From: dua@duaconsulting.com
To: "Syed Tausif Abbas" <advmn@trai.gov.in>
Cc: syngal@duaconsulting.com
Sent: Monday, January 24, 2022 3:00:42 PM
Subject: Comments on TRAI Consultation Paper No. 8/2021 on Auction of Spectrum in Frequency Bands Identified for IMT 5G (30 Nov. 2021)

Shri S.T. Abbas
Telecom Regulatory Authority of India
New Delhi

Dear Sir,

Please find attached our comments (both in Word and PDF formats) on Consultation Paper No. 8/2021 on Auction of Spectrum in Frequency Bands identified for IMT/5G (30th November 2021).

A hard copy of our response is also being sent to you separately.

Best regards,

Brijendra K Syngal

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Comments on the TRAI Consultation Paper No. 8/2021 on Auction of Spectrum in Frequency Bands Identified for IMT/5G (30th November 2021

Preamble: I would like to draw the attention of the authority to a Speech Made ON 12TH December 2007 at Vigyan Bhawan, by The then Prime Minister Shri Man Mohan Singh on the importance of Telecomm, what it means for Bharat Nirman, and the stress he laid on the allocation of scarce national resource/asset THE SPECTRUM

Quote

"I am extremely happy to be here in your midst to inaugurate the India Telecom Conference. At the outset, I would like to acknowledge the phenomenal contribution of the telecom sector to the rapid growth of the Indian economy. The sector has shown remarkable enterprise and dynamism in the last one decade. May you grow even more rapidly in the coming decade

Three years ago, a target of 250 million telephone subscribers by 2007 was considered too ambitious. You have proved the critics wrong and have reached the milestone well in time. I congratulate the industry for this phenomenal expansion and growth. Today, as my colleague A.Raja mentioned around eight million new telephone subscribers are being added in India every month. This is mostly in the mobile telephone segment. Mobile telephony has been growing at an annual rate of over 90% since 2003. We need to understand what has spurred the remarkable growth of this sector and take steps to ensure its sustained continued growth in future as well.

The key to the growth of telecom has been liberalisation, reforms and competition. This has been as true of telecom as it has been for civil aviation, insurance and asset management. All these sectors have benefited enormously from the removal of state monopolies, reduction in entry barriers to new firms, creation of a level playing field between incumbents and new entrants, and most importantly, forward looking and even-handed regulation which has promoted competition and also effective consumer interests. All these are important steps whose lessons need to be kept in mind if we have to maintain the current growth momentum into the distant future.

The growth rate of the Indian economy is at a historic peak. It has averaged close to 9% year after year and we are now targeting a growth rate of 10%

in the 11th five year plan. Given our youthful population and a rising savings rate, I am confident that we will be able to sustain this growth in the medium term. The major constraints I foresee are the availability of skilled manpower and of high quality infrastructure. The infrastructure needs of the country are in excess of 450 billion US dollars in the next five years and we need to work towards facilitating investment on such a large, massive scale.

Growth in the telecom sector is a critical component of our infrastructure plans and it plays an important catalytic role in our development process. The opening up of the telecom sector has created an impressive forward momentum in India, resulting in massive investments and expansion in supply which are signs of a vigorous, competitive and fast growing sector. I am very happy that the telecom department has ambitious targets for the future - 500 million telephone connections, 40 million Internet connections and 20 million broadband connections. Raising the investments needed for this ambitious plan would be a tremendous challenge for the industry as well as for the country.

I would like to draw your attention to a few issues concerning this booming sector. First, there is the issue of access and the large rural-urban divide in connectivity. Although the growth in the last few years has been truly impressive and our tariffs are among the lowest in the world, vast stretches of our rural population have little or no telecom penetration. Rural tele-density is still in single digits. I had heard of plans for a Phone in Every Village some twenty years ago. We have not yet reached that goal. This is why we have emphasised telecom connectivity in our **Bharat Nirman** programme.

