Telecom Regulatory Authority of India

Recommendations

On

Valuation and Reserve Price of Spectrum: Licences Expiring in 2015-16

(Response to reference received from Department of Telecommunications on recommendations of 15th October 2014)

24th November 2014

Mahanagar Doorsanchar Bhawan,

Jawahar Lal Nehru Marg, New Delhi-110002

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CHAPTER-I: INTRODUCTION

1. The Department of Telecommunications (DoT), through its letter dated 17th April 2014, sought TRAI's recommendations on the applicable reserve price for all the service areas for auction of spectrum in the 900 MHz and 1800 MHz bands. The DoT also provided the list of Access licences (CMTS/UAS) which are due to expire during 2015-16 and their spectrum holdings in the 900 MHz and 1800 MHz bands. The Authority sent its recommendations on 'Valuation and Reserve Price of Spectrum: Licences Expiring in 2015-16' on 15th October 2014.

2. During 2015-16, 29 licences are expiring in 18 LSAs and hardly any additional spectrum is available apart from what is becoming available as a result of the expiry of the licences. 'Expiry licensees'[1] are holding spectrum mainly in the 900 MHz band. It is quite likely that apart from the expiry licensees, others would also be keen to acquire spectrum in the 900 MHz mainly because: (i) it is suitable for providing deeper coverage with less Capital Expenditure (CAPEX); (ii) there is a mature device eco-system for providing 3G services in the 900 MHz band; (iii) there is no pan-India 3G service provider in India, the intra-circle roaming agreements of the service providers have not been accepted by the DoT and the issue is under litigation; and (iv) there is no clear visibility of additional supply of spectrum in the 2100 MHz band which is the only other band in India for providing 3G services.

3. The constrained supply of spectrum poses a real threat to the continuity of services being provided to millions of subscribers by the 'expiry licensees' and the investment already made in that particular LSA. Even if they are able to regain the spectrum, it is highly likely that they would have to pay very dear prices because of operational compulsions (not letting investment already made go waste) or

[1] Licensees whose licences are due to expire in 2015-16

strategic bidding. In either event, this will seriously impair their ability to invest. The existing pressure on retail tariff margins would likely be exacerbated in such a scenario. Given the large indebtedness of many Telecom Service Providers (TSPs) to public sector banks (and private sector banks), an exit from an LSA raises the prospect that some part of that TSP's debt could become a Non-Performing Asset (NPA).

4. In view of the above, the Authority emphasised the need to increase the supply of spectrum. The Authority also recommended some steps that could be taken to make available additional spectrum in the 900, 1800 and 2100 MHz bands. The measures suggested include taking back 1.2 MHz spectrum in the 900 MHz band from BSNL, implementing the E-GSM band solution, utilising spectrum earmarked for Defence but lying idle in the 1800 MHz band and vacation of spectrum by Defence in the 2100 MHz band. Further, the Authority recommended the spectrum in the 800 MHz, 900 MHz, 1800 MHz and 2100 MHz bands be auctioned together (simultaneously). If auctions of 2100 MHz were to be taken up later then there would continue to be uncertainty. In addition, the Authority recommended that the Government immediately announce the roadmap for the auction of spectrum in 700 MHz band, so that TSPs can take informed decisions regarding their participation in the auction. The Authority highlighted the deleterious fallout, not only for the telecom sector but for the economy as a whole, of conducting the auction while leaving the supply constraint unaddressed. It is in this backdrop that the Authority recommended that the forthcoming auction should be scheduled after the above issues are resolved. However, it had never recommended postponement of the auctions.

5. The quantity of spectrum available is not only small but also very fragmented. The non-availability of spectrum in contiguous form is a major concern for the deployment of new technologies. The Authority emphasized the need for having contiguous spectrum blocks which results in a better and more efficient use of spectrum. Optimal use of

spectrum is beneficial not only for the industry but for the Government also, because it will result in more revenues in terms of licence fee and spectrum usage charges. In order to facilitate the TSPs to make their spectrum holding contiguous, the Authority reiterated its earlier recommendation that *"the frequency rearrangement in the same band, from within the assignments made to the licensees, should be permitted amongst all licensees irrespective of whether the spectrum is liberalised or not. However, the use of spectrum shall be liberalised only if the entire spectrum holding of a licensee in a particular band is liberalised."*

6. Apart from permitting and encouraging TSPs to realign their spectrum holding to make it contiguous, the Government can on its own reassign spectrum frequencies amongst TSPs and Government users so as to make it contiguous. The Authority has illustrated, with examples, that it is feasible to make available spectrum in the 900 and 1800 MHz bands contiguous by re-aligning spectrum. Hence, even if the recommendations stated in para 5 are not found immediately acceptable, there is still a way out: independent action by the DoT to make fragmented spectrum contiguous.

7. The recommendations of 15th October 2014 also discussed the various methodologies used to arrive at the valuation of spectrum in the 900 and 1800 MHz bands. On the basis of the valuation of the spectrum, the Authority recommended the reserve prices in these bands.

8. Notwithstanding the clearly-stated objective in the National Telecom Policy (NTP) -2012 and various recommendations made by the Authority over the past decade for improving the supply of spectrum availability for commercial use, DoT/ WPC[2] have so far not been able to take effective steps to lay out a roadmap for increasing the supply of spectrum to ensure the orderly growth of the telecom sector. Therefore, the Authority recommended that a dialogue needs to be

[2] The Wireless Planning & Coordination wing of the DoT.

held at the level of the Finance Minister, the Minister of Communications and IT and the Defence Minister to ensure the availability of additional spectrum for commercial use.

9. Many of the recommendations have been referred back by the DoT to the Authority for reconsideration. The Authority's earlier recommendations, the views of the DoT thereon, and the response of the Authority are provided in Chapter II.

CHAPTER-II: PARAWISE RESPONSE

1. Para 5.1

The Authority recommends that 1.2 MHz spectrum in 900 MHz band should be taken back from BSNL from all the LSAs where licences expire in 2015-16 except in Punjab. In lieu, BSNL should be assigned 1.2 MHz in the 1800 MHz band only in those LSAs where its spectrum holding in that band is less than 3.8 MHz in this band i.e. in Gujarat, Rajasthan and West Bengal.

