# Workshop on "Internet Access and Adoption"

**Jointly organized by**

**ITU- Ministry of Information Technology and Telecommunication - USF Pakistan**

## Experience of Nepal on RTDF Utilization.

**10-11 October 2018, Islamabad Pakistan**


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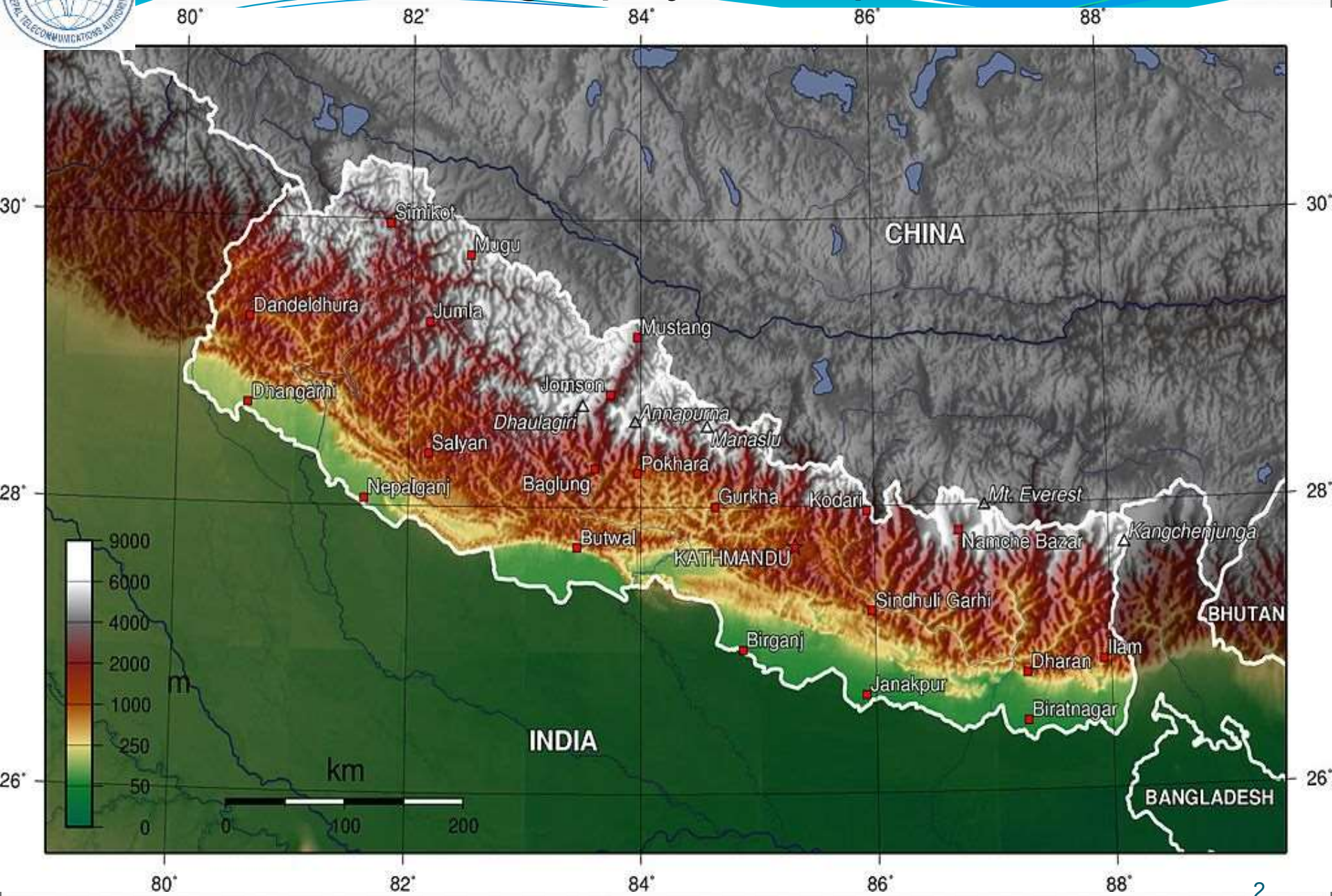
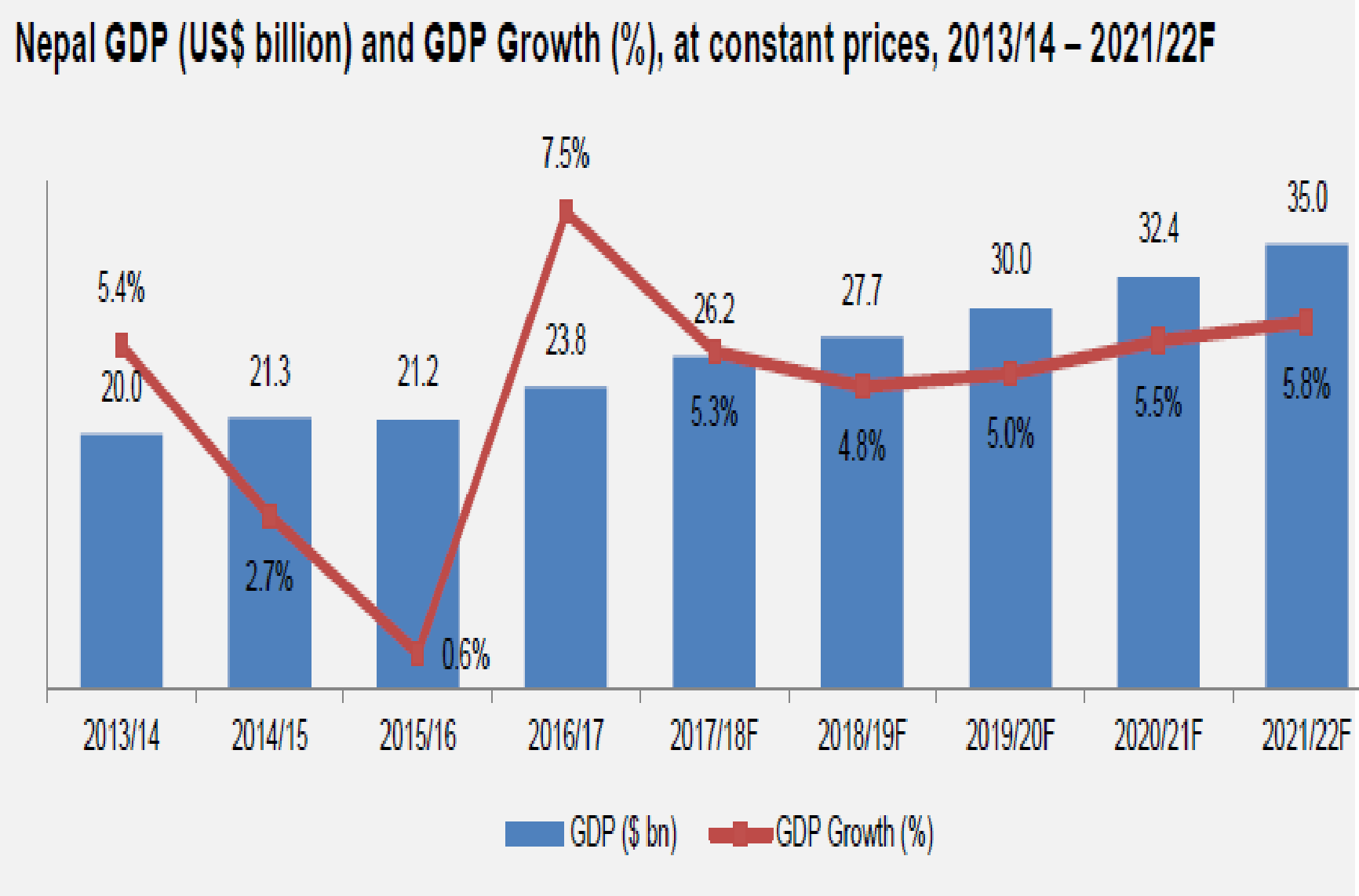
# Geography of Nepal



# Nepal GDP Growth



# Geography and Demography of Nepal

| | |
|---|---|
| Continent | ASIA |
| Region | South Asia |
| Area | Ranked 93rd (occupying just 0.1% of the earth's surface ) |
| Total | 147,181 square kilometers (56,827 sq mi) |
| Land | 92.94% |
| Water | 7.06% |
| Coastline | 0 km (0 mi) |
| Borders<br>China: ,1,236 km (768 mi)<br>India:,1,690 km (1,050 mi | Total Borders<br>2,926 km (1,818 mi) |
| Highest point | Mount Everest, 8,848 m (29,029 ft) |
| Population | 2,92,91,746 growth rate of 1.35% |
| Population density. | ➢Plain region 17 % of total Land 50% density<br>➢Hilly region 68% of total land 44% density<br>➢Himalaya region 15% of total Land and 6% density |

## Voice Telephony Service (Source: NTA MIS) :-

### 1. Telecom Statistics :- Data of Ashad , 2075 (16 July, 2018)

### 1.1 Subscription of Voice Telephony Service :-

| Services / Operators | Fixed | | | Mobile | | Others | Total |
|---|---|---|---|---|---|---|---|
| | PSTN | WLL | VSAT | GSM | CDMA | GMPCS | |
| **NDCL** | 686,762 | 120,810 | 581 | 17,586,214 | 1,586,153 | - | 19,980,520 |
| **UTL** | - | 50,136 | | - | 476,738 | - | 526,874 |
| **NCELL** | - | - | | 16,513,859 | - | - | 16,513,859 |
| **NSTPL*** | - | 2,984 | | 325,554 | - | - | 328,538 |
| **STPL** | - | - | | 1,851,021 | - | - | 1,851,021 |
| **Others** | - | - | | - | - | 1742 | 1,742 |
| **Total** | **686,762** | **173,930** | **581** | **36,276,648** | **2,062,891** | **1742** | **39,202,554** |
| | **861,273** | | | **38,339,539** | | **1,742** | |

| Services | Subscription (% ) |
|---|---|
| Fixed | **2.94** |
| Mobile | **130.89** |
| Others ( GMPCS) | **0.01** |
| **Total** | **133.83** |

