



Broadband India Forum Response To TRAI Consultation Paper on Auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz and 3400-3600 MHz bands

Broadband India Forum (BIF) welcomes the TRAI's consultation process on Auction of Spectrum in 700 MHz, 800 MHz, 900 MHz, 1800 MHz, 2100 MHz, 2300 MHz, 2500 MHz, 3300-3400 MHz and 3400-3600 MHz bands.

BIF is a policy forum and think-tank that works for the development & enhancement of the entire broadband ecosystem in a technology-neutral and service-neutral manner. BIF seeks to be a thought leader and a credible and effective voice to help propel the nation to achieve the ambitious vision of creating a Digital India. To achieve this, BIF works to promote the rapid development of affordable and high speed ubiquitous broadband in a holistic manner throughout the country.

Registered as IPTV Society, its brand - BIF was formed in October 2015 and is a fairly nascent but dedicated Forum with participation from all stake holders, including Technology Providers, Telecom Operators, Internet Service Providers, Value-Added Service Providers, Satellite Operators and service providers, MSO and seasoned Industry professionals who are familiar with different technologies, operations, regulations and policies.

Issue-wise Response

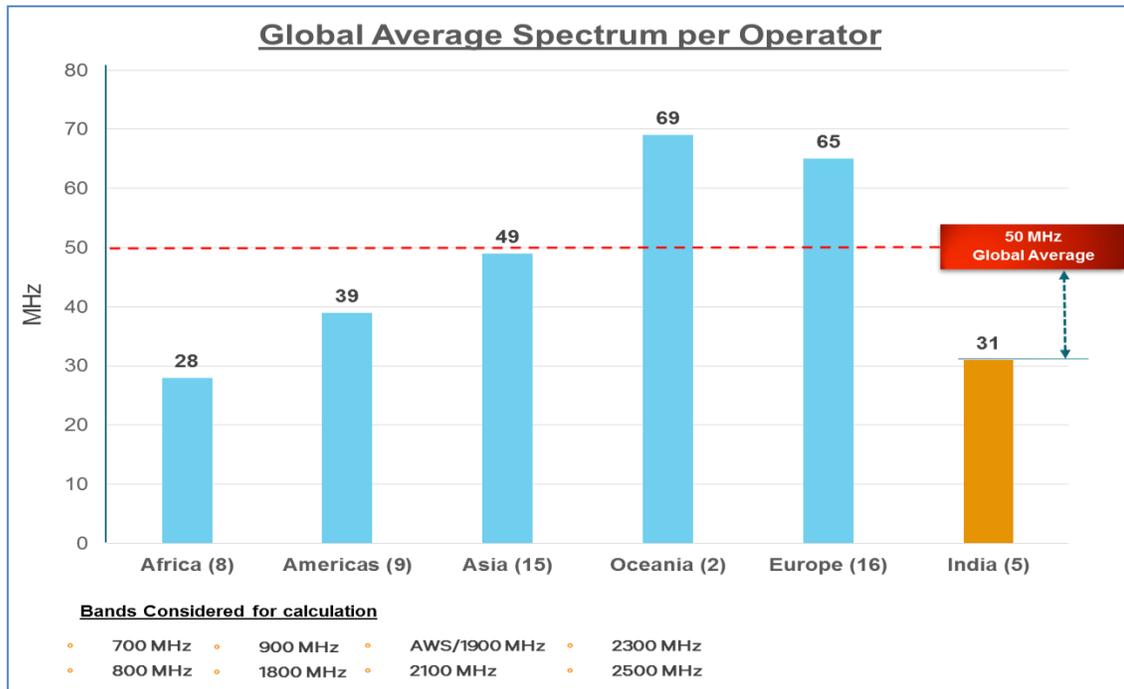
Q.1 (a) In your opinion when should the next access spectrum auction be held?

(b) If the spectrum auction is held now, should the entire spectrum be put to auction or should it be done in phased manner i.e. auction for some of the bands be held now and for other bands later based on development of eco system etc? Please give your response band wise and justify it.

BIF Response:

1. It is widely recognized that broadband communications networks are required to support economic growth in information-based economies such as India. Spectrum assignments for broadband and other services will have a crucial role to play in delivering desired broadband outcomes and achieving the objectives of Digital India.

- Though the industry is spectrum starved but still nearly 60% of the spectrum offered in the October 2016 remained unsold. Even after those auctions, while India spectrum allocation has improved, it still needs an average of 20 MHz per operator to meet the current global average and is ill-equipped for the broadband era. At this juncture, there is a need to review the effectiveness of India's spectrum allocation strategy and understand reasons as why was spectrum unsold in the 2016 auction when India still has huge demand for spectrum.



Indian operators have 20 MHz spectrum less than global average

- The success of an auction is determined not only by the ability to sell a large proportion of spectrum up for auction, but also by the market/clearing price being significantly above the reserve price, viz. the auction process must help discover the true market price of the spectrum.
- In the October 2016 auctions where a total of 2350 MHz in seven bands were put up for auction in 22 circles, only 964MHz, or barely 41%, got sold. In the case of 700MHz auctioned in 2016, nil quantity was sold—clearly a total failure. Even for the spectrum that was sold, the price realized could not be considered the market clearing price. The average sale price was hardly 5% above the reserve price, i.e. there was hardly any market discovered price in India.
- Spectrum's greatest value comes from its usage rather than from the short-term revenues generated by its sale. Short-term revenue generation must be balanced with the subsequent infrastructure investments to be made by operators to make mobile broadband available to the Indian people.

