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भारत संचार निगम लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT SANCHAR NIGAM LIMITED
(A Govt. of India Enterprise)

To,

Shri. Akhilesh Kumar Trivedi,
Advisor (Networks, Spectrum and Licensing),
TRAI, New Delhi.

No. BSNLCO-RGLN/25/1/2020-REGLN dated 28-02-2023

Sub: BSNL comments on TRAI's Consultation Paper on 'Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing'**.**- regarding

With regard to Consultation Paper on "'Telecommunication Infrastructure Sharing, Spectrum Sharing, and Spectrum Leasing", please find the comments of BSNL, as below:

A. **Issues relating to Infrastructure sharing**

Q1. Should passive infrastructure sharing be permitted across all telecommunication service licenses/ authorizations? Kindly justify your response.

BSNL Comments:

Yes**,** passive infrastructure sharing should be permitted across all telecommunication service licenses/ authorizations. This will have direct impact on costs, and subsequently on tariffs and investment; it may also enhance competition in the telecommunication market. According to the ITU recommendations also, using the passive infrastructure sharing model can lead to the lowering of the telecommunication tariff by 30%. Passive infrastructure sharing may lead to cost saving on CAPEX and OPEX and speedy rollout of telecommunication services.

Q2. Should other active infrastructure elements deployed by service providers under various licenses/ authorizations, which are not permitted to be shared at present, be permitted to be shared among licensees of telecommunication services?

BSNL Comments:

Yes, other active infrastructure elements should be permitted to be shared among licensees of telecommunication services, especially for the entities owned by the Government or by the same private group. This will on one hand will help to utilize the spare capacity available with one service provider and on other hand it will help to reduce the establishment cost for other licensee. It will also facilitate faster rollout. Allowing the sharing of all type of active infrastructure will motivate infrastructure providers, having the core competencies in this area, to put more investment to create latest infrastructure at fastest pace. It will facilitate all entities in ecosystem to

focus on their core competencies and better service quality can be delivered

Q3. If your response to the Q2 is in the negative, which active infrastructure elements should not be permitted to be shared? Further, which active infrastructure elements should be permitted to be shared with which licensees/ authorization holders? Kindly provide details for each authorization with detailed justification.

BSNL Comments:

N/A

Q4. In case it is decided to permit sharing of any additional active infrastructure elements among licensees,

a. What precautionary conditions should be put in place to avoid disruption in telecommunication services due to any unforeseen situation? The response may be provided for each active infrastructure element.
b. Whether there is a need to have a provision for permission from/ intimation to the Licensor before commencement of such sharing? If yes, what provisions and timelines need to be prescribed for each active infrastructure element?

BSNL Comments:

In case sharing of all the network elements across all licenses/ authorizations is permitted, there is a possibility that sufficient infrastructure may not be created and there could be a high level of dependency on shared network elements. Any failure in the shared network elements, particularly the core network elements, could become a single point of failure and may affect services of all TSPs which are involved in sharing.

Therefore, it is suggested that sharing of passive network elements, access network elements and transport network elements may be permitted on the mutual agreements between the sharing TSPs with a clause that none of the entity can exit the sharing arrangement without a prior notice of sufficient long period.

The sharing Core Network elements may be allowed on case to case basis by the licensor after ensuring sufficient capacity, redundancy and security requirements.

Q5. Whether any other amendment is required to be made in the telecommunication services licenses/ authorizations with respect to the provisions relating to both active and passive infrastructure sharing to bring clarity and remove anomaly? If yes, clause-wise suggestions in the telecommunication services licenses/ authorizations may kindly be made with detailed justification.

BSNL Comments:

Yes, amendment required in the Unified License (Access Service) Agreement in the clause 33 in Chapter-V. It should be modified to allow the active infrastructure sharing of network elements including spectrum and core network elements.

Q6. Should there be any obligation on telecom service providers to share infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers? Kindly justify your response.