There will be multiple benefits from increased rural telecom connectivity. At a narrow level, there will be a new burst of growth for the sector as a whole. On a larger plane, however, there will be multiplier effects for the entire rural economy. As better telecom connectivity and consequently better IT connectivity - becomes a reality, our rural hinterland will become more integrated with the rapid growth processes now taking place in the rest of the economy. There will be increased economic opportunities for our rural people - through better education, through improved market access for their products, through improved employment prospects, and through greater purchasing power in their hands. The spin off benefits will be felt, not just in telecom, but right across the economy as a whole. Telecom connectivity has the potential to play a transformational role in our rural areas. I expect all key players in this vital sector to realise and fulfil this latent potential. You need to rise to the challenge by devising innovative mechanisms for achieving our collective ambitions.

Second, while we can be satisfied with the growth in tele-density, I am concerned about our capabilities in telecom R&D and manufacturing. Can we have a sector where we are world-class in telecom networks but do not have an adequate manufacturing presence. I am happy that an enabling R&D environment is now being created by setting up Telecom Centres of Excellence through a PPP mode in our premier institutions of higher learning. These will enhance talent pool for R&D, facilitate development of state-of-the-art technology and promote country specific innovation. I wish this initiative all success as this is extremely relevant for maintaining our presence in cutting edge technologies.

We, however, need to also create an ecosystem for the rapid growth of manufacturing for telecommunication products. We need to build on our well recognised capabilities in software and IT to establish a large scale presence in manufacturing as well. It is important both from an economic and a strategic point of view that we are present in the entire telecom value chain. I assure you that the Government will develop a forward looking policy regime that will encourage investment in manufacturing in this sector.

Lastly, I am concerned that we should have a policy regime which will enable the continued growth of the telecom sector for many many years to come. As I have said earlier, the key enabling factors for this sector have been liberalisation, reforms and competition. We must never forget these principles. I am aware that spectrum availability can be a constraint for the growth of this sector in future. On the supply side, our government has taken steps for vacation of spectrum by existing users. This is at an advanced stage and the requirement of making spectrum available for commercial uses is being addressed. I have asked the Group of Ministers tasked with this to expeditiously conclude its deliberations and suggest a roadmap regarding availability and timing.

At the same time, we must realise that we need to make use of this precious and limited resource in an optimal manner. All technological options must be explored to maximise its utilisation. The policy regime for making spectrum available should be fair, transparent, equitable and forward looking. It should not create entry barriers to newcomers or barriers to the continued growth of the important sector. At the same time, the revenue potential to the government must not be lost sight of. After all,

governments across the globe have harnessed substantial revenues while allocating spectrum. In the final analysis, the key issues are correct pricing, fair allocation rules, and a pro-competitive stance. In the past, the department of telecommunication and the regulator have successfully enabled the rapid growth of this sector. I believe that working closely with the independent statutory regulator, we can balance multiple objectives in a fair and reasonably manner.

I am very happy that India has successfully made the journey from being a country with high telecom tariffs to one in which tariffs are today the lowest. Healthy competition has ensured that the benefits of skill and technological advancement have been passed on to consumers, allowing the regulator and the Government to let a tariff regime of forbearance prevail. I would appeal to the industry to continue its healthy track record in this regard.

The telecom revolution is poised today to transform our economy and our polity. It has become a part of our day-to-day lives. It can be the vehicle for taking us into the knowledge economy of the future. Against this backdrop, India Telecom 2007 offers an ideal platform to provide a glimpse of the opportunities in our country. It will also afford service providers and manufacturers an opportunity of exposure to new and emerging technologies and solutions. I am confident that this event will serve to provide a fresh fillip to the growth of this pivotal sector.

I wish the organisers and participants all the best for the conference".

