



Presentation

on

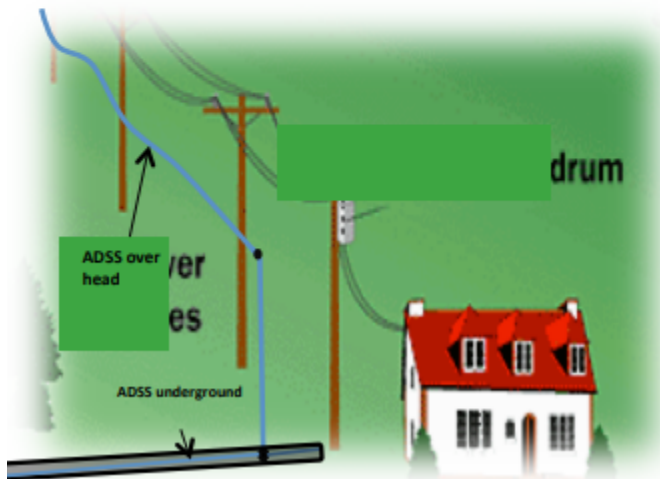
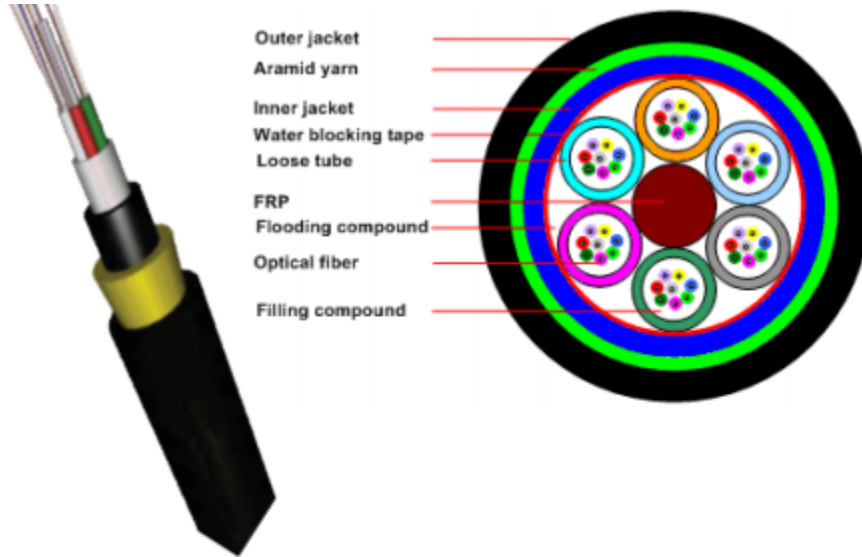
National Fiber Network

Anand Acharya, BPC.



ADSS (All Dielectric Self Supporting)

33KV and Below





OPGW (Optical Power Ground Wire)

66KV and above





History

1. First Agreement signed in 2002, between BPC and BT.
2. BPC started installing OPGW on all its new transmission lines, which serves dual purpose of both protection and communication.
3. on Jan 10, 2005, an agreement signed between BPC and BT for leasing fibre (on 220kV Sem to R/chu line).
4. Govt directed MTI and MoIC to sign a MOU between MoIC and the BPC (signed on May 30, 2007) for sharing power infrastructure.
5. ICT facility license was issued to BPC on July 1st, 2007
6. BPC started leasing out fibers commercially to both Bhutan Telecom Limited and Tashi InfoComm Limited based on the BICMA's approved tariffs.



Consolidation of Optical Fiber Asset

1. Government decided to create a level playing field by consolidating the Optical fibre assets lying with BPC and BT.

2. An agreement between RGoB and the BPC was signed on September 30, 2011 based on executive Order from the Royal Govt.
 - a. implementation of the National Broadband Master Plan Projects
 - b. Mandated BPC with O&M of fibre.



