

## Annexure A

We appreciate the Authority's gesture to come out with this detailed Consultation on this subject. While we have provided detailed comments against each of the questions raised by the TRAI, please find below the executive summary of our major submissions:

- A. The initiative of Govt. of India for national Broadband plan and implementation of same for expansion of Broadband network to Rural India is most welcome.
- B. However, as per our experience, there is limited demand for the Broadband Infrastructure already created in some of the rural pockets. Hence creation of Broadband infrastructure and Government policies for encouraging adoption of broadband services need to go hand in hand for overall success of the plan.
- C. The TRAI has highlighted the three models. While each model has its pros and cons, the TRAI needs to consider the actual requirement of this project, which is to provide quality broadband to rural areas. While all three models and the BOOT model may be required in combination in long run, however the Authority needs to go beyond the three models and consider the best and most immediate option to achieve the aim of rural broadband.
- D. The immediate and the most practicable solution would be Infrastructure readiness for implementation of 3G/4G/broadband Access technology in the GPs for the connectivity to customer premises, schools, medical, Govt. institutions, commercial establishments and end private customers in rural India.
- E. **Thus the TRAI needs to consider and recommend that the fastest way to achieve broadband availability to rural areas is by incentivizing the existing Telecom operators (by setting clear targets linked with USO reduction) to reach to such rural markets.**
- F. Also, the proposed Access Network BharatNet would be incomplete without complete clarity on last mile access to the customer premises from the BharatNet POP in the Gram-panchayat (GP). The Authority would appreciate that the demand and usage by the end customers are the actual driving factor for the success of any model.

- G. It is to be noted that 3G/4G/ Broadband services cannot be provided without presence of Tower infrastructure at the GP and hence **both fiber connectivity and tower Infrastructure with adequate EB availability at the POP - as combined package is necessary for the broadband growth in Rural India.**
- H. Hence there needs to be a tower and communication shelter infrastructure built at each GP, and same should be connected through the proposed BharatNet fiber network, so that a 3G/4G/Broadband Operator can bring the Access equipment ( BTS/ NodeB, etc. ) and start providing the services.
- I. The proposed plan is GPON technology with linear fiber connectivity from the Block level to GPs. **However it is proposed to have smaller Ring architecture for the Block to GP connectivity to have better availability of the network in rural areas where the EB availability is comparatively poor.**
- J. The Authority may note that currently, even the major Telecom operators are not connected to all the Blocks and in fact all the DHQs also are not fully covered. This is due to abnormal ROW cost being demanded by many State/ Central authorities and varying policies across states and municipalities. For example, Railway Authorities are raising demand to the tune of Rs 1 Cr for a Railway crossing, Restoration charges are abnormally high in some of the cities to the tune of Rs 30 to 70 Lacs per Km. **Hence the Govt. endeavor should be to ensure affordable ROW cost all across the country/ state for backhauling OFC network between Blocks to DHQs and State Capital, preferably with free ROW and payment of minimal actual restoration charges.**
- K. NHAI, Major State Road Authorities and Railways need to lay utility tunnels across the roads of their jurisdiction / across major Railway crossings for use by all the Utility companies for faster expansion of backhauling OFC network by telecom and broadband operators.
- L. Also, as capex investment is higher for OFC rollout, the Operators have entered to IRU model for leasing fibers from each other & IP1 license holders. However some of the Govt. ROW Authorities do not honor the same and have been threatening to remove the cable or are demanding fresh ROW charges for Leased fibers. Thus, clear guidelines need to be issued to all the State/ central ROW authorities to honor IRU agreements and only the Principal operator should be required to take ROW approval.
- M. **The emphasis on EB power availability/ renewable energy arrangement in rural India should go hand in hand with Broadband infrastructure expansion. This is particularly borne out of our recent experience in the USOF tower project for providing mobile communication in rural India, which was**

**unsuccessful due to poor EB availability at both the Mobile Access POP ( BTS POP) as well as Customer premises equipment/ Mobile handset (CPE).**

