technically complex and legally ambiguous process. For MSS, the subscriber's SIM registration is with the service entity, not the SCN entity, creating the same problem as FSS with the added dimension of roaming and emergency services. For D2D, the regulatory accountability for life-safety communications (emergency calls, disaster alerts) in areas with no terrestrial coverage falls on the service entity, the very entity that has no physical control over the satellite access path. The SCN entity that controls the satellite signal has no obligation to ensure emergency services, a structural safety gap that exists regardless of which services are permitted.

Q10. Whether D2D Service via satellite by using IMT spectrum should be permitted at this stage itself, or should this matter be examined after considering the outcome of WRC-2027? Kindly provide a detailed response with justification.

BIF RESPONSE

10.1 There are many pros and cons associated with the use of IMT spectrum for D2D service. At this stage, therefore, use of IMT spectrum for D2D service could be considered on a trial basis to check its feasibility and identify challenges.

10.2 As stated in our response to Q9 above, any commercial service using IMT spectrum for D2D service in India, should be allowed only after the WRC-27 decisions.

10.3 The D2D via IMT spectrum question illustrates the competitive distortion created by the SCN model particularly acutely. The only entities that currently hold IMT spectrum in India are the large access service providers. Under the SCN model, D2D via IMT spectrum can only be delivered by an SCN entity partnering with one of these incumbents to use their spectrum. Dedicated satellite operators, including NGSO operators whose entire product is device-direct connectivity, are structurally barred from delivering this service independently. They must approach an incumbent access provider, negotiate commercial terms, and accept that the incumbent controls the spectrum on which the satellite D2D service runs. This structural subordination of satellite operators to terrestrial incumbents is not a consequence of WRC-27 timing, it is a consequence of the SCN architecture. Align with existing frameworks (e.g. FCC and Canada) and condition any IMT authorization on revision after WRC-27

Q11. From the perspective of holding spectrum for the feeder link and the user link on SCNs, which of the following combinations should be permitted at the SCNs established by the proposed SCN authorised entities:

COMBINATION NO.	SPECTRUM FOR THE FEEDER LINK HELD BY	SPECTRUM FOR THE USER LINK HELD BY
1	SCN authorised entity	SCN authorised entity
2	SCN authorised entity	Partnering entity (service provider)
3	Partnering entity (service provider)	SCN authorised entity
4	Partnering entity (service provider)	Partnering entity (service provider)

Kindly provide a detailed response with justification.

BIF RESPONSE

11.1 We request that the response made in Q1 may be considered part of the answer of this question.

11.2 In view of the concerns raised therein, it is submitted that all four combinations involve either the SCN entity or the service entity holding spectrum, but never both holding spectrum in a legally integrated manner.

11.3 Combination 1 (SCN holds all) gives the SCN entity spectrum accountability without consumer-service accountability, a mismatch that inverts the regulatory logic of spectrum assignment (spectrum is assigned to incentivise service delivery to users). **Combinations 2 and 3 (split spectrum holding) create coordination complexity without clear benefit. Combination 4 where the partnering entity alone controls spectrum and extends it to the SCNaaS, it would mean that the SCN authorised entity is entirely dependent on the partnering entity and the same would be dictated by the business objectives of the service providers.** Accordingly, none of the proposed combinations fully resolve the underlying structural concerns arising from the separation of the satellite network layer and the satellite service layer.

11.4 In our respectful submission, the most coherent regulatory approach would therefore be to permit a standalone Satellite-based Telecommunication Service Authorisation under Section 3(1)(a), wherein the same entity holds the spectrum assignment, operates the satellite network and remains directly accountable for end-user service delivery.

11.5 **Without prejudice to the above, if the SCN authorisation framework is nevertheless adopted, Combination 1 (full SCN entity spectrum holding) should be permitted as an alternative when : (a) the SCN entity cannot find a partnering service entity willing to hold spectrum; or (b) the SCN entity's business model requires independent spectrum holding to provide SCNaaS to multiple service entities efficiently. This is particularly relevant for NGSO broadband operators who need to optimise spectrum use across their entire constellation without depending on individual service entities' spectrum assignments. Where Combination 1 is used, enhanced conditions should apply, including a formal obligation to offer spectrum access to all eligible service entities, price regulation of SCNaaS capacity and enhanced reporting to TRAI.**

11.6 **Considering the issues from user perspective and TRAI's established principle, that spectrum should ordinarily be assigned to service-authorised entities. Accountability can**

only be maintained when the spectrum holder is the same entity that has consumer-facing obligations. We would prefer option 1 where SCN holds both except for D2D using IMT spectrum for which the decision should be taken after WRC-27.

Q12. Which of the following types of spectrum should be assigned to the proposed SCN authorised entities:

(a) Spectrum in the frequency bands allocated for FSS

(b) Spectrum in the frequency bands allocated for MSS

(c) Any other? Kindly provide a detailed response with justification.

BIF RESPONSE

12.1 We request that the response made in Q1 may be considered along with our response to Q11 be considered part of the response to this question. Without prejudice to the key concerns that have been flagged therein, we wish to respond to the question as below.

12.2 Both Fixed **Satellite Service (FSS)** and **Mobile Satellite Service (MSS)** spectrum bands should be made eligible for assignment to the SCN entity. This should include spectrum assignment for commercial communication services including **NGSO-based FSS** (using Ku, Ka, and Q/V bands) and **GSO/NGSO-based MSS** (typically using L, S, and C bands for mobile links).

12.3 It is proposed that spectrum for these services, both for user and gateway links, be assigned **administratively** (rather than through auction) to align with international best practices and ensure shared, non-exclusive usage.

12.4 It is reiterated that whether FSS spectrum, MSS spectrum, or both are assigned to the SCN entity, the accountability disconnect applies, as mentioned in response to Question 11. The spectrum is assigned to an entity (the SCN) that has no obligation to end-users, and the entity that has obligations to end-users (the service provider) does not hold the spectrum it uses to serve those users. This inverts the foundational premise of India's spectrum assignment framework that spectrum is assigned to entities in exchange for service delivery obligations. Assignment of spectrum to an entity with no service

obligations to users creates a regulatory category without precedent in Indian telecom and without an enforcement mechanism proportional to the spectrum's use. The WPC spectrum management framework is designed around assigning spectrum to service providers accountable for its use; the proposed SCN authorisation breaks this assumption irremediably. Besides, it is against the provisions of the Telecom Act, 2023.

Q13. What should be the broad policy and regulatory framework for the assignment of FSS spectrum and/ or MSS spectrum to the proposed SCN authorised entities? Specifically, -

(a) NGSO-based FSS and GSO/ NGSO-based MSS: Whether in respect of NGSO-based FSS and GSO/ NGSO-based MSS, TRAI's recommendations dated 09.05.2025 on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' to DoT (read with the TRAI's response dated 08.12.2025 to DoT's back-reference dated 12.11.2025) should be made applicable to SCN authorised entities with necessary modifications? If yes, what modifications would be required in the terms and conditions for the assignment of spectrum for NGSO-based FSS and GSO/ NGSO-based MSS? If no, what should be the terms and conditions for this purpose?