Stake Holders and fiber allocations

1. Bhutan Telecom Ltd.
2. TashiCell
3. DrukCom Pvt. Ltd
4. NANO
5. BPC
6. DIT&T

Fiber Distribution:

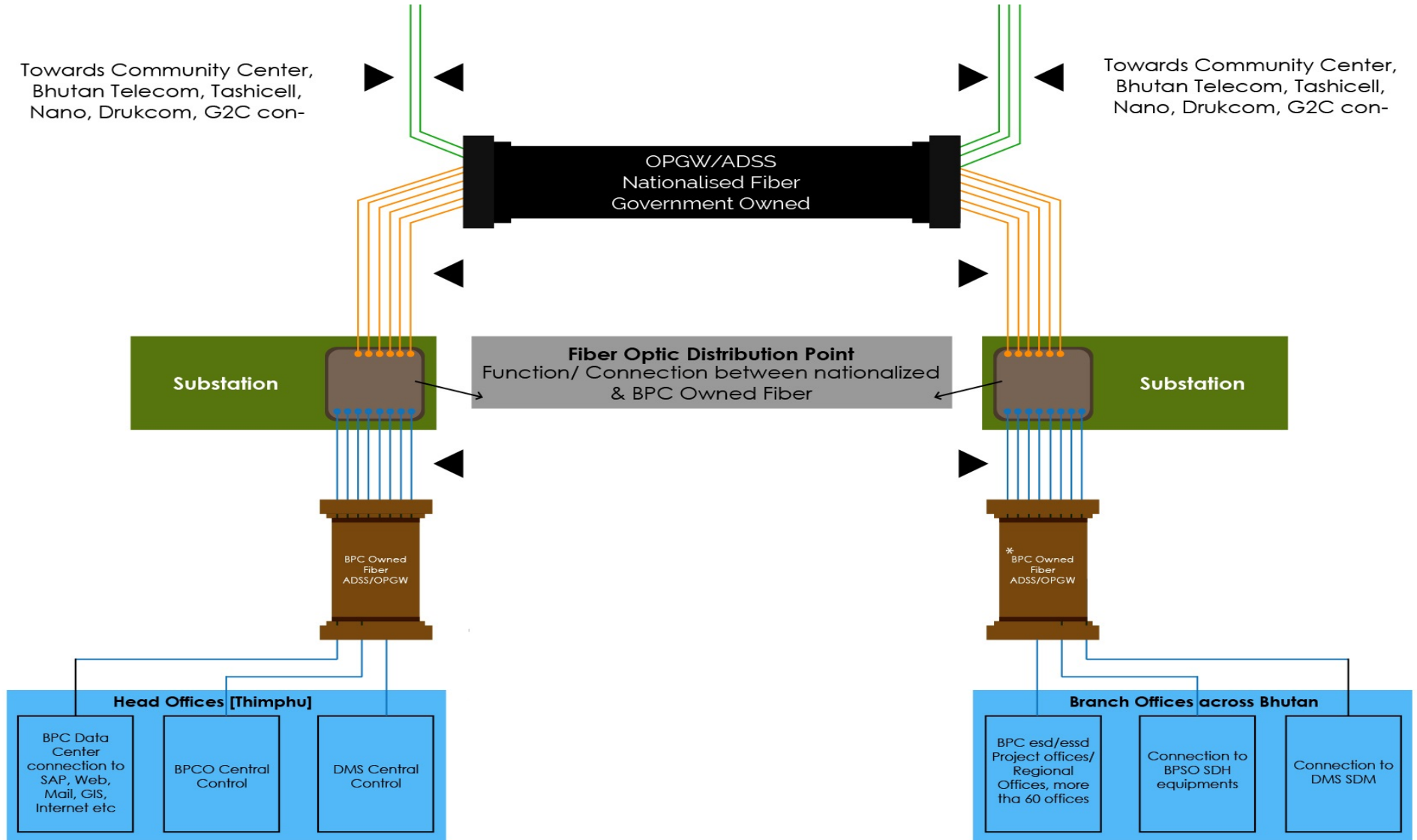
6 pairs of Nationalized fiber to BPC.

18 Pairs to DIT&T





Fiber Network Coverage





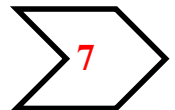
Fiber Network Coverage

- **RGoB owned National Fiber Networks:**

1. 20 Dzongkhags,
2. 200 Gewogs Offices (Remaining Gewogs are: Laya, Soe, Naro and Lingshi)
3. 19 Dzongs.
4. 196 Community Centers
5. IT Tech Park, Thimphu.
6. Royal Academy, Paro.

