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ANNUAL REPORT 2019-20

འབྲུག་བར་དོན་བརྒྱུད་འབྲེལ་དང་བར་བརྒྱུད་དབང་འཛིན།
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VISION

“To be a premier Information, Communications and Media Regulator”

VISION

MISSION

MISSION

“To foster an environment for fair and sustainable competition, stimulate innovation, encourage investment, ensure that all Bhutanese have access to quality ICT & Media services at affordable prices founded on the principles of Gross National Happiness”



DIRECTOR'S FOREWORD

It has been exactly eleven months since my appointment as the Director of BICMA and I am extremely pleased to present our achievements and experiences for the financial year 2019–2020. Firstly, let me formally thank Dasho Chencho Dorji, Secretary, Ministry of Works and Human Settlements for his leadership and numerous contributions as the former Director General of BICMA. Several programmes of long term interest to BICMA had been initiated under his stewardship and my task during the year has mostly been to further those initiatives. BICMA's strength lies in its hard working staff and I shall remain ever grateful to the young and enthusiastic team for making this transition a very smooth one.

Working in the ICT and Media regulatory agency means dealing with a dynamic industry, where we are confronted with distinct challenges almost every day. Even though BICMA follows the overall Royal Government's civil service system of setting certain work targets for every financial year, we spent more than half of our time solving and negotiating issues/ challenges of the licensees. Therefore, my experience indicates that our staff will have to work even harder to achieve the planned target for the financial year and also attend to the pressing needs of our licensees.

The year 2019 – 2020 had seen the unfortunate issue of dealing with the COVID-19 pandemic and we lost over three months by following the work from home model and concentrating only on critical services. Some of the planned programmes were either postponed or cancelled so as to avoid physical contacts and large gatherings. However, we are delighted to share that we could meet our targets on time and accomplish several programmes despite the challenging situation.

Driven by the ever increasing consumption of internet data, Bhutan's capacity has leaped from a few synchronous transport module (STM) capacities in 2011 to over 40Gbps bandwidth today. To steer the nation towards becoming a more technology and internet savvy society, the Authority has been working closely with the service providers to explore the possibilities for a downward tariff revision of fixed and mobile broadband. To this end, we managed to bring down the tariff for data by over 10% in 2019-2020. While reducing the data tariff, the Authority also ensured the quality of service by consistently monitoring the performance of the service providers.

Furthermore, since the inception of the Authority "*connecting the unconnected*" has been our imperative annual target and in the last financial year, we successfully took mobile network coverage to almost 400 households spread across 10 Dzongkhags. Similarly, mobile connectivity along the major highways in the country was also monitored and measurements were taken to avoid long stretches of road without mobile services. The remedial measures along the Thimphu-Phuentsholing highway were successfully completed and others are also in the pipeline.

Keeping in mind all the achievements in the last financial year, we are looking forward to yet another fruitful year (2020-2021) to undertake major studies and work towards creating a user friendly ICT and Media market with affordable services in the country.



Jigme Wangdi
Director

OUR CORE VALUES



PROFESSIONALISM

We ensure results without compromise...
We work professionally and collaboratively to deliver results and facilitate our clients without prejudice.



ACCOUNTABILITY

We are responsible for our actions...
We take responsibility for our actions and value the ability of our staff and organization to honour our commitments.



INNOVATION

We anticipate change and shape it to fit our purposes...
We keep pace with the rapid technological changes and promote new technologies and employee development programs.



TEAMWORK

We are committed to a common goal...
We are one organization, one team committed to build an environment where every person is encouraged and appreciated for his/her efforts.



INTEGRITY

We do the right thing...
We are transparent, honest and ethical in all our interactions with employees, clients, and the public.

01

CHANGE IN THE LEADERSHIP OF THE AUTHORITY

The year saw a major change in the leadership of Bhutan InfoComm and Media Authority (Authority) as follows:

- i. Dasho Phuntsho Tobgay, Secretary for Ministry of Information & Communications was appointed as the new Chairperson of the Authority; and
- ii. Mr. Jigme Wangdi, the former Chief of Resource Management Division, BICMA took over as the Director of BICMA on 17th July 2019 after the former Director General, Dasho Chencho Dorji was appointed as the Secretary to the Ministry of Works and Human Settlement.

02

HUMAN RESOURCE

2.1. Current Staff Strength

The total staff strength of the Authority as of June 2020 is 30 (14 male and 16 female).

2.2. Civil Service Award

On 5th December 2019, three officials of the Authority received Civil Service Awards in recognition of their service to the nation. Mr. Lakshuman Chhetri, Chief Information & Media Officer was awarded the Gold Medal for completing 30 years of service and Ms. Tshewang Choden, Senior Research Officer & Ms Sonam Lhamo, Senior ICT Officer received the Bronze Medal for 10 years of their service to the nation.

2.3. New Appointment

During the year, three employees; Mr. Norgay, Communication Officer, Ms. Pema Choden, Communication Officer and Mr. Mon Bdr Parey, Driver joined the organization.

2.4. Transfers

During the year, four officials from the Authority were transferred to different agencies and one official joined the Authority on lateral transfer.

2.5. Resignation and Early Retirement Scheme

During the same year, five officials resigned from service. While three employees resigned on voluntary basis, other two employees resigned on early retirement scheme. In the same year, two employees terminated their contract taking the total staff strength of the Authority to 30.