(b) GSO-based FSS: Whether the terms and conditions for the assignment of spectrum to SCN authorised entities for GSObased FSS should be analogous to those recommended by TRAI for NGSO-based FSS and GSO/ NGSO-based MSS through its recommendations on 'Terms and Conditions for the Assignment of Spectrum for Certain Satellite-Based Commercial Communication Services' dated 09.05.2025 (read with the TRAI's response dated 08.12.2025 to DoT's back-reference dated 12.11.2025) with necessary modifications? If yes, what modifications would be required for GSO-based FSS? If no, what should be the terms and conditions for this purpose? Kindly provide a detailed response with justification.

BIF RESPONSE

13.1 We request that the response made to Q1 above and our response to Q 11 & 12 and to other earlier questions may be considered part of the answer of this question. Without prejudice to the key concerns that have been flagged therein, we wish to respond to the question as below.

13.2 The broad policy and regulatory framework for SCN authorized entities should include the administrative spectrum assignment for FSS/MSS (Ku, Ka, Q/V, L, S bands) to enable NGSO/GSO-based services.

- **Assignment Method:** Administrative assignment is mandated for FSS/MSS spectrum under the Telecommunications Act, 2023.
- **Spectrum Bands:**
  - **NGSO FSS:** Ku, Ka, and Q/V bands for data and internet services.
  - **GSO/NGSO MSS:** L and S bands for user links; C, Ku, Ka, Q/V for feeder links. And any other band that may be decided by WRC-27
- **Validity Period:** Initial assignment of 5years, extendable by up to 7 years.
- **D2D (Direct-to-Device) Services:** Two main pathways under consideration: Using MSS spectrum for satellite connectivity, and utilizing IMT spectrum (4G/5G) for satellite services.

For NGSO-based FSS and GSO/ NGSO-based MSS:

13.3 Based on TRAI's recommendations on Assignment and Pricing of Satellite Spectrum dated 09.05.2025 and response to DoT back reference on 08.12.2025, the framework for assigning spectrum to GSO/NGSO-based Fixed Satellite Services (FSS) and Mobile Satellite Services (MSS) should be applied to Satellite Communication Network (SCN) authorized entities with necessary modifications, notably adopting administrative allocation for user links in L and S bands. These recommendations, designed for administrative assignment under the Telecommunications Act 2023, include a 4% AGR fee, 30-day assignment timelines, and 5-year validity (extendable by two years).

13.4 Based on TRAI recommendations on Assignment and Pricing of Spectrum for Satellite Services (May 2025), modifications to spectrum assignment terms for NGSO-based FSS and GSO/NGSO-based MSS emphasize administrative allocation of spectrum with a focus on coexistence and shared usage. Key changes include 5-year renewable spectrum validity, a 4% Adjusted Gross Revenue (AGR) spectrum charge, mandatory ITU compliance for interference mitigation, and specific band allocations (Ku, Ka, Q/V for FSS; L/S for MSS).

13.5 **Key Modifications and Terms:**

- **Assignment Method:** Spectrum will be assigned administratively, not via auction, following the Telecommunications Act 2023, specifically for satellite-based commercial communication services.
- **Validity Period:** Spectrum will be assigned for a period of up to 5 years, extendable by 2 years
- **Pricing Structure:** A spectrum usage charge of 4% of Adjusted Gross Revenue (AGR) has been recommended, with a minimum floor price (e.g., Rs 3,500 per MHz annually).
- **Band Allocation:**
    - **NGSO-based FSS:** Ku, Ka, and Q/V bands are recommended for user and feeder links.
    - **GSO/NGSO-based MSS:** L and S bands are designated for user links, with C, Ku, and Ka bands allowed for feeder links.
- **Interference Mitigation & Coexistence:**
    - Mandatory compliance with International Telecommunication Union (ITU) regulations to manage interference.
- **Rollout and Compliance:**
    - Gateways must be operational within 12 months of approval to prevent spectrum hoarding.
    - Rules 5-7 regarding Indian Standard Time (IST) synchronization are applicable, along with strict cybersecurity measures.
- **Spectrum Sharing:** The framework facilitates sharing of assigned spectrum among multiple service licensees, with provisions for spectrum splitting if coordination fails.

- **Additional Charges:** An additional fee (e.g., Rs 500 per subscriber/year) is proposed for NGSO-based FSS in urban areas, with potential exemptions for rural areas.

GSO-based FSS:

13.6 Based on the 09.05.2025 TRAI recommendations for Satcom Spectrum Assignment & Pricing and the 08.12.2025 response to the Department of Telecommunications (DoT) back reference , TRAI has suggested that terms for GSO-based Fixed Satellite Services (FSS) and other SCN authorized entities should be **analogous to the NGSO-based FSS and GSO/NGSO-based MSS framework**, promoting a level playing field, with necessary modifications for operational characteristics.

13.7 **Key Analogous Terms & Modifications (TRAI recommendations on Satcom Spectrum Assignment & Pricing dated 09.05.2025 & Response to DoT Back Reference dated 08.12.2025):**

- **Assignment Methodology:** Administrative assignment of spectrum for GSO/NGSO.
- **Validity Period:** Spectrum assignment validity of 5 years.
- **Pricing:** AGR-based spectrum charges (e.g., 4% of Adjusted Gross Revenue), similar across satellite-based services.
- **Interference Mitigation:** Adherence to International Telecommunication Union Radio Regulations (ITU-RR) and good-faith coordination among entities.
- **Modifications for GSO/FSS:** While NGSO often focuses on higher frequency bands (Ku, Ka, Q/V), GSO FSS will also use these on a shared basis, requiring strict, good-faith coordination in higher bands.
- **Timeline:** Spectrum assignment should occur within a defined period (e.g., 30 days) of application, assuming in-principle approval.

- Administrative assignment based on ITU filing and demonstrated qualification of the applicant is the best way to go. Administrative spectrum allocation is clearly laid out in the First Schedule of the Telecom Act 2023. No auctions in

Q14. What should be the eligibility conditions for seeking administrative assignment of FSS spectrum and/or MSS spectrum by the proposed SCN authorised entities? Kindly provide a detailed response with justification.

BIF RESPONSE

14.1 **We request that response to Q1 maybe considered as part of our response to this question. Without prejudice to the comments made therein, please find below specific answer to this question.**

14.2 Subject to the above , the Proposed Satellite Communication Network (SCN) entities seeking administrative FSS/MSS spectrum assignment in India should hold or be in the process of securing a valid DoT service authorization (e.g., GMPCS/VSAT), obtain IN-SPACe authorization for NGSO constellations, and comply with technical, security, and indigenization norms. Mandatory requirements include submitting frequency/antenna plans, and ensuring 20% ground segment indigenization within five years.

14.3 Entry 12 of the First Schedule to the Telecom Act, provides for administrative assignment for **"**Radio backhaul for telecommunication services". Further, the term 'radio backhaul' has been defined as "the use of radio frequency only to interconnect telecommunication equipment, other than the customer equipment in telecommunication networks". Since feeder link spectrum would only be used to connect SESGs with satellites, and not customer equipment, it would fall within the scope of 'radio backhaul'. Also, Entry 16 of the First Schedule of the Telecom Act provides for administrative assignment of spectrum for a number of Satellite services including MSS in the L & S band. Hence, in line with Section 4(4), such assignment may be done through administrative process only.