(Para 2.28 of TRAI Recommendation)

DoT View

The DoT is of the view that Licensor has no jurisdiction to take back the spectrum from BSNL under provisions of the license agreement.

TRAI is requested to reconsider this recommendation.

Response of TRAI

The PSUs (MTNL/BSNL) were awarded the spectrum in the 900 MHz band administratively and free of charge. Both the PSUs are Government-owned companies and the Government has every right to take the spectrum back from them if they are not using it optimally and efficiently. It is inexplicable to take the stand that the Government, being a sovereign and as owner of the PSU companies cannot resume spectrum given to the PSUs free of charge. Besides, the DoT, being the Licensor, has to ensure that spectrum is put to optimal use and an operator does not squat on invaluable spectrum.

In this context, it is worth recalling that being Government companies, the Government assigned 3G and BWA spectrum to them without their participation in the auctions. This spectrum was literally foisted on the PSUs. Later, when they just could

not use the BWA spectrum, the Government allowed them to surrender BWA spectrum and decided to refund the payment made by these PSUs. Now, the Government would agree that it surely would not extend the same opportunity to a private operator. This was a decision of the Government exclusively for the PSUs. Moreover, any sovereign policy decision by the Government has precedence over licence terms and conditions or NIA (Notice Inviting Applications) provisions. Therefore, the argument being advanced by the DoT that it has no jurisdiction to take back spectrum from PSUs under provisions of the licence is specious and untenable.

The main motive behind the recommendation of taking back 1.2 MHz is to augment the supply of spectrum in the 900 MHz band in the auction which is very critical in the present context. The resumption of spectrum from BSNL will also lead to availability of an additional block of 5 MHz in 6 LSAs (MH, GUJ, AP, KTK, NE and WB). Moreover, if 1.2 MHz in the 900 MHz band is taken back from BSNL, it will still be left with 5 MHz spectrum in the 900 MHz band. Therefore, it would not impact its ability to offer HSPA/HSPA+ services in the 900 MHz band, if it wishes to do so after converting its spectrum holding into liberalised form. Moreover, as per the recommendations of the Authority, BSNL will get back an equivalent amount of spectrum in all LSAs wherever its spectrum holding in the 1800 MHz band is less than 3.8 MHz. Gujarat, Rajasthan and West Bengal are three such LSAs. In Punjab, BSNL is not required to surrender any spectrum in the 900 MHz band, as it does not have any spectrum in the 1800 MHz band. Therefore, BSNL will be required to surrender 1.2 MHz spectrum in the 900 MHz band in 17 LSAs and will get back equivalent amount of spectrum in 3 LSAs. Even after the surrender, total spectrum holding of BSNL

in the 900/1800 MHz band will be 8-8.8 MHz in each of the 17 LSAs.

Before delinking of spectrum from licence, the DoT used to determine the justification for additional spectrum as per the subscriber linked criteria (SLC), which was last modified in January 2008. As can be seen from Table 1 below, even after the surrender of spectrum, BSNL's spectrum holding in 900/1800 MHz band is more than what is justified under the SLC in all of these LSAs except Andhra Pradesh and Kerala.

Table 1

BSNL's spectrum holding in 900/1800 MHz band (after surrender of spectrum as recommended) vis-a-vis quantum of spectrum justified as per DoT's SLC prescribed in 2008

Sl. No.	LSA	BSNL's GSM subscribers as on September 2014 (Peak VLR)	BSNL's spectrum holding in 900/1800 MHz band after surrender (MHz)	Spectrum justified as per subscriber link criteria of DoT dated 17th January 2008 (MHz)
1	MH	4,625,457	8.8	8.2
2	GUJ	2,716,690	7.4	6.2
3	AP	6,232,391	8.8	9.2
4	KTK	3,962,662	8.8	7.2
5	TN	4,758,902	8.8	8.2
6	KL	5,468,415	8.8	9.2
7	HR	2,056,138	8.8	6.2
8	UP (W)	2,383,320	8.8	6.2
9	UP (E)	4,561,544	8.8	8.2
10	RAJ	2,618,885	8.0	6.2
11	MP	2,996,162	8.8	6.2
12	WB	1,601,549	8.0	6.2
13	HP	1,113,235	8.8	6.2
14	BH	1,869,996	8.8	6.2
15	OR	2,801,474	8.8	7.2
16	AS	1,035,659	8.8	6.2
17	NE	763,590	8.8	6.2

The sub-optimal utilisation of spectrum not only amounts to denial of opportunity for its better and more efficient use by others but also entails a revenue loss to the Government in terms of upfront payment, annual licence fees (LF) and spectrum usage charges (SUC). In addition, there is an

opportunity cost to keeping the spectrum idle in terms of other taxes and levies such as service tax, corporate tax etc.

In view of the above, the Authority reiterates its recommendations.

2. Para 5.2

The Authority recommends that the DoT should take a completely fresh look at the implementation of E-GSM band. (Para 2.32)

DoT View

It is noted that

I. The Government has taken a considered decision in this respect after examining all relevant aspects.

II. The various aspects related to carving out the E-GSM band were communicated to TRAI as a part of back reference vide DO no.L-14006/03/2013-NTG dated 11.10.2013 made by DoT on TRAI's recommendations on Valuation and Reserve Price of Spectrum dated 9th September 2013. Relevant extracts are enclosed as **Annex-I**.

III. There is no substantial change in the status and the circumstances.

Accordingly, TRAI is requested to reconsider the recommendation.

Response of TRAI

The Authority had recommended that the DoT should not summarily reject the recommendation on a cursory examination without first fully exploring the feasibility of the adoption of E-GSM for efficient utilization of spectrum in the 800 MHz band.

On 12th November 2013, the DoT informed the Authority that *"..... E-GSM band requires vacation of spectrum by Defence services to ensure availability of adequate spectrum which is likely to take time and keeping spectrum in the 800 MHz band unsold would result in foregone revenues for Government. ..."*

More than a year has passed since September 2013 when the Authority recommended that the feasibility of the adoption of E-GSM should be explored in a time-bound manner. Spectrum in the 800 MHz band has not been auctioned till date. Are there no foregone revenues in this context? The Authority is not aware whether the Government has consulted with Defence about their actual utilisation of the spectrum in 925-935 MHz and the possibility of its vacation.