BSNL Comments:
Sharing of infrastructure that has been funded, either partially or fully, by the Government through Universal Service Obligation (USO) Fund or otherwise, with other telecom service providers may be allowed by USP to other TSP, however, it should not be mandatory **.** Network is being created by USP to provide the services to customers, therefore, decision of sharing of network should be under the preview of USP after analyzing the current utilization of network.

Q7. In case it is decided to impose some obligations on telecom service providers to share the infrastructure funded by Government with other telecom service providers, is there a need to provide a broad framework for sharing of such infrastructure? If yes, kindly suggest the key aspects of such framework with detailed justification.
BSNL Comments: N/A

Q8. Any other suggestion to facilitate infrastructure sharing may kindly be made with proper explanation and justification.

BSNL Comments: The TSPs who have decided to be merged and the merger has in principle approved by the licensor, may be allowed to treat their networks as a single network so that synergy can be created even before that actual merger.

B. **Connectivity Issues Faced by the Subscribers in Remote and Far-flung Areas of the Country**

Q9. What measures could be taken to encourage roaming arrangements among telecom service providers in remote and far-flung areas? What could be the associated regulatory concerns and what steps could be taken to address such concerns? Kindly provide details on each of the suggested measures with justification.

BSNL Comments:

To encourage roaming arrangements among telecom service providers in remote and far-flung areas intra-circle roaming should be made obligatory for service providers providing the service that area.

Q10. What could be the other ways to ease out the hardship faced by the subscribers in remote and far-flung areas due to connectivity issues of the home network provider? Kindly provide detailed response with justification.

BSNL Comments:

Intra circle roaming seems to be only suitable solution which can be deployed by TSP in quickest time.

C. **Issues relating to inter-band spectrum sharing among access service providers**

Q11. Whether inter-band access spectrum sharing among the access service providers should be permitted in the country?

BSNL Comments:

Yes, inter-band access spectrum sharing among the access service providers should be permitted in the country as the radio frequency spectrum is an extremely valuable and important natural resource. With exponential increase in data usage, digitalization of services and uptake of video consumption over cellular network, demand for spectrum has increased significantly and we must utilized this finite radio resource very efficiently and optimally. Any amount of frequency spectrum, if not use optimally and efficiently, results not only in financial loss to the Government, but also hinders socio-economic development of the country.

During spectrum auction, TSP purchase the spectrum by projecting its requirement for next 10-20 years, however, it is not always possible to utilize the complete purchased bandwidth of spectrum by TSP. Therefore, for effective utilization of unused capacity inter band spectrum sharing should be permitted. It will promote the other operators to provide the services in cost effective manner to customers, thus, will create the competition in market. If two TSPs pool their spectrum holdings, spectral efficiency increases non-linearly. For illustration, data rates achievable with 10 MHz of spectrum is much higher than two times the data rate achievable with 5 MHz of spectrum. Spectrum sharing can provide additional network capacities in places where there is network congestion due to spectrum crunch.

Q12. In case it is decided to permit inter-band access spectrum sharing among access service providers, please provide detailed inputs to the following questions:

a. What measures should be put in place to avoid any potential adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

BSNL Comments:
(i) Minimum rate for sharing of spectrum should be defined in accordance to the market rate of the spectrum during the auction, so that dynamics of spectrum auction are not be affected. It will motivate to purchase the spectrum through auction who wanted for longer period.
(ii) Inter-band spectrum sharing should be restricted to sharing by licensees subject to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.

b. Considering that surrender of spectrum has been permitted in the country, what provisions need to be included in the guidelines for inter-band access spectrum sharing so that any possible misuse by the licensees could be avoided? Kindly justify your response.

