

Response to TRAI CP Consultation Paper on “Assignment of Spectrum for Space-based Communication Services”

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We appreciate and thank TRAI for opening this issue for public discussion. Please see our observations and comments below.

A. Preliminary Remarks

We have two overarching concerns with the Department of Telecommunications’ (DoT) Reference Letters:¹

1. **DoT reference letters do not consider the public interest in broadcasting:** Broadcasting is an important tool for dissemination of public interest content to citizens and adds significant value to the Indian economy. TV broadcasters use satellite spectrum, particularly the C-band. There are 180 million TV households in India today and it will increase to 206 million by 2025, according to estimates.² TRAI is statutorily bound to promote the interests of consumers and service providers in both telecom and broadcasting.³ The regulator should therefore study the implication of auctioning of C-band spectrum (3300-3670 MHz) on broadcasting.
2. **DoT Reference Letters do not reflect key distinctions in ‘satellite spectrum’ and ‘terrestrial spectrum’:** Second, the Reference Letter⁴ clubs ‘satellite spectrum’ and ‘terrestrial spectrum’ as ‘access spectrum’ and calls for similar rules for both. This ignores the fundamental concept that satellite spectrum is always associated with satellite orbital parameters – the reason why it is aptly termed by the ITU (International Telecommunication Union) as ‘spectrum-orbit resource’. This resource, as per Article 44 of ITU’s Constitution (of which India is a signatory), is shared *rationality, efficiently and economically, in conformity with the provisions of the Radio Regulations* by all member administrations of the ITU. Therefore, satellite spectrum and terrestrial spectrum are distinct, and it would be erroneous to accord the same regulatory treatment to both. Functional differences between the two reflect in the regulatory treatment and mode of assignment for both.

The DoT reference also ignores key technological distinctions that separate regulation, the practice followed for filing of space networks with the ITU and mode of spectrum allocation/assignment. Procedures and modalities contained in the provisions of ITU’s Radio Regulations for ‘spectrum-orbit coordination’, cannot be avoided or circumvented. Frequency assignments to satellite networks that are not recorded in ITU’s MIFR (Master International Frequency Register) do not qualify for international recognition and protection (Article 8 of Radio Regulations).

It is important to recognise distinctions between business use-cases for terrestrial and satellite spectrum. While terrestrial spectrum is widely reserved for telecom and internet services amongst other services, satellite spectrum by virtue of its ubiquitous nature is capable of multiple

¹ DoT Reference letters dated 13 September 2021 and 16 August 2022 in the TRAI CP, pg 136 & 140, available at: https://www.trai.gov.in/sites/default/files/CP_06042023.pdf#pg=136

² FICCI-EY, Windows of Opportunity: India’s Media and Entertainment Sector – Maximizing across segments (April 2023), available at: <https://fikki.in/publication.asp?spid=23783> , pg 50.

³ Preamble, The Telecom Regulatory Authority of India Act, 1997.

⁴ DoT Reference Letter dated 13 September, 2021, pg 137 available at: https://www.trai.gov.in/sites/default/files/CP_06042023.pdf#pg=137

applications in various sectors of national interest such as military, aerospace and defense, disaster management, banking, and agriculture. Related applications rely on satellite-based communication and would need to co-exist with other radio services like broadcasting satellite service.

Acquisition of terrestrial mobile spectrum comes with several distinct privileges like the right to interconnection, right to use spectrum that is interference-free, right to unique numbering resources and right of way. While use of satellite spectrum also involves some of these privileges, being shared resource as compared to discrete and exclusive chunks (as in the case of terrestrial mobile spectrum) it can support multiple users on a coordinated basis.