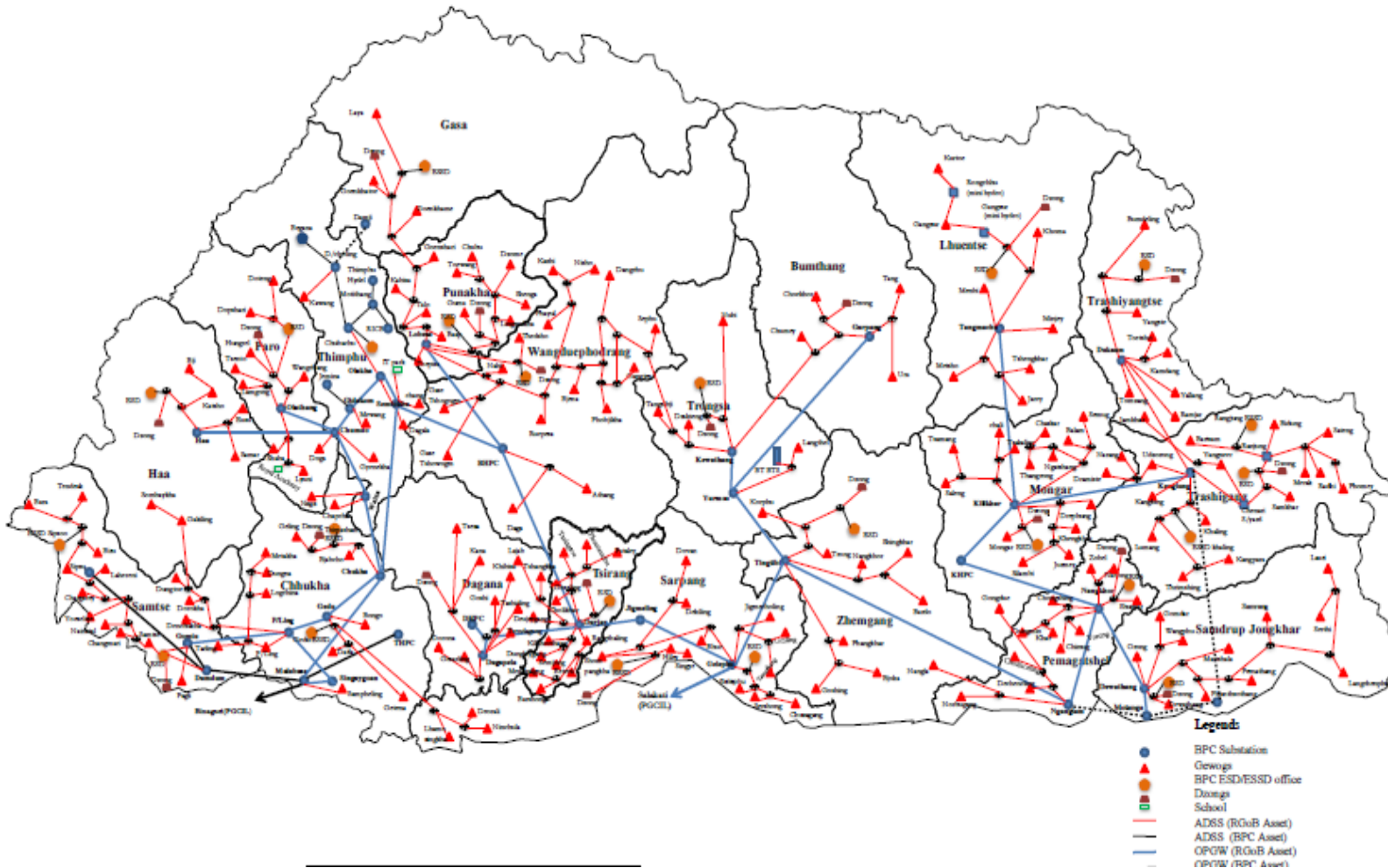
- **BPC Owned fiber.**

1. All regional BPC Corporate Offices and Electricity Services Divisions spread across the country
2. All Hydro Power Plants



Fiber Network

ADSS and OPGW Map of Bhutan





Projects implemented

(National Broadband Master Plan Implementation Project)

1. Live line replacement of existing ground wire with Optical ground wire in 132 & 66 kV transmission line.
2. Live line replacement of existing ground wire with Optical ground wire in 220kV Thimphu-Phuentsholling transmission line.
3. Live line installation of all dielectric self supporting (ADSS) optical fiber cables on BPC distribution poles at voltage level 33kV and below (Phase-I): **130 Gewog Centres**
4. Live line installation of all dielectric self supporting (ADSS) optical fiber cables on BPC distribution poles at voltage level 33kV and below (Phase-II): **64 Gewog Centres.**



Projects implemented

(National Broadband Master Plan Implementation Project)

5. Extension of ADSS to Dzongkhag Administration offices (20 Dzongs)
6. Community e-Centres. (171 Community Centres across Bhutan)
7. Extended fiber connectivity to the IT Tech Park.
8. Extended Optical fiber connectivity to the Royal Academy.
9. Extended Optical fiber connectivity to all Hydro Power Plants.
10. Interconnected BPC's substations and divisional offices with fiber all over Bhutan.