BSNL Comments:
(i) Minimum lock in period of for inter-band access spectrum sharing should be defined to be 3 years.
(ii) Minimum one year notice period may be mandated for exiting the sharing arrangement
(iii) Minimum ceiling for commercial rate may be specified based on market price so that licensee will not be able to take the advantage or arbitrage of cost by surrendering the spectrum.
(iv) An appropriate surrender fee should be charged from the TSP that wants to surrender the spectrum but providing the services from the shared spectrum of other service provider.

c. What should be the broad framework for inter-band access spectrum sharing? Whether the procedure prescribed for intra-band access spectrum sharing could be made applicable to inter-band access spectrum sharing as well, or certain changes are required to be made?

d. What should be the associated charges, and terms & conditions for inter-band access spectrum sharing?

BSNL Comments:

(i) DoT may place a centralized mechanism for implementation of framework for inter-band access spectrum sharing and for handling any disputes between spectrum provider and spectrum seeker. Any service provider who want inter-band spectrum on sharing should apply on this centralized platform and on the basis of First Come First Served sharing of spectrum may be carried out between the operators and to be monitored by DoT. Through this mechanism, DoT may monitor the actual utilization of the spectrum. Some application charges may also be prescribed by DoT to apply for spectrum sharing by the service provider.

(ii) Minimum rate for sharing of spectrum should be defined that will be in accordance to the market rate of the spectrum during the auction.
(iii) Spectrum to be shared to the access service provider should be on the basis of First Come First Served on non-discriminatory basis.
(iv) Spectrum sharing should be restricted to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.
(v) SUC charges should be applicable for the service provider who has taken the spectrum on sharing basis.

Q13. Any other issues/ suggestions relevant to the spectrum sharing between access service providers, may be submitted with proper explanation

and justification.

BSNL Comments: NIL

D. **Issues relating to Authorised Shared Access (ASA) of Spectrum**

Q14. Whether there is a need to explore putting in place a regime to implement Authorised Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis? Kindly justify your response.

BSNL Comments:

The possibility of Authorized Shared Access (ASA), wherein an access service provider as a secondary user could use the frequency spectrum assigned to a non-TSP primary user (government agencies and other entities) on a dynamic spectrum sharing basis to ensure efficient and optimal utilization of spectrum, should be explored.
Certain quantum of frequency spectrum bands assigned/ earmarked for Government use and/ or other services, the utilization of which may not necessarily be optimum i.e. frequency bands are spatially and temporarily underutilized. As Radio frequency spectrum is an extremely valuable and important natural resource and in some cases entire spectrum, at some places, at all times may not be in used by the Govt/User. Therefore, there is need to explore putting in place a regime for authorized shared access of spectrum, wherein the spectrum assigned/ earmarked for Government/ other users on primary basis could be used by the access service providers as secondary user.

Q15. In case it is decided to implement ASA technique for secondary use of frequency spectrum assigned to non-TSP primary users, please provide your response to the following questions with detailed justification:

(a) What are the potential spectrum bands in which ASA implementation can be considered?

(b) What measures should be taken to encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique?

(c) What should be the broad framework for implementation of ASA technique?

(d) Is there a need for putting in place a mechanism for dispute handling including interference issues in case of ASA? If yes, what should be the framework?

(e) What methodology should be adopted for spectrum assignment to secondary users? What could be the spectrum charging mechanism for such assignment?

(f) Who should be entrusted the work of managing shared access of spectrum?

BSNL Comments:

(a) All mid and low band spectrum can be considered for ASA implementation for better coverage and rollout obligations. This will be good

for users because lots of equipment are already available using these band. These spectrum bands may also be utilized by the TSPs to rollout 5G technology services.

(b) To encourage and motivate the incumbent users for participation in the spectrum sharing through ASA technique, TSP to which spectrum is shared should pay the proportional market price of the spectrum, mutually agreed between both the parties, thus generating revenue to the Govt/ users in this way for the infrastructure which was lying idle.