03

ICT AND MEDIA SECTOR AT A GLANCE (AS OF JUNE 2020)

The Authority is mandated to issue and monitor the following ICT and media establishments in the country:

1.1. Glimpse of Media and Broadcasting Sector:



Cable TV Services

- » As of June 2020, the Authority has issued 93 cable licenses which includes five new licenses issued in the financial year 2019-2020
- » The Authority has licensed Bhutan NetCom as the first ever Multi-Service Operator (MSO) in October 2019, to purchase channels from broadcasters and distribute cable television (CaTV) signal to the local cable operators in the country.

1.2. ICT LANDSCAPE

Fixed Telephony



The Bhutan Telecom is the only fixed-line telephone service provider in the country. As compared to 2019, its market share has increased by 1.26 %.The Average Revenue Per User (ARPU) for the year ending 2019 is Nu.330.

Cellular Mobile



As of June 2020, the total mobile cellular subscribers have increased by 1.98 % as compared to previous year. The mobile cellular subscribers' market share is given in figure 1. The ARPU for mobile service for year 2019 is Nu. 544.

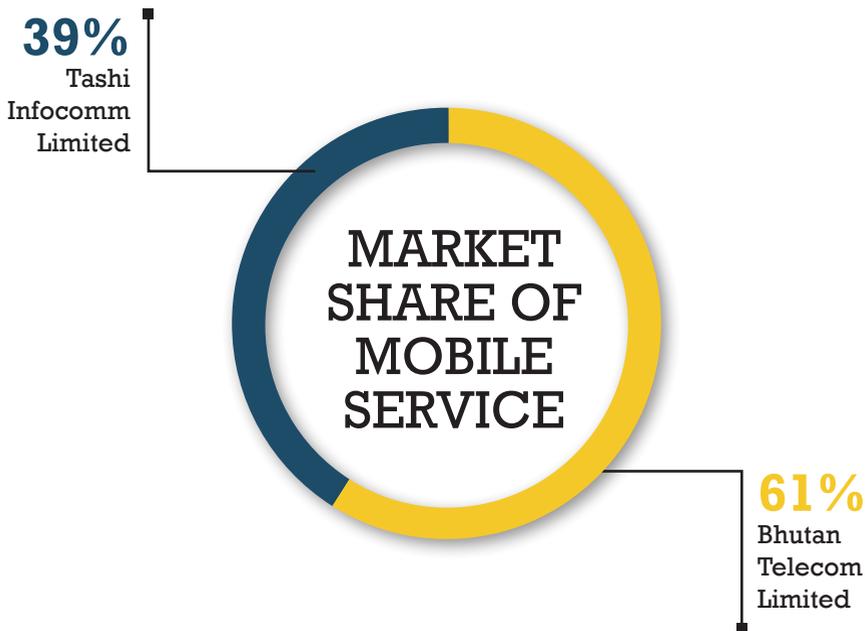


Fig 1: Market Share of Mobile Service

Fixed Broadband Service Provider and its Market Share

- » There are 3,356 fixed broadband subscribers in the country. The market share of fixed broadband subscribers is as in figure 2.

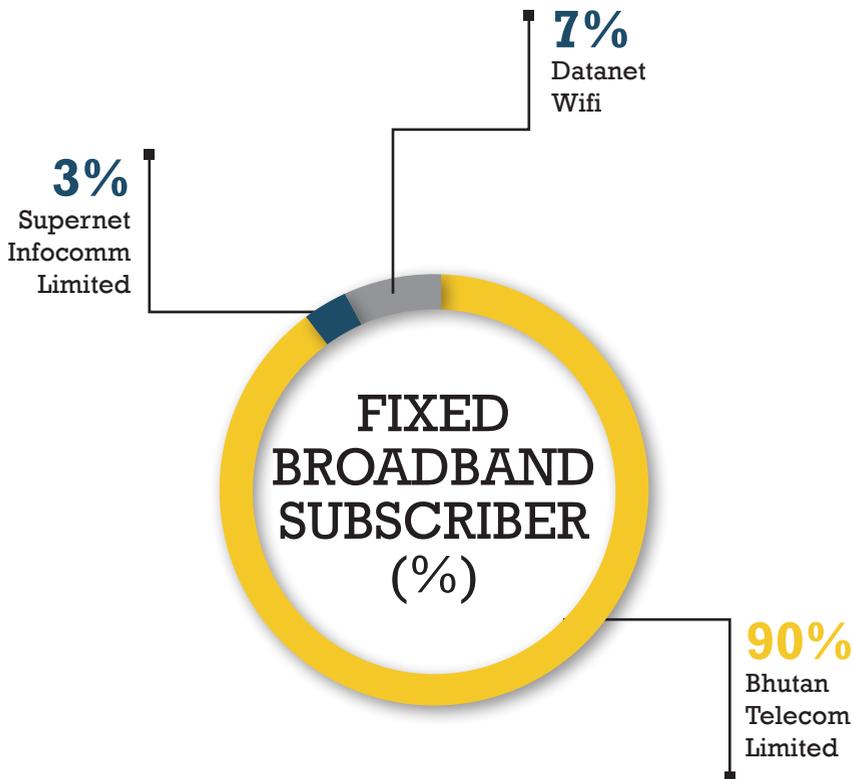


Fig 2: Fixed Broadband Subscriber (%)