The Authority is of the view that it is one of the ways to enhance the supply of 900 MHz band spectrum which is considered by operators (the market) to be the most valuable spectrum. The option needs serious consideration. Therefore, the Authority reiterates its recommendations.

3. Para 5.3

The Authority recommends that unused spectrum in the Defence band should not be kept idle. The DoT in coordination with Defence should fix a time frame for migration of Defence from commercial band to Defence band. If because of any reasons, this is not possible then only that much spectrum should be kept reserved for Defence in the Defence band which would make its total spectrum holding 20 MHz in the 1800 MHz band. In some LSAs viz. Andhra Pradesh, Tamilnadu, Kerala, Madhya Pradesh, Bihar and Orissa, where there is nil or negligible spectrum assignment to Defence in both commercial and Defence band, only 5 MHz can be kept reserved for them for any future requirement. The rest of the vacant spectrum in the Defence band should be put to auction. (Para 2.38)

DoT View

Taking note of the fact that the vacation of spectrum from Defence has time and attendant implications, it is not possible to fix a timeframe for migration of Defence from commercial band to Defence band in the national interest.

Further, taking into consideration the Defence requirements and commitments to Armed Forces, it may not be possible to put to auction any vacant spectrum falling in the Defence band.

TRAI is requested to reconsider the recommendation.

Response of TRAI

The DoT has not apprised the Authority whether it held any consultation on this issue with Defence. The Authority's position is as explained below:

- **In the 1800 MHz band, there is a designated Defence band (1765-1785 MHz/1860-1880 MHz) and the remaining 2x55 spectrum in this band has been earmarked for commercial use. Therefore, Defence cannot be permitted to occupy spectrum in the commercial band and also keep 20 MHz spectrum reserved for it in the Defence band for an undefined period of time. The Authority is of the view that Defence should move to its designated band and vacate spectrum earmarked for commercial use, and, a definite time-frame for this move needs to be decided in coordination with Defence.**

- **The Authority is of the view that the matter needs to be taken up with Defence at the highest level. In case it is not possible to immediately fix any time-frame for migration, it has to be made clear to Defence that, in the meanwhile, the spectrum in the Defence band cannot be kept unutilised. Unutilised spectrum is a waste of a scarce natural resource and also entails a recurring revenue loss to the Government.**

- **In some LSAs, the current assignment to Defence in the 1800 MHz band is nil/ negligible. If Defence could manage its communications requirements till date in these LSAs without this spectrum, what is the rationale for continuing the assignment of up to 20 MHz of spectrum to Defence? From purely practical considerations too, it seems that Defence may <u>not</u> require 2x20 MHz across all LSAs. This issue needs careful reconsideration to avoid spectrum squatting.**

The non-availability of sufficient spectrum is the greatest impediment to realisation of the stated goals in NTP - 2012 for broadband proliferation. Spectrum squatting and indecision/ lack of clarity about other spectrum bands creates an artificial spectrum scarcity which cannot be justified, particularly at a time when 'expiry licensees' would be bidding for the very survival of their investments in 18 LSAs in the upcoming auction.

4. Para 5.5

The Authority recommends that the entire 2x60 MHz in the 2100 MHz band should be made available for commercial use. If required, Defence may be assigned spectrum in the 1900 MHz band (1910-1920/ 1980-1990 MHz). The Authority also recommends that auctions in this band should be carried out along with the auctions in 900/ 1800 MHz band. (Para 2.45)

DoT View

It is noted that:

I. Spectrum in 2100 MHz band is not likely to be vacated by Defence in the near future.

II. Deliberations with Defence for vacation of spectrum in 2100 MHz band and swapping of 1900 MHz band with equal amount of spectrum in 2100 MHz band are already in process.

III. It does not appear feasible to get the spectrum in 2100 MHz band, in the time line proposed for auction in 800/900/1800 MHz bands.

Therefore, the vacation of spectrum by Defence may not be linked with the upcoming auction of spectrum in 800 MHz, 900 MHz and 1800 MHz bands.

TRAI is requested to reconsider the recommendation.

Response of TRAI

The Authority's recommendation that the entire 2x60 MHz in the 2100 MHz band should be made available for commercial use is not for immediate implementation; it is to be realised in the medium-term. The rationale is to ensure availability of sufficient spectrum in this band for commercial purposes.

The immediate focus of the Authority is to make available additional spectrum in this band which can be put to auction along with spectrum in the 900/1800 MHz band. Additionally, 3 blocks of 2x5 MHz of spectrum can be made available by swapping spectrum in this band with Defence. Defence can be assigned spectrum in the 1900 MHz band (1910-1920/1980-1990 MHz). The DoT has not informed the Authority about the action taken by them; and, this matter has been hanging fire for a long time.

It is vitally important to auction spectrum in the 2100 MHz band along with spectrum in the 900 MHz band. The reasons for doing so have been elaborately explained in paras 2.41 and 2.42 of the recommendations dated 15th October 2014. The Authority is of the view that swapping of spectrum in 2100 MHz band with Defence in lieu of spectrum in the 1900 MHz band should be done quickly, so that it (2100 MHz) can be put to auction in the upcoming auction of 900/1800 MHz band. It

should be noted that once agreement is reached with Defence for the swapping of spectrum, the actual release of spectrum will be required only at the expiry date of the licences.

In view of the above, the Authority reiterates its recommendations.

5. Para 5.6

The Authority recommends that:

- *The Government should immediately take action on the Authority's recommendations of February 2013 on the adoption of APT700 in the country.*
- *The Government should also announce the roadmap for the auction of spectrum in 700 MHz band. This should be done before the conduct of the upcoming auctions in 900/1800 MHz band. (Para 2.52)*

DoT View

It is noted that Band Plan for 700 MHz, as recommended by TRAI, was actually conceived and formulated by India and adopted by APT and ITU.

The TRAI recommendations of February 2013 are under consideration and the roadmap for auction of spectrum in 700 MHz band can be announced after taking into consideration various factors including decisions on TRAI recommendations.