Mobile operators in India have been faced with high financial burden which, in turn, impact their ability to make the investment required to upgrade consumer services, meet demand in highly populated urban areas and, expand networks to provide coverage to people living in rural areas.

6. There is obviously much to be done to improve the effectiveness of our auctions and balance the socio-economic benefits over revenue maximization. BIF believes that the auction design has to change significantly before any new auction is announced. There is a need to lay down a clear spectrum roadmap and address changes related to the following:
 - a. Pricing of spectrum
 - b. Spectrum Harmonization
 - c. Contiguity of spectrum
 - d. Interference free spectrum
 - e. Spectrum usage charge

- a. Pricing of spectrum: High reserve prices and/or unrealistic predetermination of spectrum value would likely result in poor appetite from potential bidders and could lead to valuable spectrum left unsold and unused. It was observed in Australia that an unrealistically high reserve price resulted in one operator quitting before the auction and led to valuable portion of the 700MHz spectrum left unsold and unused. Unused or under-utilised spectrum does not benefit society or consumers. Therefore the timing of auctioning the band also plays a major role. The opportunity cost of unused spectrum is enormous and far outweighs any short term gains in auction revenue.

There is a need to review the auction rules for reserve prices, which are out-of-line with international norms and result in non-discovery of market prices. There is a need to set reserve prices at levels that are high enough to keep non-serious bidders at bay, but low enough to achieve vibrant price discovery.

- b. Harmonization of spectrum: It is also important allocate harmonized spectrum in all bands after the completion of the auction and this exercise should be conducted well in advance so as to ensure timely allocation. Harmonization exercise should also include fragmented spectrum allocated to Government to be made available for commercial use.

The 1800 MHz has hardly any fresh spectrum available for auction and all of it is fragmented and cannot be used for deployment of data. However, if you harmonize this band (rearrange spectrum between operators) then the total quantum of spectrum available for auction can be increased by a factor of 10 (from the current 22 MHz Pan-India to 220 MHz). Also, the existing spectrum assigned to the operators can be defragmented and partial assignments converted to full – making spectrum palatable for LTE. At the reserve price set by the government, the value of additional spectrum that will get released is approximately Rs 22,200 Cr. Not to undermine the future revenue potential from expiring spectrum in larger contiguous blocks.

Similarly, the very important 900 MHz band has fallen between the cracks and is currently working at only 50% efficiency - being highly fragmented. In 18 circles out of 22, the Government can release a block of 5 MHz or more for auctions.

- c. Contiguity of 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 shall strive to ensure contiguity of the holdings so as to ensure efficient utilization of spectrum and better user experience.
 - d. Interference free spectrum: It is submitted that DoT is obliged to allot clean, interference free and usable spectrum to the operators in all the bands. The “as is where is” concept cannot be applied to licensed Spectrum.
 - e. Spectrum usage charge: The spectrum usage charges (SUC), which are more than 5% of revenues is not reasonable. This represents a highly anachronistic situation. Once the spectrum has been won in an auction, enlightened regimes merely cover the cost of administering and regulating the spectrum, which would only be a small fraction of 1%. Hence, it is recommended that, for auction-allocated spectrum, the SUC level should be brought down to max 1%.
7. At present, the Government/DoT is in the process of formulation of New Telecom Policy and the time is ripe to bring about policy changes that address the spectrum design issues as highlighted above before any new auction is announced.
 8. The industry has undergone a phase of substantial consolidation and is stabilizing now. For explosion of 4G services and advent of 5G, more spectrum is required and BIF believes that auction should not be delayed. The auction design issues as highlighted above should be addressed without any further delay and then the auctions should be held.
 9. As regards call on which bands to be put up for auction, all available spectrum should be put up for auction.

Q.2 Do you agree that in the upcoming auction, block sizes and minimum quantity for bidding in 700 MHz, 800 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? Please justify your response.

BIF Response: The block sizes and minimum quantity for bidding as suggested by TRAI in the last auction should be continued.

Q.3 What should be optimal block sizes and minimum quantity for bidding in (a) 3300-3400 MHz and (b) 3400-3600 MHz bands, keeping in mind both the possibilities i.e. frequency arrangement could be FDD or TDD? Please justify your response.

BIF Response:

1. In band 3300-3600, only 275 MHz is available as DoS is using remaining 25 MHz for IRNSS. For deploying 5G, 3GPP is working on its technical work. Early work of 3GPP (Rel.15) shows that a minimum bandwidth of 100 MHz per block is essential to deploy 5G technology in sub-6 GHz bands. As sufficient spectrum in 3300-3600 MHz band is not available, therefore, it is advisable to use this spectrum for near-5G technologies (e.g. LTE-Adv) which will require a bandwidth of 20 MHz per block. To make it future proof, while assigning these 20 MHz blocks, it should be ensured that they are contiguous blocks for each operator.
2. 3300-3600 MHz band should be auctioned in TDD mode as auctioning it in FDD mode will further reduce the spectrum availability due to FDD center gap beside 25 MHz with DoS. 3300-3600 MHz band is a good candidate band for deploying near-5G technologies. It will require that a minimum assigned block size for each operator should be ≥ 40 MHz. Hence it is advisable to have a block size of 20 MHz. Therefore, an operator should be permitted to obtain multiple consecutive blocks of 20 MHz as it is also conducive to evolution to 5G by reusing the hardware. Block size 20 MHz (TDD) to be assigned in contiguous manner so as to make it future proof.

Q.4 Do you think that 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 October 2016 are appropriate? If no, what changes should be made in the roll out obligations for these bands?