Internet Leased Line Service Providers

» There are 3,101 leased-line broadband subscribers in the country. The leased-line market share of each service provider is given in figure 3:

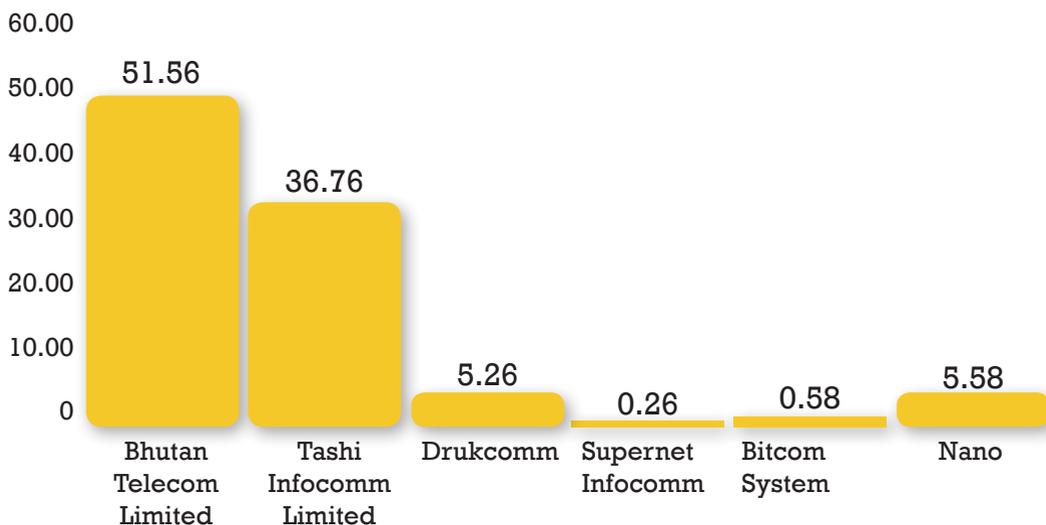


Fig 3: Leased-line broadband subscribers (%)

04

REFLECTION OF THE ACTIVITIES

During the Financial Year 2019-2020, the Authority implemented the following activities:

4.1. Regulatory Frameworks

4.1.1. Formulation of New Regulatory Frameworks

In keeping with the technology advancement to protect ICT and Media consumers and for the effective regulation of ICT and Media sectors, the Authority developed the following regulatory frameworks:

- » Regulatory framework for 5G deployment in Bhutan
- » Frequency channel plan for fixed point to point radio system in microwave band
- » Guideline for Assigning the Signaling Point Codes in Bhutan
- » Rules and Regulations for Licensing and Operation of Multi-Service Operator (MSO)
- » Guideline for Allocation of Spot Frequency for Land Mobile Radio

4.1.2. Review of Existing Rules

With the enactment of the Information, Communications and Media Act of Bhutan 2018, the Authority reviewed the existing Rules and Regulations for the Operation of Cable Television Service and aligned them with the legal provisions of the Act.

4.2. Public Service Delivered for 2019-2020

Towards ensuring effective and efficient public service delivery, the Authority successfully maintained its turn-around time for its issuance of service delivery to two days. The diagram below shows the details of service delivered in the year 2019-2020:

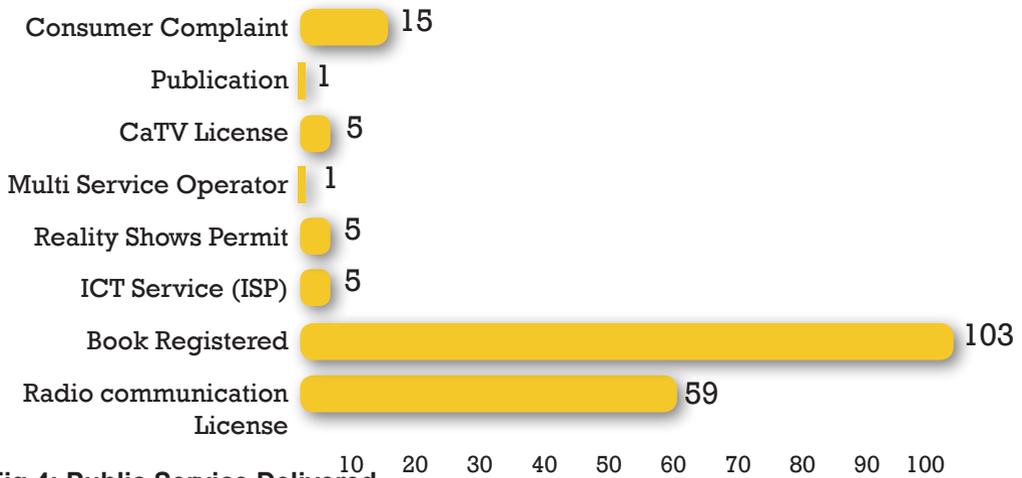


Fig 4: Public Service Delivered

4.3. Verification of Telecommunication and Broadcasting Stations' EMF (electromagnetic field)

In order to ensure that all Cellular Base Transceiver Stations (BTS) are safe, the Authority carried out the measurement of EMF exposure from BTS stations in the country.

The Authority completed the EMF exposure measurement of 106 BTS located in 10 Dzongkhags (Thimphu, Chukha, Samtse, Paro, Gasa, Punakha, Wangdue, Tsirang, Dagana and Sarpang).

