

# Quarterly Report on Cable Television Service



འབྲུག་གཞི་རིམ་གྱི་གྲོལ་ལུགས་འཕེལ་སྐྱོད་ལྷན་ཁག་གི་འཕེལ་སྐྱོད་ལྷན་ཁག་  
འཕེལ་སྐྱོད་ལྷན་ཁག་གི་འཕེལ་སྐྱོད་ལྷན་ཁག་

**Bhutan InfoComm and Media Authority**  
**Royal Government of Bhutan**

**(October-December, 2024)**

<b>1. Samuh Video-On-Demand</b>	<b>3</b>
<b>2. Monitoring Visit</b>	<b>4</b>
<b>3. Communication Cable Layout</b>	<b>6</b>
3.1 Objectives and Goals	6
3.2 Pre-Work Coordination Meeting	6
3.3 Work Progress and Execution	7
3.4 Scope of Work Executed	7
3.5 Monitoring and Quality Assurance	7
3.6 Before and After Documentation	8
3.7 Conclusion and Recommendations	8
<b>4. Common Duct Field Visit</b>	<b>9</b>
4.1 Purpose of the Visit	9
4.2 Methodology	9
4.3 Observations and Findings	10
4.3.1 Locations and Mapping	10
4.3.2 Condition of Ducts	10
4.4 Recommendations	10
4.4.1 Immediate Actions	10
4.4.2 Long-Term Measures	11
4.5 Conclusion	11
<b>5. Complaints received with and compiled by the Authority</b>	<b>12</b>
<b>6. Key Activities Carried Out by the Authority</b>	<b>18</b>
<b>7. Findings</b>	<b>18</b>
<b>8. Way Forward</b>	<b>19</b>
Annexure A: Monitoring tour to Mongar and Lhuentse to monitor and verify the discontinuation of Direct-to-Home (DTH) services	20
Annexure B: Phase 1- STCBL Petrol Pump till Babesa Zero/ Junction	22
Annexure C: Phase 2- Babesa Zero till Lungten Zampa Bridge	25
Annexure D: Google Earth Markings	30
Annexure E: Photographic Evidence	31
Annexure F: Detailed Table of Observations	34

## 1. Samuh Video-On-Demand

Samuh, Bhutan's first Over-the-Top (OTT) platform, has taken another step toward enriching the country's digital entertainment landscape by launching its Video on Demand (VoD) service in collaboration with DrukCom Pvt. Ltd., a prominent Multi-Service Operator (MSO). This partnership is aimed at providing Bhutanese households with greater access to high-quality digital content through DrukCom's cable television network. Samuh Mediatech Pvt Ltd and Drukcom Pvt Ltd officially signed the agreement on October 10, 2024 and the service was activated from November 1, 2024.

The Samuh VoD service brings a diverse collection of Bhutanese films, documentaries, music and cultural programs directly to viewers, promoting local creativity and storytelling. By utilizing DrukCom's existing cable infrastructure, the service ensures seamless integration with traditional television systems, offering subscribers a convenient and affordable way to enjoy digital entertainment.

This collaboration signifies an important development in Bhutan's media sector, bridging the gap between conventional cable television and modern streaming platforms. By expanding the reach of digital content, Samuh Mediatech Pvt Ltd and DrukCom Pvt. Ltd. are working together to make OTT services accessible to a wider audience, supporting the growth of local content consumption.

The partnership also highlights the potential for further innovation in content delivery within Bhutan. It sets an example of how cable operators and digital platforms can collaborate to enhance entertainment services while creating new opportunities for revenue generation. This initiative not only strengthens Bhutan's media ecosystem but also reinforces the promotion of Bhutanese culture and creativity through modern technology.



*Figure 1: Samuh on Demand Channel.*

## **2. Monitoring Visit**

The Authority regularly undertakes monitoring, inspection, and verification visits for cable television services across Dzongkhags and Gewogs. In this quarter, the team from InfoComm and Infrastructure Division conducted a monitoring tour to Mongar and Lhuentse to monitor and verify the discontinuation of Direct-to-Home (DTH) services in areas where cable services are already available. In collaboration with local cable operators, the team inspected various regions to ensure compliance with the regulatory mandate to phase out DTH services and promote digitized cable systems.

During the tour, the team actively engaged with residents to inform them about the mandatory switch to digitalized cable services. The benefits of using a digitized cable system were extensively explained, focusing on how it offers better service quality, more reliable connections, and enhanced customer support. The digitized system not only improves the viewing experience for customers but also allows for better regulatory oversight, contributing to fair pricing and the provision of localized content.

Furthermore, the team emphasized that the transition to a cable-based system aligns with national interests. A digitized cable system helps boost the local economy by supporting Local Cable Operators (LCOs), who reinvest in community infrastructure and services. By moving away from DTH, which often channels revenue outside the country, the switch promotes greater economic circulation within Bhutan, benefiting both the nation and its citizens. The awareness campaign focused on the long-term advantages, encouraging people to make the shift for the collective benefit of consumers, LCOs, and the country as a whole.

