

# **Mobile Internet Connectivity Report**

## **(April - June, 2018)**



**Division of Telecom & Space (DoTS)**

**Department of IT and Telecom**

## **Executive Summary**

In compliance to the instruction of the Hon'ble Prime Minister to check and monitor the quality of Internet in the Dzongkhags, the DITT/MoIC has prepared the seventh report for this fiscal year based on data inputs collected by the Dzongkhags.

## **Objective of the study**

To study the quality of mobile Internet connectivity in Bhutan

## **Methodology**

A dashboard was prepared for monitoring/measuring the quality of telecom services based on different parameters listed as follows:

- Internet speed using the OpenSignal app.
- Call blocking rate
- Call dropping rate
- Voice Quality
- SMS received/sent failure rate
- Signal coverage
- Switchover

This dashboard is being shared with the Dzongkhag ICT Officers. The ICT officers were given instructions on the usage of the dashboard via email, letter and telephone after which they were asked to carry out and record measurements on above parameters from time to time on a monthly basis starting July, 2016. This data collection is an ongoing process and will be refined from time to time.

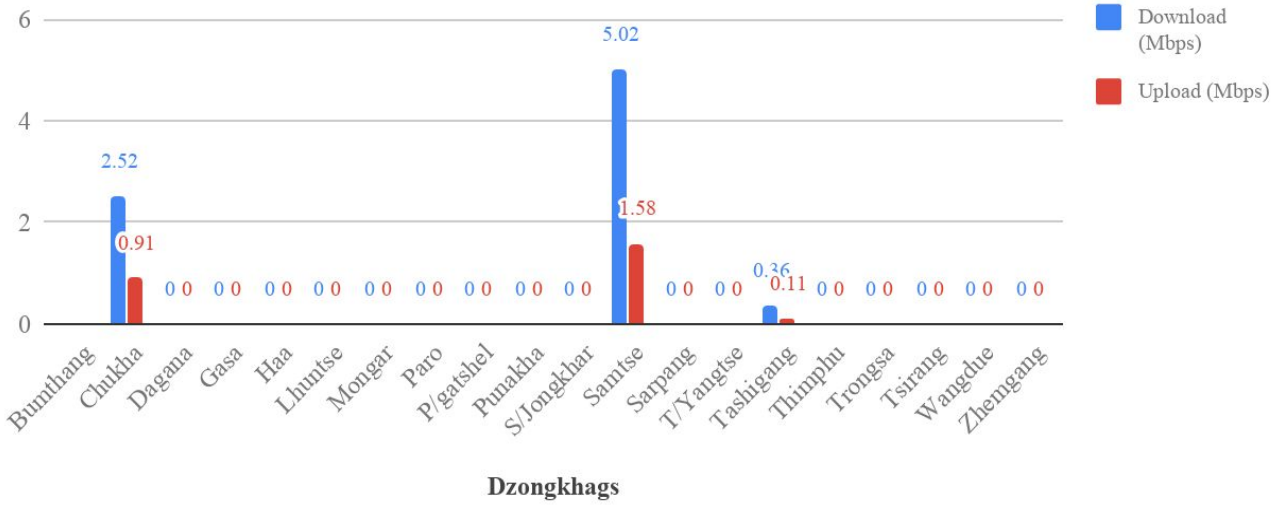
In this reports, we have displayed the five lowest & five highest average mobile Internet speed from the twenty Dzongkhags in the form of column chart. Based on inputs provided by the Dzongkhag ICT Officers, data has been analysed and compiled as shown below.

## **Key Findings**

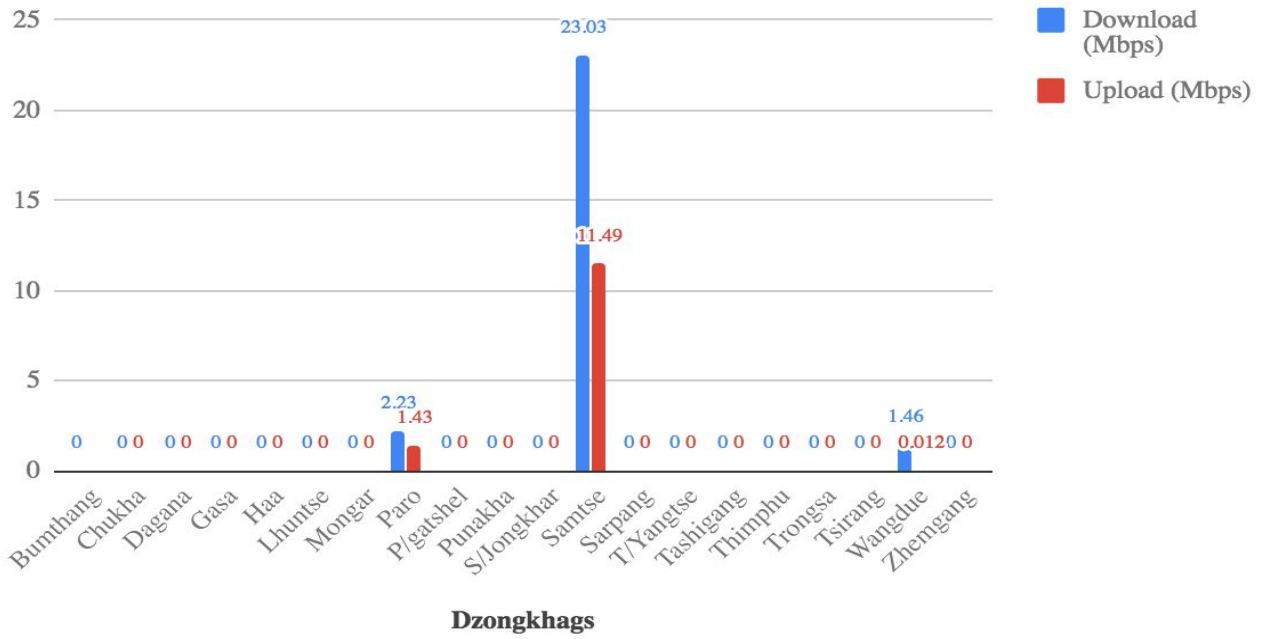
Based on the data submitted by all the twenty Dzongkhags (average mobile Internet speed (upload speed and download speed) of each dzongkhag has been compiled in Table 1 below.

