

Response to Consultation Paper on Spectrum Management

Spectrum requirement and availability

1. Do you agree with the subscriber base projections? If not, please provide the reasons for disagreement and your projection estimates along with their basis?
2. Do you agree with the spectrum requirement projected in ¶ 1.7 to ¶1.12? Please give your assessment (service-area wise).

These two issues are immaterial given the fact that future requirements of spectrum for commercial use will be constantly rising and spectrum is a limited resource the universal approach to spectrum management is to maximize the availability of spectrum for commercial use. Specifics such as those attempted here can never be accurate since more and more bandwidth hogging applications are constantly evolving and not much purpose will be served by pinning down the spectrum need to voice subscribers only. Besides, the spectrum management approach need not be aimed at accommodating any specific number of voice services users.

3. How can the spectrum required for Telecommunication purposes and currently available with the Government agencies be re-farmed?

Since direct persuasion has not been very successful, government agencies holding crucial spectrum may be provided the incentive of being permitted to carry out spectrum trading to UASL licensees with the incentive of being able to retain most or all the proceeds.

4. In view of the policy of technology and service neutrality licences, should any restriction be placed on these bands (800,900 and 1800 MHz) for

providing a specific service and secondly, after the expiry of present licences, how will the spectrum in the 800/900 MHz band be assigned to the operators?

There should be no restriction on the choice of technology so long as the interference aspect is taken care of. This implies that the choice of using 2G or 3G equipment in these bands should be left to the operators so long as they ensure that older technology handset using subscribers continue to get service. However, since spectrum in these bands was allotted bundled with the Cellular or UASL license with spectrum being licensed in tranches designed for GSM services (CDMA in 800 MHz band), if a service is started by the holders of these spectrum bands for which market based license fees is being paid by competitors, the allottees of these spectrum bands will also have to pay similar license fees to ensure level playing field. The pressure of other operators wanting these bands due to better propagation characteristics can be reduced by immediately starting the auction of spectrum in the new 700 MHz band. In such a situation there can not be an objection to extending the license for the existing operators in these bands at a cost discovered in the auction of 700 MHz band when used for IMT services and existing rates if an operator continues to use the GSM technology (which is unlikely due to the lower spectral efficiency of GSM equipment for 2G services).

5. How and when should spectrum in 700 MHz band be allocated between competitive services?

700 MHz spectrum allocation process should commence straight away so that service providers can draw up their concrete plans for launch of services such as mobile TV, LTE, etc. The allocation process should entail auction of spectrum.

6. What is the impact of digital dividend on 3G and BWA?

Both services will benefit using the 'digital dividend band'. In our country, unlike in some developed countries, the dividend component is not much since analog TV

transmission does not use much of this band and most of it should be available.

Licensing issues

- 7. Should the spectrum be delinked from the UAS Licence? Please provide the reasons for your response.**

Yes. UAS license permits triple-play i.e. voice, data and video services but does not insist on providing these services through the use of spectrum only. Spectrum is a resource whose use needs to be maximized without shackling it unnecessarily to any specific application. It should be treated as an independent commodity. UASL license without spectrum can be used by wireline service providers to provide triple play and burdening him with spectrum costs (which he does not need) will be meaningless and retrograde.

- 8. In case it is decided not to delink spectrum from UAS license, then should there be a limit on minimum and maximum number of access service providers in a service area? If yes, what should be the number of operators?**

In view of the above, no comment is offered.

- 9. What should be the considerations to determine maximum spectrum per entity?**

No such limit is required. Market forces should determine this with the regulator keeping an eye to ensure that neither monopolization nor SMP nor hoarding situation is allowed to occur. While it is easier for monopoly powers or SMP to be determined in terms of percentage share of total subscriber base or the AGR, linking it to spectrum may be somewhat more complex because the market power achieved through owning of spectrum does not have a

simple correlation with the percentage subscriber share or the AGR. Perhaps a tighter limit on spectrum holding unlike the 40% limit of subscriber base currently considered to require regulatory intervention to prevent SMP situation, would be needed for spectrum holding. In this light the 25% limit (25% of total available spectrum of all types of services) suggested by the Subodh Kumar committee may be as good a guideline for regulatory intervention as any.