Spectrum sharing and coordination procedures have been developed over the years by the ITU membership and have passed the test of time for harmonious coexistence by 41 radio services defined in the Radio Regulations. Satellite spectrum is not assigned to an operator exclusively. Instead, it is coordinated internationally and shared among multiple operators for use of different orbital positions for GSO or N-GSO satellite networks. The concept of exclusive privilege for terrestrial spectrum does not extend to satellite spectrum for this reason. It does not meet the fundamental prerequisite for being auction able.⁵

Therefore, prior to the CP, the TRAI could have assessed the state of spectrum usage in India and provided clarity on some key questions. Some of these include:

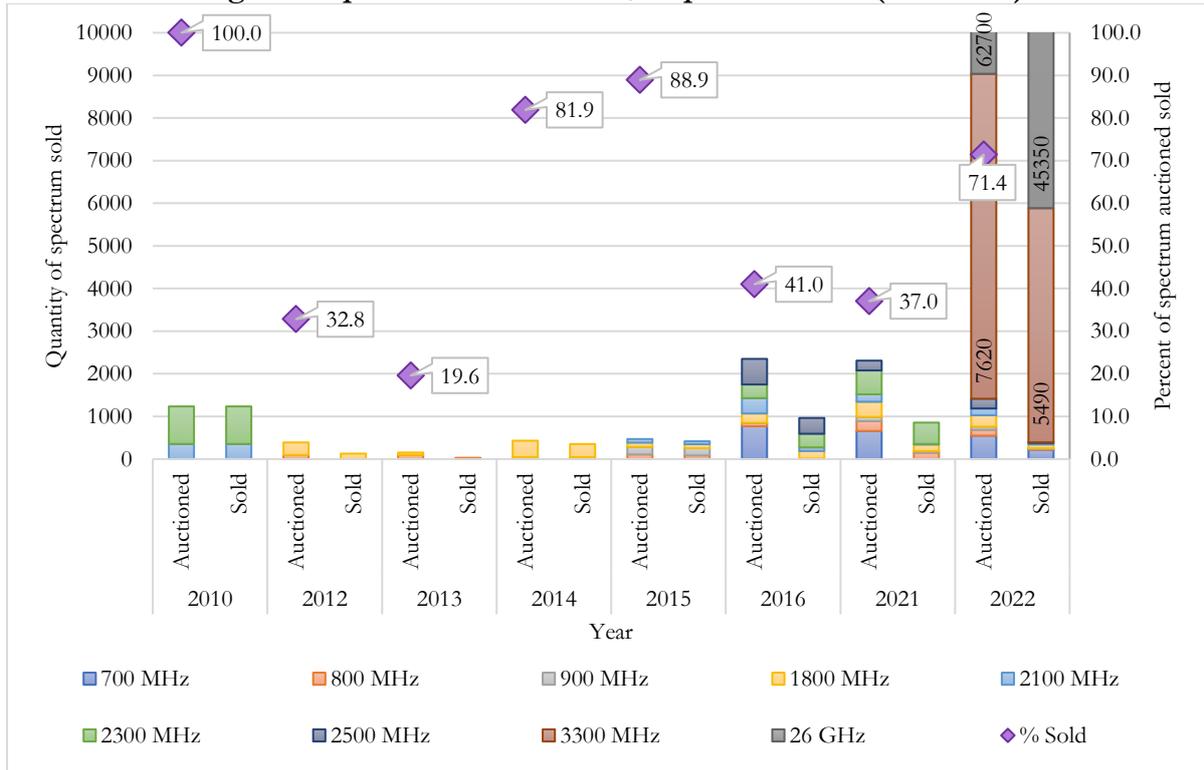
- a. The impact of satellite spectrum on other services and use-cases.
- b. The impact on other policy efforts like the Draft Telecommunications Bill, the Indian Space Policy, and the Uplinking and Downlinking Guidelines.
- c. The cost of shifting a service like broadcasting from one spectrum band to another.
- d. Implications on international and regional coordination mechanism.

Further, the CP also does not provide explanations for certain confounding factors/ trends. These include:

- a) **Large portion of spectrum put to auction remains unsold** – Except for 2010 auctions due to artificial scarcity and lack of a roadmap, large part of spectrum has remained unsold. In 2014, 900 MHz got sold 100 percent because of license extension/renewal compulsions. Thus, it is the artificial scarcity combined with license extension/renewal compulsions which led to spectrum sale in the initial years. In 2016, the entire 700 MHz and 60 percent of the total spectrum put for sale remained unsold due to [high prices](#). Only 69 percent spectrum put up for auction so far has been sold indicating that reserve price was too high, besides other factors like eco-system not being fully ready.
- b) **Significant portion of spectrum sold at the reserve price**- The success of an auction is determined not only by the ability to sell a large proportion of spectrum put up for auction, but also by the market/clearing price being significantly above the reserve price (RP), viz. the auction process must help discover the true market price of the spectrum. Evidence from previous auctions indicate that a significant portion of spectrum was sold below the RP. While in 2013 [none of the spectrum](#) was sold above RP, in 2014, 2015 and 2016 only 53 percent, 79 percent and 21 percent of the spectrum put to auction was sold above the RP respectively. Similarly, in 2022 a large quantum of the spectrum [was sold](#) at the reserve price.

