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PPP LED ICT ENABLED SERVICES IN RURAL NEPAL

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Inputs from various interactions with private and government sector stakeholders, Advisory Committee meetings, and the workshop organized by the EPN Focal Unit have been incorporated in the report. The names of people met during the interactions are included in annex 1 in this report.

Foreword

Economic Policy Network (EPN) is an undertaking of the Government of Nepal since August 2004 with an Asian Development Bank (ADB) technical assistance (TA) to develop and institutionalize an open, responsive and result oriented economic policy formulation process based on sound economic analysis and dialogues with the partnership of public and private sector, academia, and independent professionals, to support and consolidate the Government's economic policy reforms on poverty reduction strategy. The initial focus has been in the areas of macroeconomic management, trade, investment, employment, infrastructure, tourism, agriculture, and regional development through four thematic advisory committees chaired by the secretaries of the respective implementing ministries, and guided by a high-level steering committee. The present study is an outcome of the initiative under the Advisory Committee for Economic Policy on Infrastructure Development chaired by the Secretary of the Ministry of Physical Planning and Works.

The study reviews the development of information and telecommunications technology (ICT) in Nepal and recommends appropriate policy interventions to enhance public private partnership modalities to promote ICT enabled services in rural areas of Nepal. The recommendations are the outcome of consensus reached among major stakeholders through various consultations and the EPN workshop. I hope the findings and recommendations will be helpful for policy makers for future reforms.

I would like to thank the School of Science of Kathmandu University (KU) for leading the study and Prof. Dinesh Chapagain for carrying out the study on their behalf. I also thank all those who have provided inputs for the report during the interactions at KU and other venues, the advisory committee meetings, and the EPN workshop. The work of the Advisory Committee for Economic Policy on Infrastructure Development is to be commended for selecting the issue and for following through with the study. I would also like to appreciate the entire EPN team for their hard work. I also thank the former Steering Committee chairperson (former Member of National Planning Commission) Dr. Champak Prasad Pokharel, for his guidance during his tenure. Last but not least, I would like to thank the ADB for supporting this initiative.

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ACRONYMS

ADB	Asian Development Bank
BOT	Build, Operate and Transfer
BTO	Build, Transfer and Operate
DDC	District Development Committee
DFID	Department for International Development/UK
DV	Diversity Visa
FIT	Forum for Information Technology
HLCIT	High Level Commission on Information Technology
HMGN	His Majesty's Government of Nepal
ICT	Information Communication Technology
INGO	International Non Governmental Organization
ISP	Internet Service Provider
ISD	International Subscriber Dialing
IT	Information Technology
ITU	International Telecommunication Union
JICA	Japan International Cooperation Agency
LBO	Lease, Build and Operate
MCT	Multipurpose Community Telecenter
MoEST	Ministry of Environment, Science and Technology
MoF	Ministry of Finance
MoIC	Ministry of Information and Communication
MoLD	Ministry of Local Development
MoLJ	Ministry of Law and Justice
MoWR	Ministry of Water Resources
NEA	Nepal Electricity Authority
NITC	National Information Technology Centre
NTA	Nepal Telecommunication Authority
NTC	Nepal Telecom Company
NTV	Nepal Television
NWNP	Nepal Wireless Network Project
PCO	Public Call Operator
PPP	Public Private Partnership
RIC	Rural Information Centre
RMT	Rural Multipurpose Telecommunication Centre
RONAST	Royal Nepal Academy for Science and Technology
RTF	Rural Telecommunication Fund
SPV	Special Project Vehicle
STD	Subscribers Trunk Dialing
UGC	University Grant Commission
UNDP	United Nations Development Program
VCF	Venture Capital Fund
VDC	Village Development Committee
VSAT	Very Small Aperture Technology
WSIS	World Summit on Information Society