- 10. Is there a need to put a limit on the maximum spectrum one licensee can hold? If yes, then what should be the limit? Should operators having more than the maximum limit, if determined, be assigned any more spectrum?**

See above comment to Question 9.

- 11. If an existing licensee has more spectrum than the specified limit, then how should this spectrum be treated? Should such spectrum be taken back or should it be subjected to higher charging regime?**

This question refers to a situation that has occurred due to spectrum beyond contracted limit being handed over to operators without using market mechanism and at a cost which does not necessarily enthruse the operator to maximize the spectrum utilization efficiency. Even if a fixed one time charge is applied for the excess spectrum (even if it is based on some market based benchmark), the fact remains that these operators have got spectrum using lax standards and there is need to push them to invest more on infrastructure. Therefore, ideally such excess spectrum should be withdrawn and offered through auction. No priority reservation for new operators who have not yet got spectrum should be given since the existing situation of several such operators is the result of anomalous situation created by delinking number of licenses to availability of spectrum resource. However, complete withdrawal will cause immediate deterioration in QOS. For a practical solution to this problem, a combination of allowing the operators to retain some reasonable portion of the excess spectrum while also imposing a onetime penalty based

preferably on a market based benchmark, may have to be followed. A discretionary intervention on the part of the regulator to determine how much spectrum to withdraw and how much to leave with the operator may have to be followed preferably with industry support. In any case such a regulation will have to be drafted very carefully to ensure it withstands legal scrutiny. Simultaneous push for infrastructure expansion and adoption of modern techniques for improved spectrum utilization efficiency under monitoring by TRAI may be necessary.

- 12. In the event fresh licences are to be granted, what should be the Entry fee for the license?**

If the reference is to fresh licenses after delinking license and spectrum, the license fee should be nominal say 5 Crores. If however, the reference is to the present type of licenses where spectrum is bundled with license, where is the question of more licenses when enough spectrum is not available for the existing licensees.

- 13. In case it is decided that the spectrum is to be delinked from the license then what should be the entry fee for such a License and should there be any roll out condition?**

See response to Q.12.

- 14. Is there a need to do spectrum audit? If it is found in the audit that an operator is not using the spectrum efficiently what is the suggested course of action? Can penalties be imposed?**

Few years ago, Trai had attempted to determine the spectrum utilization efficiency with a view to setting up some objective criterion. It had come to the conclusion that such an exercise was not feasible. Audit is meant to assess spectrum usage efficiency which is a function of location i.e. if audit is proposed it will have to be carried out separately for each city/ different areas of a circle and within a city at several different locations. All measurements will have to be

carried out at the peak traffic hours of that location for a few days. With the large number of operators, the exercise will become unmanageable. Creation of conditions that force the operators to increase their spectrum usage efficiency (through market based price discovery for spectrum and strict and penal action for below par QOS) will be a more practical course. Incidentally, if audit is found to be practicable it is perhaps more important for spectrum allocated to government agencies.

15. Can spectrum be assigned based on metro, urban and rural areas separately? If yes, what issues do you foresee in this method?
16. Since the amount of spectrum and the investment required for its utilisation in metro and large cities is higher than in rural areas, can asymmetric pricing of telecom services be a feasible proposition?

Such asymmetrical approaches whether relating to assignment or pricing only lead to providing avenues for misrepresentations and loss of revenues to the government. Besides, the high operating costs in the rural areas are far more important than spectrum cost which is a one time capital cost.

M&A issues

17. Whether the existing licence conditions and guidelines related to M&A restrict consolidation in the telecom sector? If yes, what should be the alternative framework for M&A in the telecom sector?
18. Whether lock-in clause in UASL agreement is a barrier to consolidation in telecom sector? If yes, what modifications may be considered in the clause to facilitate consolidation?
19. Whether market share in terms of subscriber base/AGR should continue to regulate M&A activity in addition to the restriction on spectrum holding?

20. Whether there should be a transfer charge on spectrum upon merger and acquisition? If yes, whether such charges should be same in case of M&A/transfer/sharing of spectrum?
21. Whether the transfer charges should be one-time only for first such M&A or should they be levied each time an M&A takes place?
22. Whether transfer charges should be levied on the lesser or higher of the 2G spectrum holdings of the merging entities?
23. Whether the spectrum held consequent upon M&A be subjected to a maximum limit?