⁵ TV Ramchandran, 'Satellite Spectrum issue getting curiuser and curiuser' 28 September 2021, available at: <https://telecom.economictimes.indiatimes.com/tele-talk/satellite-spectrum-issue-getting-curiuser-and-curiuser/5107>

Figure 1: Spectrum Auctioned v/s Spectrum Sold (2010-2022)



Source: TRAI documents & PIB Press Release (2022)

B. Response to CP Questions

Q1. For space-based communication services, whether frequency spectrum in higher bands such as C band, Ku band and Ka band, should be assigned to licensees on an exclusive basis? Kindly justify your response. Do you foresee any challenges due to exclusive assignment? If yes, in what manner can the challenges be overcome? Kindly elaborate the challenges and the ways to overcome them.

No, frequency spectrum in higher bands such as C band, Ku band and Ka band, should not be assigned to licensees on an exclusive basis, particularly through an auction. As stated in the current CP, unlike spectrum in the lower bands (viz. L-band and S-band) as well as terrestrial mobile spectrum, frequency spectrum in the higher bands (such as C-band, Ku-band and Ka-band), can be assigned to several service providers owing to angular separation, altitude separation, polarization and ITU's framework on coordination mechanism. Thus, if frequency spectrum is assigned to space-based service providers on an exclusive basis through auctions, the same frequency range cannot be assigned to other service providers which may lead to several allocational inefficiencies.

If assigned exclusively, there are two broad issues that require further clarification. First, there is a need for explanation of what exclusive spectrum assignment means for satellite communication services in higher spectrum bands, which cannot be treated similar to exclusive spectrum assignment for terrestrial mobile spectrum or lower bands. That is, the terms and conditions of the assignment will be crucial in defining the system which should ideally provide flexibility for new market players to enter, provision for change/shift in assignment and provision for coexistence of multiple entities pertaining to the same service in the same band. Since exclusivity

in ownership is a fundamental basis of an auction, these provisions are difficult to establish if the auction route is adopted.

Second, if service providers are granted exclusive rights through auctions to use separate frequency ranges, there could be scenarios of conflict on spectrum sharing between service providers which may result in inefficient use of spectrum. We discuss the second issue and challenges associated with the same in more detail below-

- **Market concentration and spectrum gatekeeping:** Auctioning/exclusive access to spectrum (based on a minimum eligibility criteria) may create barriers to entry for market players from two standpoints. First, it may reinforce concentration amongst dominant players, and further diminish the possibility of new entrants to the telecom and broadcasting sectors. Second, it may limit participation and innovation in 5G, as smaller enterprises would not have easy access to spectrum. The same applies to news broadcasters who will find it difficult to compete in spectrum auctions, particularly given the large differences in size and scale of operations.
- **Efficient spectrum management will necessitate more business-to-business regulation:** If the entire C-band (3300-4200 MHz) is auctioned-off to facilitate 5G services, TRAI and Department of Telecommunications (DoT) may have to come up with specific regulations for shared satellite spectrum between telcos and other entities, including broadcasters. In its latest CP, TRAI has asked to make recommendations on a potential framework to address shared use of the same spectrum. This has never been done before and is likely to introduce a new set of regulatory uncertainties in these sectors. Moreover, sharing criteria between space and other services already exists in ITU's Radio Regulations after many years of extensive hard work. How would the new recommendations that TRAI has been requested to develop, by the DoT, work with those, already present in the Radio Regulations and internationally accepted.
- **Increase cost burden on incumbents to reduce interference:** Another scenario to be considered is, if the C-band (3300-4200 MHz) is auctioned-off to facilitate 5G services with a provision for coexistence of both IMT and broadcasting services in the same band. To enable coexistence of the two services TRAI and Department of Telecommunications (DoT) recommend deployment of special equipment such as high-quality bandpass filters and cavity filters to avoid interference of signals, which may increase the cost burden on incumbents, namely MSOs and DTH operators. This will disproportionately affect smaller enterprises, and act as a disincentive for new players to enter this market.
- **Exclusive assignment through auctions may also hinder distribution of content, potentially violating the freedom of speech and expression of broadcasters:** Broadcasting makes use of 'airwaves' to transmit and distribute content to 187 million TV households in India. For private broadcasters, it is a form of commercial speech, protected under Article 19(1)(a) of the Indian Constitution. In case of TV broadcasting, the Supreme Court said that the regulation of 'airwaves' should guarantee access to diversity and plurality of opinions, because it is essential to the freedom of speech and expression under Article 19(1)(a) of the Indian Constitution.⁶The Supreme Court in *Sakal Newspapers v. Union of India*⁷ [recognised](#) that the right to propagate ideas was a part of freedom of speech and expression. It further held that this right to propagate ideas included the right to reach any class and number of readers. In *Indian Express Newspaper v. Union of India* (1985 SCR (2) 287),