## **Monitoring the use of DTH in Lhuentse Dzongkhag**

- The team visited the Austsho, Tangmachu, and Lhuentse town areas.
- All the residents were positive toward the regulatory directive to phase out DTH services. Almost all households expressed their willingness to switch to cable services and remove their existing DTH setups. This was largely due to increased awareness of the benefits of the digitized cable system, including better service quality and local channel availability.
- Most residents were not aware of the regulatory requirement to discontinue DTH services in areas where cable services are available. The advantages of using Cable Services provided by LCO over the use of DTH service were mentioned in the conversation.
- Few households were found to be using DTH that were no longer in use but had not been physically removed. The DTH was inactive, as they no longer received a signal, but residents had not yet removed the DTH equipment while some have already availed of cable services.

## **Observations and Findings**

- There is a general lack of awareness among residents about how to lodge complaints or address service issues with cable providers.
- There were no DTH users in Gyelpozhing and Mongar town areas.
- There is a mixed level of compliance with the directive to phase out DTH services in favor of digitized cable systems. While some areas show a strong willingness to switch to cable services, others still exhibit significant use of DTH due to various reasons.
- People are not aware of Analog and Digitalised CATV systems and generalize this as the same.
- In most areas visited, the cable infrastructure is well-established and capable of accommodating new subscribers. However, the perceived quality and range of services provided by cable operators need to be enhanced to compete with the perceived benefits of DTH.
- The team observed that people switched to DTH mainly due to non-payment of the monthly subscription fee as it is free and they can avail of various channels.

### 3. Communication Cable Layout

This Quarter, the team from InfoComm and Infrastructure Division carried out work on the communication cable layout improvement project carried out along the stretch from the STCBL petrol pump to the Babesa express highway junction, also referred to as “ Babesa zero.” The project was initiated to address longstanding concerns regarding the disorganized and unsafe layout of communication cables in the area. These issues included tangled cables, safety risks posed by loosely hanging wires, and the visual clutter affecting the area’s aesthetics. Given these concerns, a collaborative effort among multiple service providers was organized, and a one-week timeframe was allocated for completion. During this period, the service providers worked closely to reorganize, secure, and standardize the cable layout in a manner that both enhances functionality and improves the visual landscape. By undertaking this project, the team aimed to ensure a safer, more efficient, and visually appealing infrastructure along this vital stretch, which is expected to contribute positively to public safety and the area’s overall environment. After the completion of Phase 1, the team carried out the Phase 2 of the communication cable layout improvement project, which covers the area from Babesa Zero to Lungten Zampa. Following the successful completion of Phase 1, this phase continues the efforts to improve the organization, safety, and visual presentation of the communication layout along the expressway.

#### 3.1 Objectives and Goals

The primary objectives of this project were to:

- **Enhance Safety:** Organize and secure cables to prevent risks posed by loose or dangling cables that could potentially harm pedestrians and disrupt traffic.
- **Improve Visual Appeal:** Proper cable alignment and decluttering efforts aimed to improve the visual landscape of the area, contributing to a cleaner environment.
- **Establish Consistency:** This project set a foundation for a standardized cable layout, providing structured guidelines for future cable installations.
- **Reduce Maintenance Needs:** Addressing existing layout issues in this phase reduces the need for frequent maintenance, saving time and resources in the long term.

#### 3.2 Pre-Work Coordination Meeting

A preparatory meeting was held with all relevant service providers on September 30, 2024. The following directives and goals were discussed as the way forward for the project:

- All service providers should use proper or standard accessories for a better cable layout.

- Maintain the standard height (minimum ground clearance of cable shall be 2.7 meters and the minimum cable ground clearance of 6.1 meters in the case of road crossing) or higher for the aerial cable layout from the ground level.
- BICMA shall seek approval for a road crossing to lay cables after identifying the locations. The cost of such can be borne by all the service providers.
- Service providers to list out the critical places wherever the requirement of the duct is crucial and plan accordingly to project duct in the identified places.
- All the service providers clean and maintain the existing ducts as well.
- Look into the issue of “Right of Way.”
- Operators, in coordination with BICMA, shall jointly visit and start the bundling of the cables or underground burial, if possible, starting from Babesa Zero. This is the way forward discussed during the meeting.

### 3.3 Work Progress and Execution

Work commenced on October 21, 2024, covering multiple phases within the designated area to minimize disruption to residents and commuters. Each phase involved systematic cable layout adjustments, documentation, and quality checks.

