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|  | **ASIA-PACIFIC TELECOMMUNITY** |
| **2nd Meeting of SATRC Working Group on Spectrum in SAP-IV** | **Document****WGSPEC-02/INP-06** |
| 11-12 March 2014, Tehran, Iran | **11 March 2014** |

Nepal Telecommunication Authority

**QUESTIONNAIRE REGARDING requirements and availability of spectrum for mobile broadband**

Considering the rapid increase in the volume of data traffic in the past few years which is accelerated by the introduction of new technologies and their related applications, this Questionnaire is developed to collect the information on the recent usage of mobile communication system in order to see the change of total volume of mobile communication traffic in each SATRC country towards the future and to gather information on the mobile market and services expected to be used from around 2014 to 2020 for the analysis and forecast of services and market aspects which leads to the estimation of the spectrum requirements for future development of mobile broadband and suggestion of harmonized approach to make the spectrum bands available.

1. What's the total number of subscription per year, traffic volume of mobile communication per year in the unit of Giga Bytes during past five years, including voice and data? If separation on voice and data is possible, please provide the data of each one. Please provide detail annual information, for example, based on the following table format. Elaborate the Subscriptions with Mobile Subscriber Growth Rate (with Pictural Presentation-Bar Chart) since 2008 to 2013.

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| **The end of the year** | **2008** | **2009** | **2011** | **2012** | **2013** |
| The number of subscriptions ofmobile phone |  |  |  |  |  |
| Population estimate |  |  |  |  |  |
|  voice traffic volume |  |  |  |  |  |
| Data traffic volume |  |  |  |  |  |

1. Estimate the traffic volume of mobile communication per year in the unit of Giga Bytes including voice and data till 2020 as per the followings? Elaborate the Subscriptions with Mobile Subscriber Growth Rate (with Pictural Presentation-Bar Chart) since 2015 to 2020.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| The number of subscriptions ofmobile phone |  |  |  |  |  |  |
| Population estimate |  |  |  |  |  |  |
|  voice traffic volume |  |  |  |  |  |  |
| Data traffic volume |  |  |  |  |  |  |

1. What are the new services or applications that have gained popularity among large number of users in your mobile network in past few years? If necessary, please provide detail description. (e.g. Mobile Internet Applications (e.g. Facebook, Twitter, email, Voice, Internet access, games, e-commerce, remote education, telemedicine, multimedia applications)
2. What are the services or applications that generate large amount of mobile data traffic in your mobile network?
3. What would be the basic services & applications in the future in your mobile network?
4. What would be the expected profitable services and applications in the future in your mobile network?
5. Provide the number of 2G, 3G, and 4G Base Stations since 2008 to 2013. Also provide your estimation/forecast for Network 2G, 3G and 4G Base stations upto 2020.

8. What would be the spectrum requirement for the deployment of 2G, 3G, and 4G networks till 2020 in your country? Use appropriate/rational Model for the Calculation of spectrum with annual growth.

9. What would be the technical process of estimating the spectrum requirements for mobile communications? Elaborate in respect of Definition of services, Market expectations, Technical and operational framework, and Spectrum calculation method.

10. What would be the estimated voice traffic and data traffic in the Geotypes- Rural, sub-urban, and urban areas for Spectrum BW Required for 2G, 3G & 4G spectrum?

11. Do you have specific plan for launching of 4G network. If yes provide the scheduled plan for the deployment.

12. What are some of the emerging technologies that providers may consider deploying in their respective network architecture in the next 8 years i.e by 2020 ?

13. What type of Radio environment (RE) do you explore in the future upto 2020 in your country**?** Note that REs are defined by the cell layers in a network consisting of hierarchical cell layers, i.e. macro, micro, pico and hot-spot cells.

14. Point out the different existing spectrum bands/bandwidth those are available for mobile celular technologies in your country. Mention with the lower and upper frequency along with the corresponding BW.

15. Explore the possible spectrum bands/BW for the celluar mobile technologies to be availed to cater the market demand by 2020 in your country. Point out the possible bands along with the BW.

16. What are the mobile network factors that you considered the most influencing to decide on if the mobile network should be evolved or not?

* 1. Coverage [ ]  <please provide details here>
	2. Mobile penetration [ ]  <please provide details here>
	3. Traffic volume [ ]  <please provide details here>
	4. Service and application [ ]  <please describe your answer here>
	5. Technology and industry progress [ ]  <please provide details here>
	6. Others [ ]  <please describe your answer here>

17. Do you have a mobile broadband deployment plan?

* 1. Yes. [ ]
	2. No. [ ]

18. what kind of mobile broadband deployment plans do you have?

1. Area coverage by 2020? <please describe your answer here>
2. Population coverage by 2020? <please describe your answer here>
3. Available spectrum by 2020? <please describe your answer here>
4. Number of forecasted mobile broadband users by 2020? <please describe your answer here>
5. Forecasted traffic volume of mobile communication including voice and data up to 2020. If separation on voice and data is possible, please provide the data of each one? <please describe your answer here>
6. Others [ ]  <please provide details here>

19. What are the principles that you take into account during your spectrum planning?

* 1. Global harmonization [ ]
	2. Easily to be deployed and used [ ]
	3. Impact of the services/applications in the adjacent bands [ ]
	4. Low CAPEX and OPEX [ ]
	5. Others [ ]  <please describe your answer here>

20. What are the factors that influence your decision on spectrum management and network deployment?

* 1. Maturity of commercialization network [ ]
	2. Terminal availability [ ]
	3. Terminal price [ ]
	4. Others [ ]  <please describe your answer here>

21. Provide any other relevant issues regarding the spectrum requirment for mobile broadband.