A POLICY STUDY ON
PPP LED ICT ENABLED SERVICES IN RURAL NEPAL

EXECUTIVE SUMMARY

1. The prospect of bringing about developments in economic and social sectors through Information and Communication Technology (ICT) is globally recognized. Unlike the failure in benefiting from the industrial and green revolutions, Nepal could immensely take benefit from the ICT revolution and utilize it as an ideal vehicle for achieving its poverty reduction development goal. This requires a positive and forward looking mindset to visualize its benefit and act immediately through developing policy strategy for promoting the services through ICT.
2. Only recently have a number of policy initiatives been made to incorporate ICT in the development mainstream and attempts to complement with regulatory measures. The Tenth Plan (2002~2007) has emphasized on utilizing ICT as a means to achieve its poverty reduction goals.
3. The objective of the study is to recommend structural, legal and institutional reforms to expand ICT enabled services in rural Nepal through appropriate public private partnership approach and trigger rural development through such services.
4. Numerous interactions were held with concerned policy level officials of information and communication sector. A Focus Group Discussion session with operators and users committee members and an e-mail survey of 15 government sponsored rural information centres were held to identify policy constraints and operational problems. Relevant documents were reviewed to strengthen the analysis and identify problems and issues of the ICT sector. A consultative meeting with stakeholders helped to concretize and structural and institutional problems and issues and to streamline the intervention solutions.
5. The study has been done in a considerably limited time of one month. The interactions and interviews were based only in the Kathmandu Valley. Field visits beyond the perimeter of Kathmandu Valley to some successful PPP led ICT enabled programmes was not possible.
6. The development of information technology has been a boon to policy makers, researchers, scholars and field workers. From the earlier large mainframe computers, computers have rapidly metamorphosed into diverse sizes and more compact, powerful as well as versatile gadgets. These and the recent developments in satellite connectivity, optic fibers, wireless internet, network security, access devices, mobile telephones, multimedia etc. are examples of relevant and wide range of information and communication technologies available today.
7. ICT enabled services have the potential of bringing developments within the reach of the common people. Examples of services especially relevant to rural population are timely and useful information on markets, prices, access to raw materials and credits to local farmers, artisans and traders; information on improving agriculture and livestock; information on employment opportunities (domestic and abroad), information on civic rights and responsibilities; efficient services for health and sanitation (telemedicine) and education and literacy (distance learning); news delivery (voice mail, email, e-postal service), statutory records collection (household information, property records) etc.
8. In Nepal, real progress in the IT arena took off only from 1995 onwards after a large number of offices went for automation and universities and colleges started offering courses on computer science and computer engineering. Liberalization of the communication sector facilitated the rapid growth in IT business with the dominant

participation of the private sector. Moreover, rapid growth took place in the telecommunication services. The distribution of telephone lines increased from about 65,000 in 1992 to over 422,000 at the end of 2004. The tele-density of 1.4% (2003) is expected to increase to 15% by 2017. Half of the country's VDCs have telephone connectivity. In addition, there are now 70,686 post-paid mobile subscribers and 172,893 prepaid mobile subscribers. A number of ICT enabled services have developed during the decade and are being implemented with the strong role of the private sector.

9. Some of the notable ICT enabled services in use in Nepal are call centers (international enquiry routing), medical transcription (for hospitals in the US), digitization (of geographical maps), e-commerce (on-line mail orders), e-publications (local broadsheet dailies, newsletters), cyber-cafes (in urban cities), audio-visual broadcasting (radio, television), e-education (distance learning), tele-medicine (used by some NGOs), e-library (libraries of Tribhuwan University and Kathmandu University linked up with Oxford University library), e-governance (project underway) and e-registration (college/training applications/ registration).

10. The government sponsored rural information centers are cited as examples of ICT enabled services in rural areas. These information centres resemble the Multipurpose Community Telecentre concept promoted by International Telecommunication Union. There are about 60 such telecenters in 23 districts under the aegis of different agencies. HLCIT has established 6 and NITC 15 (including 9 set up under the IT for Development program of UNDP and later transferred to NITC). Likewise, Rural-Urban Participation Project (RUPP) of Ministry of Local Development has 7 centers. In the non-governmental sector, Rural Education And Development (READ) has 15 centers and SAP Nepal 10 resource telecenters established in various districts.

11. Rural telecentres in Nepal are established and operated in three different modalities. (i) Government directly funds for equipment and initial establishment support. These are managed by the users' community with the participation of the local government, social leaders and business community. (ii) INGOs participate with local community for the establishment of telecenters on cost-sharing basis. (iii) Private and non-business organizations involved in setting up telecenters with individual sponsorship. The financial sustainability of government sponsored telecenters especially is at risk. The telecenters face problems meeting their operational costs. Maintenance of equipment has posed a problem both technically and financially.

12. His Majesty's Government of Nepal has emphasized in its policy documents the promotion of ICT enabled services in rural areas and facilitating participation of the private sector in the establishment of rural telecenters. This is covered by National Broadcasting Act (1992), National Communication Policy (1992), Telecommunication Act (1997) Information Technology Policy (2000), The Tenth Plan (2002-2007), Long Term Policy on Information and Communication Sector (2002), Telecommunication Policy (2004) and Electronic Transactions Ordinance (2004). The time gap in policy promulgation and enactment of complementary laws has given rise to confusions and caused difficulty in promoting ICT enabled services in rural Nepal.

13. Coordination problems also persist among governmental institutions mandated with the authority and responsibility of promoting ICT for the development of rural areas. The major institutions concerned are High Level Commission for Information Technology (HLCIT), Ministry of Environment, Science and Technology (MoEST), Ministry of Information and Communications (MoIC), National Information Technology Center (NITC), Nepal Telecommunication Authority (NTA) and Nepal Electricity Authority (NEA). Moreover, the venture capital fund and rural telecommunication development fund created for the promotion of ICT enabled services by the policy have not been realized properly.

14. In Nepal, a common framework for infrastructure development through Public-Private Partnership (PPP) is in place. After a series of adaptation from the first BOT (Build,

Operate and Transfer) policy in 1999, the Ministry of Local Development approved Public-Private Partnership Policy, 2004 for local bodies to implement development programmes through community participation. In the development of rural infrastructures such as rural water supply, irrigation and tracks etc., PPP involves the local community or user groups in their constructions, operations and maintenance which are partly funded by government or donor agency funds. However, sustainability of such infrastructures is mostly dependent on the continuity of external support. Presently, except for one telecenter, no other centers have been established through participation of the local governments.