The measurement of EMF exposure is carried out based on the safety standards recommended by the International Commission on Non-ionizing Radiation Protection (ICNIRP).



4.4. Radio Spectrum Monitoring

Radio Spectrum Monitoring is a process of observing the radio frequency spectrum usage to realize its efficient usage and to minimize the radio interference. The two types of radio frequency monitoring system are based on the fixed and mobile radio monitoring systems.

The Authority has one fixed radio monitoring station at Tsirang (Rakshedrangra) and one handheld Spectrum monitoring system using Spectrum Analyzer. During the year, the Authority carried out the radio spectrum monitoring in 5 Dzongkhags (Thimphu, Paro, Dagana, Tsirang and Sarpang).

4.5. Quality of Mobile Service

The advancement in mobile technology and the increase in mobile penetration have led to the expectation for better quality of mobile services. In order to ensure consumer satisfaction, the Authority monitors the Quality of Data and Voice Services on a monthly basis.

In general, both service providers did not face major issues both in terms of mobile and data services. However, for the month of October 2019 to April 2020, there was some network congestion due to increase in users. Based on the drive tests conducted, the results are shared with the service providers to further improve the telecommunication services and rectify the shortcomings. The Authority monitors the performance of the service providers on a quarterly basis.

Furthermore, recognizing the importance of mobile coverage along national highways during the time of emergencies and disasters, the Authority initiated drive tests along the national highways. The Authority completed assessment of 10 national highways as of June 2020 and the details of the black spot areas along these national highways is given in Annexure I.

4.6. Reduction of Tariff

In line with the policy objective of Bhutan Telecommunications and Broadband Policy 2014 to make internet and telecom service affordable for all people in Bhutan, the Authority has been able to reduce the tariff on mobile data and internet leased line by 25.5% and 78.9% respectively. The lower data rate will help in unlocking the untapped benefits of the internet especially in remote areas as the government ventures into online services and also accessing online news.

4.7. Fibre Monitoring System

The Authority supported the establishment of Fibre Monitoring System (FMS) by providing Nu.19.5 million from Universal Service Fund to DITT, Ministry of Information and Communications. The FMS was established with the aim to resolve and improve the reliability of fibre network in Bhutan.

4.8. Student Internship

The Authority engaged 5 students from the College of Science and Technology (CST) and 4 students from Sherubtse College for a month as a part of their On-Job Training module.

The CST students were introduced to functions of spectrum analyzer and ways to monitor the radio frequency using the equipment. The Authority also presented a short demonstration on EMF (Electric Magnetic Field) to measure the radiation from the towers as per ICNIRP standards.

The Sherubtse college students carried out review and studies on the print media houses (newspapers) and contents of cable television. They were also attached with the selected Newspaper media houses to get hands-on training and experience.

4.9. Studies Undertaken

4.9.1. Pricing of CaTV Services

In order to streamline the price ceiling for the cable television services and improvise the mechanism adopted for determining the cost of providing cable television related services and the sustainability of the cable industry itself, a related study was undertaken by the Authority and accordingly submitted to the Board for its approval.

4.9.2. Mobile Number Portability

In an effort to provide healthy competition among the mobile cellular providers by removing barriers to switch from one network to another, a study was undertaken by the Authority with an objective to require cellular telecommunications operators to offer so-called mobile number portability (MNP) or number portability. The study is completed and will be submitted to the board for its approval and implementation by the Authority.

The Authority plans to advocate people on MNP and its advantages through media (print and broadcast) as well as public consultation. Since its implementation would cost a huge amount, the Authority is in the process of reviewing financial feasibility and accordingly implementing it in the future.

4.10. The Universal Service Programme

4.10.1. Rural Communication Programme (RCP)

The Authority successfully commenced the RCP-Phase V on January 2019 and will be completed by July 2020. Through this phase, 389 households under 35 villages in 10 Dzongkhags along with 4 Cordyceps collecting areas, 6 yak herding places, Jomolhari Lhakhang and RBA Outpost under Soe Gewog, Thimphu will have mobile network. The villages will be connected with 2G, 3G and 4G mobile communication services. The Authority allotted approximately Nu 159 million for Phase V to connect these unconnected villages.

The Authority also conducted physical verification of designated villages/ places under RCP-Phase V as provided in **Annexure II**. According to the findings, the service providers were directed to provide services as per the Programme Implementation Agreement.

4.10.2. Verification of Unconnected Villages

As per the database received from the Dzongkhags, the Authority carried out physical verification in 4 Dzongkhags as provided in **Annexure III**. Based on the findings, the Authority will include the uncovered villages in the upcoming Rural Communication Programme.

05

INITIATIVES IN RESPONSE TO COVID-19



5.1. Ku Band Dish Installation to Access BBS TV in Rural Community

Based on the data collected from the respective chiwogs in the country, there are 39,461 households (HHs) in rural Bhutan without BBS TV connectivity (28,918 HHs without television sets and 10,543 HHs that have TV sets but no BBS TV connectivity). This is approximately 24% of the total households in the country without BBS TV connectivity.

To facilitate the rural community avail the BBS TV signal, the Authority issued 6 Permits to supply and install the Ku band dish equipment in March and April 2020. The permit holders have installed 325 Ku band so far. The Authority in collaboration with the Department of Information and Media (DoIM) also developed the implementation plan to make all unconnected households access BBS TV.