### 3.4 Scope of Work Executed

- **Cable Removal:** Outdated, unused, or hazardous cables were identified and removed, reducing clutter and clearing space for active cables.
- **Alignment and Securing of Cables:** Operational cables were carefully aligned and secured to designated poles or structures, enhancing structural stability and reducing visual clutter.
- **New Installations and Repairs:** Additional supports were installed where necessary to prevent cables from drooping or loosening in the future, ensuring layout integrity and reliability.

### 3.5 Monitoring and Quality Assurance

Daily inspections were conducted to assess the quality of work, adherence to safety standards, and compliance with the project objectives. Quality assurance measures included:

- **Visual Inspections:** Each completed section was inspected to confirm proper alignment and structural stability.
- **Adherence to Guidelines:** Regular checks ensured the layout met the standard guidelines, maintaining consistency across sections.
- **Documentation and Feedback:** Each day’s work was documented with notes and photographs, and feedback was promptly provided to service providers for any needed improvements.

### **3.6 Before and After Documentation**

- Photographs were taken before and after the improvement work to illustrate the transformation. These visuals demonstrate the progress from disorganized layouts to a streamlined, professionally managed cable system, enhancing both safety and visuals.
- The Before and After photographs of Phase 1 and Phase 2 are attached in the Annexure B and Annexure C.

### **3.7 Conclusion and Recommendations**

The communication cable layout project from Babesa Zero to Lungten Zampa was successfully completed within the designated timeframe, achieving all outlined objectives. The collaborative efforts of the service providers, local authorities, and community members resulted in a significant improvement in the safety, organization, and visual appeal of the communication infrastructure.

#### **Key Outcomes**

- **Enhanced Safety:** The organized cable layout has significantly reduced safety hazards for pedestrians and vehicles, contributing to a safer environment.
- **Improved Aesthetics:** The visual clutter has been minimized, resulting in a more professional and appealing appearance for the area.
- **Standardized Practices:** The establishment of standardized materials and practices will facilitate future installations and maintenance, ensuring consistency across the network.
- **Community Satisfaction:** Feedback from residents has been overwhelmingly positive, with many expressing appreciation for the improvements made.

#### **Recommendations for Future Projects**

- **Regular Maintenance Checks:** Routine inspections should be scheduled to maintain the cable layout and prevent future issues.
- **Standardized Installation Protocols:** Establishing standardized protocols for cable installation in other areas could help prevent similar issues and reduce maintenance costs.



## **4. Common Duct Field Visit**

The Team also conducted a field inspection to locate and assess the condition of common ducts along the Babesa to Lungtenzampa route. The visit followed discussions during a meeting held on November 8, 2024, which highlighted the need to evaluate the current state of the ducts for potential reuse after cleaning and restoration.

Common ducts serve as crucial infrastructure for organized cable and utility management. Over time, lack of maintenance has led to significant clogging, rendering many ducts unusable. The purpose of this field visit was twofold:

1. To map and document the exact locations of common ducts.
2. To evaluate their current condition and suitability for restoration.

### **4.1 Purpose of the Visit**

The primary objectives of the field visit were:

- To identify the precise locations of ducts along the designated route.
- To assess their usability by determining the extent of clogging and physical damage.
- To gather data for planning, cleaning, restoration, and long-term maintenance efforts.

### **4.2 Methodology**

The inspection methodology involved a combination of digital mapping and on-ground observation:

1. Digital Mapping with Google Earth:
  - An official from Thimphu Thromde utilized Google Earth to mark the duct locations while walking along the route.
  - The planned inspection route covered Babesa to Lungtenzampa. However, due to time constraints, the inspection was limited to Babesa to Changjiji Bridge.
2. Physical Inspection:
  - The field team visually inspected the ducts to assess their physical state, usability, and obstructions.
  - Observations were recorded for each location, with specific attention to clogged or damaged sections.
3. Scope and Limitations:
  - Only the Babesa to Changjiji Bridge stretch was inspected.
  - Observations suggest that the condition of ducts along this stretch is representative of the likely state of ducts in the unvisited portion from Changjiji Bridge to Lungtenzampa.

## **4.3 Observations and Findings**

### **4.3.1 Locations and Mapping**

- The inspected stretch between Babesa and Changjiji Bridge contained a continuous run of common ducts along the highway. The common ducts can be found from Babesa Zero/Junction till Lungtenzampa. Accurate location data was collected, marked on Google Earth, and verified during the physical inspection. Screenshots of the marked locations are attached in Annexure D.
- It was observed that most of the ducts are located on the right side of the road, while all the cables and fiber currently in use are on the left side of the road with the usage of poles.

### **4.3.2 Condition of Ducts**

#### **Accumulated Debris and Blockages:**

- The ducts were found to be clogged with dirt, dried vegetation, and waste materials, such as plastic. This indicates a lack of regular cleaning and maintenance over time. The areas which require maintenance are shown in the Annexure E and Annexure F.