**Population Projection (2011-2031) 29,291,746 (Source: cbs.gov.np)**

# Telecom Sector ...

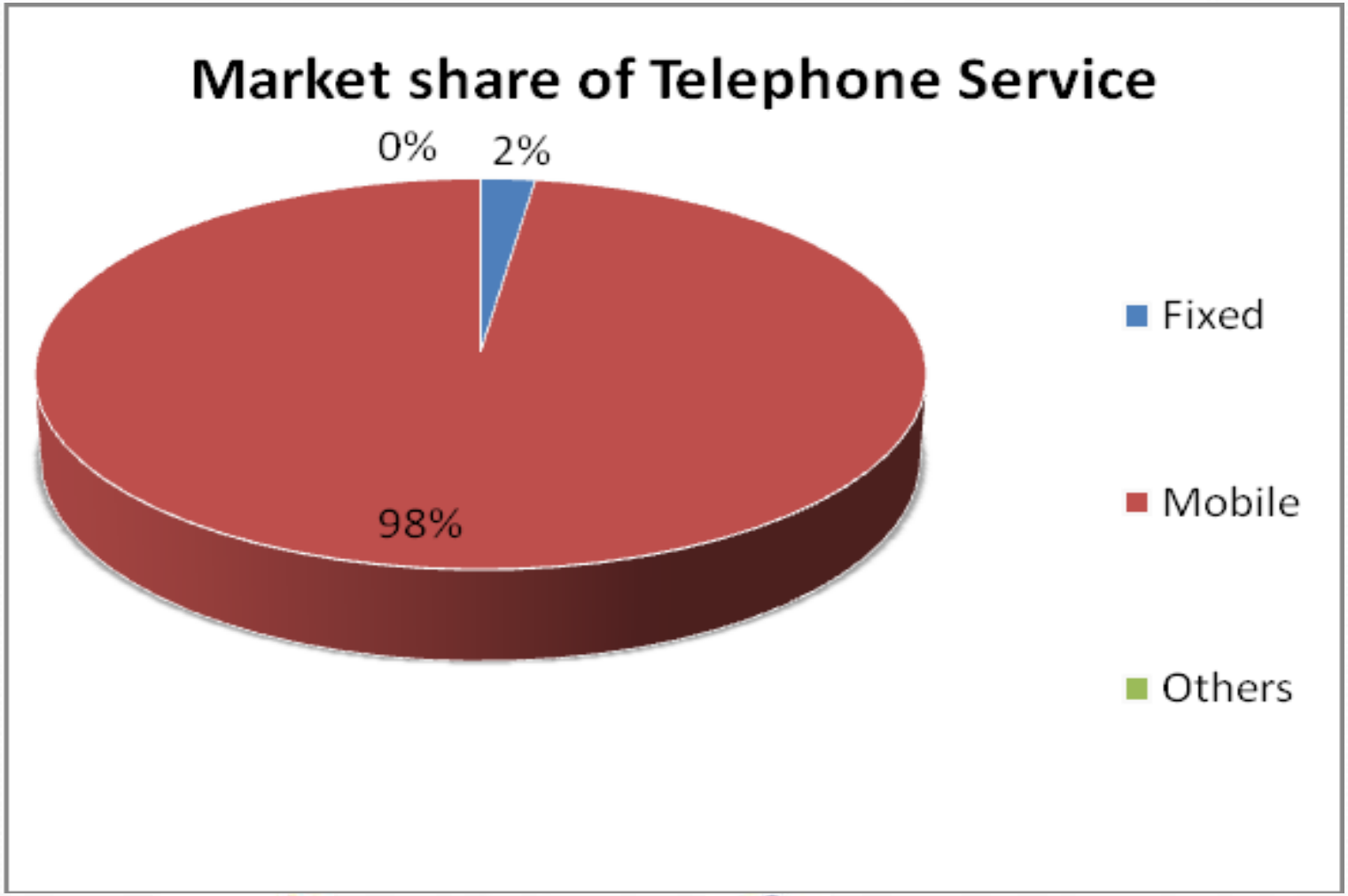
## Broadband Services till 16 July, 2018 (Source: NTA MIS)

**1.2 Broadband Service**

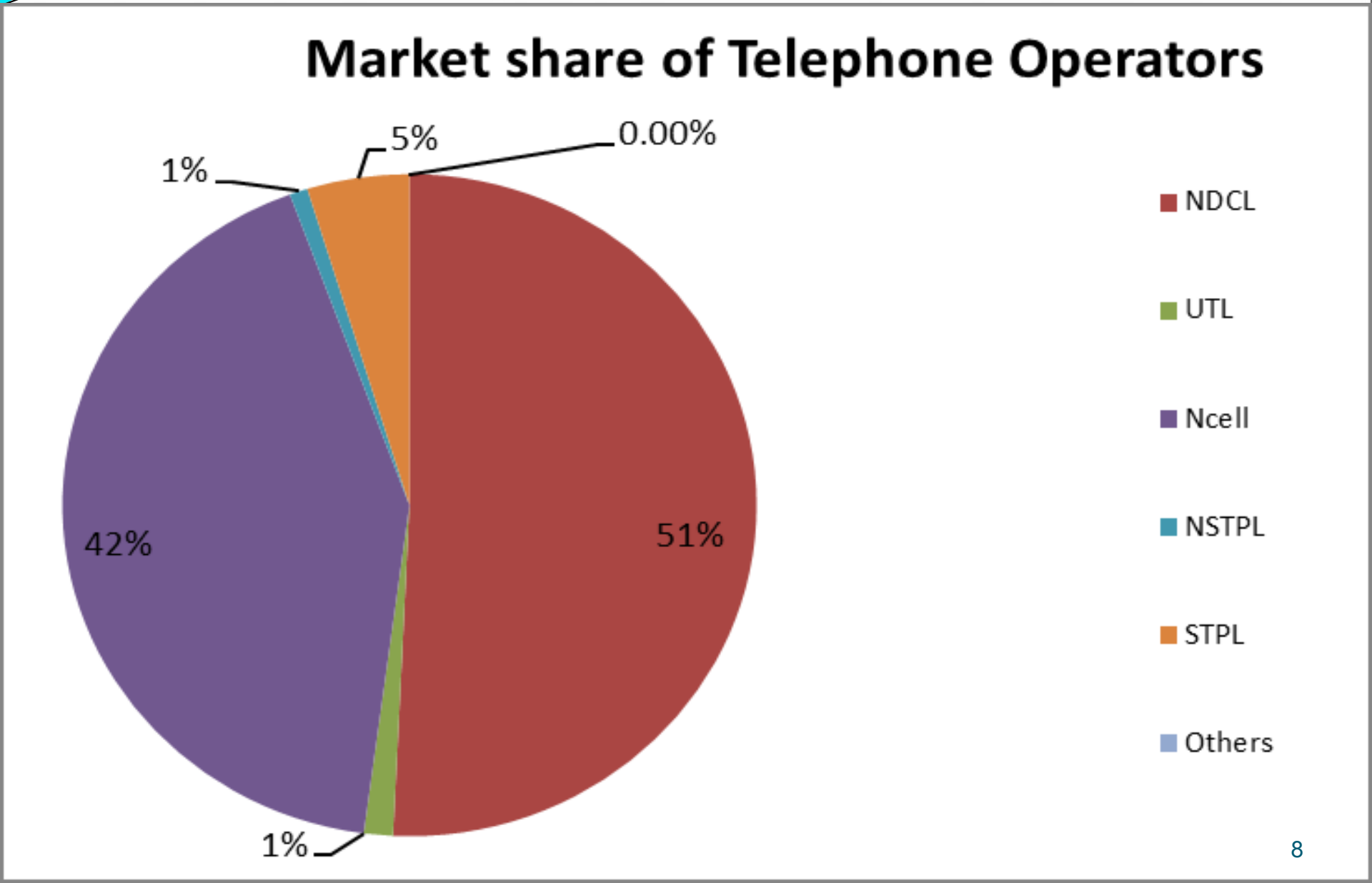
| Services | | Subscribers | | | | | Total |
|---|---|---|---|---|---|---|---|
| | | NDCL | UTL | NCELL | STPL | ISPs | |
| Fixed Broadband (Wired) | ADSL # | 1,006,339 | - | - | - | - | 1006339 |
| | Cable/ FTTH # | 3,270 | - | - | - | 2,008,974 | 2012244 |
| | Internet LeaseLine | 552 | | | | | 552 |
| Fixed Broadband (Wireless) | Radio (Wi-fi) # | | | | | 217,541 | 217,541 |
| | WiMAX # | 85,917 | - | | - | | 85,917 |
| Mobile Broadband | 3G | 4,702,311 | | 4,986,460 | | | 9,688,771 |
| | 4G | 605,791 | - | 1,123,348 | 41,301 | - | 1,770,440 |
| | EVDO | 136,573 | 63,203 | | | | 199,776 |
| **Total** | | **6,540,753** | 63,203 | 6,109,808 | 41,301 | 2,226,515 | 14,981,580 |

| Services | subscription(%) |
|---|---|
| Fixed Broadband (Wired) # | 10.31 |
| Fixed Broadband (Wireless) # | 1.04 |
| Mobile Broadband | 39.80 |
| **Total Broadband (%)** | 51.15 |