14.4 **Key Eligibility and Regulatory Conditions**

- **Licensing Authorization:** Entity must hold a, or be in the process of securing, valid Department of Telecommunications (DoT) service authorization for satellite services.
- **Technical Compliance:** Must demonstrate compliance with security protocols, including real-time monitoring and interference testing.
- **Security & Data Privacy:** Must maintain, store, and process data within India, including providing a Department of Telecommunications with the location of the server/data center.
- **Operational Requirements:**
    - **Rollout:** Mandatory network rollout within 12 months of assignment.
    - **Indigenization:** 20% indigenization of ground segment equipment within five years, post launch of commercial services
    - **reporting:** Bi-annual reporting of user terminal deployments (terminal owner, address, location) to the DoT.
- **Operational Scope:** The authorization is intended for entities providing capacity and "satellite network as a service".

Proposed Spectrum Specifics

- **Methodology:** Administrative assignment for FSS/MSS bands, in line with TRAI's recommendation to use the administrative method for satellite services.
- **Provisional Assignment:** Provisional assignment valid for up to 6 months (with options for further renewal) to demonstrate security and technical compliance.

Q15. Whether there are any other inputs or suggestions relevant to the assignment of FSS spectrum and/ or MSS spectrum to the entities holding the proposed SCN authorisation? Kindly provide a detailed response with justification.

BIF RESPONSE

15.1 Without prejudice to our response to Q1, we submit that even with the best-designed spectrum assignment framework for SCN entities, a fundamental gap will persist, when an SCN entity's authorisation is revoked, surrendered or lapses, the spectrum assigned to it has no automatic continuity mechanism for the service entities that relied on that spectrum for their user-link or feeder-link connectivity. Unlike that, in Section 3(1)(a), the service provider's spectrum assignment would be its own asset, revocation of one operator's authorisation does not affect another's. Under the SCN model, a service entity's ability to serve its subscribers is contingent on the SCN entity's spectrum assignment remaining valid. Service continuity planning for this scenario is analogous to breakdown of telecom network sharing and cannot be addressed by any spectrum assignment conditions and represents a structural service continuity gap.

Q16. In case it is decided to permit the proposed SCN authorised entity to utilize the FSS spectrum and/ or MSS spectrum assigned to a service authorised entity ("partnering entity") for the purpose of providing SCNaaS to the partnering entity – whether there is a need to establish a policy and regulatory framework for enabling the SCN authorised entity to enter into an agreement/ arrangement with the partnering entity to utilize FSS spectrum and/ or MSS spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity?

(i) If yes, what should be the terms and conditions under such a framework?

(ii) If no, in what manner such agreements/ arrangements should be enabled and regulated?

Kindly provide a detailed response with justification.

BIF RESPONSE

16.1. **Without prejudice to the comments as mentioned in response to Q1 , please find below specific answers to the question.**

16.2. We submit that there is a need to establish a dedicated policy and regulatory framework to enable a Satellite Communication Network (SCN) authorised entity to enter into agreements

with a "partnering entity" to utilize FSS/MSS spectrum for providing Satellite Network-as-a-Service (SCNaaS).

16.3. This specific policy and regulatory framework should permit SCN operators to share spectrum assigned to telcos (FSS/MSS bands) or other service providers for them to sell wholesale capacity under Regulatory oversight and controlled agreements for spectrum sharing for SCNaaS, including Direct-to-Device (D2D) services.

16.4. **Key Aspects of the Regulatory Framework Requirement:**

- **Wholesale Capacity Access:** The framework should allow Virtual Network Operators (VNOs) and other authorised service providers (PMWANI SPs, M2M SPs, Smaller or local ISPs) to purchase wholesale network capacity from SCN entities using shared spectrum.

- **Accountability:** If SCN entities use a partner's spectrum, the regulation needs to clarify accountability for interference management (between the Satellite and the Terrestrial Services operating in the same or adjacent spectrum bands), especially for D2D services in MSS bands.

- **Defining Revenue & Charges:** The framework must define how the revenues of SCN entities (derived from providing SCNaaS via partner spectrum) will be calculated for Adjust Gross Revenue (AGR) and for determining SUC.

Q17. Whether there are any other inputs or suggestions relevant to the agreement/ arrangement between the proposed SCN authorised entities and service authorised entities ("partnering entities") to utilize the FSS spectrum and/ or MSS spectrum assigned to such partnering entities? Kindly provide a detailed response with justification.

BIF RESPONSE

Response in this regard has been provided to Q16 above

Q18. In case it is decided to permit D2D service via satellite by using the spectrum in the frequency bands allocated for MSS such as L-band and S-band, whether there is a need to establish a policy and regulatory framework for enabling and regulating such a service? If

yes, kindly suggest a broad framework for this purpose and the key terms and conditions to be included under such a framework? Kindly provide a detailed response with justification.

BIF RESPONSE

18.1 **Without prejudice to the comments made in response to Q1 , please find below specific answers to the question.**

18.2 **Yes**, there is a need to establish a customised policy and regulatory framework to enable and regulate Direct-to-Device (D2D) services via satellite, even when utilizing existing Mobile Satellite Service (MSS) spectrum bands such as L-band and S-band.

18.3 While D2D services in MSS bands benefit from a more mature regulatory environment compared to using terrestrial IMT bands, the introduction of high-throughput Low Earth Orbit (LEO) constellations and massive machine-type communications requires updating regulatory frameworks to ensure coexistence and fair competition.

18.4 **Key Reasons for a New Regulatory Framework**

- **Licensing and Authorization:** While some countries may allow D2D via existing MSS licenses, new, specific ""general authorization" frameworks are generally needed for user terminals (handsets) to enable seamless commercial rollouts. Due to the technical and operational differences, specifically the use of smartphones instead of satellite dishes, makes a strong case for D2D to be provided under a **specialized authorization** within the broader Satellite Service framework, rather than being managed under the existing VSAT or GMPCS licenses.

- **Regulatory Parity:** Regulations need to ensure that D2D, which often provides SOS, messaging, and data services, meets the same standards for legal interception, national security, and consumer protection as terrestrial services.

18.5 **Regulatory Considerations for L-band and S-band**

1. **3GPP Standardization:** Policy frameworks should encourage the adoption of 3GPP standards (e.g., Release 17 onwards) to foster an interoperable ecosystem between terrestrial and satellite networks.

2. **Regulatory Harmonization:** Harmonizing national regulations with international standards (such as ITU-R) is essential for roaming and global service availability.

18.6 **Current Regulatory Approaches**

- **USA (FCC):** The FCC introduced a "Supplemental Coverage from Space" (SCS) framework, which acts as a guide for how satellite and terrestrial spectrum can be integrated.

- **Australia (ACMA):** Developed a regulatory guide for D2D services, emphasizing coexistence and updated licensing for MSS and IMT-based D2D.

18.7 In summary, although L- and S-band MSS spectrum is already authorized, the transition from traditional, low-rate MSS to high-capacity, consumer-centric D2D necessitates a robust, updated framework to manage spectrum, ensure coexistence, and maintain competition.