15. The rural telecenters, with larger social objectives (without undermining the economic objectives), have to function on the market concept with special focus on the market for the 'poor'. Since one of the key objectives of extending ICT facilities in the rural areas is to make the rural poor 'informed' and benefited through sustainable access to and affordability of services, it would be worthy to relate the market system of rural telecenters through the framework of *Making Market Systems Work Better for the Poor (M4P)* concept.

16. Neighboring India's experiences provide good insights into some creative and innovative forms of services delivered by the government and the private sector with close participation of the local communities in this area. *Drishtee* is a private sector initiative that provides technical expertise and management consultancy to build IT infrastructures and the human capacity to link service providers with the rural people. *E-Chaupal* is the sole initiative of ITC, a large agro-processing Indian company that links rural farmers directly with the company's procurement network. Likewise, *Bhoomi* delivers a signed copy of land title in 15 minutes for a fee as low as Rs. 15 from its 177 telecenters in Karnataka, and *n-Logue* project is based on least cost technology – preparing a business model that is technology based and costs the least.

17. There are certain issues of access, affordability and sustainability related to the development of ICT enabled services in rural areas. These are (i) prioritization at the policy level, (ii) aspiration of the service by rural community, (iii) level of awareness regarding the importance of information in our daily lives, (iv) service-is-free syndrome, (v) affordability of rural community, (vi) capital intensive business, (vii) *Haat-Failaune* (donor dependency) psychology, (viii) urban-pull literates, and (ix) security sensitivity.

18. The major structural and legislative constraints in the promotion of PPP led development ICT enabled services in rural Nepal are as follows:

    a. The IT Policy, Telecommunication Policy and Information and Communication Policy do not reflect coordination in addressing the two developmental dimensions of ICT – development of ICT (means) and ICT led socio-economic development.

    b. The overall policies do not give a balanced focus on the four dimensions of ICT, namely *connectivity, content, computing* and (human) *capability* which are the key drivers of ICT-led development. The policies do not make clear reference to their development.

    c. More than half of the VDCs in the country have no access to national grid electricity. The Tenth Plan envisages coverage of some 52 districts through renewal alternative energy sources especially institutional solar photo voltaic systems which are quite costly and raises the question of affordability.

    d. The ICT broadband policy does not reflect the fast developing technology of information and communication

    e. There are no strong policy options to utilize the potential of ICT and integrate it in the development programmes of various sectors.

f. There are individual acts for telecommunication, broadcasting and IT respectively rather than bringing all them under the fold of one umbrella act incorporating the requirements of ICT sector

g. While the Telecommunication Policy mentions the provision of various facilities to encourage private sector participation, the corresponding laws do not specifically address such facilities.

h. A number of institutions having almost similar objectives and mandates are involved in the ICT sector. For example, the HLCIT has sweeping powers to control rural telecenters and to promote telecenters in those areas where there is no involvement of the private sector. HLCIT has been designated the key agency responsible for ensuring effective implementation of IT Policy. NTA on the other hand is entrusted with licensing all kinds of communication service providers.

i. Telecommunication Policy mentions the setting up of a Rural Telecommunication Fund (RTF) and utilizing it for rural telecommunication development while the IT Policy provides for a public private joint Venture Capital Fund (VCF). These funds are not being used in the intended manner because of the lack of responsible institutional mechanism for the management and application of these funds.

j. Private sector operators have to go through harassing process through a number of government agencies to obtain license for broadband frequency and to establish ICT enabled services in rural areas

k. The restriction on the use of Voice Over Internet Protocol Restriction has restricted users from getting the benefit of a cheaper telephony technology

19. The recommendations made are as follows:

a. Integrating the existing IT policy, the broadcasting component of the communication policy and the telecommunication policy into one comprehensive 'Broadband ICT Policy'.

b. Appropriate policies to enhance *connectivity*, to encourage resourceful local *contents*, to encourage research on *computing* technology and to support *capacity* building of manpower and institutional capacity. Appropriate government budget needs to be allocated for localization of contents, research and promotion activities, and training and education.

c. Providing connectivity at affordable prices in the district headquarters, peri-urban areas and rural areas; encouraging private sector in extending broadband connectivity; integration of ICT with the media through mobile technology, TV, radio, sensors and controllers.

d. Encouraging private sector to develop locally specific contents that add value to the end users. For example, establishing standards and to develop contents in local languages such as Newari, Tamang, Maithili, etc.

e. Encouraging academia and research institutes to develop ICT equipments which are affordable, robust, and which require minimum maintenance, security efforts or other specialized skills; promoting integration of computer literacy and non-formal education to adults, women and disadvantaged rural population.

f. Encouraging private sector in the generation and distribution of affordable power supply through alternative energy sources to operate telecenters in rural areas. Provide subsidy incentives for the solar PV systems to power VSAT for telecenters where national grid power is not accessible.

g. Encouraging development agencies to use ICT for development especially in rural areas; encouraging private sector initiatives in extending ICT enabled services in health care, education, market linkages, agriculture, and government service delivery in rural areas.