BIF Response:

1. When spectrum is allocated through market driven auctions, full market value for spectrum has been extracted by the Government through an open market process and there is no justification for stringent roll out obligations. BIF believes that reasonable roll out obligations in line with global norms can be continued.
2. Further, the Government should incentivize rural rollout to ensure faster broadband proliferation.

Q.5 Should there be any rollout obligations in 3300-3400 MHz and 3400-3600 MHz bands? If yes, what should these be? Please justify your response.

BIF Response: The new bands will be used for data and 5G connectivity. Hence, there is no need to mandate any rollout obligation on these bands.

Q.6 Is there a need to prescribe spectrum cap in bands 3300-3400 MHz and 3400-3600 MHz? What spectrum cap provisions should be kept for 3300-3400 MHz and 3400-3600 MHz spectrum bands? Should these bands be treated as same or separate bands for the purpose of calculation of spectrum cap?

BIF Response:

1. The current spectrum cap conditions have effectively served the interest of consumer, competition and the Industry. Spectrum caps have served well in the era when there were a large number of operators – up to ten or more in comparison to today’s typical number of 3-4 major mobile networks in a national market.
2. To cope with the pressures of Broadband and explosive data requirements, BIF believe that spectrum caps need to be significantly relaxed. This will be crucial for the data explosion and the advent of 5G in India.
3. Over time spectrum caps have been substantially modified and even removed in some countries in light of progress in wireless technology, growing demands for mobile services, and the attribution of new spectrum bands for commercial mobile communications. Many countries have done away with spectrum caps. In North America, the major developments that are relevant for the development of mobile broadband, the attribution of spectrum, and issues of competition include the removal of spectrum caps since 2000 on the grounds that the mobile market had become sufficiently competitive, hence the rationale behind them was no longer valid. Europe did not introduce spectrum caps but relied on conditions of mobile licensing, for example the number of licenses that were issued, to ensure competitiveness in the mobile market.
4. Thus, there is a need to significantly relax the spectrum caps criteria in India.

Q.7 Whether the prices revealed of various spectrum bands in the October 2016 auction can be taken as the value of spectrum in the respective band for the forthcoming auction in the individual LSA? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016. If indexation is to be done then at what rate?

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Q.8 If the answer to above question is negative then, whether as per the practice adopted by TRAI in the previous valuation exercise, the valuation for respective spectrum bands be estimated on the

basis of various valuation approaches/methodologies (Referred in Annexure 3.3) including those bands (in a LSA) for which no bids were received or spectrum was not offered for auction?

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Q.9 Whether the value of 700 MHz spectrum should be derived by relating it to value of other bands by using technical efficiency factor? If yes, with which spectrum band this band be related and what efficiency factor or formula should be used? Please justify your views with supporting documents.

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Q.10 Else, what valuation approach should be adopted for the valuation of 700 MHz spectrum band? Please support your valuation approach with detailed methodology and related assumptions.

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Q.11 Whether the value of October 2016 auction determined prices be used as one possible valuation for 2300 MHz spectrum for the current valuation exercise? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016? Please justify your response with supporting documents/ report(s), if any.

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Q.12 Whether the value of the 2300 MHz spectrum should be derived by relating it to the value of any other spectrum 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 documents.

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Q.13 Whether the valuation of the 2500 MHz spectrum should be equal to value of similarly placed spectrum band? If no, then which alternative method should be used for its valuation? Please justify your response with rationale and supporting documents /report(s)/ detailed methodology, if any.

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Q.14 Whether the valuation of the 3300-3400 MHz spectrum bands and 3400-3600 MHz spectrum bands 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, then which alternative method

should be used for its valuation? Please justify your response with rationale and supporting documents.

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Q.15 Is there any other valuation approach than discussed above or any international auction experience/ approach that could be used for arriving at the valuation of spectrum for 700/800/900/1800/2100/2300/2500/3300-3400/3400-3600 MHz bands? Please support your suggestions with detailed methodology and related assumptions.

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Q.16 Whether value arrived at by using any single valuation approach for 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.

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Q.17 In case your response to Q16 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, as adopted by the Authority since September 2013 recommendations? Please justify your response.

BIF Response:

1. We believe that high reserve price is one of the major reasons for spectrum remaining unsold in the previous auction and the prices discovered in the Indian spectrum auctions are not a true reflection of its value.
2. It all started with an overenthusiastic bidding by the operators in the year 2010 (3G and BWA auction) and became worse at the time of the renewal auctions of 900 MHz band in 2014 & 2015. The 2010 auctions were held at the backdrop of the license cancellation when spectrum was earlier given to new operators at a subsidized rate (without auctions). This increased the number of bidders, thereby raising the price of spectrum disproportionately high. In 2014, and 2015, the operators whose licenses were expiring had no choice but to bid enormous amount to stay in business. Apart from these few instant, the spectrum auctions in India remained largely subdued resulting in a large quantum of unsold spectrum. But the reserve price always stayed high and was never curated to correct these abbreviations, resulting in huge chunks of unsold spectrum and whatever got sold was taken only at the reserve price. This high and distorted reserve price, coupled

with forced bidding (to protect existing business), totally destroyed the value of spectrum acquired in the auctions.