There are essentially three issues associated with M&A. These are:

- M&A's encourage greater spectrum utilization efficiency since trunking effect (equivalent to economies of scale) comes into play. This implies that when a company holding spectrum 'f1' and handling traffic T1 merges in M&A process with a second company holding spectrum 'f2' and handling traffic 'T2', the merged company has a spectrum 'f1+f2' which is capable of handling traffic much more than 'T1+T2'. This implies that greater spectrum utilization efficiency has been achieved i.e. this merged entity can handle the sum of the individual two companies traffic for less than the total spectrum 'f1+f2' or that given the spectrum 'f1+f2', the merged entity can handle more traffic than was possible as two individual companies. The benefit of M&A can be had either if the excess spectrum is withdrawn from the merged entity (and given to other seekers of spectrum) or the merged company is allowed to retain all spectrum so that it is now in a position to handle more traffic. The call that a

regulator/policy maker has to take is whether the merged entity be allowed to retain all spectrum and therefore have the capability to grow much bigger or take away the excess spectrum and let the merged entity perform at the same size (traffic handling wise and therefore perhaps revenue wise) or permit the new entity to grow substantially more than what the two merging companies could have achieved individually with the same amount of spectrum. Of course, the limit to such a growth will be placed through the conditions applicable to a company that acquires significant market power (SMP) or which clearly proves to be leading to monopolistic powers governed by the Competition Law. Had the spectrum allocation beyond the contracted amount been done on the basis of market mechanism, one would without reservation indicate that to reap the full benefits of M&A, allow the merged company to retain the entire spectrum. However, this not the case in our country. Therefore, the only alternative would be to take away the excess spectrum and sell it to other operators desirous of obtaining more spectrum at market price. One problem remains viz. how to determine what is the amount of excess amount of spectrum and how to determine it for a merged entity? For a single operator thr contracted amount of spectrum is 6.2 MHz. Can we take double this figure for determining as the lower limit beyond which any held spectrum will be treated as excess spectrum? Not quite because this ignores the economy of scale advantages. Since the subscriber base criterion is definitely unscientific, perhaps an arbitrary limit below this figure of 12.4 MHz has to be decreed. The Subodh Kumar Committee has suggested an upper limit of 8 MHz which assumes a lot of extra investment on infrastructure and therefore to encourage M&A an

arbitrarily arrived round figure of 10 MHz can be decreed.

- The issue of when to allow a new acquirer of license to participate in the M&A process becomes important because the new licenses have been given at a non-market driven basis leading to the possibility of speculative gains. The existing guidelines have a 'lock-in' condition of three years. More than half the period is over for the licenses issued in early 2008 and no fresh licenses are likely to be issued. This would, therefore, suggest that there is nothing lost in permitting it to continue despite it being a restrictive clause to M&A activity. On the other hand, there are some operators who have not rolled out any network and by preventing them to go for M&A, we simply end up in a situation where precious spectrum is lying unused. Such a consideration suggests that these operators be permitted to merge or be acquired. To ensure that there is no undue profit in the form of speculative profit, a regulation on penalty such as windfall profit tax could be considered. Both are fairly strong arguments and the regulator will have to exercise its discretion. If the second option can be implemented within a period of one to two months then perhaps this option is preferable.
- The third aspect is that of market share based presently on a company's share of the market assessed on the basis of subscriber numbers and AGR. Prevention of significant market power and dominance of the market has to be ensured. Therefore, the conditions applicable in the present guidelines on SMP and monopolistic powers should continue.

Spectrum Trading

24. Is spectrum trading required to encourage spectrum consolidation and improve spectrum utilization efficiency?
25. Who all should be permitted to trade the spectrum ?
26. Should the original allottee who has failed to fulfill "Roll out obligations" be allowed to do spectrum trading?
27. Should transfer charges be levied in case of spectrum trading?
28. What should be the parameters and methodology to determine first time spectrum transfer charges payable to Government for trading of the spectrum? How should these charges be determined year after year?
29. Should capping be limited to 2G spectrum only or consider other bands of spectrum also? Give your suggestions with justification.
30. Should size of minimum tradable block of spectrum be defined or left to the market forces?
31. Should the cost of spectrum trading be more than the spectrum assignment cost?

