



DG/COAI/2022/013

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Subject: COAI Response to the TRAI Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT / 5G”

Dear Sir,

This is with reference to the Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT / 5G” released by TRAI on November 30, 2021.

In this regard, please find enclosed COAI response to the said Consultation Paper.

We hope that our submission will merit your kind consideration and support.

Thanking you,

Yours faithfully,

Lt. Gen Dr. SP Kochhar
Director General

Cc:

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COAI Response to the TRAI Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT/5G”

Preamble:

We thank the Authority for providing us the opportunity to provide the comments on the TRAI Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT/5G”.

The financial viability and sustainability of players remains a challenge and sector requires massive investments for 5G rollout. Hence spectrum pricing should ensure more and sustainable investment in networks.

During and post Covid-19 pandemic, wireless connectivity has acted as lifeline for society and economy. It will be crucial for industrial transformation and economic recovery post pandemic and to make India reach \$5 trillion economy.

The NDCP-18 recognizes spectrum as a key natural resource for public benefit. Depending upon the objective Government takes - public good or revenue maximization – a valuation model can be developed.

Telecom is capital-intensive, long gestation and requires constant investment. The current health of the industry is very poor. Even the recent government package recognizes the challenge faced by Telcos on liquidity front. Therefore, TRAI should account for the industry financial health while doing its valuation cum reserve price setting exercise.

Unsold spectrum is another huge challenge for India. Last few auctions specially 2016 and 2021 saw almost 60% of the MHZ unsold. This shows Reserve Price (RPs) set by TRAI are actually not realistic.

The valuation method for India should be devised keeping local context in mind including sustainability of the industry and service affordability.

Executive summary:

1. We submit that Spectrum is a critical resource for mobile networks. Availability of ‘adequate spectrum’ at the ‘right price’ and ‘right time’ is central to the growth of the telecom sector. Right price means that prices should be at a level that should ensure the financial sustainability of the mobile industry and affordability of the services.
2. **Telecom Reforms:** The Government recognized the importance of the telecom sector and approved telecom reforms in September 2021. The **availability and pricing of spectrum should be in consonance with the objective of these reforms** which are to generate employment, promote competition, protect consumer interests, ensure sustainability of mobile industry, encourage sustainable investment and reduce regulatory burden on TSPs
3. **Availability of spectrum:** 5G is designed to serve various use-cases by deploying it over a wide range of spectrum bands. For instance, sub-GHz bands are essential for the capacity of the network. Since all the bands have a complementary role in a 5G



network, these must be auctioned simultaneously for efficient designing of the network and to deploy various use cases supported by 5G. **It is thus important that entire available spectrum of all the 5G spectrum bands (sub-GHz, mid-band and high-band) is put to auction in the forthcoming auction for 5G/ IMT along with V-Band and E-Band.**

4. **Spectrum Harmonisation:** Industry has in the past, faced several challenges with respect to interference caused from various sources, which has adversely affected the quality of services or has rendered spectrum unable. Therefore, **in the upcoming spectrum auction, only the harmonized interference-free and immediately deployable spectrum should be put-in.**
5. **Contiguous Spectrum:** It is most desirable to make available contiguous blocks for auction. In case an operator is already having blocks of the spectrum in a particular band, and they acquire additional block in the same band, **DoT should strive to ensure contiguity of the holdings so as to ensure efficient utilization of spectrum and better user experience.**
6. **Pricing of Spectrum:** A large chunk of 63% of the spectrum put up for auction, remained unsold in the last auctions. Hence **spectrum pricing is an area which requires a comprehensive re-look by the Authority.** Sticking to old methodologies may not yield the desired results as envisaged in NDCP 2018 which lays emphasis on “*Optimal Pricing of Spectrum to ensure sustainable and affordable access to Digital Communications.*”

A critical factor which has an impact on the pricing of spectrum is the level of **ARPU /RoCE or the income/revenue potential in a country; and this along with international benchmarks must be considered in the valuation exercise.**

7. **Reserve Price:** Every **failed auction results in missed opportunity** for the economy and the sector. Given the fact that **in 2016 only 41% and in 2021 only 37.1%** of the spectrum was sold that too majority of that at the reserve price itself, we suggest that the Reserve Price should be kept low and fixed **at 50% of the valuation of spectrum** to enable competitive bidding and market driven price discovery. The Analysis suggests that both, the valuation and the level of reserve price need to be rationalized, and the reserve price should not be too close to the estimates of valuations like in the present cases i.e. 80% and must be lower than these estimates. Hence valuation exercise should take a fresh look.
8. **SUC:** While SUC has been removed for spectrum to be auctioned in future, SUC is still payable on spectrum acquired in the past auctions. We submit that once the spectrum is allocated through an auction mechanism, continuing with the current escalating charge approach is detrimental to consumers and operators as it works as an inverted duty structure. It increases the input cost of the spectrum leading to excessive burden on operating margins and revenues for the spectrum holders. Most of the countries that have adopted auction as a mechanism to assign spectrum, do NOT have any revenue share such as SUC in India. **Hence, we strongly believe that the existing SUC on spectrum acquired in past auctions**



should be should be lowered by 3% across all the bands for all the TSPs and the floor of 3% for the SUC should be withdrawn.

9. **Surrender of Spectrum:** Surrender of spectrum acquired in future auctions is an important part of the reforms announced by the Govt. To enable the sector to benefit from this reform, **the terms and conditions associated with surrender of spectrum should be kept simple and easy to implement.**

Our issue wise response is as follows:

Issues related to Quantum of Spectrum and Band Plan

- Q.1** Whether spectrum bands in the frequency range 526-617 MHz, should be put to auction in the forthcoming auction? Kindly justify your response.
- Q.2** If your answer to Q1 above is in affirmative, which band plans and duplexing configuration should be adopted in India? Kindly justify your response.
- Q.3** In case your answer to Q1 is in negative, what should be the timelines for adoption of these bands for IMT? Suggestions to make these bands ready for adoption for IMT may also be made along with proper justification.

COAI Response

Please see our members' individual responses on these questions.

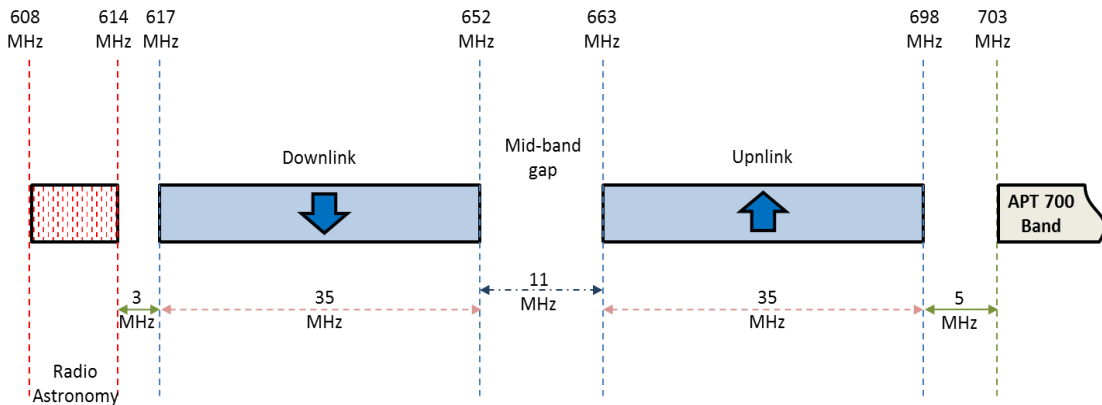
- Q.4** Do you agree that 600 MHz spectrum band should be put to auction in the forthcoming auction? If yes, which band plan and duplexing configuration should be adopted in India? Kindly justify your response.