h. Reviewing and updating ICT policies and legislation biannually to reflect the fast changing developments in the ICT sector.

i. Consolidating legislations on telecommunication, broadcasting and IT to develop one broad umbrella ICT act.

j. Inclusion of legal provisions such as waiver on VSAT fees to ISPs and local rural service providers, reduction of customs duty to 5% on imports of ICT equipments used in rural areas and tax exemption for a period of at least 10 years to private sector ISPs and service providers.

k. Enactment of appropriate legislations on special tariff for connectivity and power for ICT enabled services in rural areas, facilitating credit access to ISPs and service providers on project lending concept, waiver on licensing and provisions for registration of the business with the local government for the purpose of monitoring.

l. Developing one strong institution to cover information, communication and broadcasting subsectors in the country by coordinating the activities of MoEST, HLCIT, NITC, NTA and MoIC to facilitate promotion of ICT enabled services in rural areas.

m. Designing mechanism to utilize the RTF for enhancing the connectivity and power supply for ICT development in rural areas and the VCF for enhancing computing research and development applicable for ICT development in the rural areas.

n. Establishing need-based and business-oriented rural telecenters by the government by mobilizing I/NGOs, local communities, donor communities, and the private sector. Government to outsource jobs related to e-governance to the rural telecenters on fee or commission basis to facilitate the telecenters to earn revenue.

o. Allocating budget from RTF for the purposes of awareness building about the rural telecenters, content development and promotion, and satellite frequency fees for government mobilized telecenters.

p. Reengineering the process of licensing for VSAT and frequency allotment to shorten time for establishing rural telecenters. Developing mechanism to allow registration only at respective VDCs and also for establishment and availing incentives at the respective VDCs

q. Stopping restriction on the use of Voice Over Internet Protocol (VOIP) for telecommunication

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Content

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

The development of information and communication technology (ICT) is widely recognized as a vehicle for economic growth of a nation. The importance of ICT infrastructure and its potential to promote social developments is also well established. It also underpins one of the basic rights of human beings, that is, the right to seek, receive and impart information. The rapid development in this technological sphere has cut across all boundaries making information accessible to all societies, although more for the privileged ones. ICT revolution has shortened time spans and physical distances and brought about great possibilities. It has redefined life styles and development perspectives and thus significant investments are being made both in the private as well as public sectors to benefit from it. In the dawn of the new millennium, more and more nations are gearing up to meet the challenges of the 'digital economy' and to participate in an increasingly knowledge-based society.

Development in ICT is seen in the form of land and mobile telephone, the multimedia, radio, cable television, computers, internet, wireless technology, optical fibers, satellite connectivity and much more. A wide range of technologies are available to address the service needs of communities across different sectors and helping governments to deliver efficient services. Its utility is all the more significant for servicing the rural and remote areas by connecting the people there and bringing them in the development mainstream through the exchange of vital information. These services may be in healthcare, education, agriculture and marketing, entertainment, property records, improving economic conditions, gainful employment or simply dissemination of news. The World Summit on the Information Society (WSIS) has brought to fore the role of ICT for development and highlighted its significance.

However, there is concern about the ICT being responsible for creating digital divide between the developed and developing nations and between urban and rural populations. It has been felt that there will be significant difference in economic conditions of nations with and without developed IT, and this difference is likely to pose serious concerns even to the developed nations. Policy makers and development experts recognize that ICT and its potential services should help to address equity concerns by bridging the knowledge gap the rural societies of poor nations like Nepal face. Underdevelopment is partly linked with the lack of information or unequal access to information especially information that is vital for making critical decisions. The disparity in access to knowledge between the "technology empowered" and "technology excluded" societies needs to be narrowed or alleviated. In this regard, a number of initiatives have been implemented to address the digital divide through global programmes of the UN to national programmes of different nations. The International Telecommunication Union (ITU) has implemented the multipurpose community telecenter (MCT) projects to spread ICT to rural and remote villages of developing countries around the world. Starting with Timbuktu (Mali) in Africa, these MCT projects are deployed in a number of other countries including Nepal.

The prospect of bringing about developments in economic and social sectors through ICT is well recognized. While developed countries have well utilized the technology to accelerate

their progress, developing countries are lagging behind in this. The challenge of ICT for developing countries badly ridden in poverty is to assimilate it in the national policy of poverty alleviation by providing opportunities for socio-economic growth. There is the challenge of connecting the population for access to information vital to their lives and livelihoods.

Unlike the failure in benefiting from the industrial and green revolutions, Nepal could immensely benefit from the ICT revolution. With its predominantly agrarian economy and rural population, ICT is an ideal vehicle for achieving its poverty reduction development goal. One of the difficulties of extending development infrastructures and services in Nepal is its terrain. Its topography consists of 17% flat land (the Terai) and 83% in the hills and rugged mountains. Approximately 85% of the total 24.8 million (2004 estimates) live in rural areas and more than half in the mountains. Electrification through the national grid has covered only 40% of the country while concerted efforts have been made to electrify other areas through alternative energy means like solar photovoltaic systems and micro-hydro projects. Rural electrification programmes are in progress and the Tenth Plan envisages providing access to 55% of the population by the end of the plan period. The overall literacy rate is 54% (2001 census) and the per capita income is less than US$210. As against the urban areas, development indicators of rural areas point to low access to communication facilities, markets and services. Rural people manifest with lower status in education, health and sanitation and empowerment. In such a situation, ICT could become a key success sector to bridge the rural-urban gap and channeling socio-economic development efforts to the rural areas. Extension of ICT services in rural areas and catalyzing the development process is indeed a big challenge.