The concept of Spectrum trading worldwide has gained currency as a major progressive step to encourage the unlocking of the potential of new technologies and of promoting better spectrum utilization efficiency. In theory the concept is very powerful. However, it's implementation is full of possible pitfalls whose severity depends on specific conditions prevailing in a given market. The pitfalls relate to

- Possible interference potential to the neighbour's services
- Possible speculative gains due to the method adopted in the past for spectrum acquisition
- Possible evolution of distortion of competition through development of dominant firms

Clearly, there would be a need to guard against and control all these possible pitfalls in case spectrum trading is permitted. This will need regulatory intervention. In India, the spectrum allocation has almost entirely been done on the basis of non-market based practices and therefore the pitfalls are even greater than those faced by other countries where more transparent market based practices have been followed. A thorough study of the successful practices adopted in other countries followed by careful formulation of guidelines as well as regulator's intervention steps and powers is needed before the advantage of spectrum trading can be brought to the Indian market. It is suggested that a separate detailed consultation paper based on the practices successfully deployed by some of the other major countries, their experiences in implementation and the steps taken to ensure interference free operation be brought out by TRAI before considering formulating and sending recommendations to the government.

However, considering that government through WPC have not had much success in getting government agencies (holding very substantial chunks of spectrum) for releasing parts of their spectrum for commercial purposes, it is suggested that these government agencies be permitted spectrum trading for the spectrum held by them and keeping all or substantially all proceeds of trading with themselves both to provide incentive to them for vacating spectrum and at the same time testing the market waters for the possibility of opening up spectrum trading to all UASL licensees.

Spectrum sharing

World over spectrum trading is treated as a major part of spectrum sharing. However, in the consultation paper a clear distinction has been made and the spectrum sharing covered under this section relates to either leasing or pooling of spectrum resources. Comments given below therefore refer to this limited and specific definition of spectrum sharing.

32. Should Spectrum sharing be allowed? If yes, what should be the regulatory framework for allowing spectrum sharing among the service providers?

Yes. See comments on the next question.

33. What should be criteria to permit spectrum sharing?

Spectrum sharing is being considered in the light of a means to maximize the utilization of the spectrum and to increase efficiency and minimize capital outlays. Spectrum sharing can not be carried out as a mandate from the regulator. It can be carried out when the two involved parties find a business case and a win-win situation in sharing spectrum. There is therefore no role for the regulator other than to provide a general umbrella permission and keep an eye on the application to which the sharing is being put to with a view to ensuring that illegal use or services are not created including any operator gaining SMP or monopolistic hold over the market. For this purpose, regulator has only to introduce 'must report' requirement and have the wherewithal to monitor the sharing. Technical and commercial details of the sharing arrangements should be left with the involved private operators. Spectrum sharing policy should permission to have spectrum sharing in parts of the total licensed area should be

34. should spectrum sharing charges be regulated? If yes then what parameters should be considered to derive spectrum sharing charges? Should such

charges be prescribed per MHz or for total allocated spectrum to the entity in LSA?

The parties proposing to share spectrum would be regular license holders and therefore would have already paid license fees as well as spectrum charges (both acquisition charge as well as spectrum user charge). There is therefore no justification beyond a very nominal administrative cost charges are justified for two parties sharing their spectrum.

35. Should there be any preconditions that rollout obligation be fulfilled by one or both service provider before allowing the sharing of spectrum?

36. In case of spectrum sharing, who will have the rollout obligations? Giver or receiver?

Roll out or any other license condition should not in any way get modified due to spectrum sharing on a temporary lease or pooling.

Perpetuity of licences

37. Should there be a time limit on licence or should it be perpetual?

38. What should be the validity period of assigned spectrum in case it is delinked from the licence? 20 years, as it exists, or any other period

39. What should be the validity period of spectrum if spectrum is allocated for a different technology under the same license midway during the life of the license?

40. If the spectrum assignment is for a defined period, then for what period and at what price should the extension of assigned spectrum be done?

41. If the spectrum assignment is for a defined period, then after the expiry of the period should the same holder/licensee be given the first priority?

No comment on Questions 37 to 41.

Uniform License Fee

42. What are the advantages and disadvantages of a uniform license fee?

43. Whether there should be a uniform License Fee across all telecom licenses and service areas including services covered under registrations?