- N. Also the expansion plan of the road network in the rural areas should be available in advance for better planning of the OFC laying routes, keeping in mind that, the asset is to be protected for long term use for more than 15-20 years.
- O. The small OFC laying Civil Contractors are actually the end rollout partners for any organization (Executing agency/TSP/MSOs). These smaller partners are key to success for any such large scale rollout. The Government needs to encourage and support these contractors with policies and funding / tax exemption for procuring machinery required for OFC rollout. Further, the Government should examine the country's manufacturing capacity for supply of required materials / equipment's for such large scale rollout (Duct, OFC Cable, accessories, Active equipment etc.) and necessary policy/ support should be extended to manufacturers to cater to the same.

### **Our query-wise submissions are as under:**

***Q.1 The —Report of the Committee on NOFN” has recommended three models and risks/advantages associated with these models. In your opinion what are the other challenges with these models?***

#### **Idea Response:**

- A. The TRAI has highlighted the three models. While each model has its pros and cons, the TRAI needs to consider the actual requirement of this project, which is to provide quality broadband to rural areas. While all three models and the BOOT model may be required in combination in long run, however the Authority needs to go beyond the three models and consider the best and most immediate option to achieve the aim of rural broadband.
- B. The immediate and the most practicable solution would be Infrastructure readiness for implementation of 3G/4G/broadband Access technology in the GPs for the connectivity to customer premises, schools, medical, Govt. institutions, commercial establishments and end private customers in rural India.
- C. **Thus the TRAI needs to consider and recommend that the fastest way to achieve broadband availability to rural areas is by incentivizing the existing Telecom operators (by setting clear targets linked with USO reduction) to reach to such rural markets.**

- D. Also, the proposed Access Network BharatNet would be incomplete without complete clarity on last mile access to the customer premises from the BharatNet POP in the Gram-panchayat( GP). The Authority would appreciate that the demand and usage by the end customers are the actual driving factor for the success of any model.
- E. It is to be noted that 3G/4G/ Broadband services cannot be provided without presence of Tower infrastructure at the GP and hence **both fiber connectivity and tower Infrastructure with adequate EB availability at the POP - as combined package is necessary for the broadband growth in Rural India.**
- F. Hence there needs to be a tower and communication shelter infrastructure built at each GP and same should be connected through the proposed BharatNet fiber network, so that a 3G/4G/Broadband Operator can bring the Access equipment ( BTS/ NodeB etc. ) and start providing the services.
- G. Also, as capex investment is higher for OFC rollout, the Operators have entered to IRU model for leasing fibers from each other & IP1 license holders. However some of the Govt. ROW Authorities do not honor the same and are threatening to remove the cable or demanding fresh ROW charges for Leased fibers. Thus, clear guidelines have to be issued to all the State/ central ROW authorities to honor IRU agreements and only the Principal operator should be required to take ROW approval.
- H. The TRAI consultation paper is silent on the Block to DHQ connectivity under assumption that operators are well connected to the Block. But as matter of fact that, the backhaul network is still weak and major operators are not even connected to all Districts. Block connectivity of major operators is much lower (even less than 50% for larger private operators in a circle excluding BSNL). Hence, without proper Backhauling Network, only rural access network will not be successful.

***Q.2 Do you think that these three models along with implementation strategy as indicated in the report would be able to deliver the project within the costs and time-line as envisaged in the report? If not, please elucidate.***

**Idea Response:**

- A. Only the three models described above may not only be sufficient as detailed in Q1. Combination of BOOT model and the three model in different Service areas may be required in long run.
- B. **However as highlighted above, the TRAI needs to consider and recommend that the fastest way to achieve broadband availability to rural areas is by incentivizing the existing Telecom operators (by setting clear targets linked with USO reduction) to reach to such rural markets.**
- C. Also we can plan to connect some of the GPs through Microwave for faster rollout and can switch over to OFC connectivity based on usages for which Tower infrastructure is must at GP and as highlighted, the Tower Infrastructure and OFC connectivity need to be considered as combined package.
- D. However as already highlighted, it is essential to have a concrete plan for Block to DHQ connectivity and **free ROW for making Backhaul DHQs/ Blocks connectivity viable for the Telecom operators.**