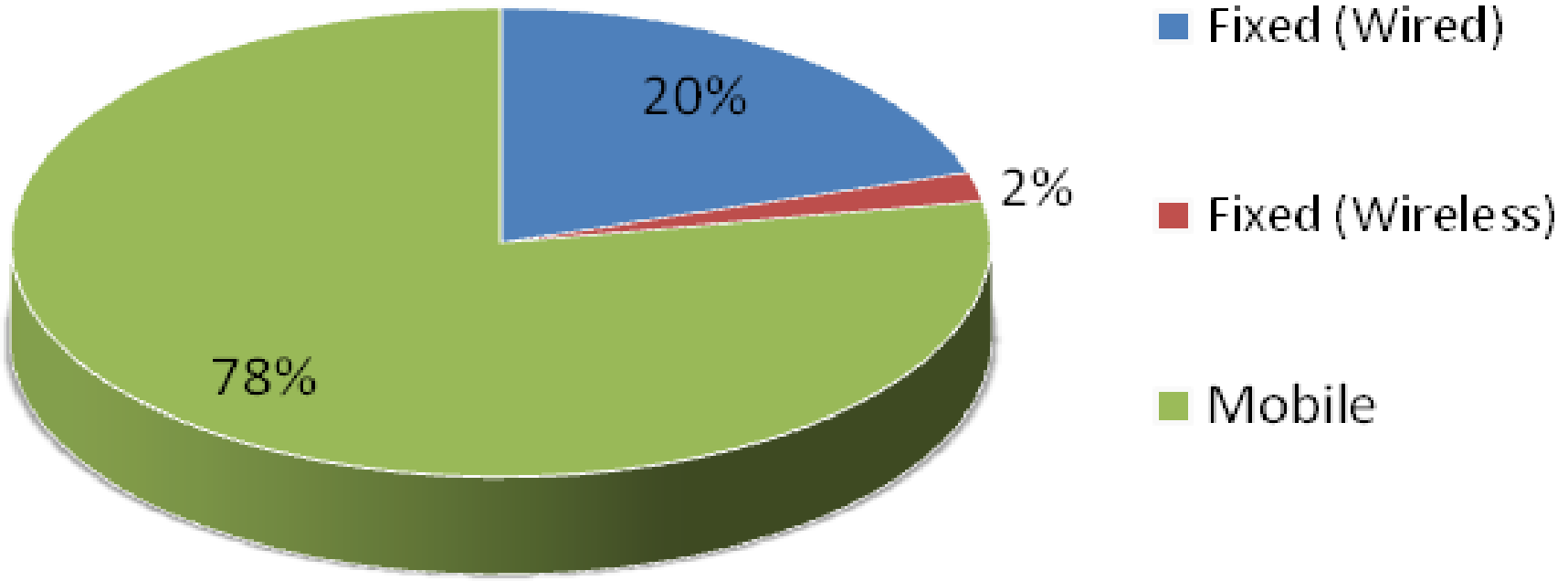
# Telecom Sector .....



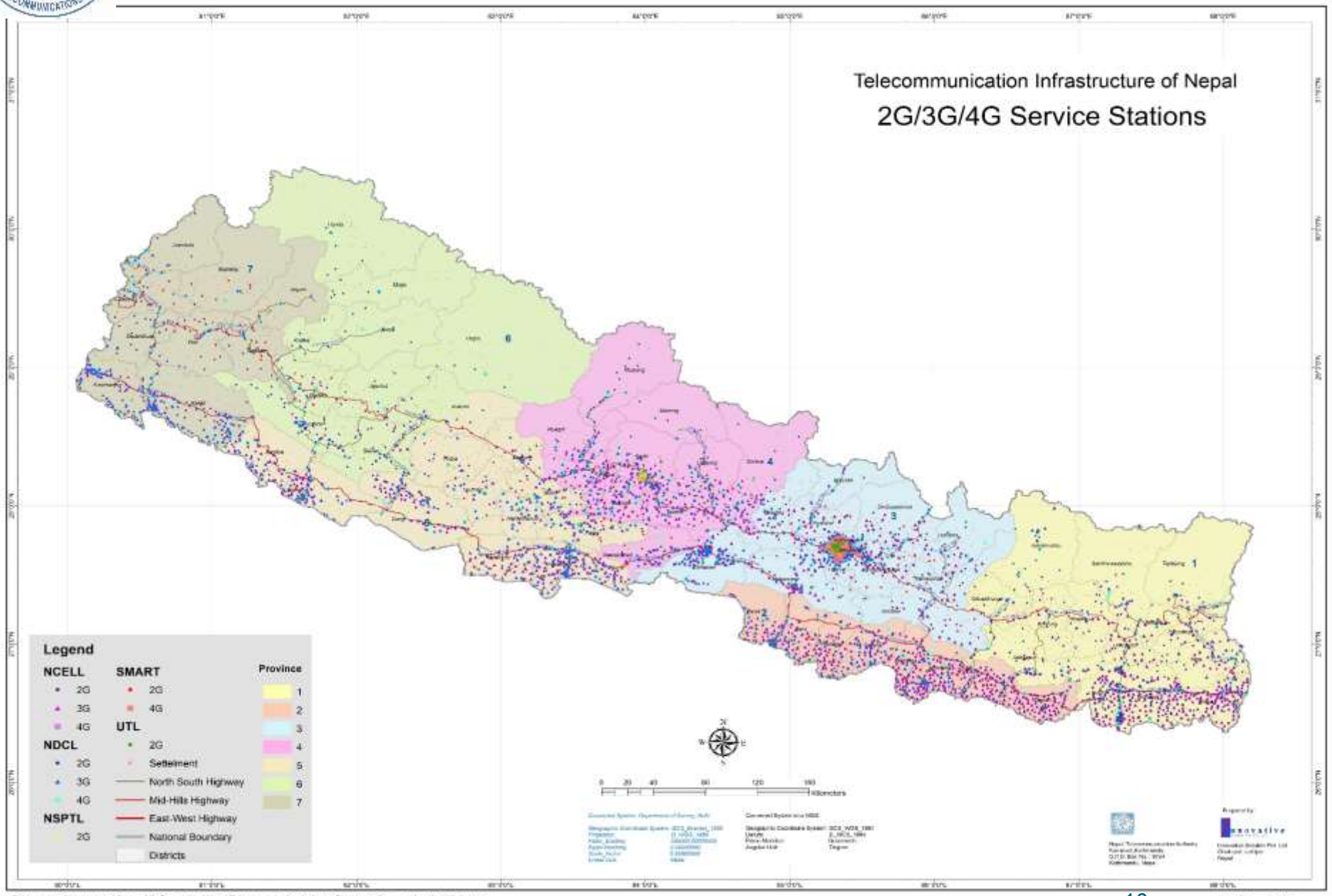
# Telecom Sector ...



## Market share of Broadband Services



# Telecom infrastructure in Nepal



# Current data of different users

**Population**

29.30 Million
Urbanization
20%

**Broadband users**

15 Million
Penetration
55%

**Active social Media users**

9.30 Million
Penetration
32%

**Mobile connections**

36.76 Million
Penetration
134%

**Active mobile social users**

8.70 Million
Penetration 30%

**New Internet connection**

250
every hours

**Face book users**

9.3 Million
Jan 2018

**Registered users on You tube.**

6.4 Million
Jan 2018

# Country Profile in ICT

| Key indicators for Nepal (2016) | Nepal | Asia Pacific | World |
|---|---|---|---|
| Fixed-telephone sub. per 100 inhab. | 3.0 | 10.0 | 13.6 |
| Mobile-cellular sub. per 100 inhab | 130 | 98.9 | 101.5 |
| Fixed-broadband sub. per 100 inhab. | 10.23 | 11.3 | 12.4 |
| Active mobile-broadband sub. per 100 inhab. | 39 | 47.4 | 52.2 |
| 3G coverage (% of population) | 90.0 | 87.6 | 85.0 |
| LTE/WiMAX coverage (% of population | 20.7 | 73.6 | 66.5 |
| Mobile-cellular prices (% GNI pc) | 3.8 | 3.2 | 5.2 |
| Fixed-broadband prices (% GNI pc) | 10.3 | 14.5 | 13.9 |
| Mobile-broadband prices 500 MB (% GNI pc) | 9.5 | 2.7 | 3.7 |
| Mobile-broadband prices 1 GB (% GNI pc) | 9.5 | 5.4 | 6.8 |
| Percentage of households with computer | 11.2 | 37.8 | 46.6 |
| Percentage of households with Internet access | 15 | 45.5 | 51.5 |
| Percentage of individuals using the Internet | 19.7 | 41.5 | 45.9 |
| Int. Internet bandwidth per Internet user (kbit/s) | 3.9 | 48 | 74.5 |

Source: Measuring the Information Society Report 2017 by ITU

# New Policy Initiatives

- Broadband Policy, 2015
- ICT Policy, 2015
- New Revised Spectrum Policy, 2015
- Telecom Infrastructure Service Regulation, 2017
- QoS Regulation, 2017
- Mobile Device Management System Bylaw, 2018
- National Cyber Security Policy (Draft)
- Merger and Acquisition Regulation (Draft)
- Regulatory Framework for MNP (Draft)
- Regulatory Framework for IoT & M2M (Draft Initiative)
- IT Act (Drafting)
- Telecommunication Act (Ammd. Drafting)

# National ICT Policy 2015

**The Salient features:-**

***The ICT Policy 2015*** outlines the government's vision for converting the Nepal in to information and knowledge based society by utilizing information and communications technology by 2020 including

| Main Targets |
| --- |
| ❖ Achieving digital literacy, 75% of population by 2020. |
| ❖ Insuring broadband services available to 90% population by 2020. |
| ❖ Achieving e-governance concept by providing online govt. service to 80% citizen by 2020. |
| ❖ The policy has guaranteed to provide internet service to all citizens by 2020. |

# National Broadband Policy of 2015

The National Broadband Policy of 2015 outlines the government's vision for affordable, secure, reliable and ubiquitous high speed Internet.