(c) (i) DoT may place a centralized mechanism for implementation of ASA technique. Any service provider who want spectrum sharing through ASA technique should apply on this centralized platform and on the basis of First Come First Served sharing of spectrum may be given. Through this mechanism DoT may monitor the actual utilization of the spectrum. Some application charges may also be prescribed by DoT to apply for spectrum sharing by the service provider.
(ii) Minimum rate for sharing of spectrum should be defined that is in accordance to the market rate of the spectrum during the auction, so that dynamics of spectrum auction may not be affected.
(iii) Spectrum sharing through ASA technique should be restricted to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.
(iv) Spectrum to be shared to the access service provider should be on the basis of First Come First Served on non-discriminatory basis.
(v) SUC charges should be applicable for the service provider who have taken the spectrum on sharing basis based on their AGR to DoT. Paying of the SUC charges for the shared spectrum will the responsibility of the service provider

(d) Yes, there is need for putting in place a mechanism for dispute handling including interference issues in case of ASA. DoT may provide centralized platform to resolve these type of disputes in time. Any dispute between Access Provider and Access Seeker may be referred to the Authority by either party for resolution.

(e) A system should be set up to discover when the licensed users are not using their assigned spectrum so that the spectrum is assigned to the unlicensed users. But when the Primary User surfaces the requirement, Secondary User that is holding the spectrum should release it immediately.
In respect of spectrum charging, TSP to which spectrum is shared should pay the proportional market price of the spectrum, mutually agreed between both the parties and it should be in accordance with the market rate of the spectrum. DoT may set the minimum ceiling spectrum charging for the secondary users.

(f) DoT should appoint a centralized authority for the work of managing shared access of spectrum.

Q16. Whether there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers? If yes,

(a) What are the possible regulatory issues involved and what could be the possible solutions?

(b) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction? Kindly justify your response.

BSNL Comments:

(a) Yes, there is a need to permit the ASA technique-based dynamic spectrum sharing among access service providers for effective utilization of unused capacity of spectrum purchased by the licensee.

Some of the regulatory issues involved is due to the provision of surrender of spectrum clause in the license agreement, for this it should be ensured that commercials for sharing of spectrum should in accordance to the market rate of the spectrum during the auction.

(b) (i) Minimum rate for sharing of spectrum should be defined that is in accordance to the market rate of the spectrum during the auction, so that dynamics of spectrum auction may not be affected.

(ii) Inter band spectrum sharing should be restricted to sharing by licensees subject to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.

Q17. In case it is decided to permit ASA technique-based dynamic spectrum sharing among access service providers in the country, please provide your response to the following questions with justification:

(a) Whether there is a need for prescribing any framework for such shared use? If yes, what should be the framework?

(b) Whether access service providers should be required to obtain approval or intimate to DoT before entering into such arrangement?

(c) Whether any fee (one time, or recurring), should be prescribed on the spectrum sharing party(ies)? If yes, what should be the fee and who should be liable to pay such fee?

(d) What should be the treatment of spectrum shared through ASA technique for the purpose of computation of spectrum cap?

(e) Whether there is a need for an independent entity for managing spectrum access? If yes, who should be entrusted this work? If not, how should the spectrum access be managed?

(f) Is there a need for putting in place a mechanism for dispute handling including interference issues or should it be left to the access service providers? If yes, what should be the framework?

(g) What other terms and conditions should be applicable for the sharing parties?

BSNL Comments:

(a) (i) DoT may place a centralized mechanism for use of ASA technique for spectrum sharing. Any service provider who want spectrum sharing through ASA technique should apply on this centralized platform and on the basis of First Come First Served sharing of spectrum may be given. Through this mechanism DoT may monitor the actual utilization of the spectrum. Some application charges may also be prescribed by DoT to apply for spectrum sharing by the service provider.

(ii) Minimum rate for sharing of spectrum should be defined that is in

accordance to the market rate of the spectrum during the auction.
(iii) Spectrum to be shared to the access service provider should be on the basis of First Come First Served on non-discriminatory basis.
(iv) Spectrum sharing should be restricted to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.
(v) SUC charges should be applicable for the service provider who have taken the spectrum on sharing basis based on their AGR to DoT. Paying of the SUC charges for the shared spectrum will the responsibility of the service provider.