COAI Response

1. We submit that the sub 1GHz spectrum is very useful on account of its propagation characteristics and the role that it can play in delivering mobile broadband especially in the rural areas. The Authority has also noted that lower frequency bands provide wider coverage because they can penetrate objects effectively and thus travel farther, including inside buildings.
2. Therefore, this band has a potential to enhance terrestrial mobile coverage, particularly in rural and far-flung areas and also to fill the in-building coverage gaps in urban areas. Thus, opening up of this band could be beneficial for the TSPs as well as the consumers. It is therefore most important that it is used in the most optimal and efficient manner.
3. **Band Configuration - We recommend to use globally defined spectrum band configuration (n71) for 600 MHz spectrum in the current auctions.**



4. 3GPP & ITU have standardized 600MHz spectrum from 617MHz to 698MHz as NR band. This is commonly termed as n71 band with Uplink from 663MHz to 698MHz & Downlink from 617MHz to 652MHz (with duplexing separation of 46MHz between Uplink and Downlink).
5. The suggested band plan for this band is given below:



6. This spectrum band configuration has been allocated in Canada, USA with commercial mass scale deployment across country in USA. There are about 200 smartphones / devices which support n71 band configuration (Source: GSA report).
7. APT is considering two options for expanding the spectrum by 2x5MHz through spectrum band configuration. One of the option will increase duplexing separation to 51MHz & other option will reduce the Rx & Tx gap from 11MHz to 6MHz.
8. Key aspects to note for the same are as follows:
 - a. Benefits of new definition
 - i. New definition would increase spectrum availability from 2x35MHz to 2x40MHz
 - b. Challenges of new definition
 - i. Would impact design of the radio unit at base station & user equipment
 - ii. Need new development of radio modules
 - iii. Would not be able to take benefits of economies of scale of existing smartphones supporting n71 band
 - iv. Smartphones supporting n71 band would not be able to work on this configuration (e.g. for global roaming)
 - v. Similarly, smartphones supporting new band configuration will not be able to work with networks deployed with n71 band
 - vi. Changing band configuration in future (if initial deployments are made in n71 and then changed to new band configuration to expand 5MHz spectrum) would need change of radio units deployed at the site



9. Considering the above aspects, it is recommended to use globally defined spectrum band configuration (n71) in the current auctions to leverage existing ecosystem, ensure interoperability and reap benefits of economies of scale.
10. As far as new band plan is concerned, depending on the take up of the spectrum in auction & status of adoption of APT proposal, new band plan may be considered in future auctions.

Q.5 For 3300-3670 MHz frequency range, which band plan should be adopted in India? Kindly justify your response.

COAI Response

1. As per recent deployments, TDD arrangement (3GPP Bands n77 and n78) are being implemented in most of the countries. Currently, the Authority has asked for band plan to cover 3300-3670 MHz band. COAI believes that in near future spectrum above 3670 MHz will also be made available for 5G/IMT therefore we recommending adopting Band n78 in India to cover entire 3300-3670 MHz band, which is consistent with the global trends.
2. It would be a natural outcome of global trends that eco-system in 5G technology will be developed in a gradual manner. But harmonization is vital to achieve the economies of scale in end-user devices, facilitate national/ international roaming and deploy/re-farm to 5G in future. **Therefore, we recommend that TDD arrangement may be adopted as the preferred option for spectrum in 3300-3670 MHz.**
3. We also submit that since globally 3300-4200 MHz band is being considered for IMT services, the same also needs to be considered and evaluated for allocation for IMT 2020 services in India.
4. We further submit that to make 5G a success in India, it must be ensured that the interference and contiguity challenges are addressed before any spectrum is put to auction. Our members have faced in past such challenges that hampered the deployment of the spectrum allocated to them causing loss to TSPs and consumers alike.

Q.6 Do you agree that TDD based configuration should be adopted for 24.25 to 28.5 GHz frequency range? Kindly justify your response

Q.7 In case your response to Q6 is in affirmative, considering that there is an overlap of frequencies in the band plans n257 and n258, how should the band plan(s) along with its frequency range be adopted? Kindly justify your response.



COAI Response

1. Yes, TDD based configuration should be adopted for 24.25 to 28.5 GHz frequency range. Higher frequency bands are generally used for enhancing capacity and lowering latency. Therefore, TDD based configuration is desirable. 3GPP has also defined this band only for TDD configuration based band plans in mmWave spectrum bands.
2. The allocation has to be such a manner that when the Spectrum is assigned to a particular operator, there should be no overlap between n257 and n258.
3. Industry has in the past, faced several challenges with respect to interference caused from various sources, which has adversely affected the quality of services or has rendered spectrum unable, causing huge financial damage. In addition, non-contiguous spectrum assignments make it impossible to deploy mobile broadband technologies or cause inefficient spectrum use. Therefore, in the upcoming spectrum auction, the spectrum should be put to auction only after harmonization and ensuring that it is interference-free.
4. Adequate provisioning of protection zone/guard band can be considered for satellite gateway operations at critical locations so as to ensure smooth operations for both the sectors.

Q.8 Whether entire available spectrum referred by DoT in each band should be put to auction in the forthcoming auction? Kindly justify your response.

COAI Response

1. 5G is designed to serve various use-cases by deploying it over a wide range of spectrum bands. For instance, sub-GHz bands are essential for providing coverage, while mid-band and high-bands are primarily used for increasing the capacity of the network. Since all the bands have a complementary role in a 5G network, these must be auctioned simultaneously for efficient designing of the network and to deploy various use cases supported by 5G.
2. It is important that entire available spectrum of all the 5G spectrum bands (sub-GHz, mid-band and high-band) is put to auction in the forthcoming auction for 5G/ IMT. Fragmentation of the bands or lower availability will not be sufficient for deployment of 5G by four operators as only 4G can be deployed in the limited spectrum bandwidth.
3. As stated above, Industry has in the past, faced several challenges with respect to interference caused from various sources, which has adversely affected the quality of services or has rendered spectrum unable, causing huge financial damage. In addition, non-contiguous spectrum assignments make it impossible to deploy mobile broadband technologies or cause inefficient spectrum use. Therefore, in the upcoming spectrum auction, the spectrum should be put to auction only after harmonization and ensuring that it is interference-free.



Issues related to Block Size

- Q.9** Since upon closure of commercial CDMA services in the country, 800 MHz band is being used for provision of LTE services,
- Whether provision for guard band in 800 MHz band needs to be revisited?
 - Whether there is a need to change the block size for 800 MHz band? If yes, what should be the block size for 800 MHz band and the minimum number of blocks for bidding for existing and new entrants? (Kindly justify your response)

COAI Response

Please see our members' individual responses on this question.

- Q.10** Do you agree that in the upcoming auction, block sizes and minimum quantity for bidding in 700 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands, be kept same as in the last auction? If not, what should be the band-wise block sizes and minimum quantity for bidding? Kindly justify your response.

COAI Response

- Yes, for these bands the block sizes and minimum quantity for bidding as in the last auction of March 2021 should be continued.

- Q.11** In case it is decided to put to auction spectrum in 526-698 MHz bands, what should be the optimal block size and minimum quantity for bidding? Kindly justify your response.

COAI Response

Please see our members' individual responses on this question.

- Q.12** What should be optimal block size and minimum quantity for bidding in 3300-3670 MHz band? Kindly justify your response.

COAI Response

- Channel bandwidth for future technologies is being planned in increment of 10MHz upto 60MHz & 20MHz beyond 60MHz. A block size of 5MHz has a risk of fragmenting the spectrum and making it non-efficient for usage. **Hence, 10 MHz of block size is recommended for the auction.**

- Q.13** What should be optimal block size and minimum quantity for bidding in 24.25-28.5 GHz? Kindly justify your response.



COAI Response

1. 100 MHz of block size is recommended for auction in 24.25 – 28.5 GHz band.
2. Further, 100 MHz spectrum should be defined as minimum amount of spectrum for bidding considering the quantum of spectrum available in these bands and the requirement of contiguous large blocks for delivering better performance on wireless broadband networks.
3. Since 5G is designed to serve various use-cases by deploying it over a wide range of spectrum bands. For instance, sub-GHz bands are essential for providing coverage, while mid-band and high-bands are primarily used for increasing the capacity of the network. It is thus important that entities desirous of bidding for these mmWave bands, should also bid for lower band spectrum.
4. For a new entrant with no spectrum holdings in any other band, the minimum bidding amount in 24.25 – 28.5 GHz band should be 400 MHz.