## Targets

- Achieving a broadband penetration rate of 30% at a minimum of 512kbps and making available at least 10 Mbps download speed on demand in urban areas.
- Achieving a broadband access and coverage to 45% household by 2018.
- Options will be provided to choose service through multiple service providers to urban people by 2018.
- Downsizing the broadband tariff up to 5% of per capita income by 2018.
- Achieving rural e-community center in all vdcs by 2020.
- Achieving broadband services (wired /wireless) by 2020
  - To all VDCs.
  - To all govt. hospital
  - To 80% health centers
  - To all district level govt. offices

# Policy-directives issued by Government

- Ministry issued a series of directives for immediate implementation with the slogan **of "Haat haat ma mobile, ghar ghar ma internet"**
- The policy has also emphasized the use of existing optical, microwave and satellite links.
- It also declared that a special program would be implemented to establish alternate information highway.
- Distance education, telemedicine, e-governance and e-banking has also emphasized.
- Stakeholder coordination was also emphasized.

# Digital Initiatives

## Digital Nepal Framework

### Unlocking Nepal's Growth Potential

# Concept for Digital Nepal

Nepal has made significant progress on reforms with the adoption of a new Constitution in 2015,

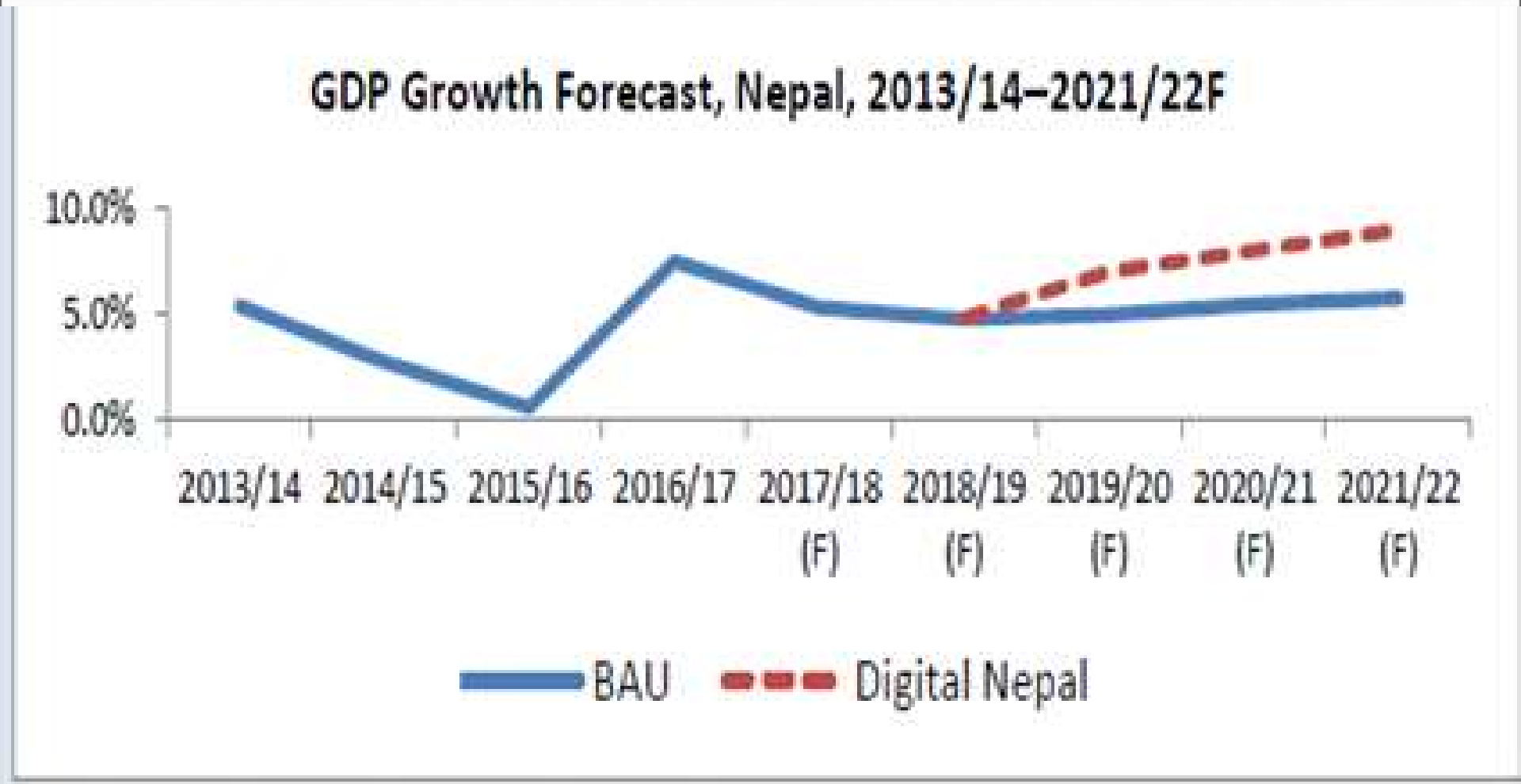
- Transitioning from a unitary to federal state, and election of a stable government.

- Priorities are centered on development and targeted initiatives to realize its goal of attaining developing nation status by 2022, and middle-income country status by 2030.

- The Prime Minister, has outlined his vision of ***"Prosperous Nepal, Happy Nepali"*** with broad objectives to address some of the basic challenges facing the country. Key focus areas include:
  - ✓Building capabilities to grow the country's tourism sector
  - ✓Focusing on rapid build-out of infrastructure – water, transportation, and energy
  - ✓ Ending absolute poverty, illiteracy, and unemployment
  - ✓Providing health insurance and free health care for every citizen
  - ✓Accelerating post-earthquake reconstruction efforts
  - ✓Curbing the flow of young talent leaving the country
  - ✓Increasing farming productivity

# Concept .....

The digital Nepal Program is designed to enable Nepal to harness its growth potential by leveraging disruptive technologies and driving socioeconomic growth. The program is excepted to deliver an impact of up to NPR 800 Billion



# Digital Nepal Framework

Digital Nepal framework is a blue print that provides a roadmap to how initiatives can:-

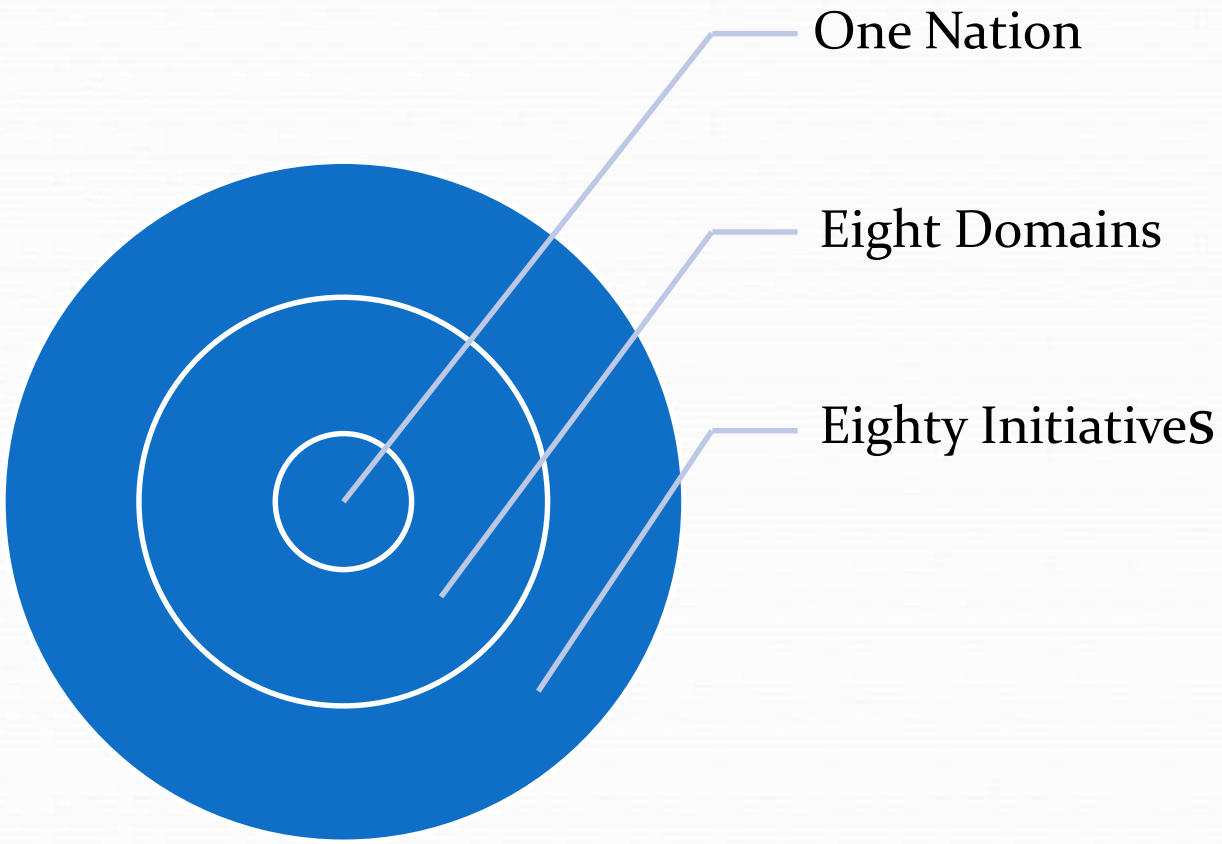
- Contributes to economics growth
- Find innovative ways to solve major challenges facing society in a shorter period with minimum resources.
- Identify opportunities for Nepal to participate in Global economy.