⁶ *Ministry of Information and Broadcasting v. Cricket Association of Bengal*, 1995 (2) SCC (161).

⁷ (1962 AIR 305)

the Supreme Court [held](#) that there could not be any restriction on the freedom of speech and expression on the grounds of public interest. It also noted that the freedom of speech and expression could not be restricted on any grounds other than those mentioned in Article 19 (2) of the Indian Constitution. The state has an obligation to guarantee the right to commercial speech and to ensure plurality of opinions on television. Spectrum allocation is an important tool for the state to ensure this. In case of an auction, the state passes on the ability to determine spectrum use by broadcasters to private players. As the private player has no obligation to ensure plurality, they can hoard spectrum for their own use, or act as a gatekeeper and charge broadcasters for spectrum use. In both cases, plurality of opinion, and freedom of speech and expression is impacted. In case of gatekeeping, smaller broadcasters would be unable to pay high fees and lose out on the ability to access spectrum to disseminate content. Further, a citizen's right to access information is tied to the right to freedom of speech and expression. A restriction on spectrum access by broadcasters also indirectly impact the citizen's right to access information.

- **Exclusive assignment through auction will affect broadband and broadcast connectivity in remote and rural regions:** Satellite spectrum is an important vehicle to ensure connectivity to remote regions in India that do not have wired connections, and areas affected by natural disasters. At present, many sparsely populated areas, including areas of strategic importance and areas important from the socio-economic perspective, do not have mobile terrestrial coverage and other forms of connectivity. An auction to grant exclusive rights to a few players and increase costs for basic network services in these regions. This may also impact many other government programs like Digital India, Digital payments, Smart Villages, Basic Health & Education programs, etc.

Thus, given the potential challenges that may arise due to exclusive assignment, specifically through auctions, we propose that DoT should resort to administrative assignment of spectrum for space-based communication services, particularly in higher bands such as C band, Ku band and Ka band.

Q2. Whether any entity which acquired the satellite spectrum through auction/assignment should be permitted to trade and/or lease their partial or entire satellite spectrum holding to other eligible service licensees, including the licensees which do not hold any spectrum in the concerned spectrum band? If yes, what measures should be taken to ensure rationale of spectrum auction and to avoid adverse impact on the dynamics of the spectrum auction? Kindly justify your response.

No, an entity which acquires the satellite spectrum through auction/assignment should not be permitted to trade and/or lease their partial or entire satellite spectrum holding to other eligible service licensees, including the licensees which do not hold any spectrum in the concerned spectrum band. This is because use and administration of satellite spectrum involves and affects multiple domestic as well as international service provides based on international coordination mechanisms.

