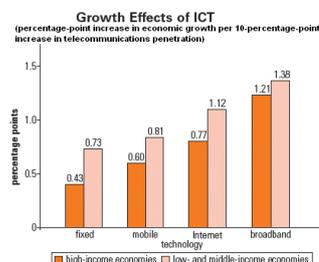


Addressing Regulatory Challenges for uptake of broadband in Nepal

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Broadband impact on Economy

- World bank study indicates that there is 1.38 % increase in GDP for every 10% increase in broadband penetration.



Broadband Growth - Challenges

- Availability of suitable network
 - Access Network
 - Core Network
- Affordability of Broadband
- Limited Right of Way
- Availability of low cost Customer premises equipment
- Local Content and Applications

Broadband Growth - Challenges (contd.)

- Copper loop (in Access Network)
 - Total number of Wire line connections - 600,154
 - Broadband connections over ADSL - 54,155
 (Source: NTA MIS 15 Jan 2011)
- Challenges
 - Limited Availability and not open to competition
 - Not all local loop are xDSL capable
 - The growth in Copper network is dismal.

Broadband Growth - Challenges (contd.)

- Wireless (in Access Network)
 - an effective solution for increasing Broadband penetration
 - Broadband on wireless may soon contribute much more than wireline
- Challenges
 - Limited Capacity to support bandwidth requirement in access network.
 - High cost of handsets
 - Inability to support huge bandwidth requirement of core network even with most optimistic projections

Broadband Growth - Challenges (contd.)

- Cable TV Network
 - Total number of Cable TV subscribers – about 300,000
 - Broadband connections over cable TV – about 6000
- Challenges
 - Single operator providing cable broadband
 - Capability of last mile in cable Network to support Broadband ??
 - High upgradation cost of cable TV network to support broadband.
 - Commensurate returns on investment for upgradation of cable network considering present Broadband tariff.
 - Knowledge requirement

Broadband Growth - Challenges (contd.)

- **Satellite**
 - Suitable to provide broadband for inaccessible and remote areas
- **Challenges:**
 - Limited Availability of satellites transponders.
 - Limited Bandwidth support
 - High cost of providing Broadband connection - not sustainable unless subsidized

Broadband Growth - Challenges (contd.)

- **Optical Fibre in access**
 - Available mainly in long distance network and inside the large cities
- **Challenges:**
 - Almost no or very Limited availability of fiber to the curb or house (FTTx).
 - High Cost of Right of Way (RoW)
 - Cost of hiring optical fiber in local access network is high.
 - Emergence of New Wireless Technologies, hence no clear business model.

Broadband Growth - Challenges (contd.)

- **Core Network**
 - Extrapolating at the future bandwidth requirement **Optical fibre seems to be the suitable option** for core network/backhaul
 - Presently Optical Fibre is only available along the highways and on OPGW of NEA
 - In order to provide broadband facilities in villages suitable connectivity is required up to village level
 - Creation of such a network will require huge expenditure

Broadband Growth - Challenges (contd.)

- **Affordability of Broadband**
 - High usage charge (per MB download charges) in spite of low Entry level tariffs
 - Inefficient utilization Internet Exchange of Nepal (NPIX)-a private initiative
 - Higher International bandwidth prices
 - When Satellite is the only backhaul and access technology-the price is exorbitantly high

Broadband Growth - Challenges (contd.)

- **Right of Way**
 - Complicated Right of Way procedures
 - High charges RoW permissions
 - Non uniform policies
 - No national coordination in making RoW ready to be used by the telecom service providers

Broadband Growth - Challenges (contd.)

- **Content and Applications**
 - Development of content in local language and also relevant content
 - Low English literacy
 - Killer application and perceived utility to customers
 - Framework to resolve commercial issues between access providers and content providers

Broadband Growth - Challenges (contd.)

- **Customer Premises Equipment**
 - High cost of PCs and other access devices
 - Recycling of old PCs/laptops
 - Bundling of PCs and other access devices with broadband subscription
 - Fiscal incentives for reducing costs of CPEs

Nepal: Broadband Status

- **Broadband market**
 - relatively underdeveloped, both in terms of size and competitive dynamics
 - 3G and CDMA 1x-EVDO yet to be made widely available
 - Ineffective implementation of measures to open broadband markets such as LLU-ONLY incumbent providing ADSL
 - It is based on ADSL, Cable Modem, Radio(Wi Fi), and Fiber-Ethernet hybrid and VSAT, and slowly on 3G and CDMA 1x-EVDO
 - Single cable operators and limited cable infrastructure ready for broadband

Regulator's Role?

- Implementing the simple authorization framework
- Regulating competition (including tariffs) creating fair and equitable competitive market principles
- Interconnecting networks and facilities
- Implementing universal service/access mechanisms

Regulator's Role?

- Managing the radio spectrum effectively to facilitate new entrants and new technologies
- Establishing sufficient safeguards to ensure that consumers, particularly children, are protected
- Minimizing the burden and costs of regulation and contract enforcement

Source: ICT Regulation toolkit

Regulator's Role?