This initiative aimed at enabling the rural community have access to information, announcements, e-learning and entertainment programs and create an informed society.

5.2. Mobile Data Tariff Revision for Students

Due to the COVID-19 pandemic, schools were closed and workplaces had to enforce work-from-home by the end of March 2020. To avoid disruption and to facilitate the continuation of studies, Ministry of Education (MoE) adopted online teaching and as a result, consumption of mobile data increased, particularly by students. Therefore, the special mobile data package exclusively for students was approved.

BHUTAN TELECOM				
Package	Data(MB)	Revised Data	Timings	Validity
45	692	700	7AM-6PM	7 Days
95	1472	1600	7AM-6PM	30 Days
195	3078	3500	7AM-6PM	30 Days
495	9444	9900	7AM-6PM	30 Days
695	25673	27000	7AM-6PM	30 Days

TASHI INFOCOMM LTD				
Plan Name	Rate (Nu)	Data Volume (MB)	Validity	
Student Daza	97	1300	30 Days	
Student Barma	297	4300	30 Days	
Student Barma Plus	497	8000	30 Days	

5.3. Uninterrupted BBS channels

As part of COVID-19 response, the Authority notified all the cable operators to provide uninterrupted BBS1 and BBS2 channels irrespective of whether the customers had paid the bill or not. This was initiated with an objective to keep the public updated on the situation and to facilitate e-learning for students.

5.3. Information on access to BBS and Smart phone

Following the directive of the Government towards enhancing the BBS connectivity nationwide to create a well-informed society, especially in the rural areas, the Authority carried out a compilation on the number of households with and without BBS access and smart phones. The data collected was accordingly presented to the government for their reference and necessary action.

5.4. Term Based Soft Working Capital Facility for Industries

COVID-19 pandemic resulted in the disruption of the business operations leading to loss of income and employment. To curb this issue, the Royal Monetary Authority (RMA) introduced a Term Based Soft Working Capital Facility for industries to provide short-term monetary relief to import raw materials at concessional interest rate to cater to local markets and for export-oriented business. As such, only the industries under the Department of Industries & Department of Cottage and Small Industries, Ministry of Economic Affairs were eligible to apply and Printing Press licensees were excluded.

Considering the nature of work of Printing Press establishment as one of the manufacturing industries, the Authority facilitated in availing the Term Based Soft Working Capital Facility for the Printing Press licensees.

06

STAKEHOLDER ENGAGEMENT

The Authority carried out the following consultation meetings pertaining to ICT and Media issues, and to collect feedback and comments from the stakeholders:

Details on consultations held:

Sl. No	Consultation	No. of consultation held	Remarks
1	Gyalchi Sarchog Newspaper	1	Discussed the print run and its status of operation
2	Newspapers Publishing House	1	Discussed issues and concerns pertaining to Newspaper Publishing House
3	Printing Press	1	Discussed availing Term Based Soft Working Capital Facility and other issues and concerns
4	Telecom Operators & Internet Service Provider	1	Discussed regulatory framework for 5G deployment in Bhutan and Channel Plan for fixed point to point radio system in microwave band
5	Telecom Operators	3	Discussed new spectrum fees structure of Draft National radio rules and regulation Discussed access to Disaster Resilient Mobile Core Network (DRMCN) in Bumthang, International roaming, National roaming and number portability & assessment of highway connectivity
6	DITT, MoIC	1	Discussed to sort out the issues on funding for establishment of South Asia Satellite ground station from USF
7	Tashi InfoComm Limited	1	Discussed RCP Phase V
8	Bhutan Netcom	2	Discussed work progress of the MSO Discussed the issues related to operation of MSO and LCOs during COVID-19 crisis

07

20TH SOUTH ASIAN TELECOMMUNICATIONS REGULATORS COUNCIL (SATRC) MEETING



The Authority hosted the 20th South Asian Telecommunications Regulators Council meeting at Paro, Bhutan from 28-29 August 2019.

The SATRC meeting is held annually to discuss and coordinate regulatory and other related issues in the area of telecommunication and ICT that are common for the regulators of SATRC Members.

The meeting was attended by 60 participants from telecommunication regulatory bodies of SATRC Member countries and stakeholders.

08

TRANSFER OF MEDIA RELATED ACTIVITIES



In line with the provisions of the Information, Communications and Media Act of Bhutan 2018, the National Film Commission of Bhutan and Media Council of Bhutan were established.

All the activities related to films and accreditations of journalists were handed-over to the National Film Commission of Bhutan and Media Council of Bhutan respectively on 4th September 2019.



09

WAY FORWARD

The Authority has prioritized the following activities for implementation during the financial year 2020-2021:

8.1. Feasibility Study on Private Television Broadcasting Station

Considering the emerging technologies and development in broadcasting services, the Authority will conduct a detailed feasibility study on the possibility of licensing Private TV Broadcasting Stations in Bhutan including assessment of the current situation and development of regulatory framework related to broadcasting service. The study shall also provide evidence-based recommendations and way forward on the future prospect of private television broadcasting service in the country.

8.2. Rural Communication Programme

As per the directive of the Royal Government, the Authority will implement the Phase VI of the Rural Communication Programme to connect the unconnected villages and areas without mobile communication services.