18.8 **However, D2D via MSS spectrum using ordinary cellular handsets is, from the user's perspective, indistinguishable from a standard mobile service. The user expects emergency services, number portability and subscriber protection , all of which are obligations of the service-authorised entity. But the service entity in the SCN model does not control the satellite access path, it cannot guarantee coverage, quality of service, cannot prioritise emergency traffic at the network level, and cannot ensure seamless handover between terrestrial and satellite modes without deep cooperation with the SCN entity. Life-safety implications of this gap are acute, if a user in a no-coverage area places an emergency call via D2D satellite, the accountability chain for ensuring that call is connected runs through a service entity that does not control the network, which relies on an SCN entity that has no obligation to the user. This regulatory gap in emergency D2D connectivity exists regardless of how the MSS D2D framework is designed.**

18.9 The international policy and regulatory framework for D2D using MSS spectrum is anchored in established ITU regulations, allowing deployment under existing licensing regimes (e.g., CEPT in Europe) without requiring new international spectrum allocations. These systems typically use L/S bands and must adhere to interference mitigation requirements with incumbent services. **Various MSS bands are available for different operators and new MSS spectrum bands are being proposed for adoption by WRC27 for D2D services. No further rules are needed other than recognizing ITU filing priority in India. Authorizations should be national.**

Q19. In case with a view to enable D2D service via satellite using IMT spectrum, it is decided to permit the proposed SCN authorised entity to utilize IMT spectrum assigned to a service authorised entity ("partnering entity") for the purpose of providing SCNaaS to the partnering entity, -

a) whether there is a need to establish a policy and regulatory framework for enabling the SCN authorised entity to enter into an agreement/ arrangement with the partnering entity to utilize IMT spectrum assigned to such partnering entity for the purpose of providing SCNaaS to the partnering entity? If yes, what should be the terms and conditions under such a framework? If no, in what manner such arrangements should be enabled and regulated?

b) Which frequency bands identified for IMT should be considered for this purpose? Specifically, whether only FDD-based frequency bands should be considered?

c) For the frequency bands identified for IMT where D2D is decided to be permitted, whether the National Frequency Allocation Plan (NFAP) should be modified to include MSS on a secondary basis? If yes, kindly furnish your suggestion for the proposed modification(s).

d) To mitigate the issues related to cross-border interference, whether any other condition in addition to Article 4.4 of the ITU-Radio Regulations is required to be made applicable?

e) **What regulatory framework should be established for ensuring interference-free operation of D2D service via satellite by using IMT spectrum within the country? Specifically, which of the following methods should be followed:**

- **(i) The SCNs established by SCN authorised entities should be permitted to be used to provide D2D service via satellite by using IMT spectrum only if a single partnering entity (access service provider) holds the relevant IMT frequency channel in all the 22 LSAs of the country and agrees to permit the usage of its IMT frequency channel by the SCN authorised entity at its SCN for the purpose of providing SCNaaS; or**
- **(ii) The SCNs established by SCN authorised entities should be permitted to be used to provide D2D service via satellite by using IMT spectrum if one or moreService Licensees – together holding the assignment of the relevant IMT frequency channel across all 22 licensed service areas of the country – agree to allow the usage of their IMT frequency channel by the SCN authorised entity at its SCN for the purpose of providing SCNaaS; or**
- **(iii) Any other method?**

Kindly provide a detailed response with justification.

BIF RESPONSE

Without prejudice to our made in Q1 and responses to earlier questions , please find below specific answers to the question.

a) As proposed earlier , this should be done after WRC-27 decision is taken. There is a need for clear guidelines on agreements between SCN authorized entities and partners to ensure compliance with the Telecommunications Act, 2023 for sharing spectrum and infrastructure between SCN Providers and IMT players to ensure optimal usage and security.

Details of the proposed policy and regulatory framework have been provided in response to the previous questions in this paper

b) **Only <u>FDD-based mid-bands (1800/2100 MHz)</u> should be considered for the purposes of D2D via IMT spectrum at this stage.**

Why TDD and sub-GHz should wait

- In TDD bands, uplink/downlink synchronisation issues can cause serious interference to existing terrestrial TDD deployments; in sub-GHz, large-scale satellite downlinks could disturb IMT uplinks, and the already scarce sub-GHz spectrum is unlikely to support both IMT and D2D adequately.
- These more complex bands can be revisited later, once global standards, coexistence studies and international experience for D2D in TDD and sub-GHz bands are mature.

Why 1800/2100 MHz FDD are suitable now

- FDD inherently separates uplink and downlink into different bands, making interference scenarios more predictable and reducing the risk of satellite downlinks desensitising terrestrial uplinks (and vice versa) under appropriate technical conditions.
- 1800/2100 MHz are already widely deployed for nationwide coverage and are strongly supported in the global device/chipset ecosystem, enabling early D2D without bespoke hardware or fragmented band support.

Regulatory prudence and future flexibility

- Starting D2D only in 1800/2100 MHz lets the regulator gain operational experience, fine-tune rules (power limits, beam footprints, protection criteria) and monitor interference, while keeping more sensitive TDD and sub-GHz bands insulated during the learning phase.

- Once there is sufficient real-world evidence and clearer global best practice for D2D in TDD and sub-GHz, TRAI can consider a carefully controlled expansion through a separate consultation.

c) Modifying the National Frequency Allocation Plan (NFAP) to include Mobile Satellite Services (MSS) on a secondary basis in IMT-identified bands for Device-to-Device (D2D) communication is generally not necessary.

d) **Article 4.4 of the ITU-Radio Regulations is required to be made applicable to mitigate the issues related to cross-border interference at this stage.** The same may be reconsidered post the outcome of WRC-27.

Besides, the following additional measures maybe necessary for robust cross-border interference management:

- **Harmonization of Technical Parameters:** Aligning parameters such as frequency band plans, synchronization of time-division duplex (TDD) networks, and technical standards for transmitters/receivers to avoid interference, particularly for 5G
- **Direct Cooperation Between Regulators:** Establishing direct contact and exchange of information between national spectrum management authorities (e.g., using monitoring stations to directly deal with issues).

These measures ensure that interference is addressed proactively, rather than relying solely on the reactive mechanism provided by Article 4.4 and its Rules of Procedure (RoP). Specific directives to Operators to switch off the service, if required, as per mandatory obligations under RR (No.4.4 and its RoP).

e) A robust regulatory framework for D2D-satellite service via IMT spectrum must prioritize **interference management through joint Mobile network Operator (MNO) -Satellite Network Operator (SNO) partnerships**, strict compliance with WRC-27, and adherence to 3GPP Release 17 NTN standards.

Key steps include designating dedicated spectrum or implementing dynamic spectrum sharing (DSS) with terrestrial networks, creating a unified authorisation regime for spectrum allocation (avoiding mandatory auctions) and implementing regulatory sandboxes for testing.

Key Regulatory Components for Interference-Free D2D

- **Spectrum Strategy & Authorization:**
    - **Administrative Assignment:** Rather than auctioning, spectrum should be allocated administratively to enable satellite access, as authorized by the Telecommunications Act 2023.
    - **Unified Licensing:** Adopting a unified authorization framework that allows satellite operators to collaborate with terrestrial Mobile Network Operators (MNOs).
- **Interference Mitigation & Technical Conditions:**
    - **Partnership Requirement:** Encourage introduction of D2D services through a direct partnership between an MNO and a Satellite Network Operator (SNO).
    - **3GPP NTN Standards:** Adhering strictly to 3GPP Release 17/18 Non-Terrestrial Network (NTN) standards to ensure interoperability and minimize interference.
    - **Compliance with WRC:** Ensuring all assignments align with WRC-27 agenda items regarding D2D and Satellite-IMT Integration.
- **Operational & Legal Framework:**
    - **Regulatory Sandboxes:** Using sandboxes to test D2D technology in a controlled environment.