Accordingly, DoT is of the view that the upcoming auction in 900 MHz and 1800 MHz bands may not be linked with the road map for auction of spectrum in 700 MHz band.

TRAI is requested to reconsider the recommendation.

Response of TRAI

The Authority is astonished by the comments of the DoT. The DoT is claiming that the APT700 band plan was conceived by India (the DoT). If so, then what explains the inordinate delay in accepting the Authority's recommendations to adopt the band plan? After all, the DoT would only be accepting what it has itself designed! The recommendations that the APT700 band plan should be adopted for the 700 MHz spectrum band (698-806 MHz) with FDD based 2x45 MHz frequency arrangement were sent by the Authority on 19th March 2013 and, even after 20 months, the DoT has not taken a decision in the matter.

Announcing the decision to adopt the APT700 band plan would only be the first step in the process of making additional spectrum available. The road map and detailed timeline for the auction of spectrum in the 700 MHz band is also required to be put in place by DoT. These two decisions will help in the faster development of the device eco-system. It is well known to all that development of the device eco-system takes a considerable amount of time. Therefore, if an announcement is made by DoT immediately, it can give direction and critical impetus to the device manufacturers. It will also help TSPs to take an informed decision when bidding for the upcoming auction in 800/900/1800 MHz bands.

The importance of the availability of device eco-systems can be gauged from the fact that due to the lack of availability of devices, the subscriber base of CDMA technology in the 800 MHz band has been continuously declining.

On 16th October 2014, the Authority received a reference from the DoT for recommending the reserve price for the auction of spectrum in 2100 MHz, 2300 MHz and 2500 MHz bands. It is worth emphasising here that world over the technology which is

being deployed in 2500 MHz (2500- 2690 MHz) band is LTE. As the higher frequency waves are prone to greater propagation loss, it would be extremely difficult to deploy LTE network using spectrum in only the 2500 MHz band. In most European countries, the auction of 2500 MHz band has been carried out along with 790-862 MHz band. It is referred to as 800 MHz band in the Europe and is equivalent to the 700 MHz (698-806 MHz)[3] band in India. The primary motive behind auctioning these two bands together is that the 790-862 MHz band, being a sub 1-GHz band, is suitable for extending coverage of LTE and spectrum in the 2500 MHz band can pitch in by providing capacity to the network. It is in these circumstances that an announcement of the roadmap for the auction of spectrum in 700 MHz band has become even more important.

The Authority, therefore, reiterates its recommendations.

6. Para 5.7

The Authority reiterates its recommendation that the frequency rearrangement in the same band, from within the assignments made to the licensees, should be permitted amongst all licensees irrespective of whether the spectrum is liberalised or not. However, the use of spectrum shall be liberalised only if the entire spectrum holding of a licensee in a particular band is liberalised. (Para 2.63)

DoT View

It is noted that

I. Government has taken a considered decision in the matter and same is reflected in the Notice Inviting Applications for auction of spectrum in November 2013 and the auctions held thereafter, viz. "*Frequency reconfiguration i.e, rearrangement of spot frequencies in the same band, from within the assignments made to the*

[3] There is a growing LTE device eco-system in 698-806 MHz band which is known as 700 MHz band .

licensees, may be carried out, with the authorisation of WPC Wing, among the licensees, only when the entire spectrum held by them is liberalized, No charges will be levied for rearrangement of frequency spots."

II. Based on TRAI recommendations, Government has decided that existing CMTS/UAS Licensees can liberalise their existing spectrum holding in 1800 MHz band after payment of auction determined price.

III. No such recommendation has been provided by TRAI for 900 MHz band.

Accordingly, DoT is of the view that there appears to be no need for review of earlier decision of the Government on the issue of frequency rearrangement in same band and TRAI may also be requested to provide clarification/reconsidered opinion on the price to be charged for converting existing spectrum holding in 900 MHz band into liberalized spectrum.

TRAI is requested to reconsider the recommendation.

Response of TRAI

The necessity to permit swapping of spectrum spots in the same band amongst licensees, even if the licensees have been administratively assigned spectrum, has been elaborately explained in paras 2.61 to 2.63 of the Authority's recommendations of 15th October 2014. The DoT has not given any rationale for rejecting this recommendation. It has only stated that a well-considered decision on the issue was already taken. Is this to be construed to mean that once a decision is taken, it cannot ever be reviewed even if there is a compelling economic rationale?

Denying licensees an opportunity to make their spectrum holding contiguous is equivalent to denying them to use it more

efficiently. Moreover, it has been made abundantly clear by the Authority that licensees will not be able to change the use of the spectrum until they liberalise their entire spectrum holding in that band. The better use of spectrum results in better traffic carrying capacity for the TSPs which in turn facilitate better services for subscribers and more revenues for the TSP and the Government. Therefore, the Authority is unable to fathom the reasoning for not allowing every licensee to rearrange their frequency spots within the same band.

In view of the above, the Authority reiterates its recommendations.

7. Para 5.9

The Authority recommends that

- *Spectrum should be put to auction in a block size of 2x200 KHz in both the 900 and 1800 MHz bands.*
- *In the 900 MHz band, the bidders should be required to bid for a minimum of 2x3.6 MHz in those LSAs where spectrum being put to auction is 10 MHz or more and 2x2.4 MHz in the remaining LSAs.*
- *In the 1800 MHz band, the bidders would be required to bid for a minimum of 2x0.6 MHz spectrum. (Para 2.82)*

DoT View

DoT noted the following:

I. The present and future technology scenarios and the need for making the spectrum contiguous (as also recommended by the TRAI)

II. In previous three auctions, namely November 2012, March 2013 and February 2014 auction, new entrant/Licensees whose licenses are expiring were required to bid for 5 MHz minimum spectrum

III. There is no substantial change in market and eco system scenario since last auction of February 2014

IV. The need to induct new technologies, to meet the requirements of ever growing demand for data.

Accordingly, the DoT is of the view:

I. That new entrant / licensees whose licenses are expiring in 2015-16 should bid for a minimum of 5 MHz of spectrum instead of 3.6 MHz / 2.4 MHz in 900 MHz band as recommended by TRAI.