3. The issues with spectrum pricing can be summarised as :
 - a. Low proportion of spectrum sold
 - b. Few circles with premium over reserve price indicate no real market discovery
 - c. No correlation between prices and revenue
 - d. No correlation between prices across bands
 - e. Prices increasing exponentially
 - f. Anomaly in calculation (700 MHz price)
 - g. Indian price among the highest although tariffs are lowest in India
 - h. High outflow in buying more spectrum - Total debt of the Industry – INR 4.5 lakh crores; total spent on spectrum in auctions since 2010 – INR 3.6 lakh crores

- a. Low proportion of licensed spectrum sold: Except for 2010 auctions due to artificial scarcity and lack of roadmap, spectrum has remained unsold. In 2014, 900 MHz got sold 100% because of license extension/renewal compulsions. Thus, it is the artificial scarcity combined with license extension/renewal compulsions which led to spectrum sale in the initial years. In 2016, whole of 700 MHz and 60% of the total spectrum put for sale remained unsold due to unreasonably high prices. Despite the deficiency of spectrum for Indian telecom operators, only 62% spectrum put-up for auction so far has been sold indicating that Reserve Price was too high.

Low Proportion of Spectrum Sold

Year	Band	Put-up	Sold	% Sold
2010	2100 MHz	355	355	100%
	2300 MHz	880	880	100%
	Total	1235	1235	100%
2012	800 MHz	95	0	0%
	1800 MHz	295	128	43%
	Total	390	128	33%
2013	800 MHz	95	30	32%
	1800 MHz	58	0	0%
	Total	153	30	20%
2014	900 MHz	46	46	100%
	1800 MHz	385	307	80%
	Total	431	353	82%
2015	800 MHz	108	86	80%
	900 MHz	178	168	94%

	1800 MHz	99	94	95%
	2100 MHz	85	70	82%
	Total	470	418	89%
2016	700 MHz	770	0	0%
	800 MHz	71	15	21%
	900 MHz	9	0	0%
	1800 MHz	220	174	79%
	2100 MHz	360	85	24%
	2300 MHz	320	320	100%
	2500 MHz	600	370	62%
	Total	2350	964	41%
Total		5029	3128	62%

- b. Few circles with premium over reserve price indicate no real market discovery: In most cases, reserve price turned out to be clearing price. Hence, there was no market discovered price. In the last auction, there were only 4 circles in 800 MHz, 6 Circles in 1800 MHz, 11 circles in 2300 MHz and 7 Circles in 2500 MHz where spectrum was sold at a premium to reserve price.

Premium Over reserve price in October 2016 Auctions

Circle	800 MHz
	Premium Over Reserve Price
AP	0%
Bihar	0%
Delhi	0%
Gujarat	20%
Haryana	0%
HP	0%
Karnataka	0%
Kerala	0%
Kolkata	0%
MP	0%
Maharashtra	0%
Mumbai	0%
Odisha	0%
Punjab	17%
Rajasthan	15%
Tamil Nadu	0%

UP-E	1%
UP-W	0%
West Bengal	0%

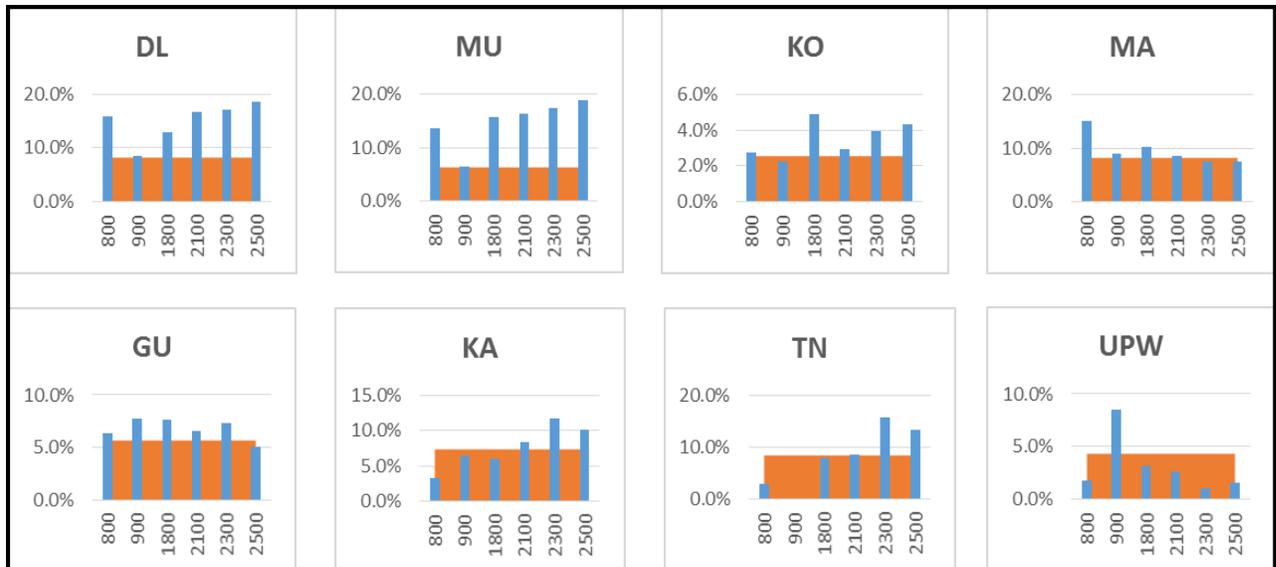
Circle	1800 MHz
	Premium Over Reserve Price
AP	0%
Assam	0%
Bihar	0%
Delhi	0%
Gujarat	0%
Haryana	5%
HP	0%
J&K	0%
Karnataka	0%
Kerala	0%
Kolkata	2%
MP	0%
Maharashtra	0%
Mumbai	65%
North East	0%
Odisha	0%
Punjab	0%
Rajasthan	1%
UP-E	16%
UP-W	5%
West Bengal	0%

Circle	2300 MHz
	Premium Over Reserve Price
AP	1%
Assam	1%
Bihar	3%
Delhi	1%
Gujarat	58%