This approach addresses the challenges of using IMT spectrum—typically designed for terrestrial use—by allowing satellite to operate as a shared user in specialized, regulated circumstances

Methodology to be adopted –(ii)

This CP is aimed at bridging the digital divide and plug the gap in terrestrial coverage in rural and remote areas and how it should be done including whether such services should be permitted now or after reviewing the outcomes of the World Radiocommunication Conference (WRC-2027).

Satellite Communication Network (SCN) authorised entities should be permitted to provide Direct-to-Device (D2D) services using IMT spectrum. If one or more service licensees – together holding the assignment of the relevant IMT frequency channel across all 22 licensed service areas of the country – agree to allow the usage of their IMT frequency channel by the SCN authorised entity at its SCN for the purpose of providing SCNaaS.

Under this framework, SCN-authorised entities can operate at the network level and offer wholesale SCNaaS, while partnering with or providing capacity to other authorized service providers or virtual network operators (VNOs).

It may be noted that the interference management question further reveals the structural flaw in the SCN model for D2D-IMT. The SCN entity operates the satellite network. The service entity holds the IMT spectrum. Neither entity alone can manage interference between the satellite signal and terrestrial IMT networks and it requires coordinated real-time network management between two separate, independently regulated entities. It is submitted that interference management for satellite-terrestrial co-use of IMT spectrum will be extremely challenging in the network-service split as envisaged in this CP about SCN framework.

Q20. Whether there are any other inputs or suggestions with respect to the delivery of D2D services via satellite through SCNs established by the proposed SCN authorised entities? Kindly provide a detailed response with justification.

BIF RESPONSE

20.1 In addition to the submissions regarding structural gaps in SCN authorisation mentioned earlier, we will further draw your attention to any scheme of USOF , where again the issue of

service and network separation will be relevant. The USOF is designed to support service-authorised entities directly. An SCN entity cannot be a USOF beneficiary because it provides no service to subscribers and the service entity that receives USOF support has no guarantee that the SCN entity will maintain the network availability required to fulfil the USOF supported service.

20.2 Any USOF scheme designed for satellite D2D under the SCN model requires a complex three-party arrangement between USOF, service entity and SCN entity. This is also a structural consequence of the service-network split in the satellite domain.

Q21. Any other inputs or suggestions related to the use of spectrum on SCNs established by the proposed SCN authorised entities may be submitted with proper explanation and justification.

BIF RESPONSE

21.1 It is further submitted that spectrum management efficiency, which is a core objective of spectrum assignment policy, is fundamentally compromised by the network/service split because the service provider entity, which is responsible for traffic management, is not the entity managing spectrum (SCN entity).

21.2 **We earnestly submit that any solution to justify SCN and not acknowledging satellite communication as a separate service authorisation, will lead to more and more issues. The Space Policy and the legislature (Telecommunications Act, 2023) are very correct in acknowledging Satellite Communications as a service. We request this CP must take into cognisance these points and provide valid explanations if any view is taken to the contrary.**

Q22. Regarding the agreement between SCN Authorised entity and a Service Authorised entity providing FSS/ MSS to the end user, for provision of SCNaaS to the Service Authorised entity, which may or may not include provisions for utilisation of FSS/ MSS spectrum assigned to the Service entity, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, Spectrum utilisation etc., which would form the basis of regulation? Please provide your response with justification.

BIF RESPONSE

22.1 **Without prejudice to the comments made in response to Q1 above, please find below specific answer to the question.**

22.2 Yes-There is a need for regulation of charges between a Satellite Communication Network (SCN) Authorised Entity (wholesaler) and a Service Authorised Entity (retailer/VNO) for providing Satellite Network-as-a-Service (SCNaaS) to ensure non-discrimination, and regulate the spectrum leasing charges if spectrum usage is involved, even though the absolute end user pricing is left to commercial negotiations. We recommend regulatory oversight and control through a RIO for the following reasons:

22.3 **Need to Regulate Wholesale Charges**

- **Preventing Anti-Competitive Behavior:** Regulation of these charges may be deemed necessary to ensure that SCN entities do not charge discriminatory or exorbitant rates to retail service providers, especially if the SCN entity holds a dominant market position or exclusive spectrum access.
- **Integration with AGR Framework:** Whether payments made by service providers to SCN entities for SCNaaS should be deducted from the Applicable Gross Revenue (ApGR) when calculating AGR-linked charges. This is to ensure that licensing fees are correctly levied.

22.4 **Impact of Spectrum Utilization (SCNaaS with or without Spectrum Lease)**

- **Scenario A: SCN Entity uses its own spectrum:** The SCN entity is responsible for paying Spectrum Usage Charges (SUC) to the government (proposed 4% of AGR). While the wholesale contract between them is largely commercial, TRAI may oversee the arrangement to ensure that market dominance by any entity is not abused and that it does not facilitate "hidden" spectrum sharing that bypasses compliance.

- **Scenario B: Utilization of Spectrum assigned to the Service Entity:** If the agreement involves the SCN entity facilitating the use of spectrum assigned to the Service Entity, this falls under **spectrum leasing or sharing**.

22.5 **Current Regulatory Outlook**

- **Administrative Assignment:** The government aims to encourage competition by allowing SCN entities to offer wholesale services, thus separating the network layer from the service layer. While the specific charges (price per bit or terminal) might be left to commercial negotiation, the **terms of the agreement**—specifically regarding spectrum utilization, quality of service (QoS) guarantees, and revenue sharing maybe mandated to comply with the provisions of the Telecommunications Act, 2023.
- **Key** parameters that would broadly form the basis of these regulations should include:
    - Spectrum Utilization and Efficiency Parameters
    - Service Level Agreement (SLA) and Quality of Service (QoS) Parameters
    - Coverage and Rollout Obligations
    - Technical and Interoperability Standards
    - Financial and Legal Parameters

22.6 **It is submitted that any regulation of charges between the SCN entity and the service entity will require TRAI to determine a 'fair price' for satellite network-as-a-service, a pricing problem of extraordinary difficulty because there is no comparable market (no other country has created this precise two-entity structure). As mentioned earlier, market-based pricing without regulation leaves smaller service entities exposed to discriminatory pricing. TRAI must state how this issue will be resolved under the proposed SCN authorisation framework.**

Q23. In case of an agreement between an SCN Authorised entity and a Service Authorised entity providing D2D services using MSS spectrum, for provision of SCNaaS to the Service Authorised entity, which may or may not include provisions for utilisation of MSS spectrum

assigned to the Service entity amongst other possible spectrum utilisation arrangements, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, Spectrum utilisation etc., which would form the basis of regulation? Please provide your response with justification.