Unquote

Nothing appears to have changed which would warrant allocation of spectrum in any other manner except a fair transparent, market developed mechanism. It would not be inappropriate to point out the folly committed in the August 2007 TRAI recommendations of not auctioning 2G spectrum, but the rest of the spectrum then under consideration. Whatever be the political Coalition Dharma or other considerations. **The result of that flawed recommendation of August 2007 was the infamous 2G scam**. Therefore, any spectrum whether for terrestrial use or in

access, back haul, last mile, middle mile and or by satellite should be auctioned. That is what has been done world over, why not here? The raging Devas controversy is another example. The valuation of spectrum for satellite usage can be done on the basis of the number of times it can be used vis-à-vis terrestrial systems. One can't linearly multiply price discovery of terrestrial spectrum to the equivalent satellite spectrum. Technology in both cases is evolving continuously. A factor of something like 88 was once being touted for example, should terrestrial spectrum price discovery be Rupee 1/MHz, for satellite it can't be the same. The factor of repeatability will have to be factored in, which would likely depend on beam forming networks on board the satellite.

Yet another narrative being espoused these days is "Public Good versus Public service", revenue maximisation must not be the sole criterion of selling national assets, at the same time distribution at rock bottom prices is also not the way forward. This was adequately demonstrated during the 2007-2008 distribution of spectrum, later sold at multiples of 6 to 10 by unscrupulous fictitious companies in black market. The result, lessons have been learnt. Therefore, wrong misplaced narratives to sell national resources at not market discovered price would be a folly.

On the contrary, the government should look at the levies, fees and taxation, which are linearly applied in perpetuity no matter the quantum of revenue. Why are the principle of revenue maximisation not applied there? The issue was discussed at length in April 2012 recommendations, but no action. Whereby the intention appears to be distribution of spectrum a la 2 G era. The hint is towards affordability of service for the weaker, rural strata of society. The intention appears to be to reduce input costs of spectrum. First, of all it is a fallacy that costly spectrum makes end tariffs exorbitant. This aspect had been discussed in details in the 23rd April 2012 recommendations ad nauseam.

I would like to draw attention to the 23rd April 2012 recommendation on the auction of spectrum and what it means as a percentage of the end tariff. Para 3.64 and annexure VII of those recommendation should be gone into where a study of spectrum cost on the end tariff has been manifested/presented. In the present case the spectrum will be available for 30 years whereas those calculations were on a 20 year tenure basis. In addition there is spectrum charge. The fact which government refuses to recognise the linear application of taxes, levies and license fees. It indirectly means **"Taxing Success of Industry in Perpetuity"** The biggest reform needed here is in the reduction of GST rates and calibration of revenue share basis growth against variable Revenue share. The Authority had recommended review of all levies in their 23rd April 2012

recommendations in their Conclusions Para 5. Years have gone by without any consideration of this important aspect.

CHAPTER–V: ISSUES FOR CONSULTATION

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.

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

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.

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.

Answers to Q.1 through Q.8

Any standalone yes or no response would be misplaced. The entire gamut of responses is hugely depended upon the eco systems of devices and access technology in the bands under consideration, at least in the case of spectrum up to say 3.7 GHz. Therefore, any suggestions recommendations whether to auction not to auction, pairing used will have to be decision of service providers. Having said that whatever approach is chosen, it must uniformly conform to national and international standards, best practices for interoperability like roaming etc.

Coming to 24 to 28GHz bands, it is believed that these bands are going to be used for last mile or middle mile, hardly for access. It would have to be seen how efficient they are in our situations. Their utility would lay in dense

areas requiring high throughputs etc. However, their penetration into buildings would pose a challenge. It could as well be a case pf much ado about nothing.

By all means auction the entire spectrum which DOT has made available. Such an approach ensures visibility of spectrum, and would bring economies of scale in implementation. The only caution is that leave space for a fifth player. There are many players wanting to come in with cloud based solutions. In effect, in the auction document itself new entrants must be encouraged. .

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, a. Whether provision for guard band in 800 MHz band needs to be revisited? b. 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)

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.