II. However, in West Bengal service area, new entrant / licensees whose licenses are expiring in 2015-16 should bid for a minimum of 4.4 MHz as only 4.4 MHz spectrum is available in West Bengal Service Area in 900 MHz band.

III. In the 1800 MHz band, the bidders would be required to bid for a minimum of 2 x 0.6 MHz spectrum, as recommended by TRAI.

IV. The existing licensees, whose licenses are not expiring in 2015-16 and holding spectrum in 900 MHz band, may be allowed to bid for a minimum of 2 x 0.6 MHz in block size of 200 KHz in this band. This aspect has not been covered in TRAI recommendations.

TRAI is requested to reconsider the recommendation.

Response of TRAI

In its recommendations of 9th September 2013, the Authority recommended that for the auction of spectrum in the 900 MHz band, the bidder will be required to bid for a minimum of 5 blocks. This was accepted by the Government and, accordingly, the provision was made in the NIA for the auction held in February 2014.

As has been stated clearly in its recommendations of 15th October 2014, ideally the Authority would have liked to retain the minimum spectrum holding as 2x5 MHz as it provides the flexibility to the TSPs to launch any mobile technology. However, keeping in view the limited availability of spectrum and the context of spectrum as discussed in paras 2.5 to 2.10 of the recommendations, the Authority revisited the issue.

After analysing the issue, the Authority concluded that it is preferable to reduce the requirement of the minimum quantum of spectrum that each bidder is required to bid for in the 900 MHz band. The reasons for this recommendations are elaborated in para 2.79 along with an illustration in the subsequent para of the recommendations of October 2014.

The DoT has not furnished any grounds for not agreeing with the reasons given by the Authority to reduce the minimum quantum from 2x5 MHz to 2x3.6/2.4 MHz. In the absence of any substantive reasoning by DoT, it is not possible to provide any further clarification.

The DoT has proposed that an existing licensee of 900 MHz (i.e. licensees having spectrum in the 900 MHz band and whose licences are <u>not</u> due to expire in 2015-16) should be permitted to bid for a minimum quantity of 2x0.6 MHz. The Authority is of the view that this would provide an opportunity to existing licensees to increase the price by bidding for a very small quantum. This situation is certainly not warranted particularly when 'expiry licensees' would be bidding for the very survival of their investment and there are clear possibilities of irrational/tactical bidding. Further, in the last auction too, no such provision was made for existing licensees having spectrum in the 900 MHz band.

In view of the above, the Authority reiterates its recommendations.

8. Para 5.10

The Authority is of the view that a fresh valuation of 1800 MHz spectrum for all 22 LSAs is the preferred way to initiate the process of determining valuation and reserve price of 1800 MHz spectrum for the forthcoming auction. (Para 3.17)

Para 5.11

The Authority recommends that the reserve prices for 1800 MHz spectrum in each LSAs should be as in the table below: (Para 3.66)

LSA	*Category*	*Recommended Reserve Price per 1800 MHz (Rs. in crore)*
*Delhi**	*Metro*	*364*
*Mumbai**	*Metro*	*272*
Kolkata	*Metro*	*73*
Andhra Pradesh	*A*	*163*
Gujarat	*A*	*238*
Karnataka	*A*	*155*
Tamil Nadu	*A*	*208*
Haryana	*B*	*32*
Kerala	*B*	*75*
*Madhya Pradesh**	*B*	*69*
Punjab	*B*	*71*
Rajasthan	*B*	*60*
U. P. (East)	*B*	*97*
U.P. (West)	*B*	*95*
*Assam**	*C*	*36*
Bihar	*C*	*62*
Himachal Pradesh	*C*	*9*
*Jammu & Kashmir**	*C*	*25*
North East	*C*	*11*
Orissa	*C*	*23*

DoT View

Comment for 5.10 and 5.11

It is noted that

I. The various methods used for determination of Reserve price, the rationale given for selecting the recommended reserve price

and the reasons for changes from the previous methodologies followed for valuation of spectrum.

II. That TRAI has recommended that no auction be conducted in Maharashtra and West Bengal, as spectrum is available only, in Pune in Maharashtra out of 35 districts and in 5 Districts in West Bengal out of 26 districts.

III. Partial spectrum has been put to auction earlier,

IV. TRAI has done the valuation for all 22 LSAs including Maharashtra and West Bengal in Annexure 3.8 of the recommendations, however, no price has been recommended by the TRAI for these two service areas at para 5.11 of the recommendations.

V. TRAI has recommended the 30% discount in Rajasthan Service area on the ground that spectrum is available only partially, vide para 3.64 of its recommendations. However, the same principle has not been applied for UP (E) service area.

VI. TRAI has not indicated the threshold and methodology for arriving at percentage of discount in the service areas, where spectrum availability is only partial.

VII. That TRAI has recommended 50% discount in North East service area for improving economic well being of the region, given its peculiar geography, need and particular circumstances and to accelerate the pace of investment in telecom infrastructure in the LSA vide para 3.65 of its recommendations.

VIII. That the Government had decided the reserve price of 1800 MHz band in Metro and Category A service areas, without applying the multiplication factor of 0.8 on the average valuation as arrived by TRAI, to arrive at the reserve price for the auction held during February, 2014, while no such change was made in respect of reserve price for Category 'B' and 'C' service areas.

IX. TRAI has not made any recommendation in respect of Spectrum Usage Charge (SUC)

X. Spectrum Usage Charge (SUC) forms part of the price of the spectrum to be auctioned.

XI. It was decided to levy flat SUC of 5% of AGR for the spectrum auctioned in 900/1800 MHz bands in February, 2014. The weighted average concept was adopted in case the licensee holding 900/1800 MHz spectrum acquired through auction in February, 2014 and spectrum allotted prior to that.

Accordingly, The DOT is of the view that:

(i) Same approach, as adopted for arriving at reserve price for auction of spectrum during February 2014, may be incorporated in the methodology for arriving at the reserve price of 1800 MHz band in these LSAs. Accordingly, the calculated reserve price for Metro and Category A Service areas as in Annex-II. It may be seen from Annex-II that suggested prices in Andhra Pradesh, Karnataka and Tamilnadu are Rs. 169 crore, Rs. 185 crore and Rs. 225 crore (after rounding off) respectively as against TRAI recommended price of Rs. 163 crore in AP, Rs.155 crore in Karnataka and Rs. 208 crore in Tamilnadu.

