



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

Executive Summary:

At the outset, we thank the Authority for providing us the opportunity to respond to the Consultation Paper on “Auction of Spectrum in frequency bands identified for IMT/5G”.

1. Spectrum is a critical resource for mobile networks.
2. The importance of spectrum has been recognized not only in NDCP 2018 but also in the recent telecom reforms announced by the Government in September 2021
3. Availability of right spectrum at the right price is central to the growth of the telecom sector.
4. The availability and pricing of spectrum should be in consonance with the objective of the reforms announced by the Government in September 2021 viz. to generate employment, promote competition, protect consumer interests, infuse liquidity, encourage investment and reduce regulatory burden on TSPs
5. 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.
6. The spectrum should be put to auction only after harmonization and ensuring that it is interference-free to ensure efficient utilization of spectrum and better user experience.
7. A critical factor which has an impact on the pricing of spectrum is the need to ensure /attract investments in infrastructure and also keep in mind the ARPU or the income/revenue potential in a country; and this along with international benchmarks must be considered in the valuation exercise.
8. A large chunk (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

9. Valuation of spectrum may be suitably reduced across various bands to ensure faster deployment of affordable 5G services in the country. **3300-3670 MHz band should be 10% of earlier valuation and 24.25-28.5GHz band should be priced at 1-2% of mid band spectrum.** Reserve Price should be kept low and should be fixed at 50% of the valuation of spectrum. In case of new bands, international benchmarks may also be examined.
10. 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 lowered by 3% across all the bands for all the TSPs and the floor of 3% for the SUC should be withdrawn.
11. Surrender of spectrum 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.

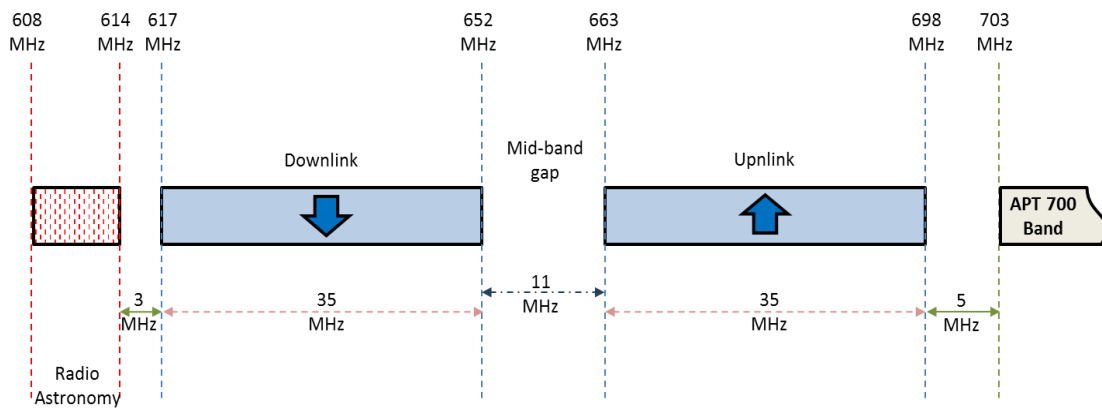
Issue wise response:

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.**

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.

- Yes. We submit that the 600MHz spectrum should be put to auction in the forthcoming auctions.
- The suggested band plan for this band is given below:



- In this frequency band the proposed frequency arrangement is based on a reverse FDD configuration, where the frequency range 617-652 MHz is for base-station transmitter and the frequency range 663-698 MHz is for mobile-station transmitter. This arrangement is preferred to ensure compatibility with existing frequency arrangements in the band above 698 MHz and to protect lower adjacent services in the band below 617 MHz.

The new band plan could be considered in future auctions depending on the take up of spectrum in the auction and the status of adoption of the APT proposal,

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

- We suggest that TDD arrangement may be adopted as the preferred option for spectrum in 3300-3670 MHz.
- Adoption of band plan N78 will be consistent with global trends

- Going forward the entire 3300-4200 MHz band, should be considered and evaluated for allocation for IMT as this band is also being considered globally for IMT.

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.

- Yes, TDD based configuration should be adopted for 24.25 to 28.5 GHz frequency range. 3GPP has also defined this band only for TDD configuration.
- It should be ensured that when the Spectrum is assigned to any operator, there should be no overlap between n257 and n258.
- 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.
- Further, Government must ensure that the spectrum being put to auction will be interference-free.

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.