Issues related to Eligibility Conditions for Participation in Auction

- Q.14 Whether any change is required to be made in the existing eligibility conditions for participation in Auction as specified in the NIA for the spectrum Auction held in March 2021, for the forthcoming auction? If yes, suggestions may be made in detail with justification.**
- Q.15 In your opinion, should the suggested/existing eligibility conditions for participation in Auction, be made applicable for the new spectrum bands proposed to be auctioned? If not, what should be the eligibility conditions for participating in Auction? Kindly justify your response.**

COAI Response

1. No change required. The existing eligibility conditions for participation in Auction as specified in the NIA for the spectrum Auction held in March 2021 should continue for all the bands being put up for auction in the forthcoming auction. The present eligibility conditions ensure that only serious players bid for spectrum and also after winning they put the spectrum to optimal and efficient use.

Issues related to Interference mitigation in TDD bands

- Q.16 Is there a need to prescribe any measure to mitigate possible interference issues in 3300-3670 MHz and 24.25-28.5 GHz TDD bands or it should be left to the TSPs to manage the interference by mutual coordination and provisioning of guard bands? Kindly provide justification to your response.**
- Q.17 In case your response to the above question is in affirmative,**
- a. whether there is a need to prescribe provisions such as clock



synchronization and frame structure to mitigate interference issues, as prescribed for existing TDD bands, for entire frequency holding or adjacent frequencies of different TSPs? If yes, what should be the frame structure? Kindly justify your response.

- b. Any other measures to mitigate interference related issues may be made along with detailed justification.**

COAI Response

1. Interference-free, harmonised and contiguous spectrum is a pre-requisite for 5G success.
2. Given industry's past experience when it faced several challenges with respect to interference caused from various sources, which has adversely affected the quality of services or has rendered spectrum unable, causing huge financial damage. In addition, non-contiguous spectrum assignments make it impossible to deploy mobile broadband technologies or cause inefficient spectrum use. Therefore, in the upcoming spectrum auction, only that spectrum should be put to auction that is duly harmonized, immediately available and that is interference-free.
3. For example, our member(s) faced the challenge of contiguity in 900MHz band in two LSAs namely Punjab and Gujarat. This caused the TSP losing precious investment and opportunity to give better service quality to users.
4. There have been known interference in the auctioned band (900 MHz) due to illegal repeaters, there needs to be enough policing and enforcement mechanisms available in the policy frameworks to make sure that illegal repeaters are prevented in any band to overcome such interference issue.
5. Interference issues were also faced in the 2100MHz band allocated in 2011 in border circles like J&K, Punjab, HP, Rajasthan.
6. In case TSPs acquire more than one block, then these needs to be contiguous and same frequency spots should be assigned to the same TSP in all the LSAs in which they have acquired spectrum. For additional spectrum acquisition, harmonization exercise should be carried out before assignment to ensure contiguity.
7. Though the issue of coexistence between IMT and Satellite players is already covered by TRAI and also in the reference sent to TRAI by DoT, it is important that this co-existence between IMT and Satellite in 3300-3670 MHz and 24.5 – 28.5 GHz bands is discussed and finalized before spectrum auction. This will ensure that the bidders go for auction with complete clarity.
8. Our member TSPs will cover some specific interference cases in their individual responses.



Issues related to Roll-out Obligations

Q.18 Whether the roll-out obligations for 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz as stipulated in the NIA for last auctions held in March 2021 are appropriate? If no, what changes should be made in the roll out obligations for these bands?

COAI Response

1. Yes, we recommend continuing with the present approach of prescribing no rollout obligations if an existing licensee has already met these obligations once using any technology in any band.
2. This ensures that while the operator has the due flexibility to meet the rollout obligations using any technology and band, the objectives of the Government for coverage are also met.
3. For a new entrant, the rollout obligations should be as defined as have been done in earlier NIAs including that of March 2021.

Q.19 What should be associated roll-out obligations for the allocation of spectrum in 526-698 MHz frequency bands? Should it be focused to enhance rural coverage? Kindly justify your response.

COAI Response

Please see our members' individual responses on this question.

Q.20 What should be associated roll-out obligations for the allocation of spectrum in 3300-3670 MHz frequency band? Kindly justify your response.

COAI Response

1. Please refer our response to Q18 above i.e. continuing with the present approach of no rollout obligations if an existing TSP has already met obligations once using any technology in any band
2. Therefore, there should not be any new or mandatory roll-out obligations in 3300-3670 MHz band for existing TSPs.
3. For any new entrant, the existing conditions as per NIAs should continue to apply.

Q.21 What should be associated roll-out conditions for the allocation of spectrum in 24.25 to 28.5 GHz frequency range? Kindly justify your response.



COAI Response

1. Please see our response to Q20 above. The present approach may be continued.

Q.22 While assessing fulfilment of roll out obligations of a network operator, should the network elements (such as BTS, BSC etc.), created by the attached VNO, be included? If yes, kindly suggest the detailed mechanism for the same. Kindly justify your response.

COAI Response

Please see our members' individual responses on this question.

Issues related to Spectrum Cap

Q.23 Whether there is a need to review the spectrum cap for sub-1 GHz bands? If yes, what should be the spectrum cap for sub-1 GHz bands. Kindly justify your response.

Q.24 Keeping in mind the importance of 3300-3670 MHz and 24.25- 28.5 GHz bands for 5G, whether spectrum cap per operator specific to each of these bands should be prescribed? If yes, what should be the cap? Kindly justify your response.

Q.25 Whether there should be separate spectrum cap for group of bands comprising of 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz bands together? If yes, kindly suggest the cap along with detailed justification.

Q.26 Whether overall spectrum cap of 35% requires any change to be made? If yes, kindly suggest the changes along with detailed justification.

Q.27 For computation of overall spectrum cap of 35%, should the spectrum in 3300-3670 MHz and 24.25-28.5 GHz bands be included? Kindly justify your response.

Q.28 Any other suggestion regarding spectrum cap may also be made with detailed justification.

COAI Response

1. Spectrum caps are typically designed and enforced to prevent spectrum concentrations in one or two operators' hand. The Industry feels that appropriate spectrum caps are essential to prevent potential spectrum grabbing or monopolization of the spectrum in a specific band by any single operator. Any spectrum cap should facilitate an outcome where all mobile operators may reasonably be able to claim necessary spectrum holdings in a particular band and also overall spectrum to deliver viable mobile communication services.



Issues related to Surrender of Spectrum

- Q.29** What should be the process and associated terms and conditions for permitting surrender of spectrum for future auctions? Kindly justify your response.
- Q.30** What provisions may be created in the spectrum surrender framework so that any possible misuse by the licensees, could be avoided? Kindly justify your response.
- Q.31** In case a TSP acquires spectrum through trading, should the period of 10 years to become eligible for surrender of spectrum, be counted from the date of original assignment of spectrum or from the date of acquisition through spectrum trading? Kindly justify your response.
- Q.32** Whether provision for surrender of spectrum should also be made available for the existing spectrum holding of the TSPs? If yes, what should be the process and associated terms and conditions? Kindly justify your response.
- Q.33** Whether spectrum surrender fee be charged from TSPs? If yes, what amount be levied as surrender fee? Kindly justify your response.

COAI Response

1. The Government in its Telecom reforms has already approved spectrum surrender for all spectrum to be auctioned in future. Hence that should be allowed in line with the Cabinet decision.
2. This forward looking step will enable efficient use of spectrum as the excess spectrum being surrendered can be put up for auction and can be utilised.
3. Hence, the terms and conditions associated with surrender of spectrum should be kept simple and easy to implement.

Issues related to Valuation and Reserve price of Spectrum

- Q.34** Which factors are relevant in the spectrum valuation exercise and in what manner should these factors be reflected in the valuation of spectrum? Please give your inputs with detailed reasoning.

COAI response:

1. The valuation of spectrum is dependent upon various factors such as demand and supply, revenue potential, spread of telecom and Broadband in the country, global benchmarks, emerging digital eco system, business continuity, renewal of expiring spectrum, propagation characteristics of spectrum bands, availability of network & device ecosystem, financial health of the telecom sector, need to attract investment in the sector etc. Thus, above factors should be reflected in the valuation exercise via an appropriate financial model(s) and its outcome



must ensure the sustainability of the mobile industry and affordability of the services.