On the issue of allowing trading/ leasing of assigned spectrum we refer to our response to the previous question where we caution against assigning satellite spectrum through auctions, especially for higher bands such as C band, Ku band and Ka band. This is because an effort to auction satellite spectrum and allow trading and/or leasing by acquiree entity will potentially involve and effect exiting international coordination mechanisms. We elucidate the challenges pertaining to the same in detail below-

- **An auction will conflict with international coordination mechanisms:** Unlike terrestrial frequency assignments where deployment of transmitting stations, only in vicinity of international borders, require ‘cross-border’ coordination, *all* frequency assignments made to satellite networks are registered in the MIFR (Master International Frequency register) after necessary coordination. This is a pre-condition for these frequency assignments to be accorded international recognition and protection as stated in Article 8 of ITU’s Radio Regulation.
- ITU is a specialized UN agency responsible for allocation of global radio spectrum, currently from 8.3 kHz to 3000 GHz (8.3 kHz to 275 GHz allocated to 41 radio services and 275 GHz to 3000 GHz not allocated to any radio service) and satellite orbits, along with the development of common technical standards. As part of its management process, ITU has an international binding treaty⁸ for its 193 member countries called the Radio Regulations (RR). The RR determines how the radio frequency spectrum is shared across different services, including space services, and presents detailed guidelines on using specific equipment to ensure successful coexistence of services across the radio spectrum.
- The Radio Regulations specify allocation of frequencies for services, like mobile, broadcasting, radio navigation, and aeronautical navigation for different regions across the globe. However, they do not cover the mode of assignment of frequencies within different countries. For instance, in India, terrestrial radio spectrum used for telecommunication services follows an auction process, whereas assignment of satellite spectrum is done administratively. Further, use of satellite spectrum involves regional coordination with concerned satellite systems, countries and regions to avoid interference with spectrum used by them. It is essential for countries to follow a common global standard. Any deviation from it would disrupt existing and time-tested coordination mechanisms.
- The ITU Constitution (CS 196) & Convention, as well as Radio Regulations state that spectrum/orbit resources are limited in nature, and must be used rationally, efficiently, economically by all member states. Under the regulatory framework for space services by ITU,⁹ the major guiding principles highlight that the right to use orbital, and spectrum resources for a satellite network or system should be acquired through negotiations with the administrative authority and fill necessary gaps in the orbit as and when required, which would not be possible via an auction process.
- Global coordination of satellite spectrum allocation under the aegis of the International Telecommunication Union (ITU) is based on the principles of efficient use and equitable access to spectrum/orbit resources.¹⁰ In the case of terrestrial spectrum, each frequency band can be used only by a single operator in a given area and cannot be shared due to interference concerns. Different networks in adjacent channels may cause significant inter-network interference, even with a guard band.¹¹ At any given point of time multiple operators look to exclusively use spectrum, and this leads to scarcity. Under such circumstances, the public interest and efficient use of the resource are best served by auctioning the spectrum.

⁸ PP-98 (Plenipotentiary Conference 1998) The provisions of both this Constitution and the Convention are further complemented by those of the Administrative Regulations, enumerated below, which regulate the use of telecommunications and shall be binding on all Member States: – International Telecommunication Regulations, – Radio Regulations.

⁹ ITU Radio Regulatory Framework For Space Services, available at: itu.int

¹⁰ Article 44(2) of the ITU Constitution, available at: <https://www.itu.int/en/council/Documents/basic-texts/Constitution-E.pdf#page=49>.

¹¹ Jeong Seon Yeom et al., “Performance Analysis of Satellite and Terrestrial Spectrum-Shared Networks with Directional Antenna,” ETRI Journal 42, no. 5 (2020): pp. 712-720, <https://doi.org/10.4218/etrij.2020-0185>.

- Conversely, satellite spectrum is a shared global resource and non-exclusive in nature. Multiple satellite operators can use spectrum within the same geographic area. Multiple operators may use the same satellite frequency using different satellites without interference. The positioning of the satellites and adherence to certain transmission limits clearly defined and elucidated in ITU's Radio Regulations ensure that there will be no interference on the receiver end. Because of this characteristic of satellite spectrum, administrative allocation is the best method for this type of spectrum. Exclusive auctioning of satellite spectrum that can be shared between operators would lead to unnecessary segmentation and inefficient use of spectrum, which goes against public interest and principles enshrined under ITU Radio Regulations. Article 4.1 of the ITU Radio Regulations states that “*Member States shall endeavour to limit the number of frequencies and the spectrum used to the minimum essential to provide satisfactorily the necessary services...*”¹².
- ITU, in its World Radiocommunication Conferences (WRCs), reviews and revises (if necessary) the Radio Regulations, that form the international treaty to govern the use of the radio frequency spectrum. ITU Member states attend the WRC to vote approve the proposed changes to the Radio Regulations, but in practice, any actual changes to the Radio Regulations are made through negotiation and consensus building.¹³ WRC decisions shape Radio Regulations. India is a signatory of the ITU Convention and Constitution.¹⁴ Satellite spectrum auction will highlight India's departure from existing practices that it has been a part of.