#### **Cable Congestion and Disorder:**

- The ducts house a considerable number of cables, which are disorganized and, in some cases, damaged. The lack of proper cable alignment and labeling poses potential challenges for maintenance and usage.

#### **Structural Conditions of Ducts:**

- While the overall structural integrity of the ducts appears to be intact, some visible wear and cracks were noted, especially near the edges of the openings. This could compromise their durability in the long term.

## **4.4 Recommendations**

### **4.4.1 Immediate Actions**

1. Conduct Routine Cleaning and Maintenance

The entire section of the ducts needs to be cleaned as no maintenance work has been carried out since their initial construction. Accumulated debris, waste, and clogged sections must be thoroughly addressed to restore functionality. Maintenance work is also required to ensure long-term usability and prevent further degradation.

## 2. Plan and Execute a Follow-Up Meeting:

- A follow-up meeting should be convened with all relevant stakeholders, including representatives from Thimphu Thromde, cable operators, ISPs and other concerned parties. The meeting should focus on discussing the way forward, particularly outlining actionable steps and responsibilities for clearing the ducts. The actual cleaning and reorganization of cables within the ducts should then be carried out based on the agreed plan of action.

### 4.4.2 Long-Term Measures

#### 1. Develop a Duct Maintenance Plan:

- Establish a comprehensive duct maintenance policy, including regular inspections, scheduled clean-ups, and measures to enforce proper cable management practices.

#### 2. Enhance Safety Measures:

- Secure all duct covers to prevent accidental displacements and ensure public safety.

## 4.5 Conclusion

The field visit provided a comprehensive understanding of the current condition of the underground ducts in the area. Observations highlighted significant issues, including improper cable arrangements, accumulation of debris, and unsecured duct covers, all of which hinder the functionality and safety of the ducts. While the ducts in some sections remain in usable condition, immediate cleaning and maintenance are necessary to restore their full utility.

To address these challenges, a follow-up meeting is recommended to discuss actionable steps and responsibilities, ensuring timely execution of the duct cleaning work. Establishing a long-term maintenance plan and enforcing proper cable management practices will be critical to preventing recurring issues. This collaborative effort among stakeholders will contribute to the efficient use of underground ducts and enhance urban infrastructure management.

## **5. Complaints received with and compiled by the Authority**

In the event of any issues/complaints related to the cable television services, the Authority has made many platforms available for the subscribers to lodge the complaints with the Authority. The complainant can contact the Authority through our focal officers appointed for the service, the details for which have been mentioned in the website ([www.bicma.gov.bt](http://www.bicma.gov.bt)) and social media (Facebook) page ([www.facebook.com/bicmabhutan](http://www.facebook.com/bicmabhutan)). We also have an online complaint platform on our website under the services/complaints section through which anyone can lodge the complaints. They can also write an email to [bicma@bicma.bt](mailto:bicma@bicma.bt)

In order to enhance the customer grievance redressal mechanism, the officials from the Authority also scan the social media pages on a daily basis to see if there are any complaints and issues related to the cable television services provided by the Service providers. As mentioned above, the Authority has made many platforms available from where the subscriber of cable television as well as our licensee such as local cable operators and multi-service operators can lodge the complaints with the Authority. The complaints received are well resolved and documented. The BICMA also receives the customer complaints through emails and formal letters from the public and Gewogs administrations. Particularly for the cable operators to share their challenges, issues and to submit the complaints with the Authority to take up the appropriate action, the Authority has formed the cable operators' group in social media platform "Telegram".

For the last three months (January- March,2024) the complaints received by the Authority are:

## Monthly Complaint Report.

**October, 2024**

Sl. No.	Cable TV Operator	Date of Complaint	Complaint Resolved date	Area/Location	Name/Email of Complainant	Contact Number/Particulars	Issue/Description	Channel of Communication received	Remarks
1	Tshela	04/10/2024	07/10/2024	P/ling	Tashi Dorji	17677905	Interoperability issue	Phone Call	Resolved
2	TD MethoCable	10/5/2024	10/05/2024	Paro	Tshering	77703237	Line issue	Email	Resolved
3	Etho Metho CATV	11/10/2024	12/10/2024	Jungshina	keyans12@gmail.com	17609443	Line issue	Email	Resolved
4	Dogar Cable Service	14/10/2024	14/10/2024	Bitekha	Gyem Dorji/karsang5star@gmail.com	17248832	Line Issue	Email	Resolved
5	Bishnu Cable services	18/10/2024	22/10/2024	Sipsu Trashicholing	yamtsho2005@gmail.com <a href="#">Yonten</a> Jamtsho	17907058	Services services interrupted	Google Form	Resolved
6	DrukCom TV cable Service	28/10/2024	28/10/2024	Wangsisina (Above Gyensho Tshamkhang)	Dorji Wangchuk	17112002	Line issue	Google Form	Resolved
7	Punab Cable	31/10/2024	31/1-/2024	Town area	Lhab Dorji	17981941	Interoperability Issue	Phone Call	Resolved