2. There is a need to reset the valuation model, to ensure that continued high prices do not deter take up of spectrum. A simple approach to this may be to apply a higher discount factor to set the reserve prices, thereby enabling fair play of market forces to determine the underlying value.

Q.35 In what manner, should the extended tenure of spectrum allotment from the existing 20 years to 30 years be accounted for in the spectrum valuation exercise? Please support your response with detailed rationale/ inputs.

Q.36 What could be the likely impact of the following auction related telecom reforms announced by the Government in September 2021 on the valuation of various spectrum bands?

- a. Rationalization of Bank Guarantees to securitize deferred annual spectrum payment instalments in future auctions
- b. No spectrum usage charges (SUC) for spectrum acquired in future auctions
- c. Removal of additional SUC of 0.5% for spectrum sharing
- d. Provision for surrender of spectrum

In what manner, should the above provisions be accounted for in the valuation of spectrum? Please support your response with detailed justification.

COAI response:

1. As far as the reforms are concerned, Govt. has appreciated and recognized the telecom industry as a critical infrastructure which has played a vital role in the growth of the economy during this pandemic and has also applauded the efforts of our frontline workers in keeping the country connected during the critical times.
2. Govt. also recognised the financial stress on the sector because of the heavy burden of regulatory levies such as AGR dues and spectrum dues on the sector and announced reforms to revitalise the sector and attract investment. Also, for Ease of Doing Business (EoDB), the Government is working towards to reduce the compliance burden on the industry.
3. It may also be noted that due to competition from OTTs, and adjacent sectors, TSPs revenue generation ability and margins are constantly coming under stress and traffic on network has decoupled from its revenue generating ability compared to in previous generations.
4. While the reforms such reduction in BGs, removal of SUC, extension in tenure for future spectrum etc., **will help improve participation in the auction, we are of the view that the above said factors will NOT and should not have any**



impact on spectrum pricing

5. Hence for determining the value of spectrum, the increased validity should not be simply transposed as a variable to the calculation.

Q.37 Whether the auction determined prices of March 2021 auction be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? Should the prices be indexed for the time gap (even if less than one year or just short of one year)? If yes, please indicate the basis/ rate at which the indexation should be done, with reasons.

COAI response:

1. No, due to continuously evolving technology trends, present circumstances which the industry faces are completely different from the various auctions held in the past.
2. **The Pandemic continues and has expedited the digitisation in India, the telecom sector has become the backbone of digital India, but continues to be overwhelmed by high burden of regulatory payments which are due to the Government in the years to come.**
3. Thus, valuation Prices as per last auctions are not sustainable as per the current market scenario. Hence, there is a need for fresh outlook for the valuation of the spectrum in the forthcoming auction. Thus, the auction determined prices of March 2021 auction should not be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA.

Q.38 If the answer to the above question is in negative, whether the valuation for respective spectrum bands be estimated on the basis of the various valuation approaches/methodologies being followed by the Authority in the previous recommendations, including for those bands (in an LSA) for which either no bids were received, or spectrum was not offered for auction?

Q.39 Whether the method followed by the Authority in the Recommendations dated 01.08.2018 of considering auction determined prices of the auctions held in the previous two years be continued, or the prices revealed in spectrum auctions conducted earlier than two years may also be taken into account? Kindly justify your response.

Q.40 Whether the valuation exercise be done every year in view of the Government's intention to have an annual calendar for auction of spectrum? Please support your response with detailed justification.

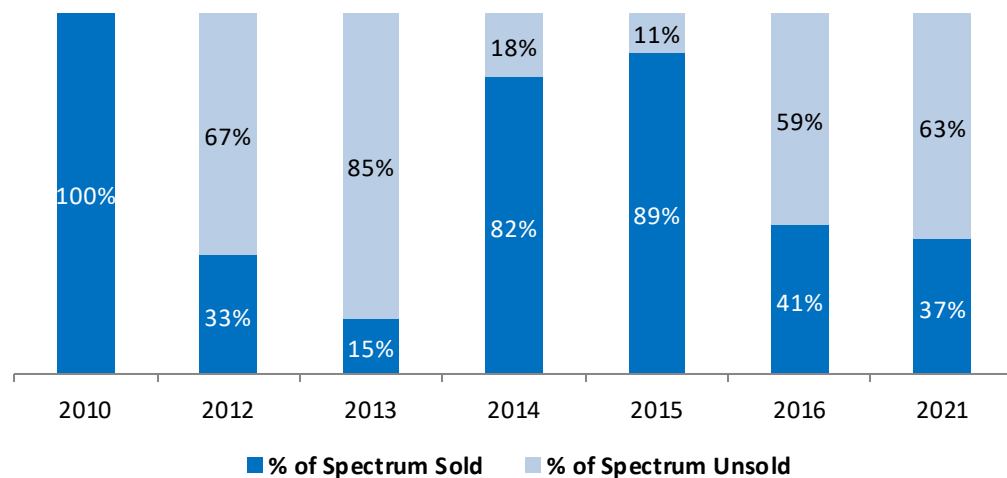
Q.41 Whether there is a need to bring any change in the valuation approaches/ methodologies followed by the Authority for spectrum valuation exercises in view of the changing dynamics in the telecom sector largely due to the usage of various spectrum bands by the TSPs in a technologically neutral manner? If yes, please provide suggestions along with a detailed justification about



the methodology.

COAI response:

1. **At the outset we submit that spectrum pricing is an area which requires a comprehensive re-look by the Authority.**
2. In the past spectrum prices have been high because of factors such as artificial scarcity and the need of re-acquiring of expiry spectrum etc. High spectrum price led to spectrum remaining unsold or severely impacting the TSPs' ability to make required investments in the network infrastructure.
3. The details of spectrum sold in the past auctions is as follows:



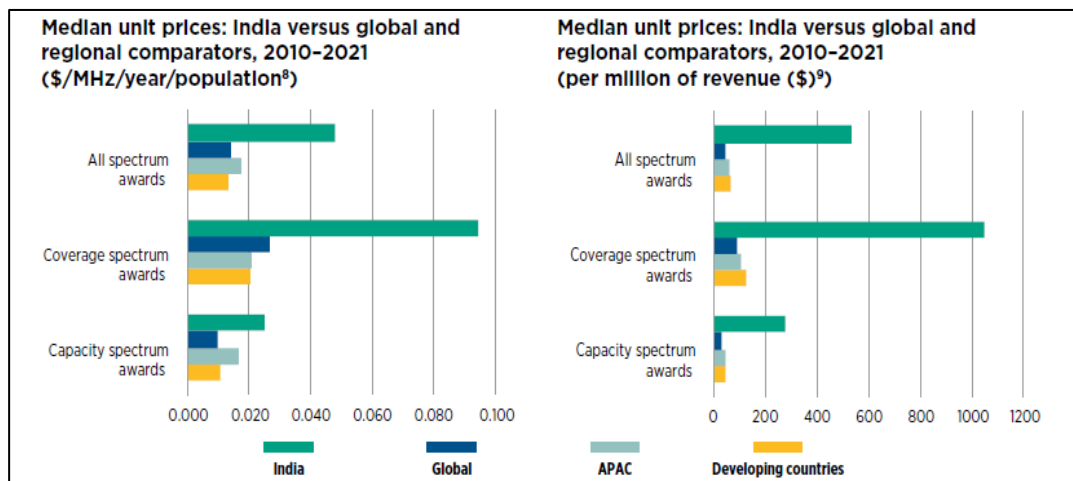
Source: Care rating report on Telecom spectrum auction: March 2021¹

6. As is evident from the graph above, only in 2010 100% of the spectrum put up for auction was sold as there was no clear roadmap. However, in 2012 and 2013, most of the spectrum put up for auction remained unsold. In 2014 and 2015, the spectrum put up for auction was sold primarily because of the need of reacquiring of the expiry spectrum and for continuity of business .
7. **Again in 2016 and 2021, majority of the spectrum put up for auction remained unsold primarily due to the high reserve price.** Thus the various methodologies adopted by TRAI namely Producer Surplus Approach on account of additional spectrum, Production Function Approach , Revenue Surplus Model, Use of Last auction determined price, Multiple Regression Approach, Technical Efficiency Approach, Economic Efficiency Approach, Data Usage Growth Model, Indexation of last available auction prices etc. have not given the desired results.