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.

Answers to Q.9 through Q.12

The questions are somewhat out of place or convoluted. The block size would depend upon the data speeds proposed to be provided by the so called 5G services. The data speeds are mix/product of technology, spectrum and power, they are interrelated, interdependent. WE can't deal with band sizes in isolation. Therefore, first define minimum data speeds for 5G, and accordingly decide on band size by choosing appropriate technology. Nonetheless, the sizes decided must leave a provision for at least one more player, if not 2. The present speeds for 5G are quoted at around 200mb/s down load and 50mb/s for upload. Having said that minimum band should be 20MHz going upto 100 MHz in sub 6GHz range and 400MHz and above in higher bands.

Q.13 What should be optimal block size and minimum quantity for bidding in 24.25-28.5 GHz? Kindly justify your response. Issues related to Eligibility Conditions for Participation in Auction

Answer same as above, but the size would be different and on much higher side, because that is the essence of these high bands, bandwidths.

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. Issues related to Interference mitigation in TDD bands

Answers to Q.14 through Q.15

Why reinvent the wheel? Are there any compelling reasons? Having said that what steps are being taken to include in NIA to encourage entry of new players. Let's be clear 5G is no migration from 4G, but a new technology. Therefore, there must be players who would want to invest in green field service roll out should conditions be conducive.

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. Issues related to Roll-out Obligations

Answers to Q.16 through Q.17

As long as frequencies are assigned as per international standards and attendant guard bands, why fresh measure should be prescribed for mitigating interference. TSPs are responsible citizens, they must abide by state of the art practices to avoid interferences. On the contrary, they should respect any measurements made by an independent body, should there be complains and take appropriate corrective action. It might be good idea to provide some guidelines on possible levels of signals, which must not be exceeded to prevent interference. Such guidelines would help in active equipment selection with proper filters and beam directions.

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. Issues related to Spectrum Cap

Answers to Q.18 through Q.22

Roll out obligations are a relic of the past, must be done away with. However, on expiry of either one year or two, should there be no progress made, let them pay a license fee on notional Adjusted Gross Revenue, which has been prescribed in the Unified License guidelines. That in itself would be a deterrent. Place a squatting charge for hoarding spectrum, or ask to surender.

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.

Answers to Q.23 through Q.28

There should be three levels of spectrum caps

1 Sub 1GHz,
2 Sub 4GHz, and
3 Sub 30GHz

For each subsection let there be 35% cap, to prevent hoarding of spectrum by any one TSP.

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.

Answers to Q.29 through Q.33

The surrender of spectrum will arise a) due to technological evolution of more efficient options than those at the time of acquisition, b) should the growth be not commensurate with predictions at the time of purchase of spectrum, and c) regulatory disruptive glitches etc Of course there could be many more reasons. Spectrum surrender conditions should be simple, without penalty and should have paid all outstanding dues until the time of surrender. The 10 year period should be counted from the date of original assignment of spectrum. The TSP should give at least a reasonable period of notice say 3 months. The surrender of spectrum will become inevitable, when trading options have been exhausted. It should ensure that consumers are ported in case of complete shutdown of shutters as per current policy of porting time availability. Surrender should be painless.

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?

Answers to Q. 34 through Q.62

First principle which must be accepted is auction, no matter which band of spectrum. No distribution of spectrum at all. Therefore, the question of valuation can be set aside, a market discovered price in ascending auctions as has been done in the past successfully, and also as recommended in 2012.

Quote

The Authority recommends the following structure for the auction of spectrum in future:

 The auction of spectrum shall be conducted using Simultaneous Multiple Round Auction (SMRA) format.

Unquote

Second question arises linear application of price in each band or for all bands. Answer clearly is no. One would have to weigh deployment of equivalent equipment to serve the same number of consumers at same service of quality for different spectrum bands.

Third factor eco system of devices, access systems, various miles of connectivity where propagation comes into play. Propagation characteristics are not linear but has a square factor of 2, if my physics serves me right.