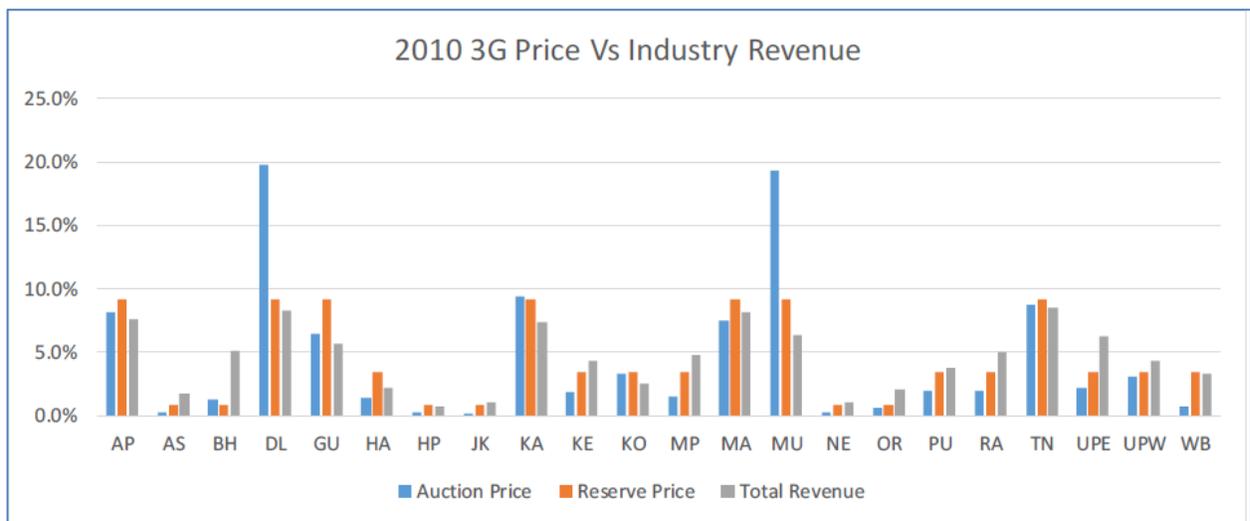
HP	1%
Karnataka	0%
Kerala	10%
Kolkata	0%
MP	3%
Maharashtra	9%
Mumbai	0%
North East	1%
Odisha	1%
Tamil Nadu	0%
West Bengal	0%

Circle	2500 MHz
	Premium Over Reserve Price
AP	0%
Assam	1%
Bihar	0%
Delhi	0%
Gujarat	0%
Haryana	1%
HP	0%
J&K	0%
Karnataka	0%
Kerala	2%
Kolkata	0%
MP	1%
Maharashtra	0%
Mumbai	0%
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Rajasthan	0%
Tamil Nadu	0%
UP-E	1%
UP-W	0%
West Bengal	0%

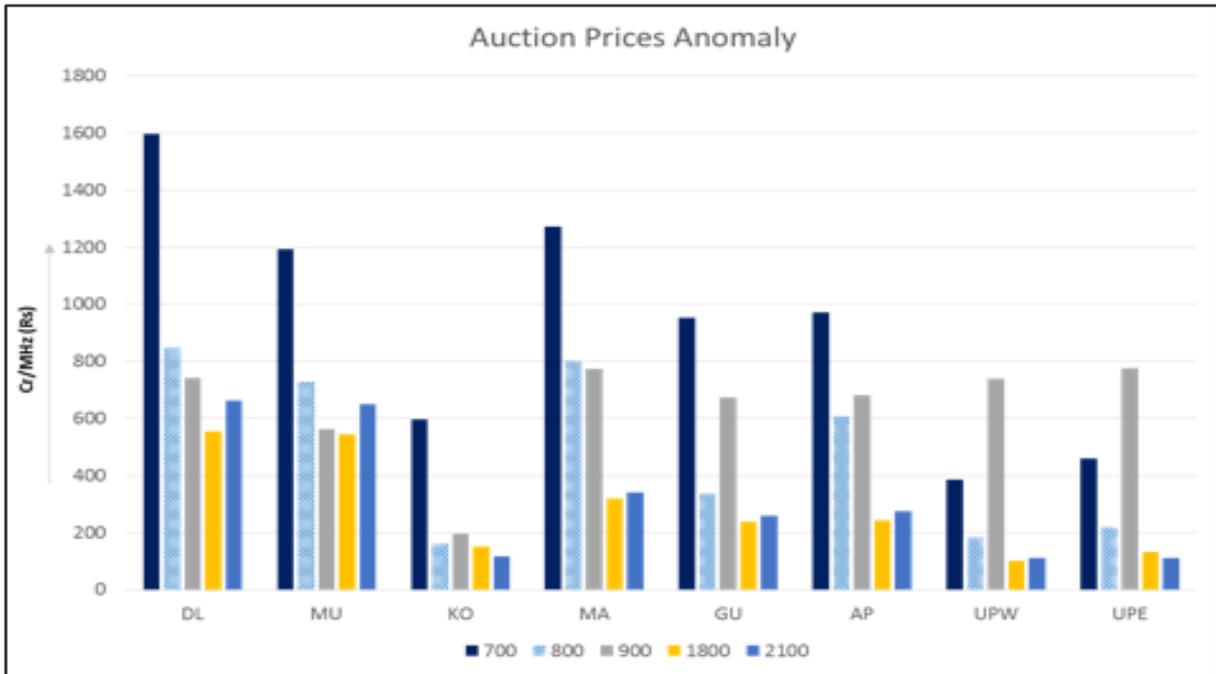
- c. No correlation between prices and revenue: The value of licensed spectrum is not proportional with the market realities. There is no correlation of value amongst different bands in same circle as well as band-wise correlation amongst various circles.