O & M

Total Nationalized Fiber Network as of December, 2017.

S.No	Particular	Total Length (km)
1	OPGW	848.336
2	ADSS	2320.607
TOTAL		3,168.943



O & M

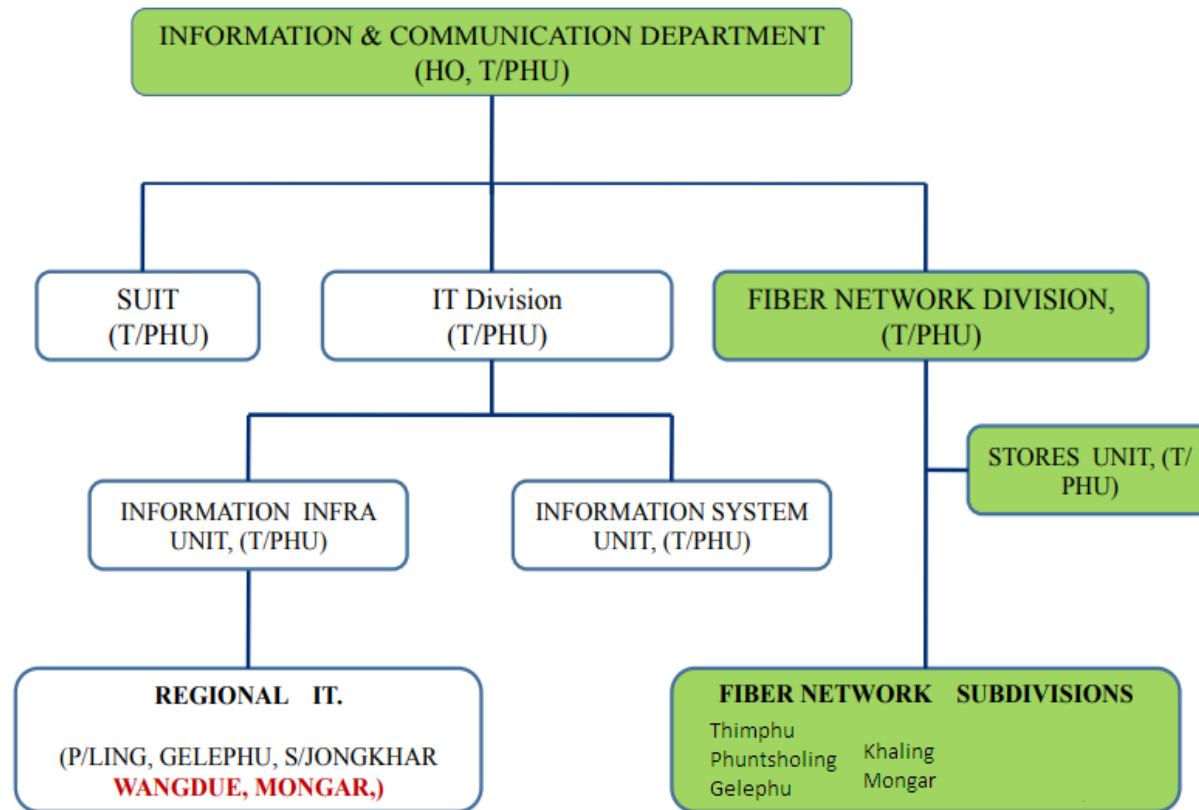
Total BPC Fiber Network as of December, 2017.

S.No	Particular	Total Length (km)
1	OPGW	141.822
2	ADSS	85.518
TOTAL		227.34



O&M

- Being Carried out by Fiber Network division, Information Communication Department , Bhutan Power corporation.
- O&M performed by 30 employees divided into 5 teams in:
 - Thimphu
 - Phuntsholing
 - Gelephu
 - Khaling
 - Mongar





Challenges

- Receiving attention right from Dzongkhag, Gups, CC operators, Operators, Hydro Power Plants, Financial Institutes..etc
- Its importance and sensitiveness will only grow in future with many ICT oriented projects and business houses in pipeline.
- Risk of tremendous financial implication that service interruption might pose in near future.
- Difficulties in attending to fault during disaster and natural calamities.
- Shortage of manpower & Vehicle. Very difficult to cope up during natural calamities.
- Concerns raised by every stakeholders & consultants.

THANK YOU