BIF RESPONSE

23.1 **Without prejudice to the comments made in response to Q1,** the need to regulate charges is driven by the following factors:

i. **Wholesale vs. Retail Distinction:** Since the CP intends to delink network and service layers, allowing SCN entities to offer their satellite network as a **wholesale service** to other authorized service providers (service entities).

ii. **Preventing Anti-competitive Practices:** Given that SCN entities might be allowed to utilize spectrum assigned to the Service entity (or vice-versa) through mutual agreements, there may be need to define suitable mechanism for spectrum sharing and mutual agreements. Regulatory oversight on the charges helps ensure that the wholesale arrangements are fair, non-discriminatory, and do not lead to anti-competitive behavior in the D2D market.

iii. **Spectrum Utilization and Pricing:** The charges should accurately reflect the value and usage of the assigned spectrum-both for the feeder and the user link. Also in a situation where a SCN entity operates in partnership with other entities to deliver D2D services using scarce MSS spectrum owned by them, the contractual terms may be subjected to specific guidelines.

iv. The service entity will hold MSS spectrum and the SCN entity will use it. The charges must reflect both the network service component (SCN infrastructure) and the spectrum use component (utilisation of the service entity's MSS assignment). No regulatory formula can cleanly separate these two components because they are technically inseparable. The value of the SCN entity's infrastructure is zero without the spectrum, Even the MSS spectrum cost to the service entity will be zero without SCN. This dependency without a unified regulatory anchor has the potential for possible

commercial disputes that TRAI will be called upon to adjudicate repeatedly, a compliance overhead that a unified satellite service authorisation would have entirely avoided.

Q24. In case of an agreement between an SCN Authorised entity and a Service Authorised entity providing D2D services using IMT spectrum, for provision of SCNaaS to the Service Authorised entity, which may or may not include utilising spectrum for feeder link assigned to the service entity, besides utilising IMT spectrum assigned to the Service Authorised entity, is there a need to regulate charges exchanged between the two entities under such an agreement? If yes, what would be the possible parameters, including SLA parameters, Spectrum utilisation etc., which would form the basis of such regulation? Please provide your response with detailed justification.

BIF RESPONSE

24.1 **Without prejudice to the comments made in response to Q1, please find below specific answers to the question.**

24.2 In the situation where an SCN (Satellite Communication Network) Authorized entity and a D2D (Direct-to-Device) Service Authorized entity, use IMT spectrum, key regulatory considerations would include ensuring availability of free and open competition, technology and service neutrality, preventing monopolistic pricing of spectrum/networks, and aligning with the provisions of the Telecom Act 2023.

24.3 Regulation may be required to ensure that the charges, whether for capacity, spectrum usage, or infrastructure, are "reasonable and sustainable" and to ensure fair market practices to prevent abuse of market power. It is submitted that any such charges will be difficult to determine considering the costs of the service entity and SCN as a service will be the determining factors.

24.4 Further the segregation of SCN from service between two entities will definitely be against consumer interest compared to the case of one integrated service entity, as the charges will be cost plus with added regulatory /administrative costs.

Q25. Should the charges paid by the Service Authorised entity (providing either FSS, MSS or D2D service to the end user) to SCN Authorised entity for provisioning of Satellite Communication Network as a Service (SCNaaS), be permitted to be deducted from ApGR of the Service Authorised entity for the purpose of arriving at AGR for levy of License/ Authorisation Fees and Spectrum charges? Please provide your response with justification.

BIF RESPONSE

25.1 Yes-The deduction should be allowed as it is intended to ensure that the same revenue is not subjected to license fee/spectrum charges twice (once at the SCN provider level and again at the service provider level), given that SCNaaS where SCN entities establish and operate satellite networks (gateways, space segment) and wholesale this network capacity to Service Authorized entities, rather than directly to end users. The proposed policy aims to delink the network and service layers, allowing service providers to operate without investing in their own infrastructure.

25.2 **If the deduction is not permitted then double taxation inflates effective regulatory costs for satellite connectivity, specifically in remote areas, makes satellite services commercially unviable** particularly when trying to establish terrestrial alternatives in remote or rural areas.

Q26. If the answer to the above question is no, please suggest the methodology for considering such charges in determination of AGR of both the service authorised and SCN authorised entities, for purposes of levying Authorisation/ License fees & Spectrum Charges? Please provide your response with justification.

BIF RESPONSE

Please refer to our response to Q25

Q27. What should be the appropriate definition of GR, AGR, and ApGR for SCN Authorisation, including the relevant items of revenue, exclusions and deductions? Additionally, are there any operational or non-operational revenue elements specific to SCN Authorised entities that should be considered within the scope of definitions of GR, AGR and ApGR? Please provide a detailed response with specific line items of revenue, exemptions and deductions, and specific definitions for GR/ApGR/AGR.

BIF RESPONSE

27.1 We wish to make the following submissions in respect of the definitions of GR, AGR and ApGR – applicable across all licenses/authorisations, including the proposed SCN Authorisation:

(i) **The scope of revenue should be limited to revenue from licensed activities only. The activities that do not require authorisation under the Act should be excluded from the ambit of LF/SUC.**

(ii) The scope of deduction should be increased to make it effective and should include charges paid by one operator to another operator to avoid the cascading effect of LF/SUC.

(iii) Co-existence of licensed telecom services with non-licensed services/products should not attract levy on composite products/services. DoT can protect its legitimate revenue by adopting a fair valuation approach.

27.2 Gross revenue should be limited to only revenue from service provided in India under the license - NOT worldwide revenue. The existing definition of "gross revenue" (bottom of p.149) seems to include worldwide income.

27.3 The definition of revenue for Satellite Communication Network (SCN) Authorised entities should focus on **core satellite communication services**, instead of the broader definition that once included non-core income.

- **Gross Revenue (GR):** Total revenue from operations, including SCN services (satellite bandwidth, gateway services) and other income.
- **Applicable Gross Revenue (ApGR):** GR minus non-telecom/non-SCN revenue, such as sale of fixed assets, rent, interest, or dividends.
- **Adjusted Gross Revenue (AGR):** ApGR minus permitted deductions (pass-through charges and taxes).

27.4 **Definitions and Components for SCN Authorisation**

(i) Gross Revenue (GR)

GR includes all revenue accrued to the SCN Licensee, including:

- **Core SCN Services:** Revenue from selling SCN-as-a-Service (SCNaaS), satellite capacity, user terminal services, and managed services.
- **Interconnection Fees:** Charges from terrestrial or other satellite providers.
- **Miscellaneous Revenue:** Fees for installation, maintenance, or activation of SCN terminals.

(ii) Applicable Gross Revenue (ApGR)

ApGR is designed to exclude non-core income, narrowing the base from GR. Exclusions to arrive at ApGR include:

- **Non-telecom Income:** Dividend income, interest on investments, profit from the sale of fixed assets/investments, and gains from forex fluctuations.
- **External Activities:** Revenue from activities under a license/permission from other ministries (e.g., I&B).
- **Universal Service Obligation Fund (USOF):** Receipts from the USOF.

(iii) Adjusted Gross Revenue (AGR)

AGR is the final revenue base for license fees. It is derived by further deducting specific costs from ApGR:

- **Pass-through Charges:** Charges paid to other licensed service providers (TSP/VNO) for interconnectivity (e.g., paying a terrestrial operator for backhaul).
- **Taxes:** Goods and Services Tax (GST) paid to the government, if included in ApGR.

27.5 Specific Operational and Non-Operational Revenue Elements for SCN

SCN entities, which often operate as Satellite Communication Network Providers (SCNP), have unique revenue streams that must be properly categorized to avoid double taxation or overcharging.