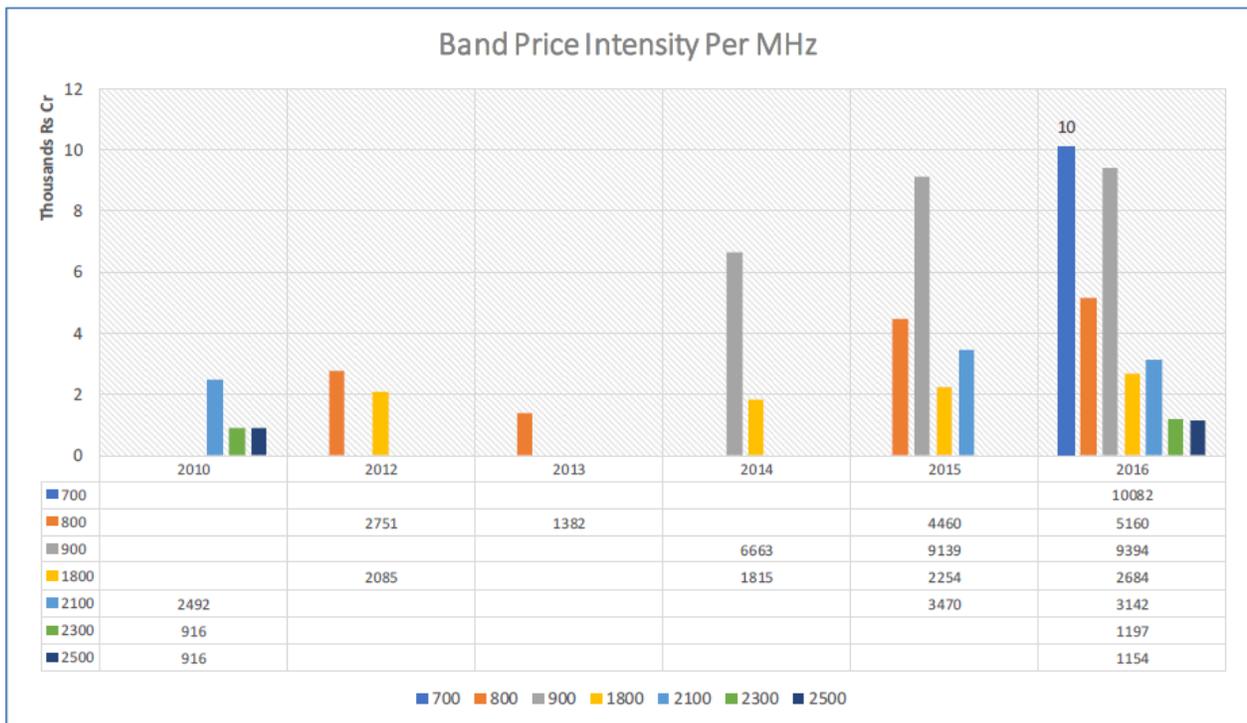
Legend
■ % Auction Price
■ % Revenue Distribution



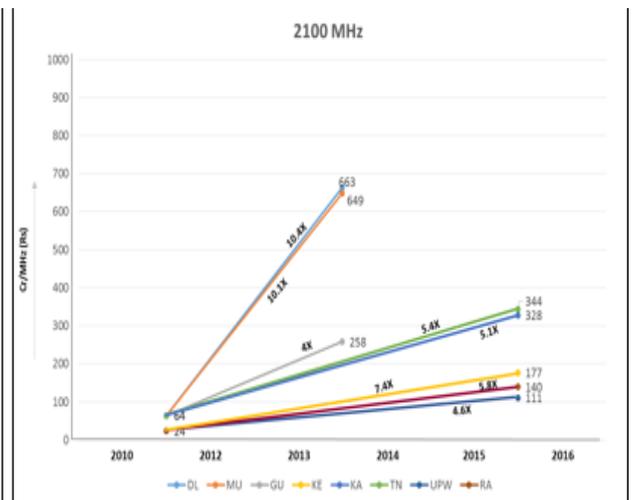
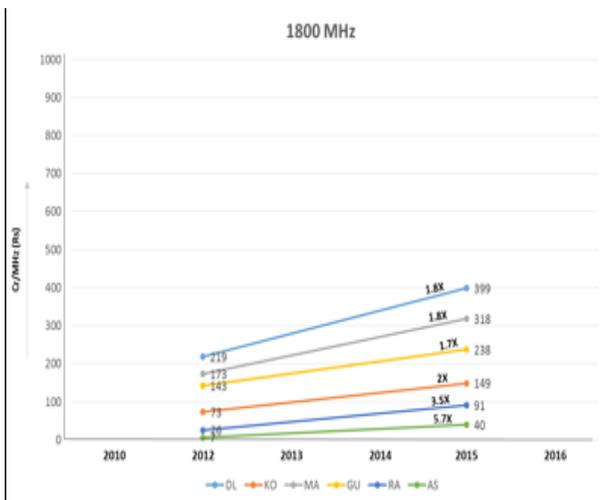
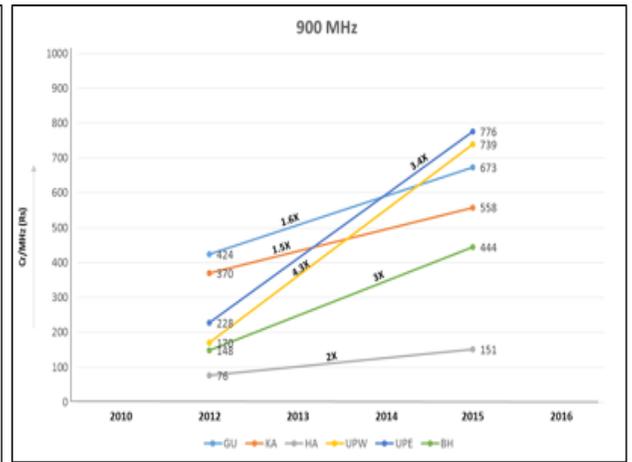
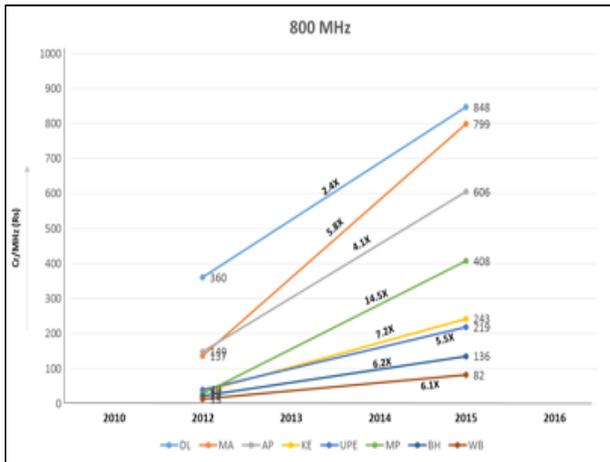
- d. No correlation between price across bands: At present, the prices of lower frequency bands are not always higher. Higher revenue circles have lower prices than lower revenue circles.