- The digital initiatives have been selected based on :

  - Alignment with vision of prosperous Nepal, Happy Nepali
  - Demonstrated success in other similar developing markets.
  - Ability to execute in the local environment.

# Digital Nepal Framework continue…..

The Digital Nepal Framework ~~encompasses~~:

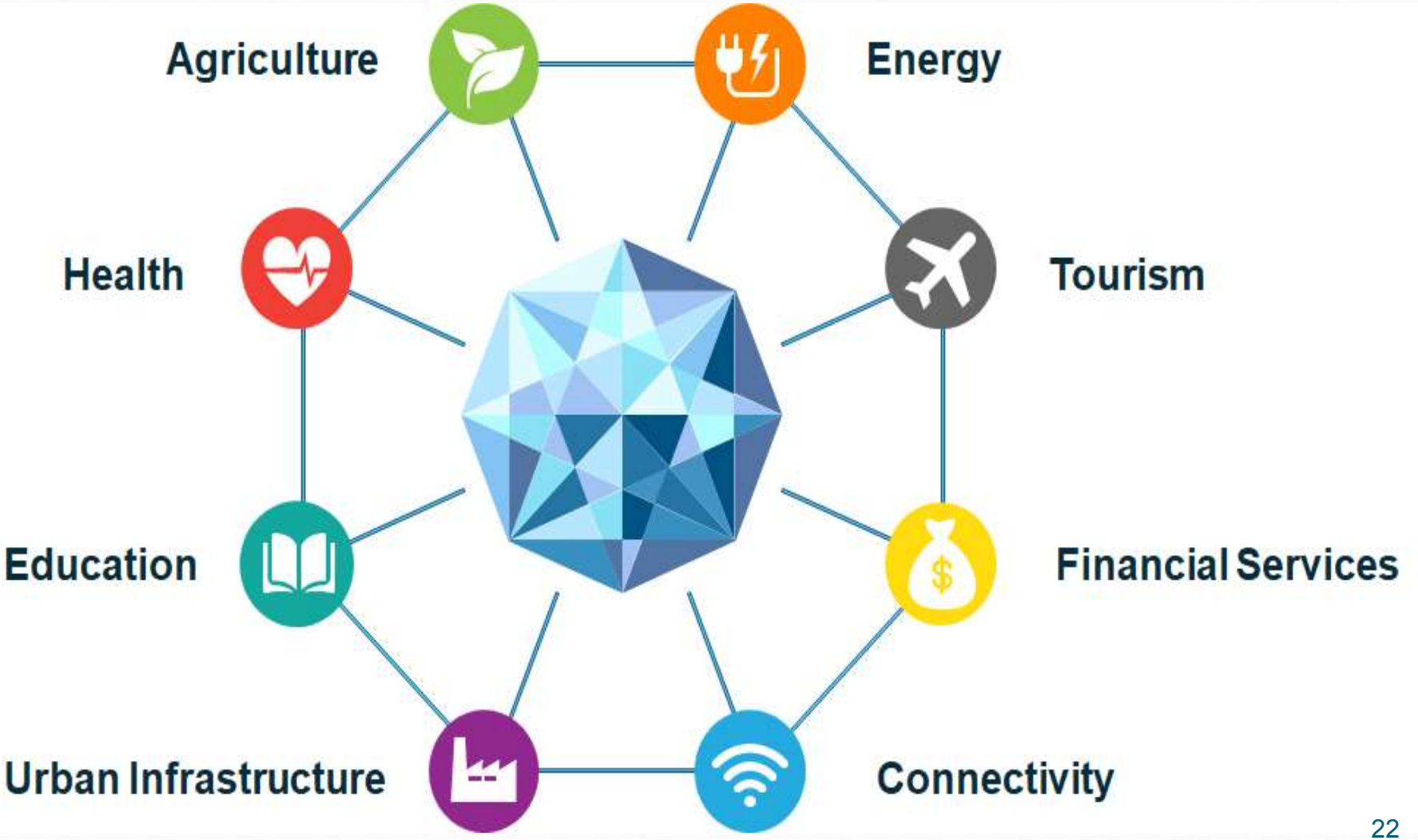



The digital Nepal Program is designed to enable Nepal to harness its growth potential by leveraging disruptive technologies and driving socio economic growth.

The aim of framework is to embark on its journey to high economic growth to achieve developing country status by 2022 and middle –income country status by 2030.

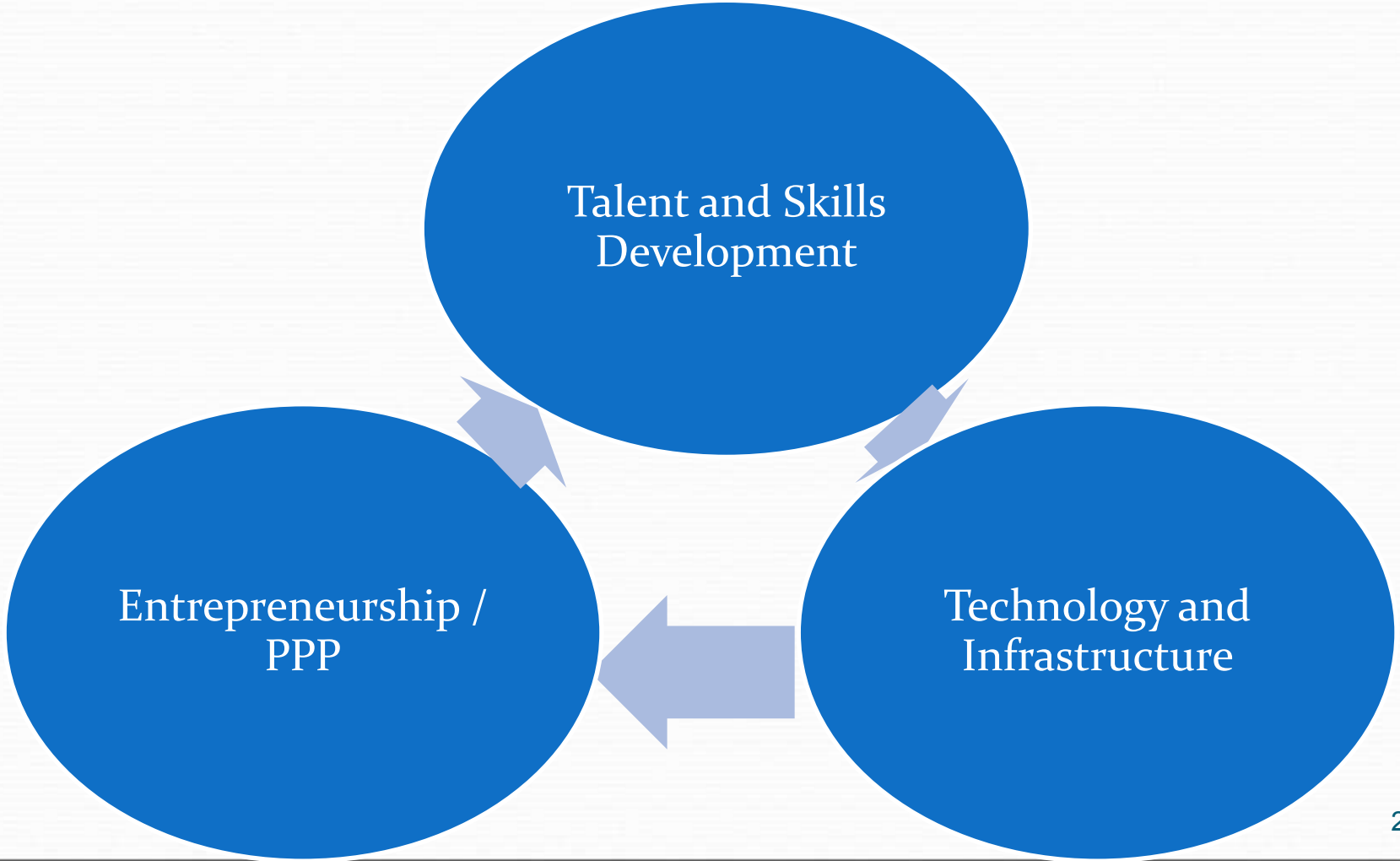
# Identified domains for digital Nepal

Following eight sectors have been identified under the Digital Nepal framework.