***Q.3 Do you think that alternate implementation strategy of BOOT model as discussed in the paper will be more suitable (in terms of cost, execution and quality of construction) for completing the project in time? If yes, please justify.***

**Idea Response:**

- A. BOOT model can be seen as successful in most of the Service Areas. The leading MSOs in a service Area should be encouraged to participate in the Auction **by encouraging them free ROW with payment of minimal actual restoration cost in other part of the State/ Service Area** for their backhauling Block -DHQ –State capital connectivity.
- B. The quality and timeline can also be better managed as they are one of the parties for end use. However the plan should be to have both Tower Infrastructure in each GP along with Fiber connectivity to the Tower Infra as a complete package.

***Q.4 What are the advantages and challenges associated with the BOOT model?***

**Idea Response:**

- A. The advantage is that the end user MSO, TSPs and ISPs are taking part in the Infrastructure development which would improve the ownership for Infrastructure quality and timely project completion.
- B. The challenges would be the readiness of the TSPs/MSOs in terms of Manpower & Man/machine availability- as whole - in the country with smaller Contractors who are actually the rollout partner for the TSPs & MSOs and Broadband operators.
- C. The TSPs/MSOs are currently occupied in their 3G/4G/ Broadband wireless Network rollout in major Urban markets / semi urban markets and with limited capex and resources it will be difficult for these operators to expand their network to rural areas where demand is less. Hence liberal Govt. support in terms of relaxed ROW payments and subsidy like tax relaxation for equipment procurement would be required.
- D. None of the TSPs have earlier done rollouts in the past going beyond a few thousand Kms per annum and such large scale rollout in short span is thus a really big challenge.
- E. Similarly, the overall capacity of the manufacturers in the country to supply the raw materials: Telecom Duct, Optical fiber & accessory has to be revisited for such large scale supply.

***Q.5 What should be the eligibility criteria for the executing agency so that conflict of interest can be avoided?***

**Idea Response:**

- A. The executing agency should have significant business presence in the Service Area and good Coverage in terms of mobile and broadband reach, to ensure faster project delivery.
- B. Conflict of interests can be avoided by enforcing adequate capacity build out plan and pre-defined tariff for capacity/ Fiber leasing.

***Q.6 Should there be a cap on number of States/ licensed service area to be bid by the executing agency?***

**Idea Response:**

Yes, there should be a Cap. This should avoid monopoly and also ensure distribution of work. As stated earlier, none of the TSPs and MSOs has earlier handled such a large scale rollout.

***Q.7 What measures are required to be taken to avoid monopolistic behaviour of executing agency?***

**Idea Response:**

- A. There should be clear predefined uniform capacity plan in place that would cater the capacity requirement of all the TSP,MSO, ISPs in the country. For example, the minimum Fiber capacity to be laid should be pre-defined, may be 96 fiber, which could suffice the requirement of all end users.
- B. The executing operator should be allowed to retain max. 50% of the fiber pairs for its own use and lease the balance to other operators based on their demand.
- C. **The tariff for leasing to other operators should be transparent and non-discriminatory pre-defined to avoid future conflict of interest and there should be periodic review by the Central SPV ( BBNL or any other Central agency) and the status of the rollout should be updated to all operators so that all operators can pre-plan their readiness for launching their services**

***Q.8 What terms and conditions should be imposed on the executing agency so that it provides bandwidth/fibre in fair, transparent and non-discriminatory manner?***

**Idea Response:**

- A. There should be pre-defined pricing structure for leasing of bandwidth and capacity to other operators. The License can be provided to the TSPs with predefined clause to provide **transparent and non-discriminatory** treatment the MSOs and other service providers.
- B. Also for uniformity, Future Scalable technology can be predefined which can cater to Country's and all MSO/TSPs current and future demand.