<b>Mobile Internet speed (Avg.) for Different Dzongkhags</b>									
<b>Sl.No</b>	<b>Dzongkhags</b>	<b>TASHICELL</b>				<b>BHUTAN TELECOM</b>			
		<b>3G</b>		<b>4G</b>		<b>3G</b>		<b>4G</b>	
		<b>Download (Mbps)</b>	<b>Upload (Mbps)</b>	<b>Download (Mbps)</b>	<b>Upload (Mbps)</b>	<b>Download (Mbps)</b>	<b>Upload (Mbps)</b>	<b>Download (Mbps)</b>	<b>Upload (Mbps)</b>
1	<b>Bumthang</b>					1.97	0.39	18.24	6.10
2	<b>Chukha</b>	2.52	0.91			3.46	1.24	22.25	4.37
3	<b>Dagana</b>					1.74	0.53	26.35	2.24
4	<b>Gasa</b>					2.84	2.24	14.95	14.59
5	<b>Haa</b>					1.34	0.85	24.18	15.86
6	<b>Lhuntse</b>					0.91	0.88		
7	<b>Mongar</b>					1.9	0.223	25.02	10.38
8	<b>Paro</b>			2.23	1.43	1.35	4.06	10.86	11.39
9	<b>P/gatshel</b>							34.72	12.88
10	<b>Punakha</b>					23.16	1.6		
11	<b>S/Jongkhar</b>					1.43	0.45		
12	<b>Samtse</b>	5.02	1.58	23.03	11.49	0.66	0.47		
13	<b>Sarpang</b>							30.59	5.59
14	<b>T/Yangtse</b>							21.11	6.55
15	<b>Tashigang</b>	0.36	0.11					35	15.73
16	<b>Thimphu</b>							18.85	11.10
17	<b>Trongsa</b>					1.61	1.78	24.18	7.13
18	<b>Tsirang</b>					1.44	0.86	11	4.53
19	<b>Wangdue</b>			1.46	0.012	1.92	0.47		
20	<b>Zhemgang</b>							36.89	8.69