- All bands have a complementary role in a 5G network. The sub-GHz bands are essential for providing coverage, while mid-band and high-bands are primarily used for increasing the capacity of the network. Thus all the 5G bands be auctioned simultaneously for efficient designing of the network and to deploy various use cases supported by 5G.
- Further, the spectrum put to auction should be harmonized and 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)**
- There is no need for any change in the block size for 800MHz band and the same may be maintained at 1.25MHz. However, inter-band distance between 800 MHz and 900 MHz as the guard band should continue.
- 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.
- Yes, 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.
- Q.12** What should be optimal block size and minimum quantity for bidding in 3300-3670 MHz band? Kindly justify your response.
- Block size of 10 MHz may be defined for bidding in the 3300-3670 band
- Q.13** What should be optimal block size and minimum quantity for bidding in 24.25 28.5 GHz? Kindly justify your response.
- 100 MHz of block size is recommended for bidding in 24.25 – 28.5 GHz band.
 - Minimum quantity for a new entrant (not having any access spectrum in any band) may be put at 400MHz, and it should be 100MHz for existing operators

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.
- No 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

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.
- Spectrum should be put to auction only after harmonization and ensuring that it is interference-free.

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?
- 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.
- Q.20** What should be associated roll-out obligations for the allocation of spectrum in 3300-3670 MHz frequency band? Kindly justify your response.
- 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.
- Q.22** While assessing fulfilment of roll out obligations of a network operator, should the network elements (such BTS, BSC etc.), created by the attached VNO, be included? If yes, kindly suggest the detailed mechanism for the same. Kindly justify your response.
- Yes, the roll-out conditions for 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz and 2500 MHz stipulated in the last auctions held in March 2021 are appropriate. No changes are required
 - Existing approach allows fulfilment of rollout obligations using any technology in any band. This approach may be continued.

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.
- The role of spectrum cap is to ensure that spectrum is used optimally and efficiently whilst ensuring competition and choice for the consumers.
 - The spectrum caps may be revisited by the TRAI keeping in mind the above principles and the quantum of spectrum that is put to auction.

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.

- Surrender of spectrum is a key element of the spectrum reforms announced by the Government in September 2021.
- The terms and conditions for surrender of spectrum should be kept simple and easy to implement and the surrender fee should be levied only to cover administrative costs.

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.

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.

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.

- 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.
- 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.
- 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.
- 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.
- 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.
- 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 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.

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?

- Valuation of spectrum is dependent up on a number of factors. Key factors to be kept in mind whilst setting the valuation and reserve price of spectrum is 1) the important of ensuring that the operators have enough funds for the deployment of networks using the spectrum acquired in the auctions and 2) the revenue potential /affordability of services to ensure robust take up and growth of services.
- International benchmarks should also be examined – whilst keeping in mind purchasing power parity for the India consumers.
- Both the above factors point to a need to keep the valuation and reserve prices at a very reasonable level. This approach will also enable fair market based price discovery.
- Trying to account for the extended tenure in the spectrum valuation exercise will defeat the very purpose /objective of extending the tenure of the spectrum licenses. It is only one of the multiple variables.

- In 2021 (as was the case in previous auctions as well), majority of the spectrum put up for auction remained unsold primarily due to the high reserve price.
- It is thus evident that valuation Prices as per last auctions are not sustainable and 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. Further, the approach thus far of indexing the last auction prices needs to be revisited and done away with.
- There is need to re-examine the approach thus far followed by TRAI as sticking to earlier 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.
- Further, even the report of Standing Committee on Information Technology (2020-21): Seventeenth Lok Sabha noted that
“... 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 acceptable to all, focusing on consumer interest and socio economic goals of our country.”
- As submitted above, critical factors that need to be kept in mind by TRAI are 1) need to attract investments into the sector and the network and 2) the revenue potential /need for affordability of services.
- We suggest that the spectrum valuation should be suitably reduced across bands to ensure faster deployment of affordable 5G services in the country.
- We further 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.

- Further, the Reserve Price may 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.

- 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?

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

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

- The requirement for making upfront payment should be done away with for the upcoming 5G auction.
- We suggest a 6 year moratorium for the deferred payment option
- We suggest that deferred payments may be recovered in 24 instalments after the 6 year moratorium

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.)

- High interest on deferred spectrum payments ultimately burdens the TSPs' finances and impairs their ability to make investments for network rollout.
- Thus interest rate 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)

- Only licensed TSPs should be allowed to offer services for Private networks as they can ensure that the widest provision of services amongst consumers and industry

verticals.

- The Licensed TSPs should also be allowed to offer their spectrum on lease to verticals to enable use cases.
- A working group may be set up by TRAI to examine issues related to spectrum leasing and introduction of a framework for the same. This would be in line with the approach followed for spectrum trading and spectrum sharing.
- No exclusive spectrum should be set-aside for localized captive networks as will lead to a sub optimal use of spectrum and would also be against the principles of level playing field including loss to exchequer and issues concerning LEAs.

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

- We believe that the use cases for 5G would emerge from the market and the need of the hour is to ensure a robust ubiquitous world class 5G networks and infrastructure that are capable of supporting the various 5G use cases and the needs of industries and consumers.