***Q.9 What flexibility should be given to the agency in terms of selection of route of laying optical fibre, construction, topology and deployment of technology?***

**Idea Response:**

- A. As stated in earlier suggestions, the network should have Ring architecture to avoid single point of failure & better network availability.
- B. The Transmission technology may be pre-defined for uniformity.
- C. The minimum no of fiber pairs to be laid should be defined whereas there may not any Upper Cap.
- D. The agency should be given free hand to define the upper limit of the access Network capacity although the minimum TX capacity of the ring should be defined to cater the requirements of all the MSOs, TSP/ISPs.
- E. The agency should be given free hand to select its technology / equipment and materials manufacturers for rollout.

***Q.10 What should be the methodology of funding the project? In case of VGF, what should be the method to determine the maximum value of VGF for each State/ service area and what should be the terms and conditions for making payments?***

**Idea Response:**

- A. The major cost is for the no of KM OFC to be laid and no of POPs (GPs) to be connected.
- B. The VGF funding should be linked to both these parameters. Shortest Routes connectivity between GP & Block can be planned to keep an upper Cap in Funding of VGF.
- C. The aerial distance calculated from geo Coordinates between Block & GPs with a predefined multiplication factor can be taken into consideration for defining this Upper CAP of route KM. This plan should be limited to only VGF Fund Calculation.
- D. However, the executing agency should be given free hand to choose its route as per its convenience, and the VGF funding can be limited to Max CAP route Km or actual Kms executed which is lower.



- E. There should be a condition of 100% VGF for connectivity of all the agreed GPs in agreed timeline and subsequent reduction if the timeline is not met.
- F. Also there should be a condition of minimum % GP connectivity within agreed timeline to become eligible for VGF payment.

***Q.11 What kind of fiscal incentive and disincentive be imposed on the agency for completing the project in time/early and delaying the project?***

**Idea Response:**

- A. There should be reward & penalty scheme. The agencies that can complete the work before agreed timeline may be provided predefined incentives (% of VGF money) and penalty should be considered from agreed VGF for delaying the project.
- B. Also there should be condition of minimum % GP connectivity within agreed timeline to become eligible for VGF payment.

***Q.12 What should be the tenure/period after which the ownership of the project should be transferred to the Government?***

**Idea Response:**

- A. As stated at the beginning, the Plan should be together for Tower at the GP with backhaul Fiber connectivity for complete readiness for 3G/4G/broadband technology expansion.
- B. This is taking longer duration return on Investment due to high Capex investment and less demand in the rural market (approx. 20 years).
- C. Hence the executing agency should be allowed to retain the network for 15-20 years.
- D. Moreover, there should be clear future plan laid for maintaining such large scale network by Govt. as there would be much challenges to maintain such at the verge of end of life OFC Network.

***Q 13 Do you think that some measures are to be put in place in case the executing agency earns windfall profits? How should windfall profits be defined?***

**Idea Response:**

- A. The business case viability can be defined based on some predefined no of fiber pairs leasing / bandwidth sharing per POP.
- B. As it is a rural market, it does not appear that the agency will earn handsome profits. It needs to be kept in consideration that any limitation here may on other hand discourage the TSP/MSO from participating in the auction.

***Q.14 Whether there is a need to mandate the number of fibres to be offered as a dark fibre to other operators to ensure more than one operator is available for providing bandwidth at GP level?***

**Idea Response:**

- A. **As the infrastructure is getting built with part public money, for affordable Broadband connectivity, there should be a minimum of 50% of the built capacity to be leased to a MSO/BSOs.**
- B. Minimum 96 fiber (48 pair deployment) should be laid so that there is sufficient capacity built up to cater to 10-12 MSO/BSO & the Government needs.
- C. Further, a Cap of 4 pair per operator can be mandated, which should be sufficient for any operator wanting to build its rural access Network.

***Q.15 What measures are required so that broadband services remain affordable to the public at large?***

**Idea Response:**

- A. **The immediate and the most practicable solution would be Infrastructure readiness for implementation of 3G/4G/broadband Access technology in the GPs for the connectivity to**

customer premises, schools, medical, Govt. institutions, commercial establishments and end private customers in rural India.