## Monthly Complaint Report.

**November, 2024**

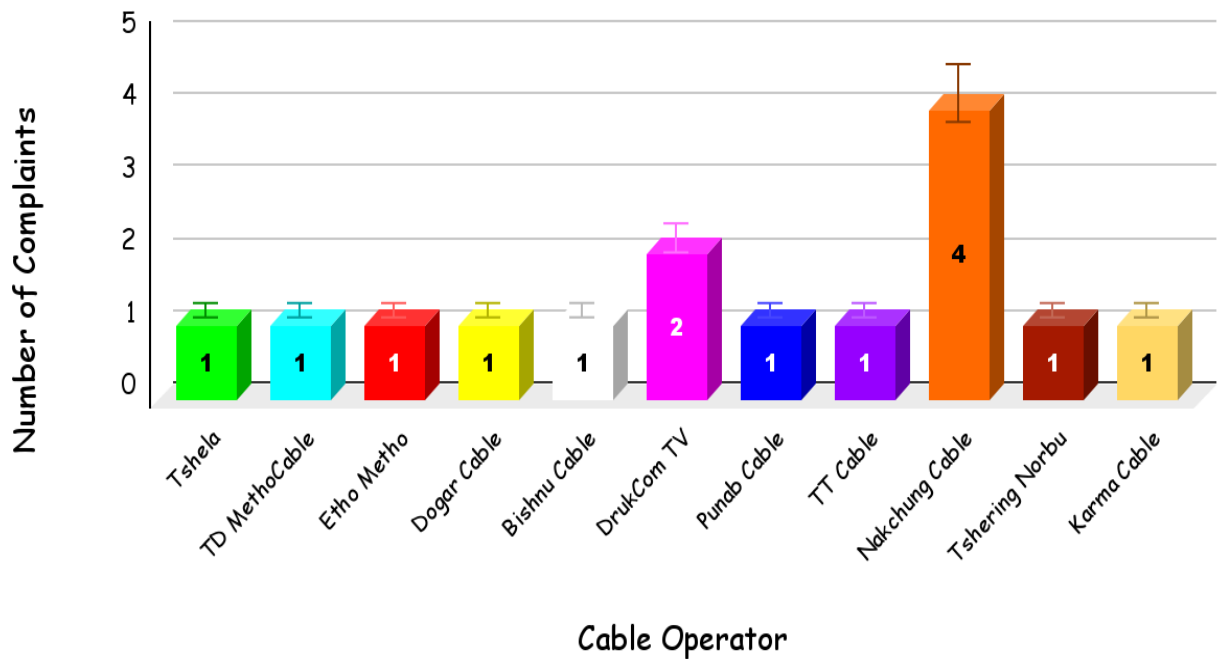
Sl. No.	Cable TV Operator	Date of Complaint	Complaint Resolved date	Area/Location	Name/Email of Complainant	Contact Number/Particulars	Issue/Description	Channel of Communication received	Remarks
1	TT Cable	04/11/2024		Gaselo, Wangdue	Dophu	17652725	Line Issue	Phone Call	Resolved
2	Nakchung Cable	14/11/2024	14/11/2024	Gedagom	Durja Dhan Rai	17342725	new connection	Phone Call	Resolved