e. Prices increasing exponentially: Reserve prices in various licensed bands have increased exponentially over the years over the years.



Increase in Prices of 800 MHz, 900 MHz, 1800 MHz and 2100 MHz Band



- f. Anomaly in calculation (700 MHz price): A serious challenge in the last auction which did not witness any sale of 700 MHz was the reserve price of 700 MHz band, which was set at 4x of the 1800 MHz band due to a calculation error of TRAI. TRAI assumed that radio waves in 800 and 900 MHz band travelled 2 times more compared with 1800 and 2100 MHz and priced 800 and 900

MHz band at 2 times that of 1800 and 2100 MHz band. TRAI broke the logic while calculating price of 700 MHz band and linked with that of European Auctions of 800 MHz and, even so, made serious arithmetical errors in the calculation which resulted in an exorbitantly high multiplier for 700 MHz, as shown in the table alongside.

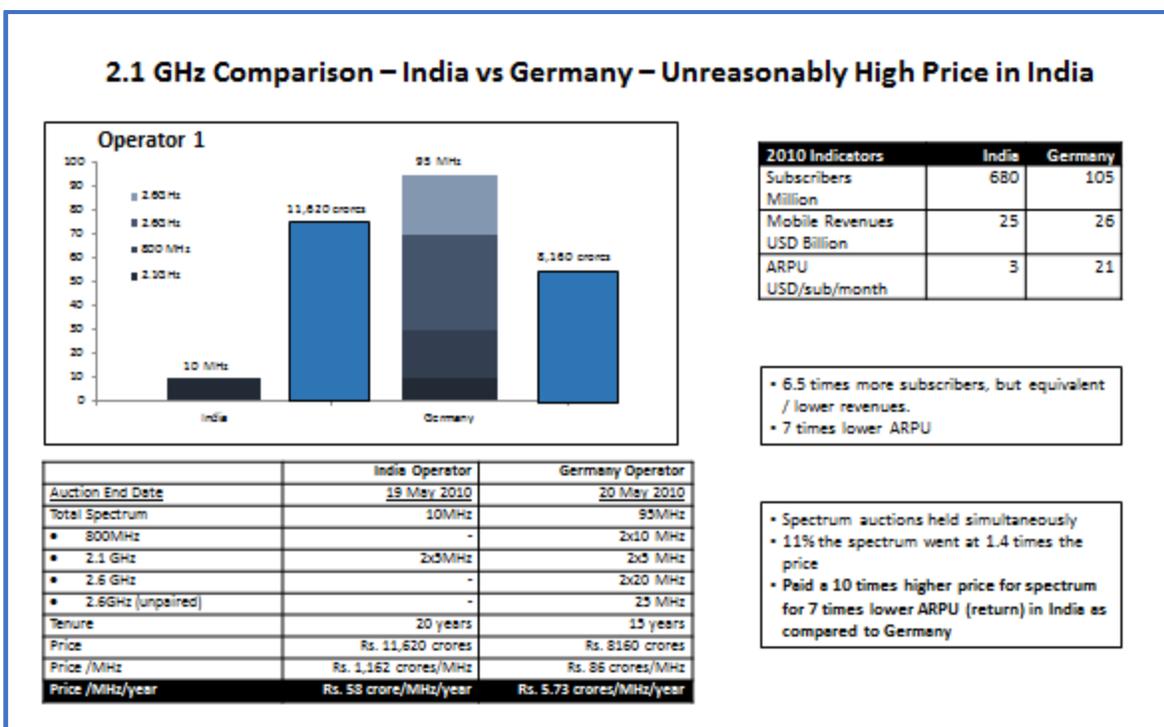
Country (£/MHz/pop)	800 MHz	1800 MHz	Ratio
France	0.5809		-
Germany	0.6217	0.0218	28.5
Italy	0.6993	0.2252	3.1
Portugal	0.3616	0.2651	1.4
Spain	0.4043		-
Sweden	0.3174	0.1788	1.8
As per TRAI : Total	2.99	0.69	4.3
Actual : Total (Countries with both 800 and 1800 MHz bands)	2.00	0.69	2.8
(-) Outlier Germany : Total (Removing Germany for real comparison)	1.38	0.67	2.1

The above point is borne out also by analysis of the auction results below which shows that the Indian 700 MHz auction reserve price was effectively 46 times more than the US auction price of 600 MHz.