- B. **Thus the TRAI needs to consider and recommend that the fastest way to achieve broadband availability to rural areas is by incentivizing the existing Telecom operators (by setting clear targets linked with USO reduction) to reach to such rural markets.**
- C. As seen the capex involvement in the Block to GP access network as well as Tower infra readiness in the GP are high which does not make the business case viable for any TSP/MSO to operate in rural. Hence **incentivizing the existing Telecom operators (by setting clear targets linked with USO reduction) to reach to such rural markets is essential.**
- D. Further, the major cost in Rural operation, the backhauling cost as well as Tower sharing infra cost should be lower.
- E. Again as stated, most of the major telecom operators are not connected to the Blocks and DHQs due to higher ROW cost. The ROW cost should be rationalized and **preferably free for all across the country (with minimal actual cost restoration charges only)** for affordable broadband to the public at large.
- F. The MSO/ BSO have to only plug in their end equipment. With overall investment cost for them getting lower with Govt. Infrastructure arrangement, affordable broadband can be made feasible by them in rural consumers.

***Q.16 What safeguards are to be incorporated in the agreement entered between Government and executing agencies if RoW is not being granted to the executing agency in time?***

**Idea Response:**

- A. There must be 30days timeline for allocation of ROW permission free of cost to the Executing agency.

- B. In case of delay beyond 30 days, there should be Single point of Contact Cell at State and Central Govt. to address the ROW permission issue of Authorities pertaining to State and center jurisdictions respectively who would address within max 15 days.

***Q.17 The success of BOOT Model depends on participation of private entities which will encourage competition. What measures should be adopted to ensure large scale participation by them?***

**Idea Response:**

- A. As stated already, the Block to DHQ connectivity is still poor. This is due to high ROW charges being levied by various authorities. The Fibre penetration being Low, Government should encourage fiber laying with **free ROW (with minimal actual restoration charges only) to the participating Operator in the State/ Service area for its backhaul DHQ & Blocks & connectivity to other major towns.**
- B. This would encourage the MSOs, TSPs for further expansion into rural markets with Govt. Funding for Infra build-out.
- C. So if the Government would support with higher Viability gap USOF funding for broadband and tower infra readiness, operators would definitely participate for BOOT model, which is an opportunity for them to expand their business.

***Q.18 Please give your comments on any other related matter not covered above.***

**Idea Response**

- A. The proposed consultation is silent on the Block to DHQ connectivity, while major telecom operators still do not have connectivity to most of the blocks. The same needs to be reviewed.
- B. As stated earlier, none of the operator has gone for such large scale rollouts earlier. It is anticipated that country's manufacturing capacity and the end Contractors may not be equipped to cater to such mass requirements. Hence, there is a need to put in place conducive policies for raw material production supported with tax benefits on procurements related to the equipment required for execution along with tax benefits to MSO/BSO on end Access equipment BTS/Node B procurements for rural deployment.

- C. Also the proposed plan should include ring architecture in the rural access network for better availability of the Network in place of the present plan of linear GPON technology.
- D. More Importantly, Power availability across Rural India should be stabilized for both the Broadband Access network Uptime availability as well as Availability of CPE of the end user. Here it is pertinent to mention that the earlier implemented USOF Towers for 2G mobile connectivity in Rural India was almost a failure due to poor EB and power availability.
- E. A major challenge of OFC Networks is Operation & Maintenance for Long Term protection of assets from any damages / road expansion for use for 15-20 years. Availability of skilled manpower at the rural pockets for O&M of the network would be a challenge and the Government would need to set up training infrastructure to groom and train rural talent.
- F. Lastly, the Government would have to plan for utilization policies etc. (Like digitalization of Govt. activities) so that there should be demand for utilization of broadband network created in rural areas. As per our experience, there is limited demand for the Broadband Infra already created in some of the rural pockets.

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