A. Relevant Operational Revenue (Within SCN AGR)

These should be **included** as they are core to the SCN license:

- **SCNaaS (Satellite Communication Network as a Service):** Revenue from supplying bandwidth to VNOs or other ISPs.
- **Gateway Service Charges:** Fees for operating Earth Station Gateways.
- **Bandwidth Leasing:** Revenue from leasing transponder capacity (C, Ku, Ka band).
- **SCN User Terminal Services:** Fee for managing D2D (Direct-to-Device) or specialized SCN terminals.

B. Non-Operational/Excluded Revenue (Excluded from SCN AGR)

These should be **excluded** to arrive at ApGR/AGR:

- **Sale of Hardware/Terminals:** Sale of physical terminals (if not bundled as a service).
- **Interest/Dividend:** Income from investments or bank deposits.
- **Litigation Proceeds:** Money received from lawsuits.
- **Sale of Capital Assets:** Profits from selling old machinery or ground equipment.

27.6 **Summary of Key Exclusions (Deductions)**

Item	Status	Rationale
Pass-through Charges	Deducted from ApGR	Prevent double taxation on interconnection
GST Paid	Deducted from ApGR	Tax collected on behalf of government
Non-Core Income	Excluded from GR	Based on 2021 reforms, focus on telecom revenue
SCNaaS fees	Part of Revenue	Core operational revenue of SCN entity

Q28. In case FSS/MSS or any other spectrum is assigned to the Satellite Communication Network (SCN) authorised entities for provisioning of SCNaaS to Service authorised entities, what should be the broad financial terms & conditions of such an assignment?

BIF RESPONSE

28.1 Fees should be based on cost recovery, which is the worldwide norm. The broad financial terms and conditions for assigning FSS/MSS spectrum to Satellite Communication Network (SCN) authorized entities for SCNaaS, maybe structured as follows:

28.2 **Spectrum Assignment Method and Fees**

- **Administrative Assignment:** In line with the Telecommunications Act, 2023, spectrum for SCN authorized entities (including feeder and user links) should be assigned administratively, rather than through auction.
- **One-Time Charges:** A reasonable one-time entry fee/processing fee should be leviedas was proposed in the Draft Telecommunication Network Authorisation Rules issued in November 2025 .
- **Spectrum Pricing:** The charges should be based on a reasonable formula that supports long-term sustainability as a percentage of the Adjusted Gross Revenue (AGR).

28.3 **Annual Spectrum Usage Charges (SUC)**

- **Percentage of AGR:** The recommended approach is an annual license fee/spectrum charge equivalent to 0.1**% of the Adjusted Gross Revenue (AGR)**.
- **Payment Mechanism:** SUC and license fees should be paid in advance on a quarterly basis, payable within 15 days of the commencement of the quarter.

28.4 **Validity and Duration**

- **License/Assignment Term:** Spectrum for NGSO-based FSS and GSO/NGSO-based MSS should be assigned for a period of **5 years**, with potential for extension by another 2 years based on market conditions,. **4. Other Key Conditions**

- **No Per-Subscriber Charge:** Since SCN authorized entities provide wholesale SCNaaS to other authorized service providers, the per-subscriber charges applicable to direct-to-consumer NGSO FSS should not apply to the SCN authorized entity.
- **Revenue Definition:** The AGR for SCN entities should be clearly defined to reflect only the wholesale revenue earned from partner entities, avoiding double counting.

Q29. Should the spectrum charges for Satellite Communication Network (SCN) authorised entities be based on the spectrum charging framework as per the Recommendations dated 09.05.2025 applicable for Satellite based commercial communications services? Accordingly, what should be the appropriate spectrum charging framework and spectrum charges applicable for a SCN Authorised entity? Please provide your response with detailed justification.

BIF RESPONSE

29.1 Recommended charge for urban areas of 500 Rs. should not be applied to dual-mode terminals that only use the MSS service when outside of urban areas. 4% is OK if based on India-based revenue, but it would be better to calculate fees based on cost-recovery.

29.2 MSS for rural areas is providing a public service by extending connectivity to rural areas. The Government should encourage this through low fees, rather than discourage it by charging fees similar to urban areas.

29.3 Since the intent of creation of this new entity (SCN) as mentioned in response to Q1 above, is to facilitate bridging the digital divide and not for commercial operations, it is urged that the spectrum charges be kept to a bare minimum -preferably a fraction (0.1% AGR).

29.4 **Justification for Calculation of SUC for Satcom**

Year	Expenditure on WPC (INR Crores)	Expenditure on WMC (INR Crores)	Total Expense on Planning and Monitoring (INR Crores (i)	Expenses on account of Cost of Equipment , buildings and pension expenditure (INR Crores) (ii)	Total Annual Expenses of WPC+WMC (INR Crores) (A) (i+ii)	Total Sector Annual Revenues (INR Crores) (B)	A/B=
2023	20.74Cr	50.31Cr	71.05Cr	~200.00 Cr	~271 Cr	~300,000Cr *	0.0009(0.1%)

Source : DoT Annual Report 2022-23 & Media Reports

- This constitutes just **0.1% of the sectoral revenues. (271Cr /300,000 Cr)**
- **Therefore SUC should be an annual fixed fee of the order of 0.1% AGR**
- **This provides for ample margins after covering the cost of administration and regulation of spectrum**

Q30. If spectrum charges are to be levied on the basis of AGR of the SCN Authorised entity, are there any specific operational/ non-operational revenue items that should be excluded from AGR for the purpose of determination of spectrum charges? Please provide your response with detailed justification.

BIF RESPONSE

30.1 The core principle is that spectrum charges should be levied on revenue directly arising from telecom operations and not on unrelated income.

30.2 **Specific Exclusions from AGR for Spectrum Charges:**

a. **Non-Telecom Operations/Activities:** Revenue from activities other than licensed telecom operations is excluded. This includes revenue from business segments such as financial services or other non-core activities. For the purpose of determination of spectrum charges, the operational/non-operational revenue items arising from activities not involving spectrum, should be excluded.

b. **Non-Core Income Items:**

- **Gains from Forex Fluctuations:** Gains arising from foreign exchange rate fluctuations are excluded.
- **Insurance Claims:** Receipts from insurance claims are excluded.
- **Capital Gains/Profits:** Capital gains on account of the sale of fixed assets and securities are excluded.
- **Interest/Dividend Income:** Income from interest, dividends, and other non-telecom sources are excluded.
- **Bad Debts Recovered/Provisions Written Back:** Excess provisions written back and bad debts recovered are excluded.

c. **Information & Broadcasting (I&B) Activities:** Revenue from activities under a license or permission issued by the Ministry of Information and Broadcasting is excluded.

d. **Universal Service Obligation Fund (USOF) Receipts:** Receipts from the USO Fund are excluded.

e. **Pass-Through Charges (Roaming Revenue):** Roaming revenue passed on to other eligible/entitled telecommunication service providers is excluded.

f. **Wireline Revenue:** For spectrum usage charge (SUC) calculations, wireline revenue is generally excluded.

30.3 These exclusions are aimed at reducing the burden on telecom service providers by ensuring that only core telecom operational revenue is subjected to spectrum charges.

Q31. If the spectrum charges are not to be levied on basis of AGR of the SCN Authorised entity, what should be the appropriate spectrum charging mechanism and the corresponding level of spectrum charges applicable to Satellite Communication Network (SCN) authorised entities? Please provide your response with detailed justification.