8.3. Mobile Communication Services:

To ensure access to safe, reliable and affordable mobile communication services, the Authority will:

- » Continue monitoring and certification of communication towers for EMF radiation compliance,
- » Carry out nationwide frequency monitoring to verify whether the cancelled licensees of Land Mobile Frequency users have stopped the operation of Land Mobile Radio services,
- » Monitor and improve the quality of mobile services, both voice and data (3G and 4G) to meet the minimum international threshold level,
- » Measure the status of mobile connectivity along 6 selected National Highways,
- » Develop Standard Operating Procedure for Disaster Management Reporting,
- » Undertake a feasibility study on the introduction of separate domestic Tariff for all internet services in the country.
- » Develop standard for Quality of Service

- » Conduct consultation meeting with the service providers to discuss the results and come out with way forward to improve the key performance indicators to enhance the mobile quality services.
- » Sign MoU with the two mobile service providers to improve their poor key performance indicators.

8.4. Television Services

In order to enable every rural household in the country have access to BBS television services, the Authority in collaboration with the Department of Information and Media will continue implementation of rural household television connectivity program.

8.5. Advocacy Program on Digitization of Cable Television

To ensure fully digitalized cable network in the country, the Authority plans to commission a consultancy firm to carry out the advocacy program in all other Dzongkhags except Thimphu. The program is aimed to push Local Cable Operators to provide digital cable network and also to encourage subscribers to avail digital cable services

NATIONAL HIGHWAYS	STRETCH	BLACK SPOT AREAS	DISTANCE		GEO-COORDINATES	
			BTL	TICL	BTL	TICL
Thimphu- Phuentsholing	Damchu bypass- Bunanagu	Near 2 nd bridge	0.76KM	Assessment not carried out	27°12'11.47"N, 89°31'24.88"E, 27°11'49.25"N, 89°31'20.27"E	
	Bunagu- Wangkha	Near steep cliff	0.48KM		27°4'37.78"N, 89°32'23.65"E, 27°4'28.89"N, 89°32'35.40"E	
		Near steep cliff	0.16KM		27°4'21.35"N, 89°32'45.79"E, 27°4'18.42"N, 89°32'50.27"E	
		Near Wangkha bridge	0.68KM		27°3'43.91"N, 89°33'21.28"E, 27°3'28.75"N, 89°33'26.42"E	
	Gedu-Phuentsholing	Near Getana junction area	0.88KM		26°54'52.86"N, 89°28'4.19"E, 26°54'47.17"N, 89°27'50.27"E	

NATIONAL HIGHWAYS	STRETCH	BLACK SPOT AREAS	DISTANCE		GEO-COORDINATES	
			BTL	TICL	BTL	TICL
		Jumja area	0.61KM		26°54'6.97"N, 89°31'0.09"E, 26°54'18.03"N, 89°31'1.65"E	
		Sorchen area	0.43KM		26°52'4.65"N, 89°25'4.03"E, 26°51'56.33"N, 89°25'14.65"E	
		Opposite to CST	0.31KM		26°51'15.52"N, 89°23'52.22"E, 26°51'7.27"N, 89°23'52.92"E	
	Gedu- Wangkha	Between Takti&Chasi- lakha	0.52KM		26°59'8.29"N, 89°34'53.59"E, 26°59'22.62"N, 89°34'59.07"E	
		Near Makibari	0.58KM		26°56'24.01"N, 89°32'58.80"E, 26°56'40.96"N, 89°32'56.36"E	
Thimphu-Punakha	Thimphu-Punakha	Lamperi&Menchuna Menchuna&Thin- leygang till Punakha	- 10m (small shadow area) None	4KM - -	- - -	- - -

Thimphu-Wangdue-Trongsabumthang	Thimphu-Wangdue	Lamperi&Menchuna Menchuna&Thinleygang	- 10m (small shadow area)	4KM -		
	Wangdue-Trongsabumthang	Near shangawang Wangdue-Trongsabumthang boundary	- 0.65KM	0.7KM 0.7KM		
	Trongsabumthang	None				
Bumthang-Mongar-Trashiyangtse	Bumthang-Mongar		0.67KM	0.31KM	27°28'48.70"N, 90°48'39.41"E, 27°28'34.47"N, 90°48'55.67"E	27°29'34.30"N, 90°47'19.98"E, 27°29'33.97"N, 90°47'29.00"E
			0.1KM	1.16KM	27°27'27.72"N, 90°50'48.70"E, 27°27'28.18"N, 90°50'51.95"E	27°27'26.88"N, 90°54'41.91"E, 27°27'12.86"N, 90°54'30.17"E
			0.2KM	0.42KM	27°25'34.09"N, 90°54'23.16"E, 27°25'29.74"N, 90°54'26.03"E	27°26'38.39"N, 90°54'22.71"E, 27°26'26.44"N, 90°54'24.77"E
			4.1KM	0.13KM	27°24'56.07"N, 90°55'43.99"E, 27°24'58.74"N, 90°56'59.08"E	27°25'58.81"N, 90°54'10.16"E, 27°25'57.19"N, 90°54'13.33"E
			3.83KM	2KM	27°26'8.23"N, 90°57'52.79"E, 27°25'1.06"N, 90°57'1.85"E	27°25'49.55"N, 90°54'35.59"E, 27°25'11.20"N, 90°54'30.02"E