TRAI is requested to provide reconsidered opinion in respect of reserve price for these service areas.

Response of TRAI

(i) The setting of reserve price is an exercise that is distinct from the valuation exercise. The Authority had, as a general principle, recommended that reserve price should be fixed at 80% of the average valuation (See paras 3.51 to 3.59 of the Authority's September 2013 Recommendations). The Authority has been of the consistent view that reserve price should not be fixed too close to the estimate of valuation, so as to encourage participation, enable competitive bidding and lead to price discovery. This view holds good across all spectrum bands proposed to be auctioned. DoT is of the

view that the same approach as was adopted for arriving at the reserve price for auction of spectrum during February 2014 may be incorporated in the Recommendations. For the February 2014 auction, it was the DoT that had fixed the reserve price of 1800 MHz spectrum equal to average valuation for Metro and category-A LSAs; and reserve price fixed for category-B and C LSAs was 80% of average valuation of 1800 MHz spectrum. While the DoT is at liberty to take its own decision on the Authority's Recommendations in this regard, there is no plausible reason for the Authority to change its view in the matter. If only for consistency, the Authority wishes to persevere with the approach it has adopted in setting of the reserve prices. The Authority reiterates its recommendations on reserve price for 1800 MHz spectrum for the forthcoming auction of 1800 MHz spectrum subject to the qualifications discussed in the October 2014 Recommendations (see paras 3.61-3.66).

DoT View

(ii)&(iv) TRAI is requested to provide reconsidered recommendation on reserve price for Maharashtra and West Bengal service areas. The practice for putting partial spectrum to auction may be followed and the available spectrum in Maharashtra and West Bengal may be put to auction.

Response of TRAI

(ii)&(iv) The Authority is of the view that partial availability of 1800 MHz spectrum in Maharashtra, West Bengal, UP (E) and Rajasthan LSAs will certainly affect the bidders' demand for spectrum in these LSAs. The details on the number of districts in these LSAs where spectrum is available can be seen in Table 3.3 of the October 2014

Recommendations. The Table shows that spectrum availability in Maharashtra (1 district out of 35 districts) and West Bengal (5 out of 26 districts) is very low. Thus the Authority was of the view that there is no case for auction of spectrum in these 2 LSAs at this stage. The Authority reiterates its view that auction should not be held in Maharashtra and West Bengal for 1800 MHz spectrum at this stage.

DoT View

(iii) In respect of SUC, for the spectrum to be auctioned in the forthcoming auction, TRAI is requested to give its reconsidered opinion on continuation of the same principle for SUC as adopted in February, 2014 auction.

Response of TRAI

(iii) In its Recommendations of September 2013 on 'Valuation and Reserve Price of Spectrum', the Authority had recommended that the SUC for <u>all</u> auctioned spectrum should be at a flat rate of 3% of AGR for wireless services. For the transition phase, till the time the entire spectrum is converted into auctioned spectrum or acquired in spectrum trading or on which the TSP has paid the prescribed market value, the Authority recommended a highest slab rate of 5% of AGR. In this regard, paragraphs 5.31, 5.33, 5.35 and 5.37 of September 2013 Recommendations may be perused. The Authority's Recommendations are not restricted to any particular spectrum band. The Authority reiterates its recommendations of September 2013 on SUC.

DoT View

(v) TRAI is requested to provide reconsidered opinion on the threshold and methodology for arriving at percentage of discount in the service areas, where spectrum availability is only partial. TRAI has recommended the 30% discount in Rajasthan service area on the ground that spectrum is available partially, vide para 3.64 of its recommendations. However, the same principle has not been applied for UP(E) service area.

Response of TRAI

(v) The Authority is of the view that in an LSA where spectrum is partially available, the auction should be conducted only where it is available in a substantial geographical area of the LSA. Each case has been examined in light of the particular circumstances obtaining in the LSA, and no specific methodology can be prescribed. The discount of 30% on the reserve price in Rajasthan LSA was recommended based on the number of districts where spectrum was available, consistent with the Authority's earlier Recommendations of September 2013 (see paragraph 4.42 of the September 2013 Recommendations). That reasoning had not been contested by DoT. Since in UP (East) spectrum is available in 45 districts out of 48 districts, no discount on reserve price was recommended by the Authority.

In view of the above, the Authority reiterates its recommendations.

9. Para 5.12

The Authority recommends that the reserve price of 900 MHz spectrum for each LSA should be as in the table below: (Para 3.68)

LSA	*Category*	*Recommended Reserve Price per 900 MHz (Rs. in crore)*
Andhra Pradesh	*A*	*271*
Gujarat	*A*	*339*
Karnataka	*A*	*286*
Maharashtra	*A*	*420*
Tamilnadu	*A*	*338*
Haryana	*B*	*64*
Kerala	*B*	*150*
Madhya Pradesh	*B*	*138*
Punjab	*B*	*141*
Rajasthan	*B*	*172*
U. P. (East)	*B*	*195*
U.P. (West)	*B*	*152*
West Bengal	*B*	*70*
Assam	*C*	*58*
Bihar	*C*	*123*
Himachal Pradesh	*C*	*19*
North East	*C*	*21*
Orissa	*C*	*47*

DoT View

It is noted that:

I. The various methods used for determination of Reserve price, the rationale given for selecting the recommended reserve price and the reasons for deviation from previous practices.

II. Partial spectrum has been put to auction earlier,

III. TRAI has provided the average and recommended valuation for 18 LSAs in Annexure 3.7 of the recommendations. While recommending value per MHz of 900 MHz band, TRAI has taken lower of "average value per MHz of 900 band" and "twice of average value per MHz of 1800 band". TRAI has mentioned in para 3.54 of its recommendation that "if the market conditions are held constant, the techno economic appraisal of the relative benefits of the two bands would indicate that the value of 900 MHz spectrum would not exceed two times the value of the 1800 MHz spectrum".