# Business Environment enablers

The success of Digital Nepal Framework will require a high degree of emphasis on implementation. Government of Nepal needs to focus on the following priority areas to create an enabling environment for the success of Digital Nepal initiatives:



# NTA's Initiatives to Sector Reform

| S.N | Activities |
|---|---|
| 1. | Amendment on Frequency Policy |
| | ➢ Technology Neutral<br>➢ Approval for 4G Services<br>➢ Spectrum re-farming and redistribution<br>➢ Review on spectrum prices<br>➢ Auction 4G |
| 2. | **Utilization of RTDF (USO Fund)** |
| | ➢ Back bone OFC project on Mid hill high way along with district head quarter<br>➢ BB Access network up to the rural municipality, schools and health center |
| 3 | Clarity on Mobile Renewable fee |
| | ➢ Study on Revenue sharing Module.<br>➢ Amendment of the Law. |
| 4. | Merger and acquisition Policy |
| | ➢ Preparation of Draft policy<br>➢ Stakeholder consultation<br>➢ Submission to MOCIT |

# Reform Project continue....

| S.N | Activities |
|---|---|
| 5 | Guideline on cross holding |
| | ➢ Preparation of Draft guideline<br>➢ Stakeholder consultation<br>➢ Submission to MOCIT |
| 6 | Regulation on Infrastructure company |
| | ➢ Preparation of Draft regulation<br>➢ Stakeholder consultation<br>➢ Finalization of the regulation<br>➢ License to the infrastructure provider |
| 7 | Amendment of Telecommunications Law |
| | ➢ Preparation of Draft<br>➢ Stakeholder/Public consultation<br>➢ Submission to MOCIT |

# Barriers to connect rural areas.

- Annually increment in minimum wage impacting significant rise in administrative cost to the ISP.
- All procurement happens in USD. Increase in USD rates may cause to increase price.
- Constant road expansion increases fiber cut and disturbs quality of service.
- High maintenance cost as the Arial fiber is exposed and vulnerable to cuts.
- Interest rate on bank loan has gone up from 7% to 13% in last one year.
- In the last two years tax deducted at source for bandwidth purchase is doubled from 5 to 10%.
- Current Gov increased corporate income tax to the service provider and 13% TSC on fixed internet services.
- Low income of rural people.

# Reason for additional capital inflow in rural areas

- To achieve the target set by BB and ICT policy 2017
- Provide broadband services to all district level govt. offices by 2020.
- To implement e-governance concept,
- By providing online govt. service to 80%  citizen by 2020.
- To provide broadband services (wired /wireless) to all VDCs by 2020.
- To establishment of rural e-community center in all vdcs by 2020.
- To provide broadband services to all govt. hospital by 2020.
- To provide connectivity to all branches of commercial  Bank in all 753 local units.
- To establish necessary infrastructure required for the distance education, telemedicine.
- To increase the volume of the ISP business to downsizing the broadband tariff up to 5% of per capita income.

# Plan of NTA to utilize RTDF

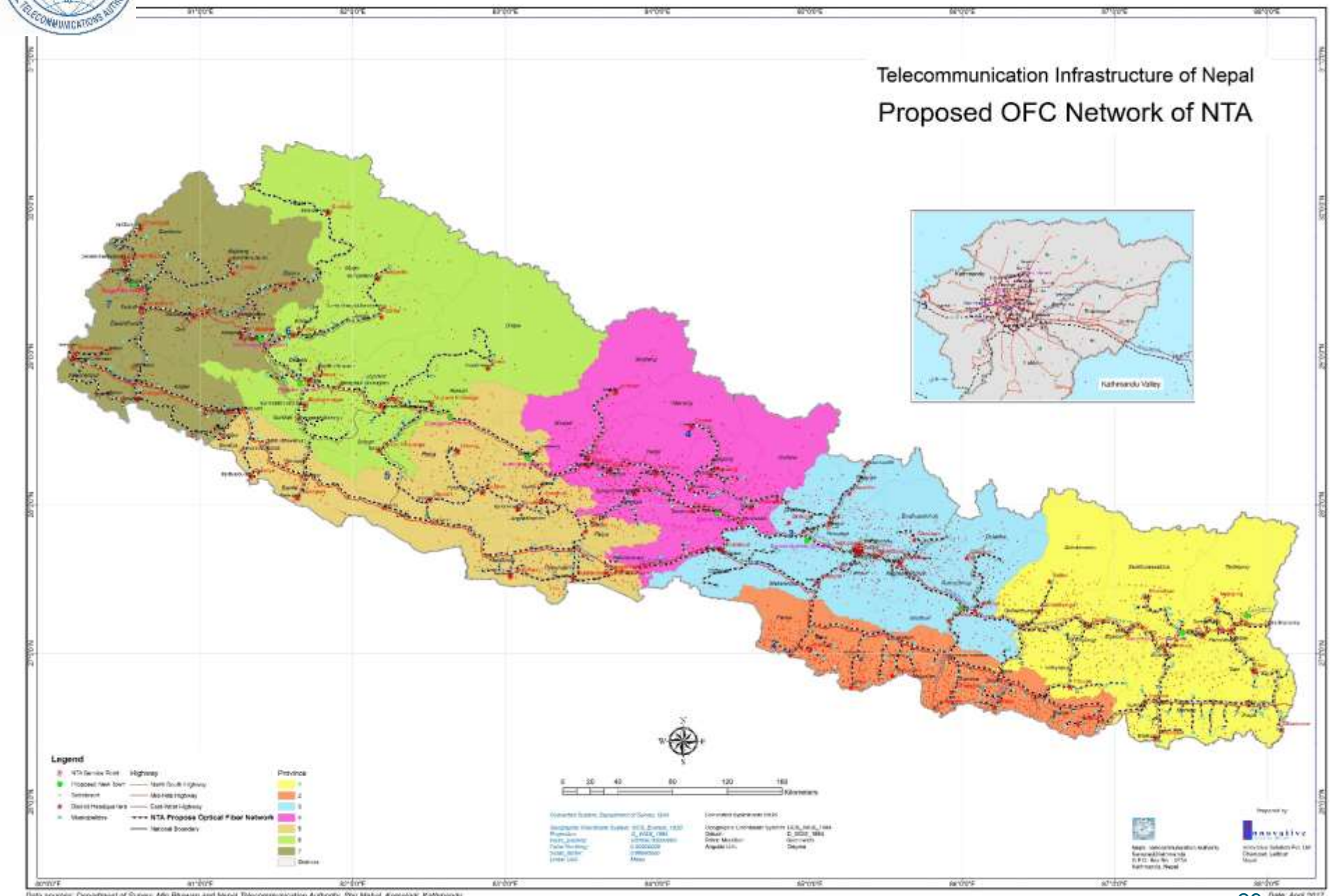
1. Mid hill Back bone project

| District Optical Fiber Network (Mid-hill) Project | Package 1. | Package 2 | Package 3 |
|---|---|---|---|
| | Direct to incumbent | Competitive bidding | Competitive bidding |
| | Eastern part. Covers 32 district of province 1,2 and 3 | Mid part. Covers 21 district of province 4 and 5 | Western part. Covers 19 district of province 6 and 7 |

2. Broadband services to all Public high schools, govt. hospitals, ward offices and rural municipalities.

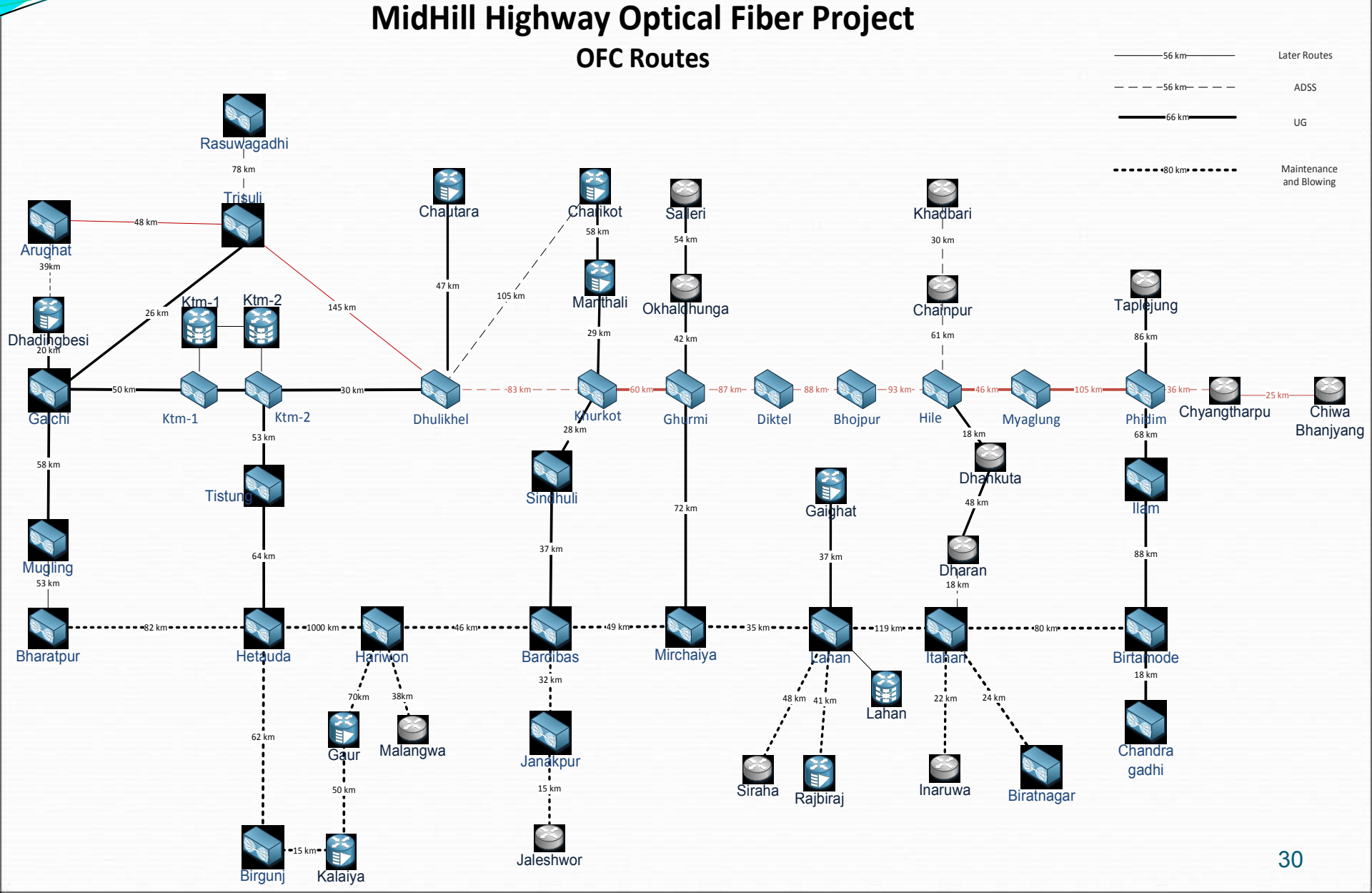
| Broadband project to connect all rural municipalities, ward offices, health institution and public high school | Project 1. | Project 2 | Project 3 |
|---|---|---|---|
| | Earth quake effected 11 district in 3 Packages | 38 district in 8 Packages | 28 district in 7 Packages |

