



# Connectivity in Bhutan: *Opportunities and Challenges*

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# Bhutan

- Landlocked
- Population: 750,000+
  - 20 Districts
  - 205 Gewogs (village blocks) - sparse
- Mountainous terrain



# Road to Broadband

1. Telco – Single fiber pair for Free
  - a. International gateway
  - b. Domestic Internet
  - c. Mobile
2. Government pays ONM to power company

Broadband – 512kbps



1999 –  
Internet



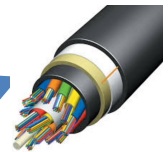
Dialup &  
2G  
Nu. 50,000  
@60 kbps



2007 –  
OPGW &  
ADSS



2008 - 3G  
2013 - 4G  
Nu. 199@ 1.3Gb



Fiber  
expansion  
Nu. 8000  
@1mbps

**3100+ km**



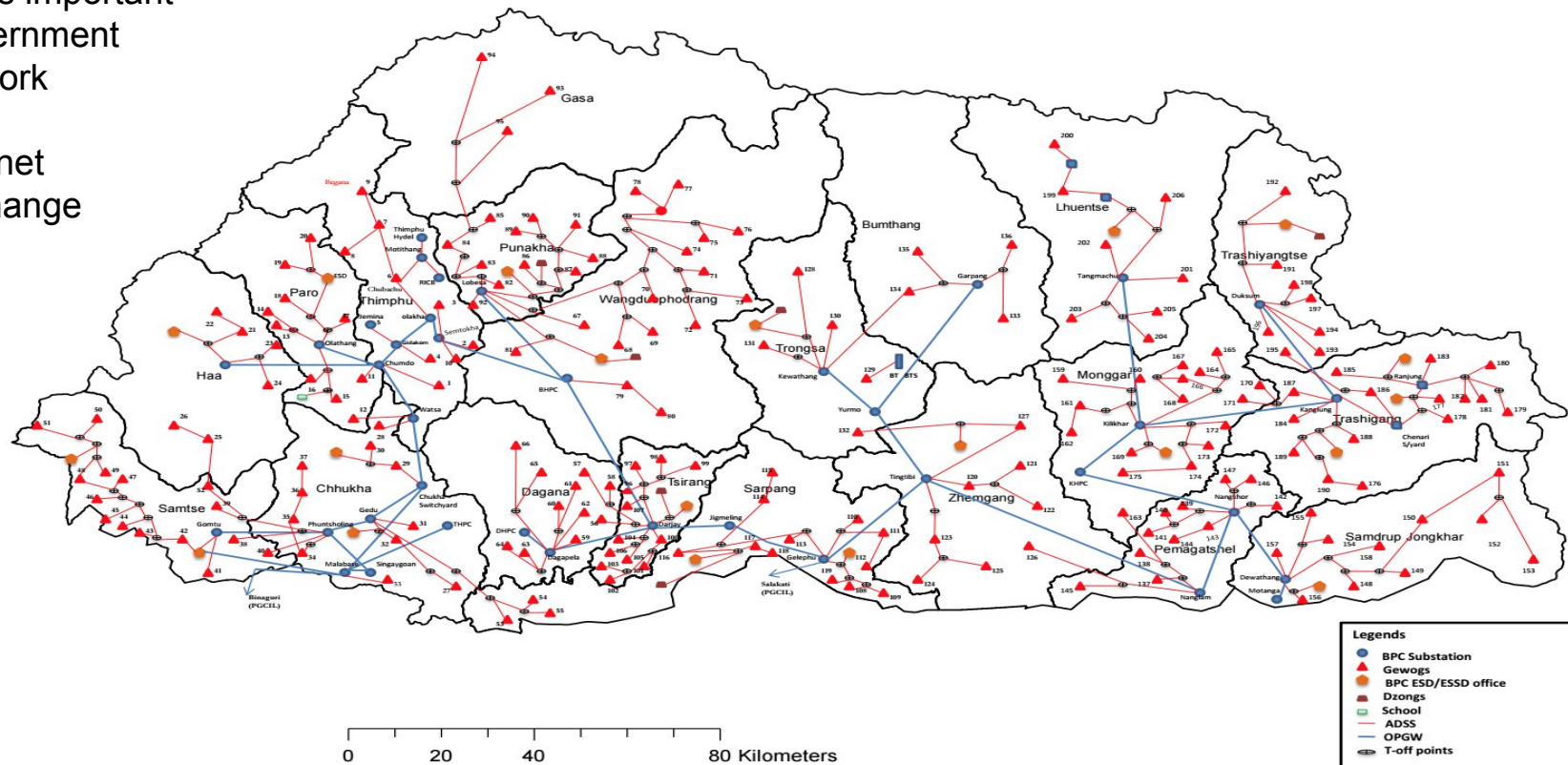


# Optical Fiber Infrastructure

Building resilient network is important

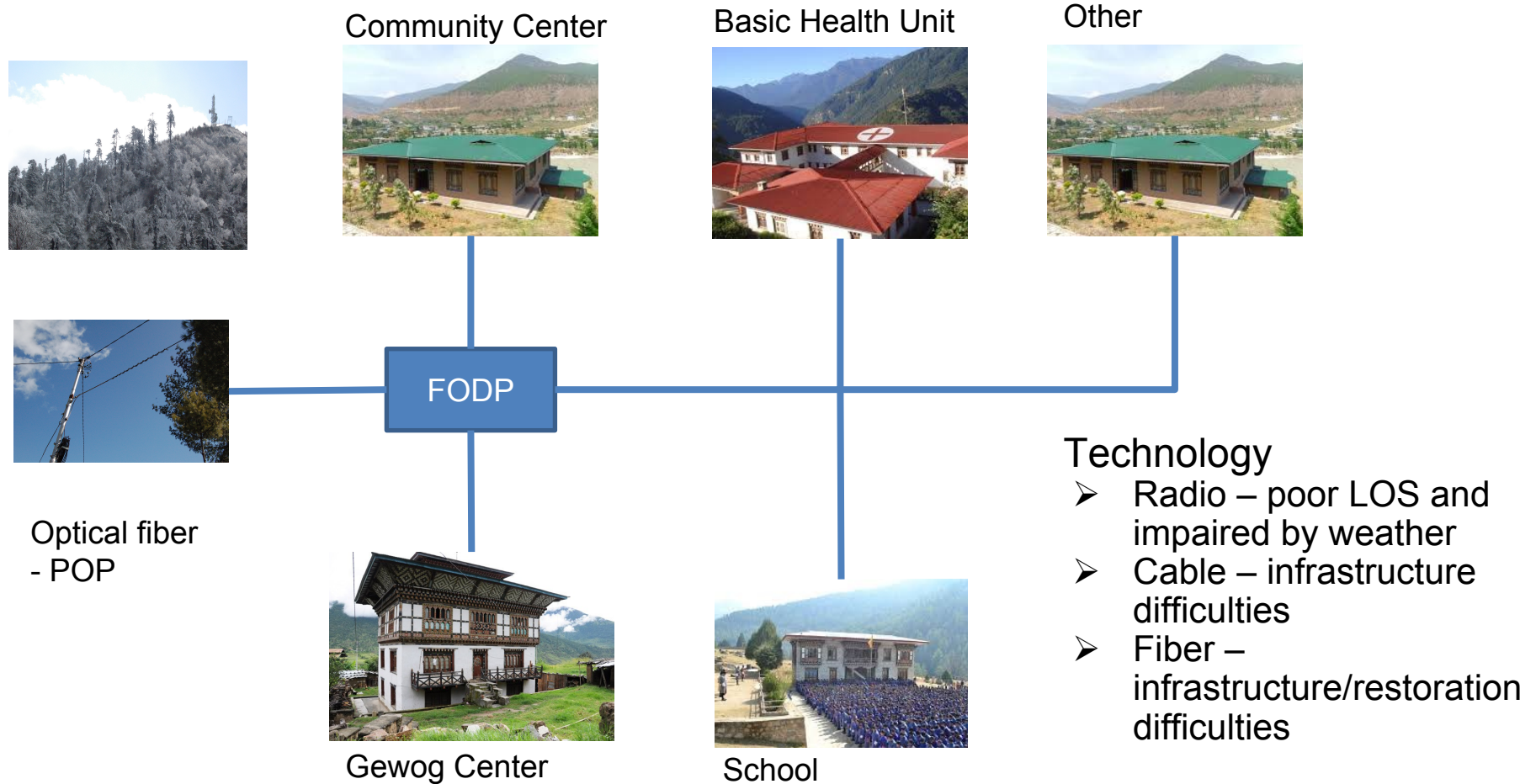
1. Government network
2. R&E
3. Internet Exchange

Dzongkhag wise Map



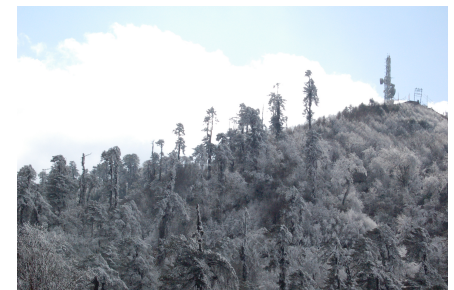
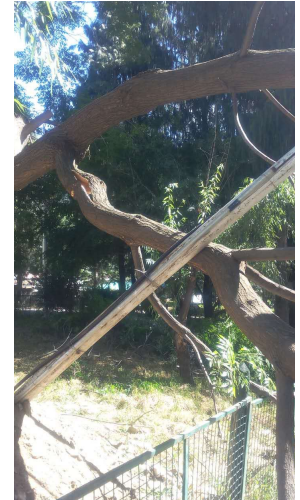


# Rural connectivity



# Broadband Reliability

- Power infrastructure (Transmission and Distribution line) – 98%
  - Urban – easy
  - Rural – difficult
- Sparse settlement
  - No economic of scale
  - FTTX is costly
  - 3G/4G
- Terrain
- Technology and Apps
- Competency and Digital Literacy



# Connectivity