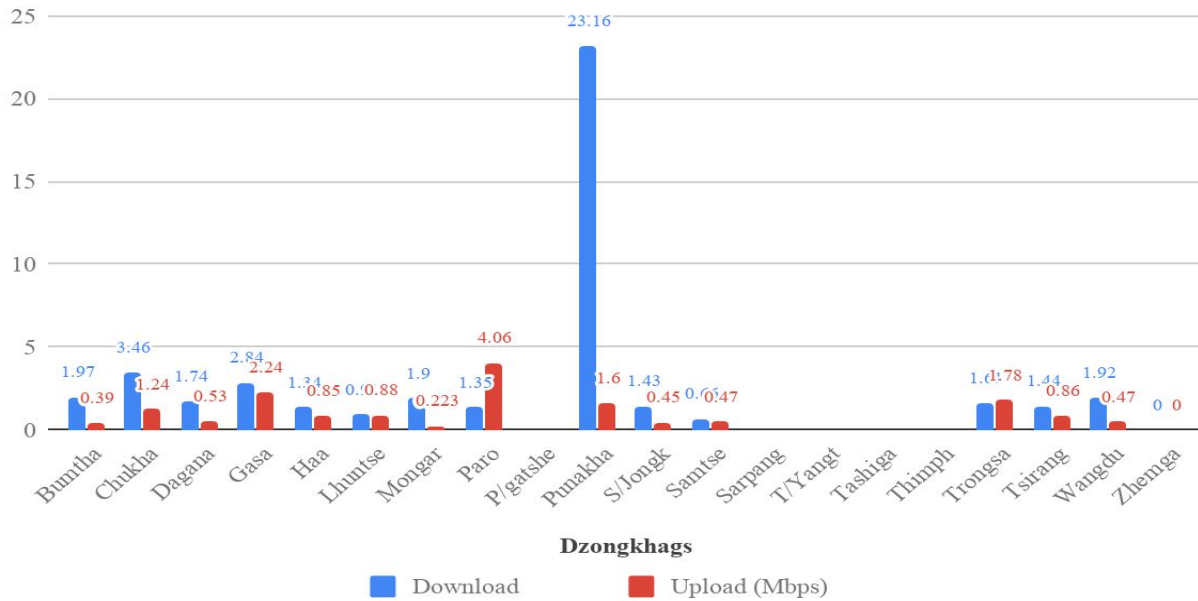
## Tashicell 3G Services



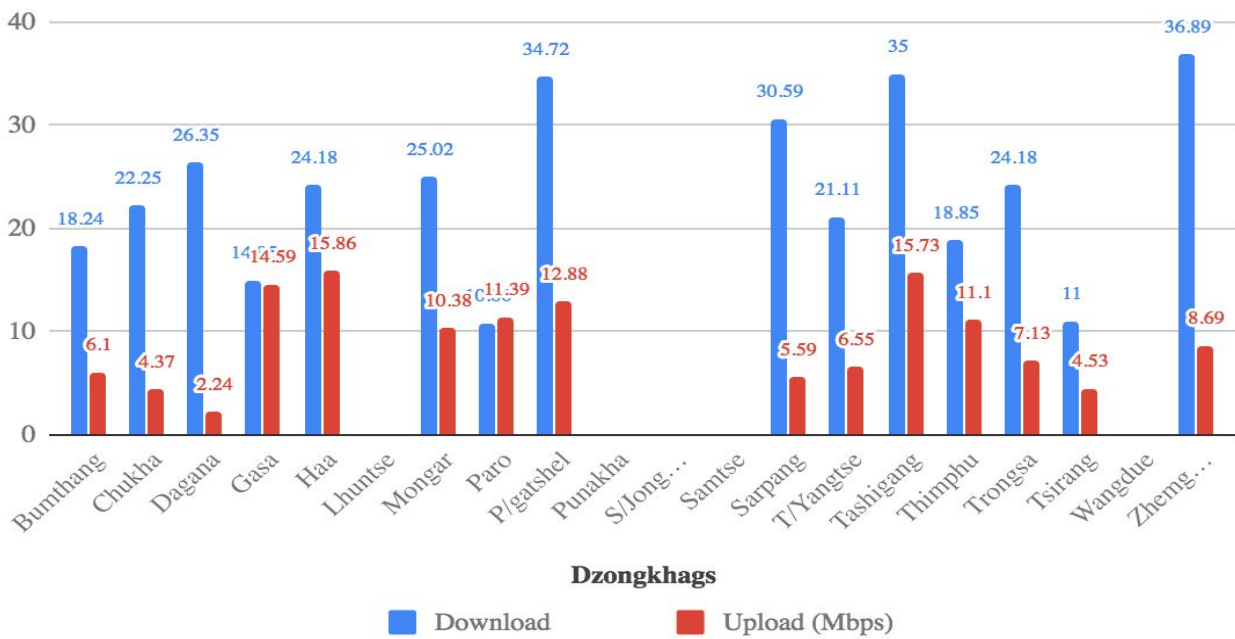
## Tashicell 4G Services



### BhutanTelecom 3G Services



### BhutanTelecom 4G Services



The following observations were made from the above graphs:

1. Most of the dzongkhag ICTOs has provided the data using the Bhutan Telecom services
2. Samtse dzongkhag has observed highest avg. downloads and uploads speed with (5.02 Mbps & 1.58 Mbps) for 3G, and (23.03Mbps & 11.49 Mbps ) for 4G Tashicell Services.
3. Trashigang has observed lowest avg. downloads and uploads speed for Tashicell 3G services (0.36 Mbps & 0.11 Mbps) and Wangdue dzongkhags has lowest downloads and uploads (1.46 mbps & 0.012 mbps) for Tashicell 4G services
4. Punakha dzongkhag observed highest avg. downloads speed with 23.16 mbps and Samtse dzongkhag has lowest with 0.66 mbps on Bhutan Telecom 3G services.
5. Paro dzongkhag has highest upload speed with 4.06 mbps and lowest for Mongar with 0.223 mbps on Bhutan Telecom 3G services.
6. For Bhutan Telecom 4G services, Zhemgang has observed highest download avg. speed with 36.89 mbps and lowest with 10.86 mbps for Paro dzongkhag.
7. Haa dzongkhag has observed highest avg. upload speed with 15.86 mbps and lowest with 2.24 mbps for Dagana dzongkhag in Bhutan Telecom 4G services.
8. Overall voice quality for every dzongkhags has observed good in both the telecommunication network services.

## **Conclusion**

From this report, it has been observed that the download speed is higher than the upload speed in most of the dzongkhags, as would be preferred by the end users. An inconsistency is observed in the data rates which could be due to network issue or events like higher access at certain times.

## **Constraints**

This study has been limited by following constraints:

- Inconsistent and irregular internet speed measurements.
- Some concerned Dzongkhags ICT Officers failed to provide input of the measurements.
- Few dzongkhag ICT officers has provided data input about Tashicell Services beside its coverage.