NATIONAL HIGHWAYS	STRETCH	BLACK SPOT AREAS		DISTANCE		GEO-COORDINATES	
		BTL	TICL	BTL	TICL	BTL	TICL
		1.1KM	0.93KM	27°25'36.02"N, 90°58'2.27"E, 27°25'11.31"N, 90°58'4.35"E	27°24'55.25"N, 90°54'43.38"E, 27°24'32.44"N, 90°54'48.06"E		
		5.5KM	4.11KM	27°24'18.52"N, 90°59'12.66"E, 27°25'11.31"N, 90°58'4.35"E	27°24'55.70"N, 90°55'44.07"E, 27°24'58.74"N, 90°56'59.08"E		
		0.35KM	4.87KM	27°24'10.49"N, 90°59'17.65"E, 27°24'6.75"N, 90°59'22.62"E	27°25'50.63"N, 90°57'55.06"E, 27°25'1.08"N, 90°57'2.18"E		
		0.39KM	2.11KM	27°24'0.33"N, 90°59'31.44"E, 27°23'56.62"N, 90°59'38.90"E	27°25'50.08"N, 90°58'2.26"E, 27°25'2.14"N, 90°58'16.18"E		
		0.1KM	2.39KM	27°23'54.75"N, 90°59'52.36"E, 27°23'53.61"N, 90°59'52.88"E	27°24'53.61"N, 90°58'46.01"E, 27°24'25.22"N, 90°58'12.73"E		
		0.41KM	1KM	27°23'50.96"N, 90°59'52.13"E, 27°23'44.16"N, 90°59'44.08"E	27°24'25.22"N, 90°58'12.73"E, 27°24'17.74"N, 90°59'12.34"E		
		0.16KM	0.77KM	27°23'29.26"N, 90°59'34.78"E, 27°23'29.96"N, 90°59'29.68"E	27°24'6.90"N, 90°59'44.94"E, 27°23'48.03"N, 90°59'49.27"E		

				0.11KM	1.16KM	27°23'12.16"N, 90°0'36.47"E, 27°23'10.10"N, 91°0'39.22"E	27°23'48.03"N, 90°59'49.27"E, 27°23'30.37"N, 90°59'32.70"E
			1.93KM	0.72KM	27°20'37.75"N, 91°7'25.79"E, 27°20'54.39"N, 91°7'0.31"E	27°23'22.70"N, 90°59'3.83"E, 27°23'16.79"N, 90°58'52.71"E	
			0.81KM	2.83KM	27°20'22.19"N, 91°6'9.43"E, 27°20'2.34"N, 91°6'22.66"E	27°23'16.79"N, 90°58'52.71"E, 27°22'55.52"N, 91°59'5.45"E	
			0.31KM	11.2KM	27°19'37.50"N, 91°4'59.10"E, 27°19'33.67"N, 91°5'6.72"E	27°22'55.52"N, 91°59'5.45"E, 27°21'48.64"N, 91°1'51.35"E	
			-	15.4KM	-	27°21'48.64"N, 91°1'51.35"E, 27°19'33.05"N, 91°5'21.67"E	
			0.14KM	0.1KM	Mongar-Trashiyang- tse	27°15'19.47"N, 91°16'12.47"E, 27°15'15.88"N, 91°16'13.88"E	27°33'42.48"N, 91°30'26.87"E, 27°33'43.38"N, 91°30'24.89"E
			-	0.1KM	Trashigang- Trashi- yangtse	-	27°33'42.48"N, 91°30'26.87"E, 27°33'43.38"N, 91°30'24.89"E
Wang- due-Tsirang-Ge- lephu			None	0.1KM	Wangdue-Tsirang	-	27°18'54.25"N, 89°56'44.92"E, 27°18'53.22"N, 89°56'46.36"E

NATIONAL HIGHWAYS	STRETCH	BLACK SPOT AREAS	DISTANCE		GEO-COORDINATES	
			BTL	TICL	BTL	TICL
				0.91KM		27°12'41.37"N, 90°3'28.49"E, 27°12'36.72"N, 90°3'6.29"E
				0.54KM		27°8'55.46"N, 90°4'19.20"E, 27°8'40.98"N, 90°4'8.99"E
	Tsirang-Gelephu		0.35KM	0.34KM	26°55'58.27"N, 90°13'17.99"E, 26°55'56.04"N, 90°13'13.90"E	26°56'18.09"N, 90°14'7.74"E, 26°56'10.90"N, 90°14'15.38"E
			0.28KM	0.3KM	26°55'34.98"N, 90°13'5.26"E, 26°55'29.45" N,90°12'57.47"E	26°55'34.00"N, 90°12'34.63"E, 26°55'25.96"N, 90°12'36.12"E
			0.28KM	0.15KM	26°55'20.41"N, 90°13'41.15"E 26°55'26.14"N, 90°12'35.51"E	26°54'55.02"N, 90°12'22.31"E, 26°54'53.02"N, 90°12'17.39"E
			0.1KM	0.1KM	26°55'50.56"N, 90°14'35.29"E, 26°52'52.19"N, 90°14'34.33"E	26°52'51.31"N, 90°14'39.91"E, 26°52'49.80"N, 90°14'38.52"E
Trashigang-Pemagatshel	Trashigang-Pemagatshel	Khaling to Khardungla	0.89KM	less than 1KM for 9 to 10 of stretches.	-	-