Only recently have a number of policy initiatives been made to incorporate ICT in the development mainstream and attempts to complement with regulatory measures. The 5-year national development plans have emphasized on utilizing ICT as a means to achieve its poverty reduction goals. The first IT policy was promulgated in 2003 and the cyber law introduced in 2004. Likewise, with the announcement of the Telecommunication Policy 2004, a broad institutional framework for the development of ICT has been in place, however loose. So far, this framework has significantly facilitated the development of ICT in the urban areas with thriving businesses in ICT hardware, software, ISPs, land and mobile telephone, cyber cafes etc. The urban educated population is in the position to access information required for various needs.

Despite ambitious plans and programmes set in the Tenth Plan such as establishing 1500 telecenters within the plan period (2002-2007), about 50 telecentres have been established. Likewise, slightly over 50% of the total 3915 VDCs have been extended telephone services as against the planned 100% coverage during the plan period. The plan also emphasizes the involvement of the private sector in the development and promotion of telecommunication in rural areas. It also has incorporated the policy of expansion of internet services to all VDCs to develop IT sector in the rural areas. These and a number of other policy promulgations are yet to be realized. A careful consolidation of appropriate policies, regulatory measures and institutional arrangements is needed to focus on facilitating demand and supply mechanism for ICT enabled services in rural areas through an approach of public-private participation.

1.2 OBJECTIVE

The main objective of the study is to recommend the policy, legal, institutional and administrative reforms to expand ICT enabled services in rural area through public private partnership.

1.3 METHODOLOGY

Preliminary interactions were held with relevant people to develop an understanding of the information and communication technology sector in Nepal. The major source of information has been relevant people of the sector extending from policy level to operative levels. Interactions and interviews were held with concerned officials of the Ministry of Information and Communication, Ministry of Environment, Science and Technology, High Level Commission for Information Technology, National Information Technology Centre, and Nepal Telecommunication Authority. Besides these, a number of ICT professionals, concerned civil society organizations and businessmen were also interviewed. Interactions were held in subsequent stages to corroborate on a number of issues. *Refer to Annex 1 – List of Persons Met.*

One Focus Group Discussion session was held with the operators and users committee members of Rural Information Centre, Panauti. The discussion provided an insight into the actual operation of telecenter and the emerging issues. *Refer to Annex 2 - Participants of Focus Group Discussion.* Likewise, an opinion survey of existing 15 rural information centres established by the government was conducted through e-mails for identifying their problems. *Refer to Annex 3 – Sample of Survey Questionnaire.*

Relevant policy documents, laws and reports and other documents were reviewed to strengthen the analysis and identify problems and issues of the information and communication technology sector. The Ninth Plan and Tenth Plan, Information Technology Policy including revised policy (2004), Telecommunications Policy 2004, National Communication Policy, 1992, Long Term Policy for Information and Communication Sector, 2002, Cyber Law 2004, Telecommunication Act 1996, National Broadcasting Act, 1992 were reviewed. National data of Central Bureau of Statistics, Telecommunication Authority and independent study reports were utilized to understand the socio-economic environment of the country, the developments in ICT services and their applications in rural development.

The structural and institutional problems and specifically the recommendations regarding expansion of ICT enabled services in rural area through public private partnership were shared in a consultative meeting with stakeholders. The outcome of the meeting helped to concretize the issues and to streamline the intervention solutions.

1.4 SCOPE AND LIMITATION

Considering the magnitude and gravity of the development objective of the subject matter, the study was done in a considerably limited time of one month. The interactions and interviews were based only in the Kathmandu Valley. Field visits beyond the perimeter of Kathmandu Valley to some successful PPP led ICT enabled programmes was not possible.

CHAPTER 2

STATUS OF ICT ENABLED SERVICES IN RURAL NEPAL

2.1 IT, ICT AND ICT ENABLED SERVICES

With the all-encompassing importance of information and the advent of data processing technology popularized by the computers, information technology emerged as a boon to policy makers, researchers, analysts, scholars and field workers. From the earlier large mainframe computers, computers have rapidly metamorphosed into desktop, laptop, palmtop and pocket gadgets. The coming of age has seen the introduction of the fifth generation computers with amazing speed, scope and versatility. Among the widespread application of computers in different spheres and dimensions, the rapid progress in communication technology has been made possible through the computers, and the complementary roles that information technology and communication have exhibited has brought about unlimited possibilities in a world of its own – thus the reference to information and communication technology. The developments in satellite connectivity, optic fibers, wireless, internet, network security, access devices, mobile telephones, multimedia etc. are examples of relevant and wide range of information and communication technologies available today.