It is seen from the recommendations that the valuation of 900 MHz band has been done by TRAI by taking simple mean of valuations obtained from technical as well as economic efficiency approaches. By this approach valuation in some LSAs is more than twice the value of 1800 MHz band. It appears that TRAI has carried out a separate techno-economic appraisal which is not available in the recommendations.

IV. That the Government had decided the reserve price of 900 MHz band, in Metro service areas, without applying the multiplication factor of 0.8 on the average valuation, as arrived by TRAI to arrive at the reserve price for the auction held during February, 2014.

V. TRAI has not made any recommendation in respect of Spectrum Usage Charge (SUC).

VI. Spectrum Usage Charge (SUC) forms part of the price of the spectrum to be auctioned.

VII. It was decided to levy flat SUC of 5% of AGR for the spectrum auctioned in 900/1800 MHz bands in February, 2014. The weighted average concept was adopted in case the licensee holding 900/1800 MHz spectrum acquired through auction in February, 2014 and spectrum allotted prior to that.

Accordingly, DOT is of the view that:

(i) Same approach, as adopted for arriving at reserve price for auction of spectrum in metro service areas during February 2014, may be incorporated in the methodology for arriving at the reserve price of 900 MHz band in category "A" LSAs.

(ii) In respect of SUC for the spectrum to be auctioned in the forthcoming auction, TRAI is requested to give its reconsidered opinion for continuation of the same principle for SUC as adopted in February, 2014 auction.

TRAI is requested to provide clarification/reconsidered recommendations.

Response of TRAI

(i) In view of response at Para 5.11 (i) above, the Authority reiterates its view on the recommendations of reserve price for 900 MHz spectrum for the forthcoming auction of 900 MHz spectrum subject to the qualifications discussed in the October 2014 Recommendations (see Para 3.67 and 3.68).

(ii) Please see response at Para 5.11 (iii) above. There are no further comments on the SUC rate.

(iii) DoT has expressed the doubt whether TRAI has conducted a separate techno-economic appraisal of the 1800 MHz spectrum. It may be noted here that no such separate appraisal has undertaken by the Authority. The phrase *"If the market conditions are held constant, the techno-economic appraisal of the relative benefits of the two bands would indicate that the value of the 900 MHz spectrum would not exceed two times the value of the 1800 MHz spectrum"* in the Recommendations (paragraph 3.54) is a simple expression of the Authority's view in this regard. The economic efficiency enjoyed by 900 MHz spectrum over 1800 MHz flows from the relative technical efficiency between these two bands and cannot obviously be greater than the technical efficiency if the market conditions remain constant. Also, the three approaches adopted by the Authority to estimate the value of 900 MHZ spectrum use the value of 1800 MHz spectrum as a base. Therefore, the Authority is of the view that the value of 900 MHz spectrum should <u>not</u> be greater than twice the value of 1800 MHz spectrum.

10. Para 5.13

The Authority recommends that a dialogue needs to be held at the level of the Finance Minister, the Minister of Communications and IT and the Defence Minister to ensure the availability of additional spectrum for

commercial use. The Authority is also of the view that the auction should be carried out only after a clear roadmap is available for vacating spectrum in 2100 MHz band from Defence and in 900 MHz band from BSNL. (Para 4.5)

Para 5.14

The Authority recommends that the forthcoming auction should be scheduled after the above issues are resolved and auction in the 800 MHz, 900 MHz, 1800 MHz and 2100 MHz band be conducted simultaneously. (Para 4.7)

DoT View

It is noted that:

There is a well established procedure for inter-ministerial consultation and accordingly the DoT is of the view that:

I. The roadmap for vacating spectrum in 2100 MHz band by Defence and in 900 MHz band by BSNL may not be linked with forthcoming auction.

II. The forthcoming auction may not be postponed by linking it with resolution of referred issues.

TRAI is requested to reconsider these recommendations**.**

Response of TRAI

As stated in the recommendations, notwithstanding the clearly-stated objectives in the NTP and the various recommendations made by the Authority over the past decade for improving the supply of spectrum availability for commercial use, DoT/ WPC have so far not been able to take effective steps to: (i) augment the availability of the spectrum; (ii) utilize the available spectrum optimally; and (iii) lay out a roadmap for increasing the supply of spectrum. It is clear that these issues cannot be resolved by

discussions at the official level. Therefore, the Authority is of the view that headway in resolving the spectrum supply constraints can only be made through an effective dialogue at the highest level between DoT and the Ministry of Defence (MoD) and the Ministry of Finance (MoF).

The Authority had not recommended the postponement of the auctions. It is of the view that efforts should be made at the highest level for augmentation of the supply of spectrum in the 900 MHz, 1800 MHz and 2100 MHz band and that spectrum in all these bands should be auctioned simultaneously.

In view of the above, the Authority reiterates its recommendations.

11. Other issues raised by the DoT in its back-reference

TRAI has not recommended any roll-out obligation linked to spectrum. TRAI is requested to provide its clarification/ recommendations in this regard.

Response of TRAI

DoT's reference dated 17th April 2014 was limited to seeking the applicable reserve price for all the service areas for the auction of spectrum in 900 MHz and 1800 MHz bands. Since the DoT has raised this issue in its back-reference, the Authority would like to state that it has recommended roll-out obligations for the licensees having access spectrum (spectrum in 800/900/1800 MHz band) in its recommendations on 'Valuation and Reserve Price of Spectrum' dated 9th September 2013.

AFTERWORD

"The time has come," the Walrus said, "To talk of many things: Of shoes -- and ships -- and sealing wax -- Of cabbages -- and kings -- And why the sea is boiling hot -- And whether pigs have wings." Lewis Carroll in "Through the Looking Glass"

This is the third time, within the space of a year, that the Authority has undertaken an exercise to value spectrum and set reserve prices. One would presume that the task had become passé. Nothing could be further from the truth. As pointed out on an earlier occasion, the valuation of spectrum is part science and part art. Further, setting reserve prices is difficult and not infallible. The value of spectrum depends on the overall macro-economic situation, the state of the industry, sector-specific issues and changes thereto, technological developments, market sentiment and market information revealed in previous auctions. As times change, so does the situation and circumstances. Lastly, it is simply not possible to undertake a valuation exercise without looking to the future and how national policy goals in the sectoral context are to be realised. Tangibles and intangibles alike have to be grappled with.