ANNEXURE II: PHYSICALLY VERIFIED VILLAGES/PLACES UNDER RCP- V

DZONGKHAG	GEWOG	VILLAGE	NO. OF HHS WITHOUT COVERAGE	SERVICE PROVIDER	BTS SITES	NETWORK TYPE
Tsirang	Rangthaling	Charingma (Zulphaygaon)	26	BTL	Samzhigaden	3G
		Balikhop	5			
Mongar	Silambi	Thangbrang	3	BTL	Serpong Top	
		Ngazhub	5		Gonthung	
	Narang	Dangshing-zor	4		Khalong Top	
		Chetenzur	2			
		Jungka	4			
		Nagtshang	2			
Samtse	Sangacholing (Chargary)	Ngedrupling (Sambake) A	11	BTL	Chargare	3G
		Ngedrupling (Sambake) B	11			
		Ngedrupling (Sambake) C	8			
Chukha	Sampheling	(Khenpaithang) Khaibatar	12		Rangeytung	
		Doruphug	15			
		PeditseInang	10			
		Tshendung				
Trashiyangtse	Yangtse				Tshendung	
Zhemgang	Bardo	Langdurbi (Lichibi)	40	TICL	Thajong Top	2G & 4G
	Goshing	Mewangang	9		Shalapong	

DZONGKHAG	GEWOG	VILLAGE	NO. OF HHS WITHOUT COVERAGE	SERVICE PROVIDER	BTS SITES	NETWORK TYPE
	Ngangla	Garsangbi	3		Sorangpong	
		Ngakhar	10			
		Chorpatang	5			
Lhuntse	Khoma	Roelmateng/Singye Dzong	5		Singye Dzong	
					Zam Tx	
Mongar	Sherimuhung	Aja Ney	17		Aja Ney	
Thimphu	Soe	4 Cordeyseps collecting places (Gongju, Lhalungphu, Bam-jutenkha and Tsophu)			Tsophu	
		Jomlhari Lhakhang and 6 herding places (Hinshothangkha, Dzongthang, Bamthong, Thongbunang, Khungchunang and Robnang)			Nyelela Tx	
		RBA Camp			Jomphu	
	Lingzhi	Tashithang (Bashothang)	17		Tashithang	
Samtse	Dungtoe	Dungtoe	25		Gebji	
	NamgayCholing (Laherini)	Sathgari	4		Chogsa	
		Puthlikharka	14			
		Kimbutar	8			
	Tharphu	9				
Kholakharka C	14					

Gasa	Laya	Lungu	42	Laya Top (above ten- drelthang)	
		Gayza	9		
		Raluta	5		

ANNEXURE III: PHYSICALLY VERIFIED VILLAGES UNDER 7 DZONGKHAGS

DZONGKHAG	GEWOG	CHIWOG	VILLAGE
Mongar	Saling	Droksar	Droksar
		Sengor	Sengor
Paro	Naja	Wanakha	Joshikha
			Naymu
			Susuna
	Shaba	Neyphu	Neyphu
	Dogar	Khamdragsali	Dala
	Lungnyi	Dzongdrakha	Guma
			Pepchu
Changche			
Haa	Eusu	Chipri Takchu	Takchu Goenpa
			Lungtshokha
			Drangoen
			Shekhadra Goenpa
Samdrup Jongkhar	Serthi	Menjong	Phagchuk
			Juenmey
			Denphu
			Tokaphung
	Martshala	Galingkhar Wangphu	Wangphu
			Khaling Dangray
Langchenphu	Jangsa	Jangsa Gom	
		Jangsa Wom	
Zhemgang	Phangkhar	Pongchula	Ridijong
			Chabgoen
			Edi
Dagana	Karmaling	Laptsakha	Basani/Keranee
		Omchhu	Dungay
	Tsangkha	Gungpa Sumchu	Simbolay
			GungpaSumchu
			Tshangkha/GC
	Tshendagang Samarchu	Gelechhu	Upper & Lower Gelechu
			Dharey
			Samerchhu
Peping			
			Gumti
			Doban

DZONGKHAG	GEWOG	CHIWOG	VILLAGE		
			Gabring		
			Gaharati		
			Tseza	Peling	Peling
					Tongsho
					Dawazimpa
					Khijo
			Tashigang	Tashigang	Tashigang
					Jangsagang
					Wukpathanka
			Samey	Samey	Samey
Zamto					
Dagana	Karmaling	Laptsakha	Basani/Keranee		
		Omchhu	Dungay		
	Tsangkha	Gungpa Sumchu	Gungpa Sumchu		
		Tshangkha/GC	Tshangkha/Tsangkha MSS		
		Gelechhu	Upper & Lower Gelechhu		
	Tshendagang	Samarchu	Dharey		
			Samerchhu		
			Peping		
			Gumti		
			Doban		
Gabring					
Tseza	Peling	Gaharati			
		Peling			
		Tongsho			
		Dawazimpa			
Thimphu	Naro	Tagsidthang_ Zhomthang	Gunglona		
			Lhayul		
			Chagophu		
			Thangtoed		
			Takey		
		Barshong_ Mentsiphu	Zomphu		
	Lingzhi	Sharyul	Tando Gonpa		
			Raulum		
			Lhakhaten		
			Yontey (Nalungphu)		

འབྲུག་བར་དོན་བརྒྱུད་འབྲེལ་དང་བར་བརྒྱུད་དབང་འཛིན།

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