¹https://www.careratings.com/uploads/newsfiles/09032021044231_Summary_on_Telecom_Spectrum_Auctions_-_March_2021.pdf



8. We thus reiterate that there is need to re-examine these methodologies and sticking to these methodologies may not lead to desired results as envisaged in the NDCP-2018, which lays emphasize on “optimal pricing of spectrum to ensure sustainable and affordable access to digital communication.
9. We wish to submit that a critical factor which has an impact on the pricing of spectrum is the current level of ARPU/ RoCE or the income/ revenue potential in a country; and this needs to be considered in any valuation exercise going forward.
10. The current reserve price recommended by TRAI for the 5G spectrum (for 3.5 GHz band) is **Rs. 492Cr/MHz**. On the contrary, **in the recently concluded spectrum auctions in 2021, UK² set the reserve price for 5G spectrum (3.6-3.8 GHz) as Rs. 40.03Cr/MHz, while in Hongkong³ (3.5 GHz) it was Rs. 3.87Cr/MHz, and in Portugal⁴ (3.6 MHz) it was 1.07Cr/MHz.**
11. Below is a global comparative analysis as per GSMA report :



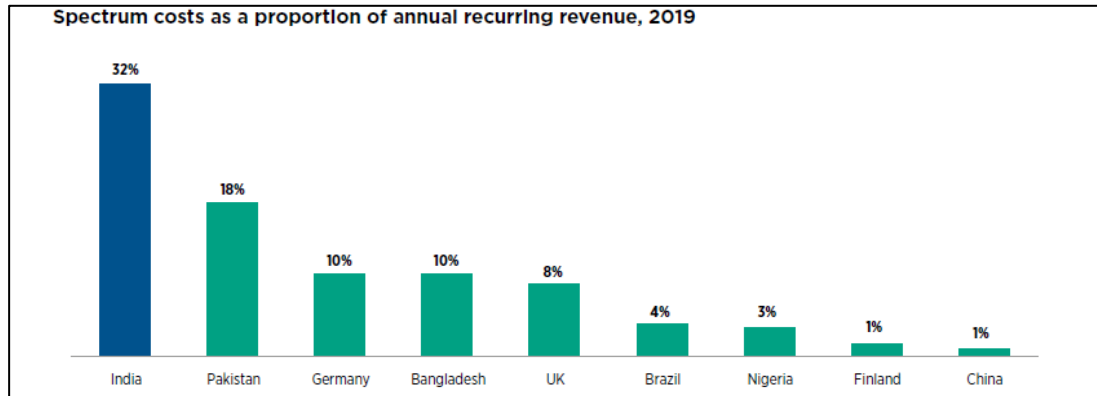
Source: GSMA Report, September 2021⁵

² TRAI CP- <https://www.trai.gov.in/consultation-paper-auction-spectrum-frequency-bands-identified-5g>

³ https://www.ofca.gov.hk/filemanager/ofca/en/content_1168/3_5_ghz_Auction_IM.pdf

⁴ <https://www.anacom.pt/render.jsp?contentId=1573881>

⁵ <https://www.gsma.com/spectrum/wp-content/uploads/2021/09/India-5G-Spectrum.pdf>



Source: GSMA Report, September 2021⁶

12. As is evident from the graph above, spectrum cost as a proportion of revenue is far higher in India as compared to other countries. Hence, the pricing of the spectrum should be proportionate to the revenue potential and the sustainability of the sector.
13. It may also be noted that globally, 5G has not resulted in any significant increase in revenues or ARPUs.
14. **The spectrum valuation needs to be aligned with the international benchmarks, and in view of low level of ARPU/RoCE in the country, the spectrum valuation should be suitably reduced across various bands to ensure faster deployment of affordable 5G services in the country.**
15. Further, as stated above point 6, the National Digital Communications Policy (NDCP) -2018 also recognized spectrum as a key natural resource for public benefit. Under the Connect India Mission, NDCP 2018 states:

“1.2 (b) v. Optimal Pricing of Spectrum to ensure sustainable and affordable access to Digital Communications”
16. We also want to draw your kind attention towards the report of Standing Committee on Information Technology (2020-21): Seventeenth Lok Sabha vide which committee is of the view that:

“Considering the stress in the sector and that the 5G ecosystem is yet to be developed, keeping such a huge reserve price for 3.3 GHz to 3.6 GHz will undoubtedly have an adverse impact on the ability of the TSPs to fully rollout 5G in the country.....the Committee are of the view that long-term consumer benefit should be the guiding principle and not short term revenue maximization. The Committee recommend that the issue of high spectrum prices is looked into and DoT/TRAI should come out with a convincing spectrum pricing policy that is sustainable, affordable and

⁶ <https://www.gsma.com/spectrum/wp-content/uploads/2021/09/India-5G-Spectrum.pdf>



acceptable to all, focusing on consumer interest and socio economic goals of our country.”

17. Hence there is a need to strike a balance between the Government’s aspiration to generate revenue from the auction and orderly growth of the sector and the overarching impact of 5G across the other sectors and the economy at large. **Thus sticking to old methodologies may not yield the desired results.**
 18. Also, we are of the view that the valuation exercise of spectrum should be done as per the Spectrum auction calendar.
- Q.42** In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 2500 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)? Please support your response with detailed justification.
- Q.43** Whether the March 2021 auction determined prices be used as one possible valuation for the spectrum in 2300 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify your response.
- Q.44** Whether auction determined prices of October 2016 (i.e. for the auction held earlier than two years) be used as one possible valuation for the spectrum in 2500 MHz band for the current valuation exercise? If yes, should these prices be indexed for the time gap and at what rate? Please justify.
- Q.45** Whether the value of the spectrum in 2300 MHz/ 2500 MHz bands should be derived by relating it to the value of spectrum in any other band by using technical efficiency factor? If yes, which band and what rate of efficiency factor should be used? If no, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting studies, if any.

COAI response:

1. We believe that even though 89% was sold in 2300 MHz band, using the existing high prices for determining the valuation of spectrum **is not the correct approach**. Also, indexing the value of spectrum for the time gap is an incorrect approach as the Indexing assumes that the price of spectrum will keep going up, whereas in fact, this is not the case.
2. As stated in the response above (Q 34 to 41), **we reiterate that any valuation should take into consideration the low level of ARPU/RoCE and income potential in the country**. The pricing of the spectrum should be proportionate to the revenue potential and the sustainability of the sector. The spectrum valuation needs to be aligned with the international benchmarks, and in view of low level of ARPU/RoCE in the country, should be suitably reduced across various bands to ensure faster deployment of affordable 5G services in the



country.

3. It is also important that the spectrum put to auction is harmonized and available in contiguous blocks.

- Q.46** In your opinion, what could be the possible reasons for the relative lack of interest for the spectrum in the 700 MHz band? Could this be attributed to technological reason(s) such as development of network/device ecosystem or availability of substitute spectrum bands or any other reasons(s)?
- Q.47** Whether the value of spectrum in 700 MHz band be derived by relating it to the value of other spectrum bands by using a technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your views with rationale and supporting studies, if any.
- Q.48** If your response to the above question is in negative, what other valuation approach(es) be adopted for the valuation of 700 MHz spectrum band? Please support your response with detailed methodology.