## Monthly Complaint Report.

December, 2024

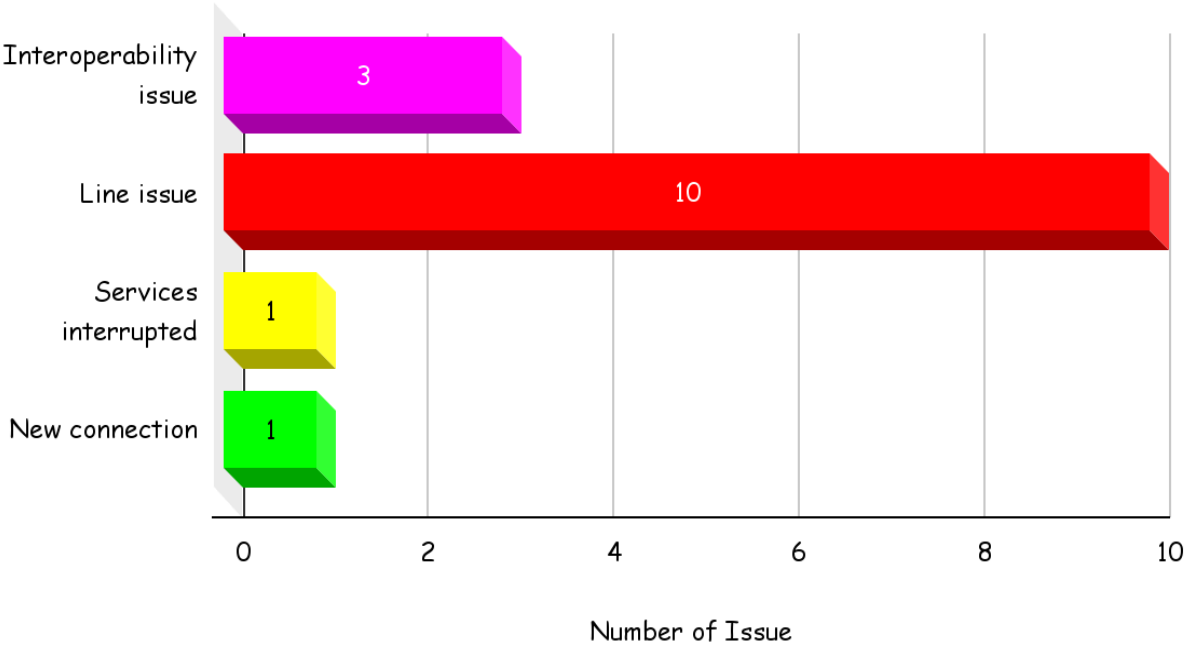
Sl. No.	Cable TV Operator	Date of Complaint	Complaint Resolved date	Area/Location	Name/Email of Complainant	Contact Number/Particulars	Issue/Description	Channel of Communication received	Remarks
1	Tshering Norbu Cable	03/12/2024	03/12/2024	Phongmey T/gang	Namgay	17742038	Line Issue	Phone Call	Resolved
2	Nakchung Cable	05/12/2024	05/12/2024	Gedagom	Dorji Wangdi	17117255	Interoperability	Phone Call	Resolved
3	Nakchung Cable	12/12/2024	12/12/2024	Genekha	Thinley Wangdi	17777400	Line Issue	Phone Call	Resolved
4	Nakchung Cable	16/12/2024	16/12/2024	Namselling		77694277	Line issue	Phone Call	Resolved
5	Drukcom	16/12/2024	16/12/2024	Namselling	Thinley	17447007	Line issue	Phone Call	Resolved
6	Karma Cable Service	20/12/2024	20/12/2024	CHP/DGPC Colony Chukha	Norden Tamang	nordent@education.gov.bt	Line issue	Email	Resolved

## Complaint Against Cable Television Operator



- As per the data recorded from October 1st - December 31st , 2024, the highest complaint was against Nakchung Cable Service (4) complaints, followed by Drukcom TV with (2) complaints, and Tshela Cable Service, TD Metho Cable, Etho Metho Cable, Dogar Cable, Bishnu Cable,, Punjab Cable, Karma Cable with (1) complaint each.
- Out of 15 complaints received, 7 were from Thimphu Thromde/Dzongkhag and 8 from different dzongkhags.

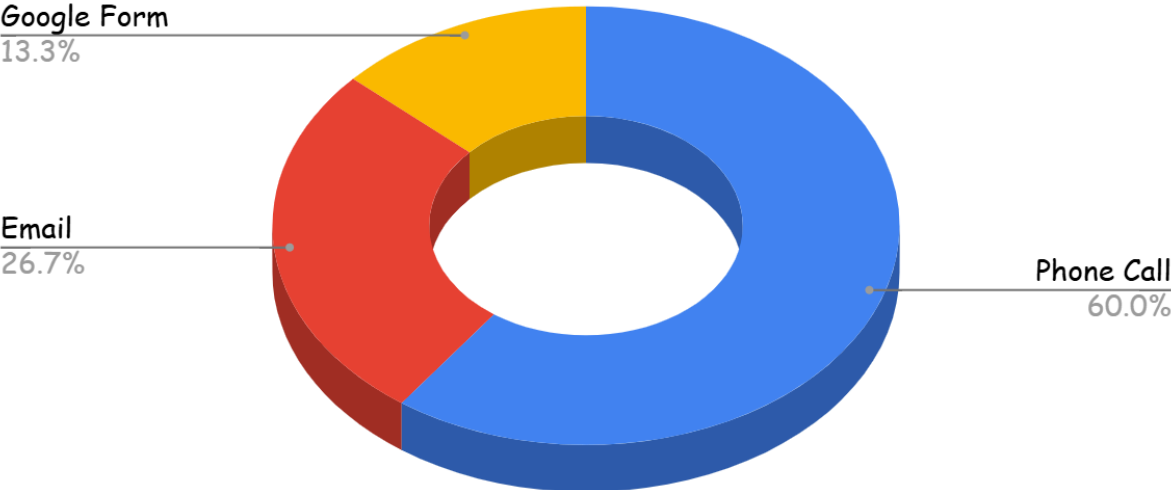
# Subject of Complaint



- On the subject of the complaint, (10) were on Cable Line Issue, (3) on Interoperability issue , (1) on service interruption issue, and (1) New connection.