The application of these technologies through a wide range of services have benefited all spheres of development worldwide whether it be in economy, agriculture, education, health, industry and commerce, environment, science or art. ICT enabled services have the potential of bringing developments within the reach of the common people. Examples of services especially relevant to rural population are

- timely and useful information on markets, prices, access to raw materials, credits to local farmers, artisans, traders etc.
- access to useful information on improving agriculture and livestock, farming and maintenance, handling problems
- efficient services for health and sanitation (telemedicine) and education (distance learning), literacy improvement (non-formal education)
- information on employment opportunities (within and abroad)
- news delivery (voice mail, email, e-postal service)
- access to information on civic rights and responsibilities
- statutory records collection (filing taxes, household information, property records)

2.2 DEVELOPMENT OF ICT ENABLED SERVICES IN NEPAL

The year 1970 marked the beginning of Nepal's entry into the world of modern information and communication technology with the introduction of IBM 1410 computer which was used for processing the 1971 national population census. This was also the year when the first telecom project was executed to modernize Nepal's telecommunication sector. However, developments in these two sectors, namely electronic data processing and telecommunication, took course very much independent of each other. The Electronic Data Processing Centre was

established by HMGN in 1974 (later renamed as National Computer Centre) to promote computer awareness, literacy and application of information technology. The centre, now dissolved, has been responsible for the initial development of human resources in the field.

Although Nepal entered into the information technology arena almost at the same time as in other countries, real progress did not trigger until 1995. It was during this time that a large number of offices went for automation, universities and colleges started computer science and computer engineering courses. Likewise, developments in computer hardware and software businesses, IT related training and desktop publication etc. took shape during the period. Such development was possible through the intervention of the private sector in the ICT sector rather than through the government.

During the same period, the emerging trend of media coverage and the complementary developments in information and communication technologies opened up wide vistas for IT usage that offered new opportunities for efficiency and productivity gains. The attention of the government was drawn toward this and policy interventions were felt necessary in both information technology and communication technology. During the period 1997 to 2004, a number of policy and regulatory measures were implemented in the information and communication sectors. The Telecommunication Act was enacted in 1996; Nepal Telecommunications Authority was constituted in 1997 as an independent telecom regulatory body; the Information Technology Policy 2000 (revised 2004) and Cyber Law 2004 were introduced. A sector was given a major thrust with the constitution of the High Level Commission for Information Technology in 2003. The liberalization of the communication sector then facilitated the rapid growth in IT business with the dominant participation of the private sector.

ICT Services in Nepal

Fixed telephone service providers	2 nos.
Mobile telephone service provider	2
Rural telephone service providers	1
Internet service providers (Dial up incl. e-mail)	23
Broadband service providers	3
Wi Fi service provider	1
Radio paging	8
Fax mail service providers	6
Video conferencing	1
VSAT service providers	10
VSAT service users	53
GMPCS (Satellite phones) service providers	2
National radio broadcasting (AM) service	1
National TV broadcasting service (Terrestrial and Satellite)	3
Private TV channels (Terrestrial and Satellite)	5
Private radio broadcasting (FM only)	56
Cable TV service providers	333

Source:
Nepal Telecom and Nepal Telecommunication Authority

Also during the same period, rapid growth took place in the telecommunication services. The distribution of telephone lines increased from about 65,000 in 1992 to over 422,000 at the end of 2004. The tele-density of 1.4% (2003) is expected to increase to 15% by 2017. Half of the VDCs have telephone connectivity. In addition, there are now 70,686 post-paid mobile subscribers and 172,893 prepaid mobile subscribers. The telecommunication network has been fully digitalized and offers full national and international direct dialing services. The first Internet along with e-mail services was provided by Royal Nepal Academy of Science and Technology (RONAST) in 1993 for a limited number of users. Mercantile Office Systems and Worldlink Communications introduced similar services in 1995. From about 150 e-mail users at that time, with an estimated annual e-mail subscription growth of 15%, the number of users increased to 15,000 in 2002, and, presently, it is estimated that

there are around 200,000 internet and e-mail users in the country. The optic fiber network has been implemented along the east-west highway and north-south links are planned.

Along with these, a number of ICT enabled services have developed during the decade and are being implemented with the strong role of the private sector. Some of the notable ICT enabled services in use in Nepal are given here.