(b) Access service providers should be required to intimate to DoT at least 30 days before the proposed effective date of sharing.

(c) Yes, recurring fee should be prescribed on the spectrum sharing party as the spectrum sharing will be dynamically used and not fixed. The access service provider which has taken share of the spectrum should be liable to pay such fee to the licensee that holds the ownership of the spectrum after the spectrum auction.

(d) The spectrum cap is the limit of radio waves a telecom operator can hold for providing wireless services. Existing Spectrum cap rules should be followed in respect of spectrum shared through ASA technique for the purpose of computation of spectrum cap.

(e) Yes, there is a need for an independent entity for managing spectrum access. DoT should appoint a centralized authority for managing spectrum access.

(f) Yes, there is need for putting in place a mechanism for dispute handling including interference issues. An independent autonomous body, National Regulatory Authorities (NRAs) should be designated for handling any such disputes, so that a centralized authority can check and issue instructions/ orders in this regard. Any dispute between Access Provider and Access Seeker may be referred to the Authority by either party for resolution.

(g) (i) Commercials for spectrum sharing should be decided mutually between the licensees in accordance to the market rate of the spectrum during the auction.
(ii) The right to share the spectrum shall be subject to the fulfillment of the relevant license conditions and any other conditions that may be specified by the licensor/ government from time to time
(iii) The licensees under sharing agreement shall ensure that they fulfill the specified roll-out obligations and specified QoS norms.
(iv) The licensees will be individually and collectively responsible for complying with sharing guidelines, including interference norms.
(v) A licensee shall not be eligible to share its spectrum if it has been established that it is in breach of terms and conditions of the license and the licensor has ordered for revocation/ termination of its license.
(vi) Licensees should have paid the market price of the spectrum and has been administratively allotted the spectrum for which they plan to share.

Q18. Suggestions on any other spectrum sharing technique(s), which needs to be explored to be implemented in India, may kindly be made along with the relevant details and international practice. Details of likely regulatory issues with possible solutions, interference management, dispute handling etc. may also be provided.
BSNL Comments: NIL

E. **Issues relating to Leasing of Spectrum**

Q19. Where there is a need to permit spectrum leasing among access service providers? Kindly justify your response.

BSNL Comments:
Yes, there is a need to permit spectrum leasing among access service providers. Leasing of spectrum can create a conducive environment for secondary market for spectrum, it may promote efficient use of spectrum and may particularly be needed for short-term events

Q20. In case it is decided to permit spectrum leasing among access service providers, please provide detailed response to the following questions:
(a) Whether spectrum leasing should be permitted for short-term period only, or for both short-term as well as long-term?
(b) In case only short-term leasing is to be permitted, what should be the maximum duration for such spectrum leasing? Should there be any restrictions on renewal of such short-term lease?
(c) In case it is decided to permit long term leasing, please provide your response to the following questions with justification:
(i) What measures should be put in place to avoid any adverse impact on competition and dynamics of spectrum auction?
(ii) Whether there should be a maximum duration for which spectrum leasing may be permitted?
(**d)** What should be the applicable roll-out obligations for the Lessee (the access service provider which takes spectrum through leasing arrangement from the Lessor)? Whether the spectrum leasing should have any effect on the roll-out obligations applicable for the Lessor (the access service provider which has leased out the spectrum)? Whether the provisions for roll-out obligation require to be different for short-term and long-term spectrum leasing?
(e) Should the spectrum leasing charges be levied on similar lines as applicable for spectrum trading? If no, what charges should be made applicable in case of spectrum leasing?
(f) Should there be a lock-in period, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading? If yes, what should be the lock-in period post which, spectrum holder would become eligible to lease it to another access service provider?
(g) Whether there is a need for an approval from, or intimation to DoT before the proposed leasing of spectrum? If yes, whether prior approval/ prior intimation requirement be different for long-term and short-term spectrum leasing? What should be the timelines for approval from, or intimation to DoT in each case?
(h) Whether the spectrum held by an access service provider on short-term,

or long-term lease be included to calculate compliance to spectrum caps?
(i) Considering that surrender of spectrum has been permitted in the country, what provisions need to be created in the guidelines for leasing of spectrum between access service providers so that any possible misuse by the licensees could be avoided?
(j) What other terms and conditions need to be prescribed in respect of spectrum leasing between access service providers?
BSNL Comments:

(a) Both short term and long term spectrum leasing should be permitted. Short term spectrum leasing should be for the period of 2 years, with extension on year on year basis. Long term spectrum leasing should be for more than 2 years, upto the balance period of the license or right to use spectrum, whichever is earlier.

(b) Both short-term and long-term spectrum leasing should be permitted. Renewal of short-term lease should be allowed with year on year basis the date of expiry of the short-term lease.

(c) (i) Minimum rate for the lease of spectrum should be defined that in accordance to the market rate of the spectrum during the auction, so that dynamics of spectrum auction may not be affected.
(ii) Interband spectrum sharing should be restricted to sharing by licensees subject to the condition that there will not be any subletting of spectrum by licensee who has taken the spectrum on shared basis.

(ii) No, but it should be mutually agreed with notice period of six months for breaking the lease agreement. The lease agreement could be upto the balance period of the license or right to use spectrum, whichever is earlier.

(d) It should be same as applicable to the service provider for providing the service by taking spectrum through auction. No relaxation in rollout obligation is suggested to the lessor the provisions for roll-out obligation for short-term and long-term spectrum leasing should be same.

(e) The spectrum leasing charges should be on different lines as applicable for spectrum trading. Spectrum leasing charges should be fixed with mutual consent however minimum ceiling be fixed by DoT for leasing in accordance to the market rate of the spectrum during the auction, so that dynamics of spectrum auction may not be affected.

(f) Yes, there should be a lock-in period of two years, after acquisition of spectrum, to become eligible for spectrum leasing as applicable in spectrum trading.

(g) Yes, there is a need for an intimation to DoT before the proposed leasing of spectrum. The intimation should be atleast 30 days prior to leasing of spectrum.

(h) Yes, the spectrum held by an access service provider on short-term, or long-term lease be included to calculate compliance to spectrum caps, so

that dynamics of spectrum auction may not be affected.

(i) Minimum lock in period for leasing of spectrum between access service providers should be defined e.g. 2 year.
(ii) Six month notice period should be given to the other TSP for stopping the inter-band access spectrum sharing.
(iii) Minimum ceiling for commercial rate may be specified based on market price so that licensee will not be able to take the advantage or arbitrage of cost by surrendering the spectrum.
(iv) An appropriate surrender fee should be charged from the TSP that wants to surrender the spectrum but providing the services from the shared spectrum of other service provider.

(j) i) Licensees can obtain spectrum on lease from other TSP on mutually agreed terms and conditions.
ii) TSPs shall submit the details of spectrum band(s), quantum of spectrum in each band, period of lease, geographic of logical parameter of the defined premises and use of spectrum to DoT, within 15 days of entering into leasing agreements.
iii) Parties of the leasing agreement shall ensure that, while using the leased spectrum, no interference is caused to any public network or any other licensed user of spectrum.
iv) The revenue earned by a TSP through the spectrum leasing shall form part of its Gross Revenue.
(v) SUC charges should be applicable for the service provider who have taken the spectrum on lease based on their AGR to DoT. Paying of the SUC charges for the leased spectrum will the responsibility of the service provider that has taken the spectrum on lease.

Q21. Any other issues/ suggestions relevant to the spectrum leasing, may be submitted with proper explanation and justification.

BSNL Comments: NIL

(Ved Prakash Verma)
DGM (Regulation-II)