Q3. What should be the methodology for assignment of spectrum for user links for space-based communication services in higher spectrum bands like C-band, Ku-band and Ka-band, such as (a) Auction-based (b) Administrative (c) Any other? Please provide your response in respect of different types of services (as mentioned in Table 1.3 of this consultation paper). Please support your response with detailed justification.

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Q4. What should be the methodology for assignment of spectrum for gateway links for space-based communication services, such as (a) Auction-based (b) Administrative (c) Any other? Please provide your response in respect of different types of services. Please support your response with detailed justification.

Based on international experience and best practices we propose an administrative assignment of spectrum for both, user link as well as the gateway links for space-based communication services, particularly for Fixed-Satellite Services (FSS) and Broadcasting-Satellite Services (BSS).

We suggest that spectrum for both user link as well as the gateway links for space-based communication services should be administratively assigned for all services, particularly for Fixed-Satellite Services (FSS) and Broadcasting-Satellite Services (BSS) in higher spectrum bands like C-band, Ku-band and Ka-band for the reasons mentioned in the responses to previous questions. Table 1 highlights services where DoT should strongly consider administrative assignment of spectrum for space-based communication services.

¹² Article 4.1, ITU Radio Regulations, Edition of 2020.

¹³ ITU, 'Dispute Resolution in telecommunications sector', available at: https://www.itu.int/ITU-D/treg/publications/ITU_WB_Dispute_Res-E.pdf#page=58

¹⁴ TEC, International Telecommunication Union, see: [https://www.tec.gov.in/itu#:~:text=International%20Telecommunication%20Union%20\(ITU\)&text=India%20is%20its%20member%20since%201869](https://www.tec.gov.in/itu#:~:text=International%20Telecommunication%20Union%20(ITU)&text=India%20is%20its%20member%20since%201869).

Table 1: Type of services for which information was sought from DoT.

S. No.	Type of service	Whether spectrum is envisaged to be assigned through auction? (Yes/ No)
1	Access	-
2	Internet	-
3	NLD	-
4	ILD	-
5	GMPCS	-
6	VSAT CUG (Commercial)	No
7	Captive VSAT CUG	No
8	Machine to Machine (M2M)	-
9	DTH	No
10	Teleport	No
11	DSNG	No
12	HITS	No

Further we highlight and reiterate reasons to avoid satellite spectrum auction particularly for space-based communication services, especially for FSS and BSS-

- **Satellite spectrum is non-rivalrous in nature-** The satellite spectrum is non-rivalrous in nature, i.e., the use of the same spectrum by one does not cause any significant negative externality to other satellite operators. Specifically, unlike terrestrial mobile spectrum, this property of satellite spectrum makes use of the same band possible (subject to specified guard bands) by multiple satellite systems servicing the same area, without causing significant interference to other service providers. Satellite systems also coordinate with each other in sharing the same frequencies across their services. ITU has not placed any limit to the number of satellite filings that can be made by member administrations for any frequency band. As a result, the satellite spectrum is never exclusively assigned as opposed to mobile access spectrum. It is a shared commodity between satcom operators and is therefore not an auctionable resource. A resource cannot be auctioned without giving unique rights.¹⁵
- **Exclusive access to spectrum is a fundamental basis of an auction-** Bidders in an auction bid for spectrum should ideally get exclusive access. Any auction mechanism will fail if the exclusive access is not granted. However, in the case of satellite spectrum, the sharing of frequencies between operators is what results in large capacities being available from multiple satellite systems over a given geography. Any attempt to create exclusivity by dividing the satellite spectrum will restrict the use of the spectrum only to a few operators and will significantly reduce its value.
- **Satellite-network operations require significant bilateral/multilateral coordination and cooperation-** India is signatory to a specific treaty for spectrum cooperation involving 193 administrations. Spectrum for satcom services is authorized for 'right-to-use' by all nations across the world, and is assigned only by administrative process, at charges that essentially cover the cost of administration and a nominal charge for use of spectrum. Various bilateral coordination agreements with other countries/ satellite systems will pose many constraints for the use of any spectrum for a particular satellite system.