2. A number of technical issues were raised through the Department of Telecommunication's communication of 14th November 2014 in response to the Authority's Recommendations; the replies to these have been furnished in detail above. However, it is noted with some regret that the main issues and purport of the Recommendations seem to have been either side-stepped or simply left unaddressed.

3. To briefly recapitulate, while formulating its Recommendations, the Authority addressed three sets of issues:

(i) What are the implications of conducting auctions in a severely supply-constrained situation? Are the outcomes desirable from national, consumer, and industry perspectives?

(ii) If indeed the consequences are adverse for any or all of them, how can the supply constraint be alleviated? What needs to be done? What action lies within the ambit of the Department of Telecommunications? And, what requires inter-Ministerial coordination, and at what level?

(iii) What are the overall objectives of public policy in the context of the telecom sector and are these objectives suitably sub-served by the prevailing policy regime? What needs to be done to realize these larger public policy issues?

4. In the communication received back from the Department there have been no comments on the serious issues raised at (i) and (iii) above. Most of the queries/clarifications sought relate to technical issues and the economic modeling to determine reserve prices.

5. At the cost of repetition, it is important to spell out the consequences of a supply-constrained auction as brought out in the Authority's recommendations. These are:

(a) There is a distinct risk that an incumbent service provider may have to shut shop in a Licensed Service Area (LSA). This will adversely impact consumer interests because of the resultant dislocation. It will also hurt industry because the Telecom Service Provider (TSP) forced to go out of business will have to bear huge losses on the capital investment made in that LSA.

(b) A very high price (per unit) realization in a supply-constrained auction may meet Government's immediate fiscal needs by higher realization of revenues but it will only bleed the industry of resources at a point of time when the industry is just

recovering from the aftermath of the events of 2008-12. The high price of spectrum will also adversely impact private investment in network expansion and infrastructure.

(c) The prosperity and health of the industry are in the Government's own good. After all, large recurrent revenues are likely to accrue to the Government from the industry viz. License Fee, Spectrum Usage Charge, Corporate Profit Tax and Services Tax. The commercial viability of the industry is, therefore, of paramount importance: both in itself and to the Government in terms of recurrent revenue streams.

(d) There will be an adverse spillover effect on the banking sector if the TSP has to shut down.

(e) All in all, a supply-constrained auction may actually be fiscally myopic.

6. In many legal-cum-geographical jurisdictions, the realization of revenue for the Government is not the sole or primary objective when allocating spectrum. Regulators and Governments the world over keep in view the prospective growth of the industry and the spillover effects on the economy. There are large non-pecuniary externalities emanating from this infrastructure sector which provide a boost to GDP growth. Much of this is widely recognized and accepted. It, therefore, would appear perverse if public policy discourse in India is not suitably re-conditioned by these considerations.

7. Spectrum availability in India for commercial use, as a whole, is about the lowest in the world. And, this, when the total quantity of spectrum is the same for all countries. If additional quantities of spectrum are not released for commercial use, it will simply be impossible to realize important policy goals such as - Digital India, broadband connectivity at high speeds throughout India, and the capacity to deal with the volume of traffic (data) and simultaneously

deliver high speeds. Spectrum availability has to be augmented and if this issue is not squarely addressed urgently, there is a serious risk that there will be a steady deterioration in the quality of service. As data traffic grows, TSPs will not be in a position to handle the volume with the limited quantity of spectrum currently available. Moreover, decisions taken today have an irreversible impact on the future. When so much is at stake for the country, these consequences can only be ignored at the nation's peril.

8. It is also important to recognize that auctions are not the only way spectrum is allocated. Even in jurisdictions where far larger quantities of spectrum are available for commercial deployment, different approaches are being taken. In some developed countries there is now a clear recognition that the demand for services has fast out-stripped the large quantities of spectrum already available for commercial use. This has prompted a move away from the position that all of spectrum must be auctioned. Now, there is a clearly discernible trend to move to a regime where more spectrum is unlicensed viz. freely available for public use. Further, technological change too has been spurred by the realization that the demand for services is growing exponentially in comparison to the fixed quantum of spectrum. These factors have weighed with Regulators and Governments: (a) to offload traffic to unlicensed spectrum; and, (b) encourage new practices and development of technologies that increase spectral efficiency e.g. spectrum sharing and cognitive radio. And, in some countries, there is a strong move towards getting a greater quantum of spectrum released for commercial use. For instance, in the US, President Obama is openly supporting the proposal to release Defence spectrum for commercial deployment. In the Indian context, this means having a relook at all non-commercial spectrum assignments and the efficiency of their deployment

9. There are other jurisdictions which have either never used auctions as a means of allocation, for instance, Japan, or where spectrum has

been allocated at a nominal price but with onerous roll-out obligations e.g. the Nordic countries.

10. The foregoing discussion is a reminder of Albert Einstein's prophetic words:

"The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking"

11. For the past 7 years (or more) a dialogue has taken place between the DoT and Ministry of Defence to release additional quantities of spectrum. To be perfectly candid, this dialogue has gone nowhere i.e., it has remained inconclusive. The Authority, therefore, after careful consideration, took the view that this needs resolution at the highest political levels as there are limits to official level institutional capacities especially as there are choices to be made between civil and defence priorities. We must have the honesty of purpose to recognize when the bureaucracy has run out of mileage. The B2B (Bureaucrat to Bureaucrat) model will not solve this problem; what the country needs is a M2M (Minister to Minister) intervention.

12. We are at a critical inflexion point that which will determine the future development of the telecom sector as an engine of growth and national development. The time for decisive action is now. Procrastination will neither address the problem nor provide any real relief. If national policy goals have to be realized, we cannot afford to look over our shoulder. We have to look ahead to what will happen over the next ten years and beyond, and base our decisions on the best available information at this point of time. The events of 2008-2012 created a pernicious atmosphere which critically hobbled decision-making while simultaneously diverting attention from medium-term policy issues needing urgent action. For far too long, we have let policy drift and indecision take over and dominate our thinking process. It is precisely this which has guided the Authority in making its

Recommendations. It is useful to recall Isaac Asimov's invaluable insight:

"No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be."