BIF RESPONSE

If spectrum charges for Satellite Communication Network (SCN) entities are not based on Adjusted Gross Revenue (AGR), the appropriate mechanism is an **administrative allocation fee (which should be proportionate to the addressable niche market that satcom is supposed to serve).**

Q32. In case D2D services are permitted to be provided using the MSS frequency bands such as L & S bands, what should be the appropriate spectrum charging framework for such bands when utilised for provision of D2D satellite based services? Please provide detailed justification for your response, including the methodology for determination of such spectrum charges, if required.

BIF RESPONSE

32.1 No additional spectrum charges should be levied on the Service Authorised entity ('partnering entity') for use of IMT spectrum in the provision of satellite based D2D services.

32.2 **Technology-neutral use of auctioned spectrum**

- IMT spectrum is already acquired via auctions on a liberalised, technology- and service-neutral basis and is used across 2G-5G (and future 6G) without incremental SUC for specific applications.
- Treating D2D as a special, surchargeable use would effectively re-price already-paid-for rights, undermine regulatory predictability, and constrain operators' ability to choose the most efficient terrestrial–satellite mix within their existing IMT holdings.

32.3 **Avoiding double-charging and supporting coverage**

- D2D over IMT does not involve additional spectrum; it uses the same licensed carriers in the same geography, so extra charges would amount to double-charging and would deter adoption of innovations that improve rural, remote and disaster-area connectivity.
- A charge-neutral framework avoids distorting technology choices and promotes efficient, high-value use of scarce IMT spectrum in the public interest.

32.4 **Auctioned MSS Spectrum**

- If the Government allows MSS-based D2D it and assigns user-link MSS spectrum through transparent auctions, no extra D2D-specific charges should apply there either, for the same reasons as in auctioned IMT spectrum.

32.5 The method of allocation of satellite spectrum for MSS bands viz. L & S bands should be administrative only, as stipulated in the Telecommunications Act 2023. When Direct-to-Device (D2D) services are provided using Mobile Satellite Service (MSS) frequency bands (such as L and S bands), the spectrum charging framework should reflect that these bands are increasingly valuable, enabling high-quality voice, data, and IoT.

32.6 An appropriate charging framework should consider the following components based on emerging regulatory trends and industry proposals:

- **Extended Tenure:** To provide investment certainty, a long-term license (e.g., 20) should be offered.
- **Technology Neutrality:** Spectrum should be made available in a technology-neutral manner, allowing operators to use the best available standards (e.g., 3GPP Release 17/18 NTN).
- **Flexibility:** The framework must support the hybrid nature of D2D, which may involve both exclusive MSS allocations and shared spectrum, with licensing that permits both.

Q33. In case D2D services are permitted to be provided using the IMT spectrum assigned to the Service Authorised entity ('partnering entity') providing D2D satellite-based telecommunication services, should any additional spectrum charges be levied on the

Service Authorised entity ('partnering entity') for use of IMT spectrum in the provision of satellite based D2D services? If yes, what should be the basis and quantum of such additional spectrum charges payable by the Service Authorised entity to the Government? In either case, please provide detailed justification for your response, including the detailed methodology for determination of such spectrum charges.

BIF RESPONSE

BIF is of the view that since the IMT spectrum is being utilised for providing D2D services for bridging the digital divide and in a way extending the terrestrial services to unconnected and underconnected areas , no additional SUC be levied on the service entity. SCN shall be primarily deployed by non-TSPs (who are expected to have their own vertically integrated) Network +Service Infrastructure, it is expected that SCNaaS will primarily be used for niche applications and for connecting the unconnected

Q34. In case spectrum is assigned to Satellite Communication Network (SCN) authorised entities, what should be the appropriate payment terms for spectrum charges payable by Satellite Communication Network (SCN) authorised entities? Please provide your response with justification.

BIF RESPONSE

Appropriate payment terms for Satellite Communication Network (SCN) spectrum involve an Adjusted Gross Revenue (AGR) based model, paid annually or quarterly, often combined with upfront fees for spectrum assignment. The Quantum of Spectrum Usage Charges should be kept to a bare minimum so as to incentivize SCN operators and in proportion to the size of the addressable niche market that Satcom proposes to address.

Q35. In case Minimum Spectrum Charges are to be applicable for SCN authorised entities, what should be the payment terms for the minimum spectrum charges for SCN authorised entities? Please provide your response with detailed justification.

BIF RESPONSE

Please refer to our response to Q34 above

Q36. What should be the minimum equity and minimum networth requirements for a Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.

BIF RESPONSE

This should be based on business plan and ability to fund the proposed plan, not net worth. Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. High entry fees (such as the proposed Rs 12 crore for unified service authorization) are disproportionate for the nascent satellite sector. We urge a separate, lower fee structure to maintain commercial viability.

Q37. What should be the entry fee for proposed Satellite Communication Network (SCN) authorisation? Please provide detailed justification in support of your response.

BIF RESPONSE

Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. High entry fees (such as the proposed Rs 12 crore for unified service authorization) are disproportionate for the nascent satellite sector. We urge a separate, lower fee structure to maintain commercial viability.

Q38. What should be the rate of Authorisation Fee for a Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.

BIF RESPONSE

Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. High entry fees (such as the proposed Rs 12 crore for unified service authorization) are disproportionate for the nascent satellite sector. We urge a separate, lower fee structure to maintain commercial viability.

Q39. Should a Minimum Authorisation Fee be applicable for the proposed SCN Authorisation? If yes, what should be the Minimum Authorisation Fee be for the proposed SCN Authorisation? Please provide detailed justification in support of your response.

BIF RESPONSE

There should NOT be a minimum authorisation fee for the proposed SCN Authorisation. Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. High entry fees (such as the proposed Rs 12 crore for unified service authorization) are disproportionate for the nascent satellite sector. We urge a separate, lower fee structure to maintain commercial viability.

Q40. What should be the appropriate payment terms & conditions for Authorisation Fees? Please provide detailed justification in support of your response.

BIF RESPONSE

Appropriate payment terms and conditions for authorization fees—which are generally one-time, non-refundable charges for setup, verification, or access—should focus on immediacy, and clarity. Best practices include demanding payment in advance, defining the fee as non-refundable, and outlining the consequences of late payment.

Q41. What should be the terms and conditions for Bank Guarantees, including both Performance Bank Guarantee (PBG) and Financial Bank Guarantee (FBG), for SCN authorised entities? Please provide detailed justification in support of your response.

BIF RESPONSE

Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. Onerous Financial Conditions viz, PBG and FBG are disproportionate for the nascent satellite sector. We urge there should be no need for any BGs.

Q42. What should be the application processing fee for Satellite Communication Network (SCN) authorised entity? Please provide detailed justification in support of your response.

BIF RESPONSE

Satcom is a nascent sector. SCN is meant for bridging the Digital Divide and therefore must be encouraged. High entry fees (such as the proposed Rs 12 crore for unified service authorization) are disproportionate for the nascent satellite sector. We urge a separate, lower fee structure to maintain commercial viability.

Q43. Apart from the financial provisions discussed earlier, are there any other financial terms and conditions that should be made applicable for the proposed Satellite Communication Network authorisation? Kindly provide a detailed response with justifications.

BIF RESPONSE

No Comments