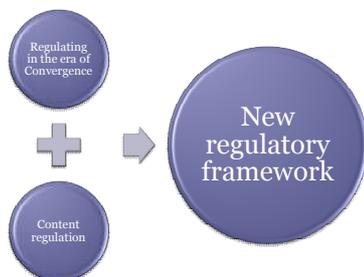
- Mr. Hamadoun Touré, Secretary General, ITU at Global Symposium for Regulators (GSR) in Dakar, Senegal:
 - **"does for the Internet and broadband what we have now so successfully achieved with mobile."**
 - Two things needed to change in order to repeat the **'mobile miracle'** with broadband deployment.
 - Governments need to **raise broadband to the top of the development agenda.**
 - **Ensure that Internet access – and especially broadband access – becomes very much more affordable.**
 - Market forces will ensure broadband affordability **when there are clear incentives to increase capacity**

Source: ITU News

What has to be done?

- *Major tasks at the government and regulator's level*
 - Developing a coherent National Broadband Strategies
 - Formulation of National Broadband Policy
 - Development of a National Broadband Plan
- Regulatory intervention should ensure efficient market function

Changing and challenging regulatory landscape



Required roles of govt and regulator

- increase confidence,
- reduce risk and
- encourage investment in the ICT sector overall.
- In particular, regulators are able to play a role in investment by
 - lending financial support through “stimulus packages” and public private partnerships and
 - lowering the costs of doing business by deferring license fees and taxes, as well as implementing rules that enhance efficiency.

Required roles (Contd....)

- **From Push to Pull**
 - Traditionally, governments have played a “**push**” role in ensuring the right environment for the provision of ICT infrastructure and the development of the domestic ICT sector.
 - Increasingly, governments will need to move towards “**pull**” strategies aimed at promoting digital literacy, establishing an enabling environment, including an appropriate legal framework, and fostering the development of applications, including local content

Source: World Bank report

Role of Government and regulator

- augment private sector investment in light of reduced capital flow, namely through:
- **Public funding programs and investments, including**
 - “Stimulus packages”, and
 - Public Private Partnerships (PPPs)
 - Loans guarantees and grants
- Facilitate investments by non-traditional ICT investors, such as banks and electricity companies.
- Play a critical role in developing frameworks to monitor the implementation of the commitments arising from the various stimulus plans and recovery packages, PPPs, and alternative investments.

Challenges for RTDF

- Funds accumulate but no disbursement-??
- the track record for allocation and disbursement of funds has generally not been good.
- Funds management should be transparent and accountable
- **Infrastructure support must be given only to bridge the digital divide.** Support should, therefore, be
 - limited to areas where it is not commercially viable for private sector operators to establish adequate facilities.

What did the developed countries do?

- Canada, Finland, Germany, Spain, Portugal, the United Kingdom and the United States included measures to expand broadband access and to bolster connection speeds in their **planned economic stimulus plans**.
- This includes investment in
 - infrastructure,
 - applications and
 - human resources.

What have governments done?

- promoted competition,
- encouraged investment and
- worked together with the private sector to increase connectivity.
- implemented broadband demand aggregation policies to bring connectivity to rural areas
- made particular efforts in connecting schools, libraries and other public institutions.

On the demand-side, countries have focused on

- increasing the uptake of installed capacity, electronic business, digital delivery and broadband applications.
- Promoting the general ICT business and policy environment,
- fostering innovation in ICT (including R&D) as well as ICT diffusion
- and use (including e-government) have been priorities.

What have governments done?

- fostered broadband content and applications,
 - for example, by acting as model users, by promoting e-government services and broadband-related standards, by putting content online and by supporting the development and distribution of digital content by other players.

Focus of Stimulus Plans

- Where stimulus plans deal with investing in ICT infrastructure and applications, they do so on two levels:
 - extending broadband to areas that are not served, primarily rural and remote areas, and
 - upgrading existing networks to support very high speed broadband connections.

TRAI Recommendation

- **Funding for network Establishment**
 - an investment of \$6 billion to set up a national broadband network
 - network will be established in two phases,
 - all cities, urban areas and village panchayats by 2012
 - move to habitations with a population of over 500 by 2013.
 - Finance the plan by universal service obligation (USO) fund and loans given or guaranteed by the government

TRAI Recommendation (Contd...)

- **Increase network usage:**
 - extend network to the rural areas for providing better education, health and banking facilities
- **Affordability:**
 - Review duties levied on products used in providing broadband and Internet services to make broadband service affordable.
 - 100 percent depreciation in the first year for modems and routers used for Internet and broadband
- **Involving local government:**
 - establishment of national and state-level optical fiber agencies to establish networks

Current Progress

1. Prepared Draft Broadband Policy
2. Formulating the Regulatory Guidelines for Broadband through universal access with ITU assistance
3. Ongoing ICT development project assisted by ADB
 - Wireless Broadband in 38 districts
 - E-government applications
 - Government Enterprise Architecture
 - Human Capacity Development

Current Progress (Contd...)

4. Initiated District Optical Fiber Network by NTA
 - 75 district HQs to be connected through optical fiber
 - Target : 3 years
 - Source of Funding: RTDF

Current Progress (Contd...)

Other initiatives:

1. Separate License to be issued for tower making companies-amendment in the telecom Act underway
2. Infrastructure sharing guidelines being formulated
3. Preparation for BWA spectrum assignment
4. On going support for establishing telecentre for diffusion of ICT services in the rural areas

Conclusion

- Broadband should be put on top of the development agenda
- Need for the development of national strategies, policy and plan for broadband
- Appropriate business models such as market driven model in the urban and subsidy in rural areas to be implemented
- Close monitoring on the implementation and timely action to address the challenges