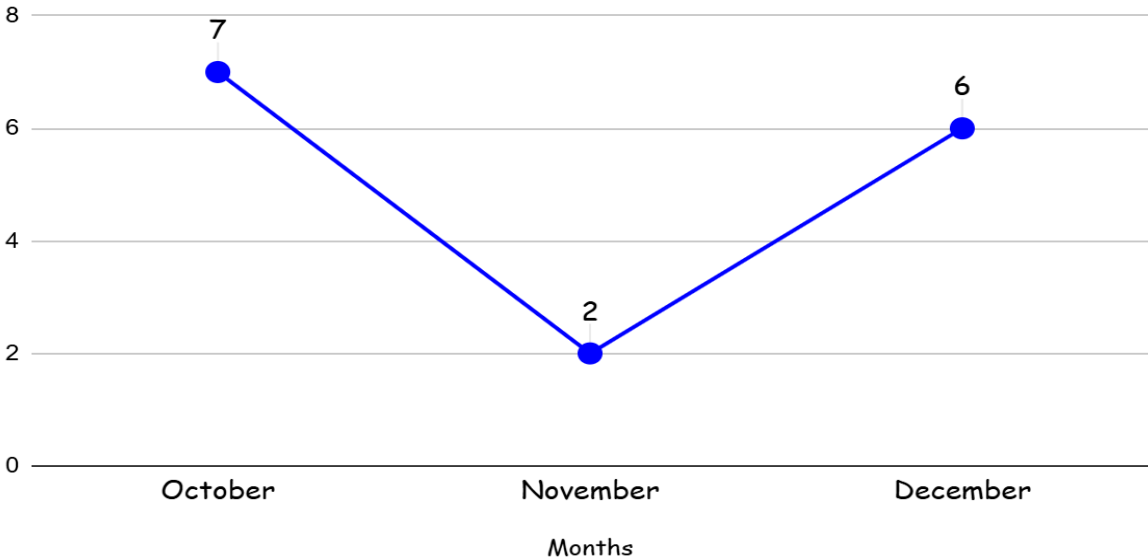


# Channel of Communication



The Channel of Communication used to lodge their complaint is through Phone Call (9), followed by Email (4) and Google Form (2) in this Quarter

# Month of Complaint



- The highest number of complaints received was in the month October (7) followed by (6) in December and (2) in December, 2024.

## **6. Key Activities Carried Out by the Authority**

1. The InfoComm and Infrastructure Division implemented a phased approach to improve the communication cable layout in Thimphu Dzongkhag. The cable layout project along the route from STCBL Petrol Pump to Babesa Zero and further from Babesa Zero to Lungten Zampa was successfully completed within the stipulated timeframe.
2. The team conducted a field inspection to identify and assess the condition of common ducts along the Babesa-to-Lungtenzampa express way. The primary focus was to evaluate their usability by examining the extent of clogging and physical damage. The collected data will inform future planning, cleaning, restoration, and long-term maintenance plans.
3. During the field visits, the team engaged with local cable operators (LCOs), internet service providers (ISPs), and representatives from the Ministry of Infrastructure and Transport(MoIT), GovTech, and Thimphu Thromde. Stakeholders, along with their technical teams, were actively involved in discussions and the execution of cable layout improvement work.
4. The Authority received various complaints regarding cable television services, and the team resolved these complaints through field visits, direct communication with cable operators, and random inspections.

## **7. Findings**

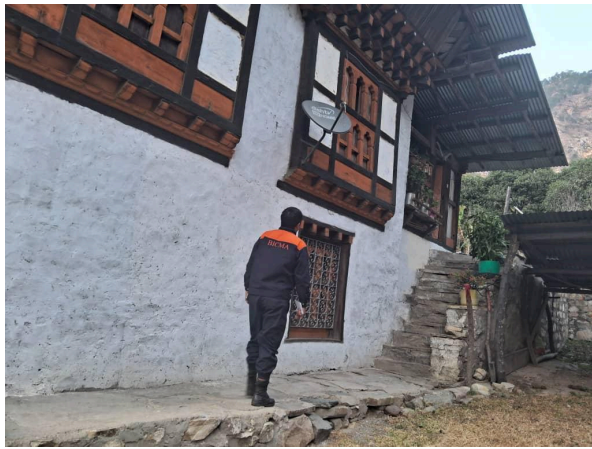
1. In most areas visited, while the cable infrastructure is well-established and capable of accommodating new subscribers, there is a lack of awareness about the distinction between Analog and Digitalized CATV systems, and the quality and range of services provided by cable operators need improvement to compete effectively with the perceived benefits of DTH.
2. The communication cable layout project from STCBL Petrol Pump area to Babesa Zero and from Babesa Zero to Lungten Zampa was successfully completed within the designated timeframe, achieving its objectives of enhancing safety by eliminating loose and hanging wires, improving the visual appeal of the area by addressing cable clutter, and introducing standardized practices for consistent installation and easier future maintenance.
3. The inspected stretch between Babesa and Changjiji Bridge contained a continuous run of common ducts along the highway, with the overall structural condition appearing sound despite some visible wear and cracks, particularly near the edges of the openings.
4. As per the data recorded from October 1st - December 31st , 2024, the highest complaint was against Nakchung Cable Service (4) complaints, followed by Drukcom TV with (2) complaints, and Tshela Cable Service, TD Metho Cable, Etho Metho Cable, Dogar Cable, Bishnu Cable,, Punjab Cable, Karma Cable with (1) complaint each.