Parameters	USA	India	
Population (mn)	325	1,310	
No. of Subscribers (mn)*	377	997	
ARPU (USD)*	39.9	2.71	
Band	600 MHz	800/1800/2100/2300/2500 MHz	700 MHz**
MHz	70	56	70
Bid (USD Bn)	19.77	10.17	61.84
Price/MHz (USD Bn)	0.28	0.18	0.88
ARPU Multiple (x)		15	15
Price Multiple (x)		0.6	3
Price Multiple adjusted for ARPU (x)		9	46
*Data as of 3Q16; ** Reserve Price has been taken for calculation			

It can be seen from the above that, even if 700 MHz not considered and only the other bands put up in 2016, the Indian prices are way above US levels by 9 times.

- g. Indian price among the highest although tariffs are lowest in India: In 2010, in the 2100 MHz spectrum band, comparison with the German auction just then concluded within 24 hours of the Indian event, revealed that the Indian auction reserve prices were unreasonably high:-



India auction price was effectively 70 times more than Germany auction price

The industry has already spend total Rs. 3.5 lakh Cr (approx.) to acquire 31 MHz. The industry will have to spend additionally Rs. 13.6 Lakh Cr (at reserve price) to acquire 100 MHz additional spectrum.

- The price discovered in the last auctions should not be treated as the market price. Rather BIF is of the view that spectrum should be treated/viewed as the 'raw material' for socio-economic benefit for the nation rather than be seen as a measure to fill /augment the exchequer revenues.
- Reserve prices play a pivotal role in the auction design. There is a need to review the auction rules for reserve prices, which are out-of-line with international norms and result in non-discovery of market prices. Reserve prices should be set at levels that are high enough to keep non-serious bidders at bay, but low enough to achieve vibrant price discovery. In past, the reserve prices were mostly linked to the most current auctions. This resulted in its exponential increase, as it was hardly ever corrected to curate market distortions.
- Calculating reserve prices correctly is critical for ensuring a properly designed auction. It must be such that it is able to steer the auction "price discovery system" to reflect the optimal value of the "band" and the "circle" in question. Currently, the prices emanating out of past auction are highly

erratic and arbitrary. If not then how can the price of the 800 MHz band (with better propagation characteristics) valued at 50% of the 900/700 MHz band?

7. Hence, well-defined formulae based on sound assumptions will not only increase transparency in the system but also will empower the government officials with the ability to take the right decision. It also help prevent changing rules in the middle and will make the spectrum auctions more robust, thereby motivating the companies to buy more spectrum - leading to better network coverage and connectivity - enhancing consumer interests.
8. The formula for calculating reserve price must be declared in advance, which can help in:
 - a. Avoiding/minimizing bidding distortions
 - b. promoting responsible bidding
 - c. ensuring optimal prices
9. The inputs needed for calculating reserve price for future auctions are:
 - a. Auction Prices of all past years.
 - b. Propagation weights of all spectrum bands
 - c. Cost Inflation Index for past years
10. Using "Auction Prices" Adjusted to "Cost Inflation" And "800 MHz Band" (Rs Cr), the prices for all auctions adjusted to the year 2010, and mapped to the 800 MHz band can be calculated. The reserve price can be now determined by carrying out some simple steps over the information listed in the above table. These steps are listed as under.
 - a. Calculate the average price for all years and for all circles individually.
 - b. Add the numbers in step 1 to get a single "Pan - India" number.
 - c. Readjust the price above (step 2) using the "Inflation Index" to map it to the current year.
 - d. Multiple the number above with the average % revenue distribution across circles to arrive at the circle numbers.
 - e. The circle price calculated above (step 4) is mapped to the 800 MHz band.
 - f. Readjust the number above (step 4) with the "band weights" to arrive at the prices for the respective bands.
 - g. Discount this number by a factor (anything between 20% to 50%) uniformly to arrive the final reserve price across circles.
11. Please note that prices calculated above are not arbitrary but based on a clearly defined principle. One might choose to tweak these principles/assumptions, but once finalized these should not be changed regularly/randomly. Doing so not only curates distortions on account of irrational bidding but also corrects for value the band and the revenue potential of the respective circles - lower bands are valued more, and so are the circles with greater revenue potential.

Q.18 Is it appropriate to recommend Reserve price as 80% of the value? If not, then what should be the ratio adopted between the reserve price for the auction and the valuation of the spectrum in different spectrum bands and why?

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Q.19 Whether the realized / auction determined prices achieved in the October 2016 auction for various spectrum bands can be taken as the reserve price in respective spectrum bands for the forthcoming auction? If yes, would it be appropriate to index it for the time gap since the auction held in October 2016? If yes, then at which rate the indexation should be done?

BIF Response:

1. There is a need to set reserve prices at levels that are high enough to keep non-serious bidders at bay, but low enough to achieve vibrant price discovery. There needs to be a meaningful correlation across bands based on factors such as efficiency, coverage and the existing ecosystem. 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.
2. In the past, TRAI has fixed reserve price at 80% of valuation. We suggest the reserve price of the all the spectrum bands be fixed at 50% of valuation.