# Proposed Optical Fiber Networks

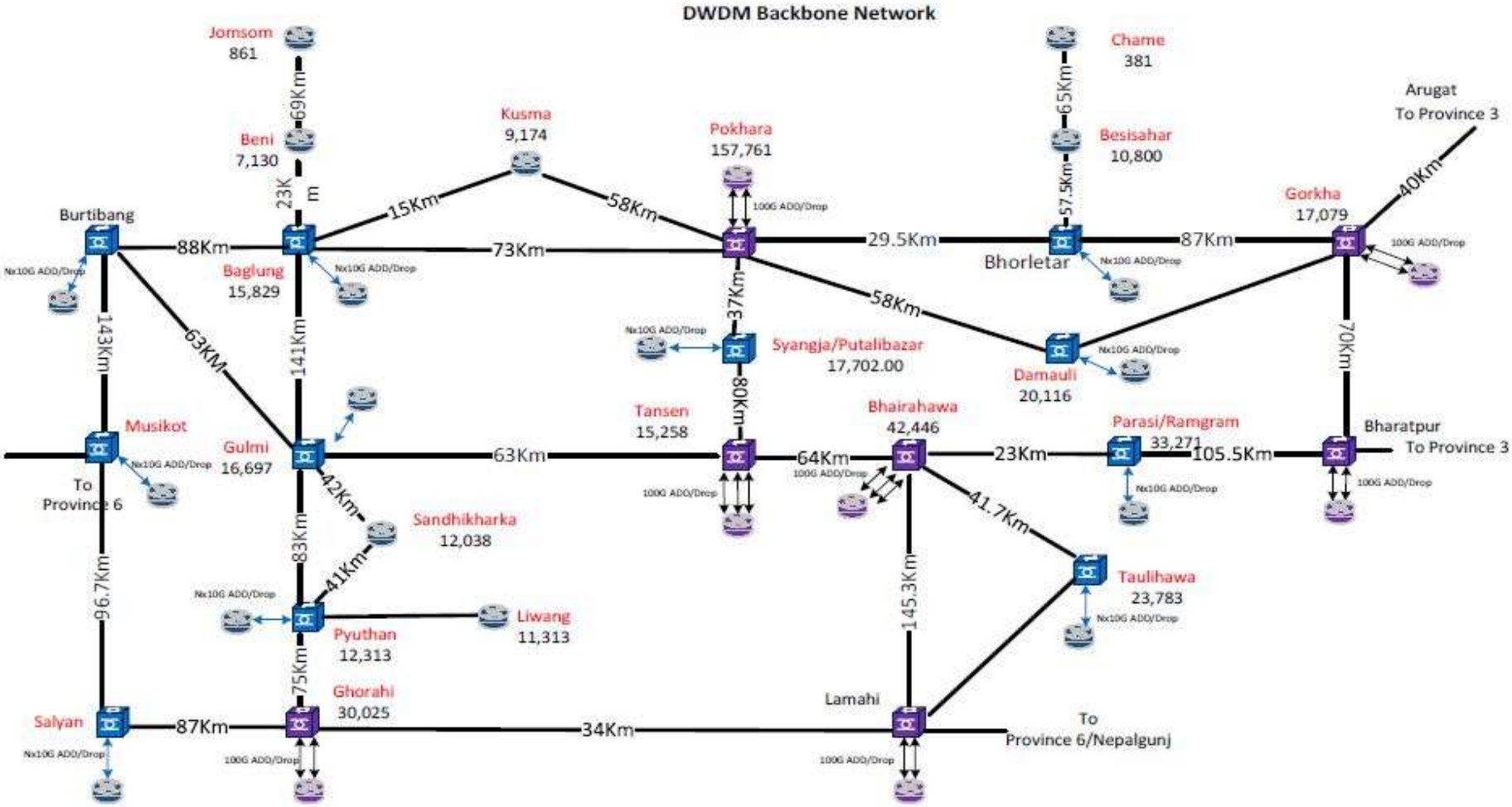


# Optical Fiber Routes in Mid-hill and DHQ PKG 1

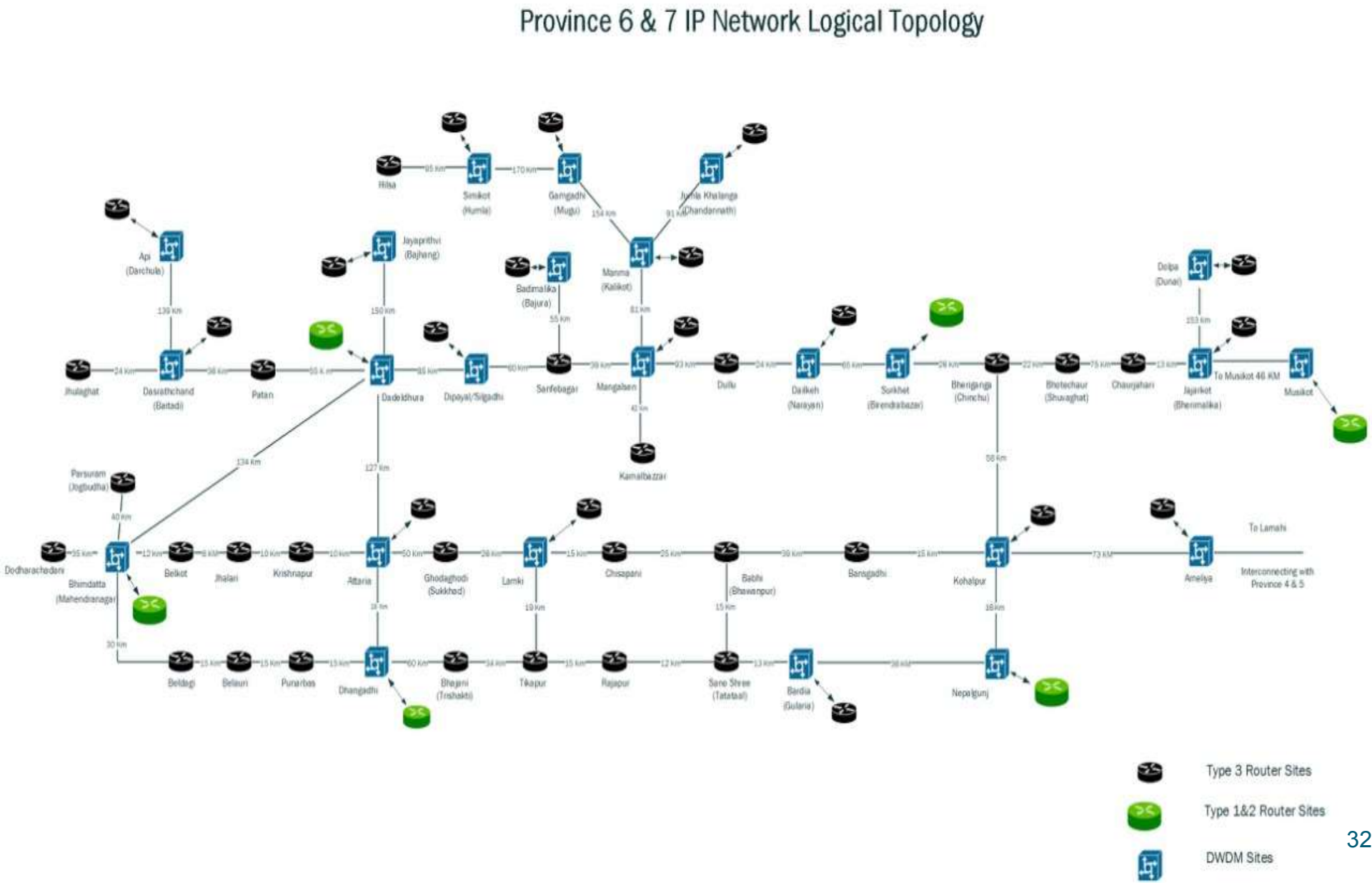
Updated : 13 July 2017



# Optical Fiber Routes in Mid-hill and DHQ PKG 2



# Optical Fiber Routes in Mid-hill and DHQ PKG 3



# RTDF projects

| S.N. | Program | Quantity |
|---|---|---|
| 1. | Optical Fiber based Broadband Backbone Network . | 7005 KM |
| 2. | Broadband Access Network. | 18296 units. |
| | | |