COAI Response

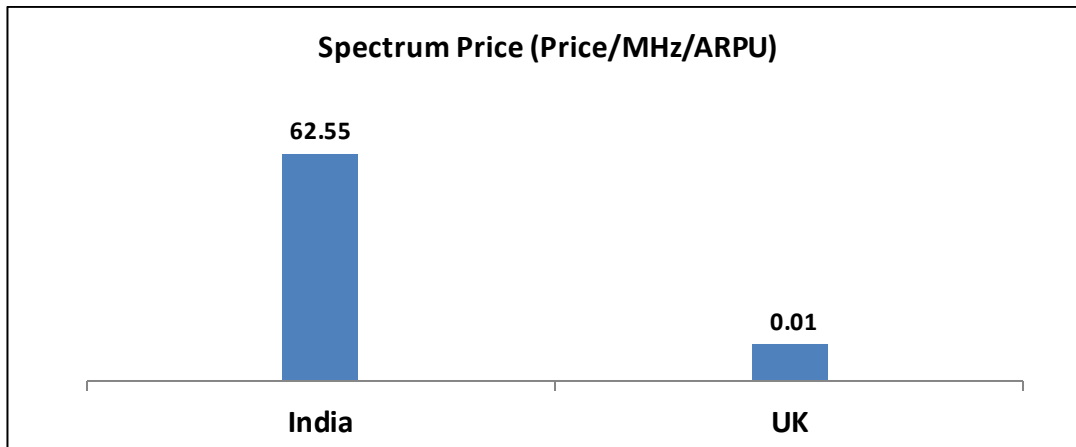
1. 700 MHz band can be used for **enhancing coverage, especially in rural areas**. The advantage of the 700 MHz spectrum is that the signals travel longer distances as compared to higher frequencies. Networks using this spectrum require fewer cell towers to reach the same geographic area.
2. We further submit that the benchmarking of 700 MHz band with 1800 MHz band is not correct approach. The spectrum valuation needs to be aligned with the international benchmarks.
3. 700 MHz band has remained unsold despite holding the two separate auctions within a gap of five years apart (auction in 2016 and the recently concluded in March 2021) and even after reduction in reserve price by about 50% in past. **The primary reason for this can be attributed to the high reserve price.**
4. Compared to 700 MHz auction price in various countries, the Indian reserve price itself is an outlier on the higher side. For example, the price of 700 MHz band came to **Rs.20 Crores per MHz in March 2021 spectrum auction held in UK⁷, whereas in India⁸ the reserve price of 700 MHz in the recent auction was 6,568 crore per MHz.**

⁷ <https://telecoms.com/508980/bidding-in-uk-5g-spectrum-auction-starts-at-1-billion/>

⁸ <https://economictimes.indiatimes.com/industry/telecom/telecom-news/dot-favours-price-cut-for-5g-700-mhz-bands/articleshow/82894608.cms>



Country	Spectrum Price (INR Cr./MHz)	Monthly ARPU in INR ⁹	ARPU adjusted to Spectrum Price (Price/ARPU)
India	6568	105	62.55
UK	20	1504	0.01



Source: COAI analysis

5. We submit that any benchmarking on a per pop (population) basis will not yield the correct result as population of India is very high and even if adjustments were to be made for number of years, **India will still continue to be a outlier with spectrum price being exorbitantly high as compared to other countries.**
6. Thus there is a need to re-examine the valuation in 700 MHz band. Even the last reduction in its reserve price has not helped since the first reserve price was set so exorbitantly high that any meaningful cut will effectively mean redoing the exercise.
7. We reiterate that the pricing of the 700 MHz band should be in proportionate to the revenue potential and the sustainability of the sector
8. Given the fact that 700MHz band may be used **enhancing coverage, especially in rural areas**, there may be significant merit in keeping the price very low.

Q.49 Whether the valuation of the 3300-3670 MHz spectrum band should be derived from value of any other spectrum band by using technical efficiency factor? If yes, what rate of efficiency factor should be used? If no, which other method(s) should be used for its valuation? Please justify your response with rationale and supporting documents, if any.

⁹ For India-https://www.trai.gov.in/sites/default/files/PIR_21102021_0.pdf and For UK <https://theinclusiveinternet.eu.com/explore/countries/performance>



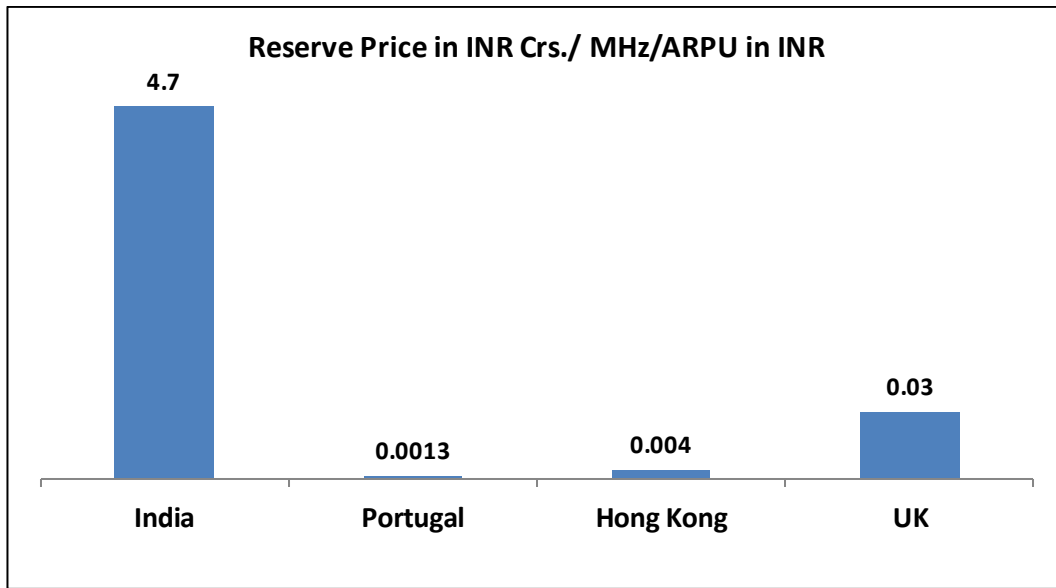
- Q.50** In case you are of the opinion that frequencies in the range 526- 698 MHz should be put to auction in the forthcoming spectrum auction, whether the value of 526-698 MHz be derived by using technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your suggestions.
- Q.51** If your response to the above question is in negative, which other valuation approach(es) should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and any other relevant factors.
- Q.52** Whether the value of spectrum in 24.25 - 28.5 GHz band be derived by relating it to the value of other bands by using technical efficiency factor? If yes, with which spectrum band, should this band be related and what efficiency factor or formula should be used? Please justify your suggestions.
- Q.53** If your response to the above question is in negative, which other valuation approaches should be adopted for the valuation of these spectrum bands? Please support your suggestions with detailed methodology, related assumptions and other relevant factors.
- Q.54** Whether international benchmarking by comparing the auction determined price in countries where auctions have been concluded be used for arriving at the value of these new bands? If yes, then what methodology can be followed in this regard? Please explain.
- Q.55** For international benchmarking, whether normalization techniques be used for arriving at the valuation of these new bands in the Indian context? If yes, please justify your response with rationale /literature, if any.

COAI Response

1. Since 3300-3670 MHz and 24.25 - 28.5 GHz band are being auctioned for the first time, the Authority may consider international benchmarks for valuation of these bands.
2. **While doing any valuation exercise using international benchmarks, the low tariffs ,ARPU and RoCE of India must also be factored in.** The pricing of the spectrum should be in proportionate to the revenue potential and the sustainability of the sector.
3. Moreover, in case of upper bands, OPEX and CAPEX of TSPs increases due to increase in the deployment of BTS. Hence, substantial reduction is required in spectrum pricing.
4. Below are some details of recent auctions:



Parameters	India	Portugal	Hong Kong	UK
Monthly ARPU ¹⁰ (INR)	105	837	1080	1504
Reserve Price ¹¹ (INR Cr./MHz)	492	1	4	40
Reserve Price Adjusted to ARPU	4.7	0.0013	0.004	0.03
Auction Date	-	November'20	October'19	April'21
Spectrum Band	3.5 GHz	3.5-3.8 GHz	3.4 – 3.6 GHz	3.6-3.8 GHz



Source: COAI analysis

- We reiterate that any benchmarking on a per pop (population) basis will not yield the correct result as population of India is very high and even if adjustments were to be made for number of years, **India will still continue to be an outlier with spectrum price being exorbitantly high as compared to other countries.**
- Hence, in light of the above, we submit that valuation of 3300-3670MHz may be set at a maximum of 10% of earlier recommended prices. Further, the price of 24.25 - 28.5 GHz band should not be more than 1-2% of price of 3300-3670 MHz spectrum.