## **8. Way Forward**

1. The complaints lodged with the Authority will be properly recorded and resolved.
2. Compile and publish the quarterly report for the cable television services to facilitate Authority in taking proper regulatory measures for improving the quality of cable television services
3. The Authority will take up the monitoring, verification and inspections on a regular basis to other Dzongkhags.
4. The Authority will work on other areas of Thimphu and continue with cable layout work.

**Annexure A: Monitoring tour to Mongar and Lhuentse to monitor and verify the discontinuation of Direct-to-Home (DTH) services**





*Figure 2: DTH user at Lhuntse and Mongar*

**Annexure B: Phase 1- STCBL Petrol Pump till Babesa Zero/ Junction**

**Before**



**After**



*Figure 3: Improper Cable Layout; Before and After*

**Before**



**After**



*Figure 4: crisscrossing of cable layout; Before and After*

**Before**



**After**



*Figure 5: Improper Cable Layout; Before and After*



**Annexure C: Phase 2- Babesa Zero till Lungten Zampa Bridge**

**Before**

**After**



*Figure 6: Improper cable layout near Babesa Zero/Junction, Before and After*

**Before**



**After**



*Figure 7 Improper cable layout along Babesa Express way, Before and After*

**Before**



**After**



*Figure 8: Improper cable layout at Changjalu, Before and After*

**Before**



**After**



*Figure 9: Improper cable layout near Helipad, Before and After*

**Before**



**After**



*Figure 10: Improper crisscrossing of cables at Changbangdu, Before and After*

**Before**



**After**



*Figure 11: Improper cable road crossover at Changzamtok, Before and After*

**Annexure D: Google Earth Markings**



*Figure 12: Google Earth screenshot showing the common duct (red line) located from Babesa Zero till Changji area.*

## Annexure E: Photographic Evidence

- Photos illustrating the condition of ducts along the inspected route.



*Figure 13: Joint Working team gathered with MoIT officials at the starting point from Babesa Zero Junction.*



*Figure 14: Common duct under the footpath along Babesa Express Highway*



*Figure 15: Common duct near O-plaza building*



*Figure 16: Common duct above Olakha workshop and towards Olakha Bridge*





*Figure 17: Common duct along Changjalu road*



*Figure 18: Common duct at near helipad*

**Annexure F: Detailed Table of Observations**

Sl No	Location	Remarks
Required road cutting to replace Aerial crossing		
1	Simtokha road junction	To Clean Aerial Network
2	Olakha top, BPC substation, road ways	
3	Chibogang road junction	
4	Babesa School, road	
5	Babesa New DGPC office road	
6	Babesa Zero point Junction	
7	City Bus Park, RTC Road Junction	
8	Olakha-Changjalu D-Site road junction	
9	Olakha BTS, Road junction (CDZ)	
10	Jungzhina near BTS road crossing	
11	Bebena Area	
12	Langchuphaka, Shelter area (near Banquet Hall)	
13	Jungzhina bridge, pole cable to Thomde duct pipe connection	
14	Rabten apartment crossing	
15	Changlimithang upper gate crossing	
16	Sunday Market parking crossing	
17	Ashi Sonam Choden Apple Orchard roadways	
Duct blocked to be cleared on the road		
1	Olakha near BTS, (CDZ)	
2	Olakha upper line, road (manhole blocked)	
3	Hotel White Tara, Olakha, need to connect to duct	
4	Central Plaza, (Duct to trench connection required)	

5	Chorten to Hospital Gate	Due to duct blockage, cables could not lay
6	Chorten to upper RBP Gate	
7	Near Changzamtok BTS	
8	Near GovTech road junction	
9	Chubachu bridge JB covered with blacktop	
10	Changangkha lhakhang road junction, duck blocked	
Trench blocked to be cleared		
1	Olakha, Hotel white Tara to Bridge	Due to drainage and sewerage waste, it is difficult to lay cables
2	Babesa, near O'Plaza area	
3	Chubachu, between two round about trench	
Required to construct additional Manhole		
1	Babesa area, the existing manhole distance exceeded 200 meters, not able to lay cables	
2	Required outlet from Manhole to take cable	
3	Required ROW to erect pole for cable distribution from manhole once outlets are taken out	