

SATELLITE DEVELOPMENT, ISSUES AND CHALLENGES IN NEPAL

AUGUST 2017

BY: MANISH MALLICK

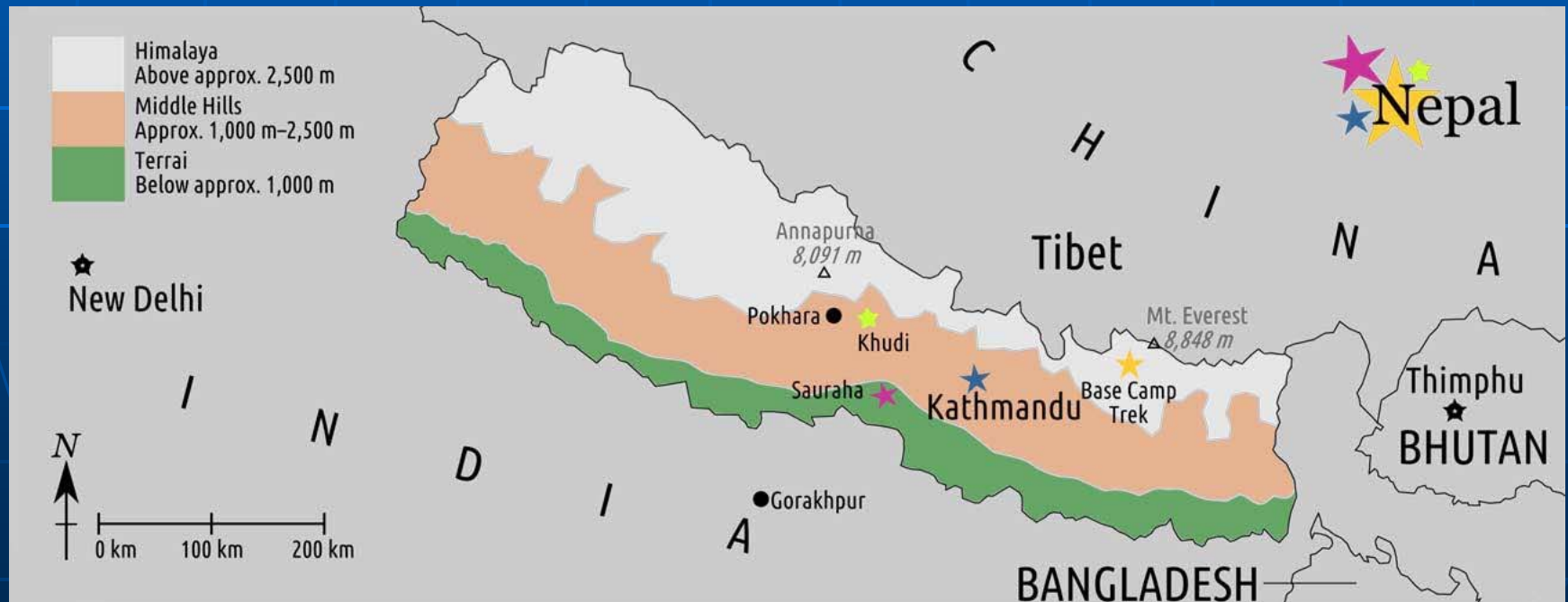
(Electronics and
telecommunication Engineer at
Ministry of Information and
Communications, Government
of Nepal)

OUTLINE

- INTRODUCTION
- CURRENT CONSUMPTION OF SATELLITE BANDWIDTH
- ITU ALLOCATION FOR NEPAL
- CHALLENGES OF IMPLEMENTATION
- COUNTRY'S OWN SATELLITE PROGRAM
- SATELLITE FOR SAARC REGION

INTRODUCTION OF NEPAL

- 83 percent of total land covered with mountains and hills and the remaining 17 percent by the plain.
- Altitude varies from 60 meters to 8848 meters from sea level in a vertical distance of 200 km.