Fourth bidding process has to be made on forecast basis for technology and applications to succeed. Having said that the reserve price could be set for three bands

1 Sub 1GHz,
2 Sub 4GHz, and
3 Sub 30GHz

In this regard, I would like to draw attention to Annexure VII of 23rd April 2012 recommendations of the authority wherein impact of spectrum cost per consumer has been detailed. What has changed since then, tenure increased to 30 years, and customer base has increased manifold, data consumption is galloping. In addition, auctions elsewhere in the world have taken place for all the bands. They could be considered in a scientific manner on the basis of purchasing power parity in arriving at a reserve price. The rest will be taken care of by market forces at the time of bidding. There are various ways take 2001 as base line index that by simple inflation, libor, stock price of the Telcos, Thre are two most successful auctions 2001 (about Rupees 7000 Crore)and I think 2010, when Rupees 1 trillion was raised after multiple rounds of auction. It would be interesting to see the relationship between base price and final price to set a bench mark. Index that suitably. Let market forces decide. Keep price high enough for serious players. Definitely relationship is possible.

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.

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?

Q.67 What rate of discount should be used while exercising prepayment/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.

Answers to Q. 63 through Q.67

No spectrum, no collection of money. Why should DOT collect money when there is no spectrum**?**

30% upfront payment shows seriousness, balance in 16 years. If they can't make money in these years, they better be not in business. Government has been generous to extend tenure to 30 years.

Four years is more than enough. That is time taken to roll out full blown services. Actually less, but

Discount rate of libor plus 2% variable.

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)

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 rationale.

The concept is being bandied as Industrial Revolution 4.0 and rightfully so. The idea behind the concept is keep the traffic within a community of interest within the confines of the enterprise, factories, and offices without having to switch an internal call from an exchange outside. Such an approach broadly provides security economies of cost savings depending upon traffic within an enterprise. Additionally, it reduces burden on the TSP infrastructure in terms of call routing, billing, security of conversations, both speech and data. Therefore, Private Mobile networks certainly could be termed as Industrial revolution 4.0. The moot question is whether to dedicate spectrum for such services or it could be shared by TSPs. Our suggestion is that in view of the evolving technology, uses and efficacy, it would be better to allocate an entirely different spectrum for such purposes. It is not only speech and data, it would be robotics, IOT, m2m large frame computers talking to each other. Many application would emerge to provide economies of scale. It could be called an EPBAX, may be with junctions for access outside for designated users. That should be left to the enterprise, and not dictated by a TSP. The reason being the bandwidth delivery could be ultra-frequency 5G network or a fibre. It is pointless mixing 5G per se with these types of Private Cellular Networks. This is a service in itself best termed as Enterprise confined network.

Such networks should not be and must not be any part of 5G scheme of things. Should TSP wish to be their subcontractor or technical support so be it? The spectrum for such services should be earmarked as adopted by OfCom, Germany and many other countries. Let it not be mixed with a public service like cellular services etc.

Additional Comments

In the document there is hardly any indication of bringing in of new entrants to install green field projects for 5G and beyond networks. There needs to be a discussion on that.

Revenuer maximisation in selling national assets is kosher. A balance has to be struck between public good and public service at affordable prices. This is best tackled by having a close look at Taxes, levies and fees.

Quote

In order to enable the telecom sector to raise the necessary resources as well as to be able to use them efficiently, the sector need to be supported strongly. First and foremost is the need for the banking sector to adequately support the telecom sector in raising of funds. This would call for a close review at the level of Ministry of Finance and Reserve Bank of India. A review of the taxation structure to which the telecom sector is subject would also be useful so as to enable it to improve its performance.

Unquote

Input costs of spectrum have much less effect on end tariff as calculated in 2012. This bogey of free distribution of spectrum should be nipped in the bud.

Why should not BSNL be allowed to be part of the bidding, and choose its destiny