Q.56 Whether a common methodology/ approach should be used for valuation of all sub-1 GHz bands, which are currently planned for IMT? If yes, suggest which methodology/ approach should be used. Please give your views along

¹⁰ For India- https://www.trai.gov.in/sites/default/files/PIR_21102021_0.pdf

For Portugal,Hongkong,UK- <https://theinclusiveinternet.eiu.com/explore/countries/performance>

¹¹ Portugal: <https://www.anacom.pt/render.jsp?contentId=1573881>

Hongkong: https://www.ofca.gov.hk/filemanager/ofca/en/content_1168/3_5_ghz_Auction_IM.pdf

UK: <https://www.trai.gov.in/consultation-paper-auction-spectrum-frequency-bands-identified-imt5g>



with supporting reasoning and documents/ literature, if any.

- Q.57** Whether the extrapolated ADP based on a time-series analysis, may be considered as the valuation itself or some normalization may be performed taking into account the financial, economic and other parameters pertaining to a particular auction? If yes, which factors should be considered and what methodology should be followed?
- Q.58** Whether the value arrived at by using any single valuation approach for a particular spectrum band should be taken as the appropriate value of that band? If yes, please suggest which single approach/ method should be used. Please justify your response.
- Q.59** In case your response to the above question is negative, will it be appropriate to take the average valuation (simple mean) of the valuations obtained through the different approaches attempted for valuation of a particular spectrum band, or some other approach like taking weighted mean, median etc. should be followed? Please justify your response
- Q.60** Is there any valuation approach other than those discussed above or any international auction experience/ approach that could be used for arriving at the valuation of spectrum for 700 MHz/ 800 MHz/ 900 MHz/ 1800 MHz/ 2100 MHz/ 2300 MHz/ 2500 MHz/ 3300-3670 MHz/ 24.25 - 28.5 GHz/ 526 - 698 MHz bands? Please support your suggestions with a detailed methodology and related assumptions.

COAI response:

1. We wish to submit that the earlier auctioned spectrum prices are not sustainable hence, the ADP approach based on a time-series analysis is not relevant for the valuation of spectrum.
 2. Further it is not necessary that the value of spectrum will always increase with the passage of time. It is therefore also recommended that there is no requirement to index the said values for the time gap
 3. We reiterate that the spectrum valuation needs to be aligned with the international benchmarks, and **in view of low level of ARPU/RoCE in the country, should be** suitably reduced across various bands to ensure faster deployment of affordable 5G services in the country.
- Q.61** Should the reserve price be taken as 80% of the valuation of spectrum? If not, then what ratio should be adopted between the reserve price for the auction and the valuation of the spectrum in different spectrum bands and why?
- Q.62** Whether the realized/ auction determined prices achieved in the March 2021 auction for various spectrum bands can be directly adopted as the reserve price in respective spectrum bands for the forthcoming auction? If yes,



should these prices be indexed for the time gap since the auction held in March 2021 and at which rate the indexation should be done?

COAI response:

1. We would like to submit that setting reserve prices is typically a conundrum, because if the reserve price is set too high it increases the probability of auction failure, whereas if set too low frivolous bidders can enter the auction.
2. Every **failed auction results in missed opportunity** for the economy, lower investor interest in the industry, revenue loss to the exchequer and inefficient allocation of spectrum and therefore sensible reserve prices are important.
3. **Given the fact that in 2016 only 41% and in 2021 only 37.1% of the overall spectrum was sold**, we suggest that the Reserve Price should be kept low so as to **allow more efficient market discovery of the spectrum price**.
4. Accordingly we are of the view that **Reserve Price should be fixed at 50% of the valuation of spectrum** so as to enable much greater participation and market discovery of the spectrum price.

Q.63 Should the method followed by DoT in the previous auction in respect of collecting bid amount from the successful bidder in case spectrum is not available in a part of the LSA be followed in the forthcoming auction? Please justify your response in detail.

COAI Response

1. In the context of partial allocation of spectrum wherein the bids are sought for the spectrum in entire LSA but the spectrum is not available in some of the districts of that LSA, the previous method followed by DoT for collection of bid amount from the successful bidder should be continued with.

Q.64 What percentage rate of upfront payment should be fixed in case of each spectrum band?

COAI Response:

1. We suggest that the requirement for making upfront payment should be done away with for the upcoming 5G auction. The payout should be in the form of annual spectrum deferred payment over the period of spectrum and after the 6-year moratorium period.

Q.65 What should be the applicable period of moratorium for deferred payment option?



COAI Response:

1. In the past auctions, the Government had allowed the TSPs a moratorium of 2 years. However, considering the current financial health of the Industry, the Cabinet, in the reforms, has also provided a moratorium period of four years to ensure liquidity with the operators.
2. Therefore, if the Government continues with the moratorium of 2 years for the upcoming auction, it may defeat the objective of ensuring liquidity with the operators, since they will be required to make hefty payments for acquired spectrum, even before the expiry of the current moratorium period granted by the Cabinet.
3. If the moratorium period is increased to 4 years, then this will overlap with payouts due after the expiry of four years' moratorium and thus put enormous financial stress on the TSPs since they would be required to pay huge amounts (payments related to AGR dues, spectrum deferred payments of past auctions as well as payments related to upcoming spectrum auction) at the same time.
4. **Therefore, to enable the availability of liquidity for TSPs and funds for 5G deployment, the best approach would be to provide a moratorium for a period of six years (2 years beyond the completion of 4 years moratorium) in the upcoming auction.**

Q.66 How many instalments should be fixed to recover the deferred payment?

COAI Response

1. We suggest a moratorium for a period of six years (2 years beyond the completion of 4 years' moratorium) for the upcoming auction and, for the case of deferred payments; the outstanding amount subsequent to the upfront payments shall be **recovered in 24 equal annual instalments**.

Q.67 What rate of discount should be used while exercising pre- payment/deferred payment option, in order to ensure that the net present value of payment/ bid amount is protected?

(Please support your suggestions for Q64 to Q67 with proper justifications.)

COAI Response

1. The obligation to pay huge interest on deferred spectrum payments ultimately burdens the TSPs' finances and impairs their ability to make investments for network rollout.
2. Thus the interest rates on deferred payment instalments may be lowered to be in line with repo rate prevailing in the country.



Issues related to Spectrum for Private Cellular Networks

- Q.68** To facilitate the TSPs to meet the demand for Private Cellular Networks, whether any change(s) in the licensing/policy framework, are required to be made. If yes, what changes are required to be made? Kindly justify your response.
- Q.69** To meet the demand for spectrum in globally harmonized IMT bands for private captive networks, whether the TSPs should be permitted to give access spectrum on lease to an enterprise (for localized captive use), for a specific duration and geographic location? Kindly justify your response.
- Q.70** In case spectrum leasing is permitted,
- i. Whether the enterprise be permitted to take spectrum on lease from more than one TSPs?
 - ii. What mechanism may be prescribed to keep the Government informed about such spectrum leasing i.e., prior approval or prior intimation?
 - iii. What timeline should be prescribed (in number of days) before the tentative date of leasing for submitting a joint request by the TSPs along with the enterprise, for approval/intimation from/to the Government?
 - iv. Whether the spectrum leasing guidelines should prescribe duration of lease, charges for leasing, adherence of spectrum cap provisions, roll out obligations, compliance obligations. If yes, what terms and conditions should be prescribed?
 - v. What other associated terms and conditions may be prescribed?
 - vi. Any other suggestion relevant to leasing of spectrum may also be made in detail.
- (Kindly justify your response)
- Q.71** Whether some spectrum should be earmarked for localized private captive networks in India? Kindly justify your response
- Q.72** In case it is decided to earmark some spectrum for localized private captive networks, whether some quantum of spectrum be earmarked (dedicatedly) from the spectrum frequencies earmarked for IMT services and/or spectrum frequencies earmarked for non-IMT services on location-specific basis (which can coexist with cellular-based private captive networks on shared basis)? Kindly justify your response with reasons.
- Q.73** In case it is decided to earmark some quantum of spectrum for private captive networks, either on exclusive or shared basis, then
- a) Spectrum under which band(s) (or frequency range) and quantum of spectrum be earmarked for Private Network in each band? Inputs may



be provided considering both dedicated and shared spectrum (between geographically distinct users) scenarios.