¹⁵ TV Ramchandran, 'Satellite Spectrum issue getting curiouser and curiouser' 28 September 2021, available at: <https://telecom.economictimes.indiatimes.com/tele-talk/satellite-spectrum-issue-getting-curiouser-and-curiouser/5107>

- International evidence indicates against auctions for space-based communication services-** Out of the 193 ITU member countries, only a few countries have conducted auctions for domestic frequency spectrum, mostly for mobile satellite services (MSS) (Table 2). The legislative history of the ORBIT Act (that bans satellite spectrum auction in the US¹⁶) includes a Commerce Committee report¹⁷ according to which the Committee apprehended that concurrent auctions in other countries could place significant financial burdens on US owned global satellites. Additionally, the Committee pointed out that launch of a global and international satellite system requires substantial resources (before getting licenses) and a spectrum auction would disrupt availability of capital for such satellite projects. The US authorizes domestic and foreign satellites through an administrative process. Brazil abandoned auctions of satellite spectrum along with orbital slots in 2020¹⁸, and noted that no country in the world follows this approach¹⁹.

Table 2: International evidence on auction of satellite spectrum for space-based communication services

Country	Spectrum Auction/Allocation	Services concerned
United States	Auctioned part of the C-band spectrum (3.5 GHz-3.6 GHz) in 2020 , and subsequently in 2021 for 3.7-3.98 GHz. The FCC conducted “incentive” auctions for broadcasters to free up the C-band back in 2017 .	MSS
Canada	Industry Canada (also known as ISED) auctioned 3.5 GHz and 3.8 GHz bands in 2023 . In response to this consultation for auctioning satellite spectrum, several satellite industry players had voiced their opposition to the use of auctions, stating the inherent international nature of satellite communications and regulations as a key reason.	MSS
South Korea	Held 5G auctions for the mid-band 3.5 GHz frequency range, raising USD 3.3 billion (KWR 3.62 trillion) in 2018 .	MSS
Brazil	Held 5G auctions in the mid-band 3.5 GHz frequency range in 2021 .	MSS
United Kingdom	The 700 MHz and 3.6-3.8 GHz frequency bands have been awarded by auction. The frequency bands are likely to be used by mobile network operators to deliver a range of services, including 5G mobile.	MSS

¹⁶ TV Ramchandran, 'Don't auction satellite spectrum', The Hindu Business Line, 27 October 2022, available at: <https://www.thehindubusinessline.com/opinion/dont-auction-satellite-spectrum/article66062155.ece>

¹⁷ Report of Committee on Commerce, Communications Satellite Competition and Privatization Act of 1998, H.R. Rep. No.494, 105 Cong., 2nd Sess. pg 64-65 (1998). , available at <https://www.congress.gov/105/crpt/hrpt494/CRPT-105hrpt494.pdf>

¹⁸ Brazil, Law No. 9,472 of July 16, 1997, § 172, as amended by Law No. 13,879 of October 3, 2019 (replacing satellite auctions with administrative process), at <https://informacoes.anatel.gov.br/legislacao/leis/2-lei-9472#livroIIItituloVcapII>.

¹⁹ Brazil, ANATEL, Analysis No. 241/2020/MM, Public Consultation regarding the General Satellite Regulation - Item No. 37 of the Regulatory Agenda for the 2019-2020 biennium (17 Dec. 2020) at para 4.70-4.81, available at https://sei.anatel.gov.br/sei/modulos/pesquisa/md_pesq_documento_consulta_externa.php?eEPwqk1skrd8hSlk5Z3rN4EVg9uLJqrLYjw_9INcO6WoeHMBfhEpsGdV8m3dD4wT0pjDpcgcaIS61R3UjJd_ZLKruth6DuXQLXjN9HUfMZ9RrUBhEkSkb_KXbDORK.