Uniform licence fee for all services and facilities including those under registration encourages proper compliance and removes scope of introducing innovative accounting practices to avoid or reduce licence fee liability. This also avoids arbitrage leading to manipulations as recognized by TRAI.

44. If introduced, what should be the rate of uniform License Fee?

It should cover only USO obligations and administrative and regulatory charges of 1% of AGR initially .At the end of each year, actual amount spent on these activities including provision of Universal service should be calculated and fixed as licence fee for next year.

Spectrum assignment

45. If the initial spectrum is de-linked from the licence, then what should be the method for subsequent assignment?

All additional assignments should be based on market-based arrangements. Subscriber Linked spectrum assignment being practiced currently should be positively given up not only because it is unscientific but also it provides incentives for resorting to malpractices. Since the number of spectrum seekers is likely to be much larger than the availability of spectrum, auction in appropriate sized blocks (say 1 MHz as today) will be the only approach that can ensure

transparency in selection as well as price discovery. The other possible approach of Administered Incentive Pricing (AIP) can determine the opportunity cost base price for spectrum to a reasonable level of accuracy but will lack transparency in the choice of operators who should get extra spectrum in the prevailing conditions of large number of claimants for very small quantum of spectrum.

46. If the initial spectrum continues to be linked with licence then is there any need to change from SLC based assignment?

47. In case a two-tier mechanism is adopted, then what should be the alternate method and the threshold beyond which it will be implemented?

Yes but delinking should actually be the priority.

48. Should the spectrum be assigned in tranches of 1 MHz for GSM technology? What is the optimum tranche for assignment?

See comment on Q 45

49. In case a market based mechanism (i.e. auction) is decided to be adopted, would there be the issue of level playing field amongst licensees who have different amount of spectrum holding? How should this be addressed?

Creation of level playing field conditions can be encouraged by allowing spectrum sharing. When enough experience is obtained and spectrum trading is introduced, further help in this direction will be available.

50. In case continuation of SLC criteria is considered appropriate then, what should be the subscriber numbers for assignment of additional spectrum?

There are enough arguments and logic available against SLC and therefore its continuation should definitely not be considered even as a hypothesis.

51. In your opinion, what should be the method of assigning spectrum in bands other than 800, 900 and 1800 MHz for use other than commercial?

The present method can continue keeping in mind that high priority has to be given to national security. However, insistence of use of the latest technology must be incorporated in the procedures with a mandatory review and vacation clause in the event of new reasonably priced alternative.

Spectrum pricing

52. **Should the service providers having spectrum above the committed threshold be charged a one time charge for the additional spectrum?**
53. **In case it is decided to levy one time charge beyond a certain amount then what in your opinion should be the date from which the charge should be calculated and why?**
54. **On what basis, this upfront charge be decided? Should it be benchmarked to the auction price of 3G spectrum or some other benchmark?**

See comments on Question 11. A practical solution will be part retention and part withdrawal of spectrum in excess of the contracted 6.2 MHz for GSM. Complete withdrawal will cause immediate deterioration in QOS. Simultaneous push for infrastructure expansion and adoption of modern techniques for improved spectrum utilization efficiency under monitoring by TRAI may be necessary. The withdrawn spectrum should be auctioned to the operators (which could include the operators from whom the spectrum may have been withdrawn). Based on this discovered price a one time charge can be imposed for the left over excess spectrum only the operators who so effected. Since this is a one time charge, the question of date of application of the charge does not arise.

55. **Should the annual spectrum charges be uniform irrespective of quantum of spectrum and technology?**

56. Should there be regular review of spectrum charges? If so, at what interval and what should be the methodology?

Once spectrum price is discovered using auction – a market based approach – there is no justification for any additional administratively determined charges to be imposed.

Structure for spectrum management

57. What in your opinion is the desired structure for efficient management of spectrum?

In simple terms, once market based selection of operator who receives spectrum and market based pricing has been done, there need not be a requirement to look at the spectrum management structure. In a situation such as the one which prevails in UK where four or five equally powerful operators share the available spectrum space, AIP is a very elegant and infrastructure promoting approach. In India we currently have up to 16 operators on an average and therefore besides discovery of the price, discovery of the worthy operator who should get spectrum also has to be transparent. Therefore, spectrum distribution through auction seems to be the ideal approach.