**Project for Optical Fiber Network (Minimum 96 core in mid hill high way (MHHW) and 48 core to all DHQ from the point of MHHW.)**

| S.N | Particular | Estimated Cost | RTDF Subsidy |
|---|---|---|---|
| 1. | Contract sign with incumbent NT for 2376 KM | 4.88 billion | 4.87 billion |
| 2. | Contract sign with united telecom for 2117 KM | 3 billion | 2.01 billion |
| 3. | Contract sign with Smart Tel for 2117 KM | 3.70 billion | 3.009 billion |
| Total in NPR | | 11.58 billion | 9.889 billion |
| Total in US$ i$=105 Npr | | | **94.18 Million** |

# Mid-Hill Optical Fiber Project Synopsis

| S. N. | Contract awarded | Location | Mid-Hill Highway Route Length (Km) | No. of Districts Covered^ | Total Distance (Km)* | Estimated Budget (NPR, in Billion) | Contract Value (NPR, in Billion) |
|---|---|---|---|---|---|---|---|
| 1. | Nepal Telecom | Provinces 1,2 and 3 | 804.0 | 32 | 2,950.0 | 4.874 | 4.874 |
| 2. | United Telecom Ltd. | Provinces 4 and 5 | 462.5 | 21 | 2,117.0 | 3.000 | 2.010 |
| 3 | Smart Telecom Pvt. Ltd. | Provinces 6 and 7 | 560.0 | 19 | 2,408.0 | 3.700 | 3.009 |
| Total | | | 1,826.5 | 72 | 7,475.0 | 11.574 | 9.89 |

*^Excluding Kathmandu Valley*

**Mid-hill Highway, DHq & Municipalities*

# Mid-Hill Optical Fiber Project Synopsis continue……

- Total network capacity shall be of 400G In Kathmandu valley.
- Network capacity shall be of 100G and 10G depending upon the population density In remaining districts,
- Optical fiber cores shall be 96 in mid-hill highway, 48 in district headquarters.
- Since the Midhill Road project partially constructed , The SLO can deploy 50% duct and 50% ADSS .
- SLO's liability to duct OFC after the construction of the roads.
- NT's agreement is signed based on the decision of the Government.
- The estimated budget and the contract value of NT is same as of now.
- The actual contract value shall be determined according to the vendors' price during execution.

# Scope of Work/Services

MHP is aimed at increasing broadband access throughout Nepal and the purpose of this project assignment is:

- To build a District Optical Fiber Network in eastern, central and western part of Nepal along the Madhya-Pahadi Lok Marga. (MID HIL Project) (MHP)
- Subsidy will be provided for the equipment procured and the cost of deployment, under the Rural Telecommunications Development Fund (RTDF).
- The proposed network is required to connect all district headquarters to municipalities, interconnecting with the East-West Optical Fiber Network and the North-South Highway.
- SLO shall be required to install, activate and operate optical Fiber network ,including DWDM and Routers.
- SLO shall be required to lease its optical Fiber network either Bandwidth or Dark fiber.
- Out of total capacity 1/6$^{th}$ of the core should be allocated to the Govt purpose.

**Locations .**

Madhya-Pahadi Lok Marg, all the District Headquarters, North south high ways and the Municipalities where the network has to be deploy under the agreement between SLO & NTA.

**Timeline of Action**

Two years from the signing the contract

# Broadband Projects of Nepal

## Features:-

- Whole Nation has been divided in to 18 packages to provide BB in18296 units.
  - **Target to connect 720 Rural municipalities,**
  - **6081 Ward offices,**
  - **6325 Community High school and**
  - **5170 Health Centers**
- Modality - least cost subsidy .
- Estimation Rs.6.93 billion. for18 packages.
- By technology SLO shall have to to deploy :-
  - **up to 95% VSAT in high Himalaya Areas.**
  - **30 % OFC, 50% Radio link and 20 VSAT in High mountain areas.**
  - **100% FTTH shall be deployed in plain areas.**
- The cost of the bandwidth for two years is included in the tender.
- SLO has to built their network to fulfill the local demand as well.
- The tariff should be equal as Kathmandu.
- The project should be accomplished with in one year.

# Broadband Project

| Package | operator | No. of District | Contract Amount. Cr. | No of area to be connected BB services | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Rural Municipality | Ward offices | High School | Health center | Total |
| 1 | Nepal Telecom | 4 | 21.16 | 42 | 306 | 370 | 252 | 970 |
| 2 | Subusu cable | 3 | 20.07 | 34 | 151 | 262 | 132 | 579 |
| 3 | Mercantile | 4 | 23.05 | 34 | 212 | 283 | 187 | 716 |
| 4 | World Link | 4 | 20.79 | 27 | 212 | 83 | 104 | 426 |
| 5 | World Link | 4 | 24.65 | 35 | 335 | 202 | 112 | 684 |
| 6 | Subusu cable | 4 | 31.44 | 66 | 607 | 607 | 607 | 1887 |
| 7 | Subusu cable | 4 | 38.44 | 61 | 598 | 598 | 598 | 1855 |
| 8 | Via Net | 4 | 26 | 35 | 262 | 303 | 219 | 819 |
| 9 | Mercantile | 3 | 20.08 | 27 | 189 | 153 | 158 | 527 |
| 10 | Mercantile | 3 | 26 | 31 | 254 | 207 | 164 | 682 |
| 11 | Tech Minds net | 3 | 13.85 | 30 | 272 | 202 | 190 | 694 |
| 12 | Three Packages | 14 | Under process to award contract. | | | | | |
| 13 | Four Packages | 18 | Process to tender shortly | | | | | |
| Total | | 72 | | 720 | 6081 | 6325 | 5170 | 18296 |

# Progress on Backbone projects

| S.N | Operators | Progress |
|---|---|---|
| 1. | Nepal Telecom Back bone project for Mid hill & DHQ (provinces 1,2 &3) | Finalization of specification<br>➢Published the tender. |
| 2. | United Telecom Back bone project for Mid hill & DHQ (provinces 4&5) | Finalization of specification<br>➢For DWDM Network,<br>➢ For Core Router has been completed and<br>➢ is in the process to select the vender. |
| 3. | Smart Tel. Back bone project for Mid hill & DHQ (provinces 6 & 7) | Finalization of specification<br>➢For DWDM Network,<br>➢ For Core Router has been completed and<br>➢ is in the process to select the vender. |

# Progress of the Broadband projects

| S.N | Packages | Progress |
|---|---|---|
| 1. | Three Packages in Earth quake affected 11 districts | Installation completed in 2235 site. |
| | | ➢Verification of package 1 completed.<br>➢Verification, rest of site are in final stage. |
| 2. | Eight packages in 31 district | ➢Tender has been awarded to different ISPs and<br>➢The installation work is in the progress. |
| 3. | Three Packages in 14 district | ➢Tender evaluation completed.<br>➢Final stage to award the contract. |
| 4. | Four Packages in 18 district | ➢RFA ready to publish. |

# Indicators

- Increase in density of fixed Broadband line users.
- Increase in density of mobile telephone users.
- Increase in density of Internet Service users 4G .
- Increase in the number of Point of Inter-connection (POI).
- Increase in Consumers Surplus.
- Improvement in Quality of Service (QoS).
- Gradual reduction in charges and tariffs for various telecom services.
- Increase in the degree of competition in the sector.
- Expansion of the service in rural areas.
- Increase in users of telecom service(s) from various social groups.
- Increase in the investment.
- Improvement in the quality of life of general people especially rural inhabitants.
- Increase in the use of telecom products manufactured domestically.
- Reduction in the cost of Customer Premises Equipments.

# Why we need to improve digital connectivity

- Internet and mobile connectivity forms the backbone of economic growth and employment generation.
- It creates an enabling environment for socio-economic transformation by improving income levels, and it empowering underprivileged communities and bridging the digital divide.
- Strong inter-linkages have been seen in improvement in digital connectivity and economic growth.
- As per studies, every 10% increase in broadband penetration results in 1.3% increase in GDP. As result, it is critical for country for undertake necessary steps to improve digital connectivity.
- Improving digital connectivity brings incremental value across the entire value chain by enabling new business models, job creation through business process out sourcing and ITeS industry, and improving quality of life through better access to information and services .

# Suggestions

- Full fill the policy gap ( draft new policy/ amendments on laws/ policy) to special address the rural areas.
- Clear roll out obligation for new license/ services.
- Mandatory obligation to serve in remote areas.
- Arrangement to inject subsidy in un-served areas by USO.
  - Subsidy to infrastructure provider
  - Subsidy to Broadband provider
  - Subsidy to end user.
- Make an arrangement to provide e-government service in those areas.
- Make an arrangement to promote content development in local languages.
- Prioritize the sector such as (agriculture, health, education, urban infrastructure, energy, tourism, finance, and connectivity )
- Identify the no. of digital initiatives which aim to propel socio economic growth in country by addressing crucial challenges while unlocking the growth potential in each of the key prioritized sectors.

# Dhanyawaad – "Thank You"