- *Call centers*: A company aptly named Ask Me started the concept of a domestic call centre basically as a telephone enquiry station. It attempted to extend services by passing on specific information of institutional members and promoting these companies when there were enquiry for certain products or services. At present, there are at least two international call centers in Kathmandu (Serving Minds being one).
- *Medical transcription*: A few companies are engaged in medical transcription services for some hospitals in the United States of America benefiting from the half a day time difference between the two countries. A large number of people were also trained for this purpose under the programme of Employment Promotion Council/HMGN.
- *Digitization*: While the government itself has large on-going project for digitization of geographical maps of the country down to the VDC levels, a few private companies are also digitizing maps for specific projects and sites in other countries.
- *e-Commerce*: A number of commercial banking transactions and B2B and B2C operations have been initiated. Online mail orders and transactions have been started by institutions like muncha.com; online ticket booking in cinema halls (Jai Nepal Cinema); etc. The implementation of the Cyber Law will overcome some of the hurdles associated with e-commerce transactions in the country.
- *e-Publications*: A number of broadsheet dailies like *Kantipur* and *Nepal Samacharpatra* are being printed simultaneously from Kathmandu and other major urban centres. Likewise, a number of online news bulletins (Nepalnews.com, Kantipur online, etc.) and e-bulletins of banks, I/NGOs etc. are quite common.
- *Cyber-cafes*: It is estimated that Kathmandu alone has around 1000 cyber cafés and more in other urban cities providing internet, e-mail, telephone and fax, photocopier services. Some also provide services for making online applications for programmes such as Diversity Visa (DV) of the US and other online registrations.
- *Audio-visual broadcasting*: From one government owned Radio Nepal and Nepal Television (NTV), presently there at least four TV stations and around 20 FM radio stations in the private sector. Some of these FM stations are operated through community participation (e.g., Madanpokhara Community Radio Center). The government NTV has extended coverage to more than 20 countries in the region through satellite broadcast.
- *Tele-conferencing*: Experts, professors, resource persons etc. giving lectures in colleges, extending domestic and international panel discussions in topical issues organized by some I/NGOs, conducting board meetings, interaction programmes with stakeholders are some areas where tele-conferencing services are being utilized.
- *e-Education*: From the old correspondence courses, distance learning has been possible through the internet and CD learning. Such e-education is possible through a number of educational institutions franchised with various international colleges and universities. This means has also been extended to the non-formal and informal education areas.

- *Tele-medicine*: Some NGOs are reported to be in the process of extending medical services in remote health posts through rural telecenters or through private infrastructure.
- *e-Library*: Tribhuwan University Central Library and Kathmandu University Central Library have been networked and are in the process of linking with international libraries such as libraries of Oxford University etc. Library members can access a host of books and publication in various libraries in the network as well as from some journals, reports and publications marked for free access.
- *e-Governance*: A number of projects are underway to extend government services to the public in areas of taxation, land registration, citizenship certificate, etc. and important information dissemination through the internet to reduce the time and costs of such services delivery to the general public.
- *e-Registration*: A number of colleges and universities and training centres have started the practice of opening up applications or registration for admission tests or enrolment through their websites.

2.3 ICT ENABLED SERVICES IN RURAL AREAS

HMGN has taken an approach of Universal Access in rural areas for telecommunications service and extend the facilities in all the VDCs of the country by the end of the Tenth Plan period. The sector goal is to make affordable access of ICT for the rural poor and the application of ICT to support rural development. These are targeted to be achieved through programmes such as use of ICT by the government and NGOs, contents development in Nepali language1, computer networking of government ministries, departments and offices by 2005 and application of ICT in education, health, agriculture, postal service, planning process and office system. A Rural Telecom Development Fund has been instituted for the development of ICT infrastructure in rural areas with contributions of service providers, the government as well as international agencies such as UNDP, World Bank, ADB, JICA etc.

Recognizing the important role of extending ICT services in the rural areas to contribute to the poverty alleviation linked developmental goal of the country, the rural information centre was highlighted for the first time in the IT Policy 2001. The rural information centres were established for the empowerment of the rural population with information and delivery of services beneficial for the livelihoods of the poor communities in the rural areas. These information centres more or less resembled the Multipurpose Community Telecentre (MCT) concept as envisaged by International Telecommunication Union.

The Tenth Plan envisages setting up 1500 rural information centers during the plan period (2002 to 2007) to connect the rural areas with the rest of the world and to global information that would contribute to the development of these areas. However, only about 60 telecenters have been established in 23 districts of the country under aegis of different agencies. HLCIT has established 6 and NITC 15 including 9 set up under IT for Development program of UNDP and which were transferred to NITC. In the non-governmental sector, Rural-Urban Participation Project (RUPP) of Ministry of Local Development has 7 centers while Rural Education And Development (READ) has 15 centers. SAP Nepal has established 10 resource telecenters in various districts which are equipped with one or more computers, printers, internet connectivity and scanning machines basically for secretarial use. While RUPP focuses on networking of urban markets with bordering rural markets, READ works for

[1] The development of Unicode Nepali font is part of this programme.

library development in various parts of Nepal. Likewise, in the private sector, one telecenter is being operated by Nepal Wireless Networking Project (NWNP) in Myagdi district. NWNP focuses on education. *Refer to Annex 4 – Rural Information Centres in Nepal.*

2.4 ORGANIZATION OF RURAL INFORMATION CENTERS

Telecentres have evolved in many parts of the world and a few have really benefited the rural community through a mix of appropriate policies and business modalities. There are three types of telecentres in Nepal established and operating in different modalities.

- Government directly establishes telecentres by funding for equipment and initial support. They are managed by the users' community with the participation of the local government, social leaders and business community. Example: telecentres under HLCIT and NITC and RUPP project.
- INGOs participate with local community for the establishment of telecentres on sharing basis. The telecentres are managed by the community and sustained through self supporting revenue generating programs. Example: resource centers of READ Nepal and SAP Nepal.
- Private and non-business organization involved in setting up telecentres with individual sponsorship for establishment. The management is done by private organization. Example: telecentres run by Himanchal Higher Secondary School in Myagdi district.