CURRENT CONSUMPTION OF SATELLITE BANDWIDTH

- Nepal Telecom:

- 75 sites use satellite to provide cellular backhaul.

- 6 MHz in C-Band and 89.2 MHz in Ku- Band(China Sat-10) for domestic services like Cellular backhaul, Internet and NGN with small data rate.

CURRENT CONSUMPTION OF SATELLITE.... (CONTD..)

- Ncell Pvt. Ltd. :

24 MHz of satellite bandwidth is leased from PCCW global (HK) limited for transmission mode for 14 sites and redundancy to a couple of data centers.

- Smart Telecom Pvt. Ltd. : **13 MHz** BW

- Nepal Satellite Telecom Pvt. Ltd. :

Satellite BW of **11.42 MHz** in Ku-band (China Sat-10 Satellite) used for BSC-BTS connectivity.

CURRENT CONSUMPTION OF SATELLITE.... (CONTD..)

- STM Telecom Sanchar Pvt. Ltd. :
4 MHz of satellite bandwidth
- Mercantile Communications Pvt. Ltd.:
2.8 MHz of BW (exclusively for VSAT services).
- Around 435 MHz satellite B/W being used by the broadcasting industry (FM radio, TVs and DTH)

ITU ALLOCATION FOR NEPAL

- Nepal assigned 50 degree east and 123.3 degree east orbital slots by the ITU.
- **MoIC** manages Radio Frequency Spectrum including the Satellite Orbital Resource allocated to Nepal by the ITU.

ITU ALLOCATION FOR NEPAL

- The 50 degree east orbital slot includes 12 channels in the band 11.7-12.2 GHz in space to earth direction and 14.5-14.8 GHz in earth to satellite direction.
- The 123.3 degree east orbital slot includes 500 MHz in ku-band (10.7-10.95 GHz, 11.2-11.45 GHz in space to earth direction and 12.75-13.25 GHz in earth to satellite direction.)

CHALLENGES OF IMPLEMENTATION

- Reluctance of broadcasters to shift to the proposed satellite due to the country limited footprint.
- Optimal utilization of satellite bandwidth under suspicion.
- Economic viability?
- Landlocked status a challenge.

COUNTRY'S OWN SATELLITE PROGRAM

- Nepal Telecommunication Authority invited EOI from competent international firms to undertake launching and operating of satellite in the orbital slots allocated by ITU.
- 20 firms have applied and the selection process is undergoing.

COUNTRY'S OWN SATELLITE INITIATION

- Objective is to conduct the Government services like data linking between Government facilities, applications like education, medicine, etc whereas commercial services would include DTH and other broadcasting services, cellular backhaul service, VSAT services, Internet Broadband services, etc.

Satellite for SAARC region

- A geostationary satellite located at 97.3 degree E.
- Bands used: 13000-13250 MHz (UL)
11200-11450 MHz (DL)
(in conformity with the provisions of ITU Radio Regulations)
- Coverage area: territories of all SAARC member countries.
- Participating nations: Afghanistan, Bangladesh, Bhutan, Maldives, Nepal and Sri Lanka

Satellite for SAARC region(contd.)

- Satellite will have a minimum capability to dedicate one transponder of 36 MHz for each country exclusively for its own purpose.
- Nepal has prioritized the applications and the terminals required for its use among the list of proposals submitted by India.

Satellite for SAARC region(contd.)

Country Specific Network		Common Network	
Applications	Terminals	Applications	Terminals
1. Tele-medicine	50	1. Connectivity purpose for government agencies	4
2. Tele-education	100	2. Hospitals	5
3. Disaster Management System	10	3. NAST and Universities	10
4. VSAT Services	10	4. Other	1
5. Cellular backhaul	30		
Total	200	Total	20

Satellite for SAARC region(contd.)

- Officially launched in India on 5th May 2017.
- Started with a video conferencing between the heads of states of South Asian Countries sans Pakistan.
- The ground segment and the related technical matters are being worked on the assistance of the Indian Government.

THANK YOU

QUESTIONS IF ANY

??