- b) What should be the eligibility conditions for assignment of such spectrum to private entities?
- c) What should be the assignment methodology, tenure of assignment and its renewal, roll-out obligations?
- d) What should be the pricing mechanism for assignment of spectrum in the band(s) suggested for private entities for localized captive use and what factors should be considered for arriving at valuation of such spectrum?
- e) What should be the block size and spectrum cap for different spectrum band(s) suggested in response to point (a) above.
- f) What should be the broad framework for the process of
 - (i) Filing application(s) by enterprise at single location, enterprise at multiple locations, Group of companies.
 - (ii) payment of spectrum charges,
 - (iii) assignment of frequencies,
 - (iv) monitoring of spectrum utilization,
 - (v) timeline for approvals,
 - (vi) Any other
- g) Any other suggestion on the related issues may also be made with details.

(Kindly justify your response with reasons)

COAI Response

1. Presently, the resources for such Captive Network are made available from the resources of licensed service providers which include spectrum acquired through transparent auction process.
2. We are of the firm opinion that with advancement of technologies, there is no justification whatsoever for continuation of private captive networks. The licensed Access Service Providers are fully capable of providing all customised solutions including M2M / Industrial 4.0 services in the most competitive and economic manner and in fact providing such network configuration to private and public sector entity. Hence, there is no need to alienate spectrum directly to companies for private network.
3. When a captive private network is part of a commercial network it addresses the following issues for orderly growth of the sector:
 - a. Neither the legitimate revenue of licensed service provider is truncated nor there is any revenue loss in terms of upfront payment for acquiring spectrum or under a separate methodology for license fee and Spectrum Usage Charge (SUC). Thus, it is respectfully submitted that in today's scenario there



is no need for private captive networks and the same should have been dispensed with the availability of state-of-art telecommunication network.

- b. This also adheres to the principle of “Same Service Same Rule”. Any move such as setting aside/ allocation of 5G spectrum (via delicensed/ administrative basis) for catering to the connectivity needs of Industry 4.0 / M2M communication services by way of Private Captive Networks, not only truncate the revenues of the licensed service providers but also affect the revenue of the Government. This also creates a non-level playing field pointing to arbitrariness in basic policies scaring away the investors leading to disorderly growth of the sector by back door entry with undue advantage to private commercial entities at the cost government exchequer.
 - c. A Captive Network within the commercial network fulfil the requirement of “Law Enforcement Agencies” as necessary lawful interception and monitoring is provided by the service provider while no such facility is available to LEAs in private captive networks. The anti-social elements may exploit this facility to bypass interception and monitoring of message in the interest of security. Thus, Private Captive Networks are detrimental to national security and should not be permitted.
 - d. It is pertinent to note that spectrum is a key finite resource with high economic value. The spectrum allocation in any spectrum band that can be used to deploy and provide communication services, irrespective of the entity desiring to use the spectrum or the technology deployed or type of services offered, should be allocated only through a transparent and open auction process. Therefore, we do not support delicensing/ reserving any Spectrum bands for Private Captive Networks or any other services like M2M services in the guise of Industry 4.0.
4. We would also like to bring to your notice the GSMA Report on ‘Mobile Networks for Industry Verticals: Spectrum Best Practice’ vide which they have stated that great care needs to be taken to ensure verticals are fully supported without harming other wireless users – especially consumers and businesses who rely on 4G and 5G. Verticals can benefit from telco’s more extensive networks, more substantial spectrum assets, expertise and, typically, operators’ lower cost base. Use of dedicated set-asides for verticals poses significant risks to wider mobile services, most notably slower 5G networks and reduced coverage. The main highlights of the report are given below:
- a. **Commercial mobile operators support needs of** a wide variety of **vertical** sectors and will have added capabilities with 5G
 - b. Spectrum **leasing** or, when carefully planned, **other types of spectrum sharing can be viable options** for supporting verticals who want to build private networks
 - c. **Spectrum that is set-aside** exclusively for verticals in core mobile bands **risks being underused and can undermine fair spectrum awards**



- d. **Spectrum set-aside** in core mobile bands **can also threaten wider success of 5G** – including slower rollouts, worse performance and reduced coverage
 - e. **Policymakers should consider coexistence challenges** when different use cases need to be supported in the same mobile band
 - f. Unlicensed spectrum is likely to play an important role for numerous verticals
 - g. **Policymakers should carefully consider their options and consult stakeholders** to ensure they most efficiently support the needs of verticals without undermining other spectrum users
5. With the digital transformation of Industry and increased automation, a large number of players would be willing to offer connectivity in terms of Private Captive Networks or any other services like M2M services. Such networks are part of their commercial operations and therefore, all resources should be procured in transparent commercial manner only. In a competitive market, the true value of resources can only be realized through a commercial process which ensures efficient allocation and best use of the resources.
 6. We urge the Authority not to recommend to reserve or de-license any spectrum which has been identified or likely to be identified for use of IMT/ commercial services for Private Captive Networks.
 7. Any de-licensing/reservation of spectrum for Industrial use/establishment of private networks, as demanded by few companies, would not only cause huge loss to the exchequer but will also lead to sub-optimal utilization of this scarce resource. Hence, such a move is technically also uncalled for. Sufficient unlicensed spectrum bands are available to cater these private network requirements.
 8. It is not out of context that in our country, Hon'ble Supreme Court of India has pronounced a judgment in CWP 423 of 2010 mandating the Government for the alienation of resources like spectrum through a transparent auction process only. Therefore, in our humble submission delicensing/ administrative allocation of spectrum for Captive Networks/ M2M services/ Industry 4.0 is legally untenable in our country.
 9. Keeping in view the above, we submit that:
 - a. **In today's scenario there is no need for separate private captive networks and same should be dispensed with the availability of state-of-art telecommunication network.**
 - b. **Private Captive Networks are detrimental to national security.**
 - c. **The licensed Access Service Providers are fully capable of providing these services in most competitive and economic manner compared to private companies looking for such solutions.**
 - d. **Request the Authority not to recommend to reserve or de-license any spectrum which has been identified or likely to be identified for use of**



IMT/ commercial services for Private Captive Networks. It amounts to undue advantage to private commercial entities at the cost of government exchequer.

- e. **Any de-licensing/reservation of spectrum for Industrial use/establishment of private Captive networks, as demanded by few companies, would not only cause huge loss to the exchequer but will also lead to sub-optimal utilization of this scarce resource. Hence, such move is not only technically uncalled for but also legally untenable.**
10. We would also like to give details of the **assessment of economic impact done by Compass Lexicon on the specific example of Germany keeping aside commercial spectrum for local private networks. The assessment mentions that that the costs of set-aside to German society are significant, while any benefits are likely to be marginal. Specifically, it finds that:**
- a. **No evidence that spectrum set-aside justifiable from spectrum policy perspective.**
 - b. **Insufficient evidence of market failures** to justify departure from market-based awards
 - c. There are **less costly policy alternatives** that would deliver most if not all of any identified benefits;
 - d. **Set-aside of 100 MHz in Germany could cause consumers welfare loss around €6.2 - €15.6 billion also consumers may suffer from a significant degradation in QOS;**
 - e. **Public network operators paid €2.2 billion extra in the German auction - Money that could have been used for faster and more extensive deployment of 5G; and**
 - f. Decrease in capability of public mobile networks will **have ripple effect on wider economy.**

Q.74 What steps need to be taken to facilitate identification, development and proliferation of India specific 5G use cases for different verticals for the benefit of the economy and citizens of the Country? Kindly provide detailed response with rational

COAI Response

1. We believe that the use cases for 5G would emerge from the market. The TSPs are already undertaking 5G trials, which are expected to go on for another 4-5 months. Some of the use will emerge during these trials. This decision should be left to the TSPs.
2. The Authority has already noted that Telecom connectivity has played its important role in digitalization and automation of processes in almost all the sectors. With high speed, low-latency, and high device density, the ultra-reliable 5G technology can have applications across different economic verticals and these applications are now commercially feasible and available.
3. The impetus will required to be given by different Ministries of the Government,



Industries across verticals and technology solution providers to have regulatory provisions and cross industry coordination.

4. The Government must also ensure auction of all the 5G spectrum bands (sub-GHz, mid-band and high-band) together to cater to different use-cases.