A cursory survey of different government sponsored telecentres presently operated in various parts of the country strongly highlighted the needs for financial sustainability, easy and affordable connectivity, technical and managerial support, more enthusiasm of the management committee members from the community, awareness building of local community on the use of the telecentres, increasing service scope with appropriate programmes etc. Problems such as high telecom charges, poor connectivity (interruptions in telephone connection) and power supply, lack of internet connectivity were mentioned. Public awareness of the function and utility of the rural telecentres appear to be a grave problem. Probably due to the lack of appropriate ICT enabled services that the community perceives as beneficial, these telecentres have been operating as 'alien offices' that most rural community members do not relate to. The government sponsored telecentres are at risk of financial sustainability. After the initial support for basic logistics (venue, ICT hardware, office furnishings etc.), the telecentres are facing problems in meeting their operational costs. Maintenance of equipment has posed a problem both technically and financially.

GOVERNMENT SPONSORED TELECENTERS

Both HLCIT and NITC are government institutions with mandate for ICT promotion in the country. One of the programmes of the NITC has been to enhance the management and to maintain and support the 6 community telecentres established by NITC and 9 such telecentres established under the ICT for Development Project of UNDP. Since some telecentres have also been established by the HLCIT, some confusion exists regarding the status of these telecentres. Although these telecentres had been set up to disseminate to the rural areas information on agriculture, health, education, productive income generating activities, environment protection and disaster mitigation, none of them are functioning beyond providing basic services such as computer education, local and long distance telephone call facilities, fax and photocopy and internet browsing. The government makes an initial support through computers and peripherals and financial contribution of a year's salary of the staff (a manager and two social mobilizers. The centers are housed rent-free in the ward office or

government property. The users committee that manages the telecentre has representation of the local government and other community members.

The Rural-Urban Participation Project (RUPP) is executed by Ministry of Local Development in coordination with National Planning Commission and Ministry of Physical Planning & Works with technical and financial support of UNDP. It has been set up to develop local capacities and support markets through rural-urban linkages. 7 telecentres have been established to link rural markets in the periphery of select urban markets.

Sustainability problem in Panauti and Sankhu rural information centres

The government sponsored telecentres have little support from the local user committee representatives who are in the management board of the telecenters. The telecentres are run by a manager and an assistant in each, and they are virtually left to fend on their own.

For example, the telecentres in Panauti (Kavre) and Sankhu (Kathmandu) each have computers, printers and facilities for local, STD, ISD telephone, fax, print scanning etc. They rely on little income that come from internet browsing and telephone services, photocopying. Panauti telecentre gets some revenue through its basic computer literacy training programmes. They are not in the position to meet their operational costs of electricity, telephone, printer cartridge, stationery and salaries. The staffs of the telecenters have not received their salaries since last four months and nine months respectively.

INGO SPONSORED TELECENTRES

INGO sponsored telecentres can be illustrated by the community libraries developed by READ Nepal. READ Nepal has been established in 1991 to combat illiteracy in Nepal through the promotion and development of rural libraries. So far READ Nepal has a network of 35 rural community libraries in 29 districts. These libraries are established with a sustainable strategy integrating income generating projects through various other development initiatives in the respective communities. Depending on geographical location, the scope for income generation from the project selected and the need of the community, the libraries could have one or more sustainability projects. Income generating projects such as front stores, telecenters, fish ponds, printing press and ambulance ensure the sustainability of the libraries. The libraries function on the concept of Community Resource Center set up and managed by the local people, and at present, seven of these resource centers also provide telecommunication facilities.

PRIVATE AND NON-BUSINESS ORGANIZATION SPONSORED TELECENTRES

The school education networking developed by Nepal Wireless Networking Project (NWNP) can be considered in this category. NWNP is also a private sector initiative started in 2003 mainly with the aim to bring the computers and the internet within the reach of the poor people and narrowing the digital gap between the developed and developing countries. NWNP has established wireless network in seven villages namely Nangi, Paudwar, Ghara, Tikot, Sikha, Ramche and Ghorepani of Myagdi district. Connectivity to the villages is done through a series of relay stations linked to an ISP in Pokhara. WorldLink, the service provider, is one of the sponsors of the broadband internet connection to the villages. The project, maintained and operated by Himanchal Higher Secondary School in Nangi village, ensures broad-base access to ICT, development of skills in using computers and demonstration of their uses with the rationale that villagers will be motivated to use the ICT for their developmental benefits.

CHAPTER 3
POLICY AND STRUCTURAL REVIEW

3.1 POLICIES ON ICT

THE TENTH PLAN, 2002-2007

The Tenth Plan has the major objective of expansion, development and operation of information and communication sector to the rural areas, as basis of socio-economic development with the massive participation of private sector with due stress in the expansion of information technology. Although the objective is linked with overall poverty alleviation strategy, there is much to be achieved in this regard.
Linked with the strategy of massive participation of the private sector, the Tenth Plan highlights the policy of

- extending information and communication to the rural areas in coordinated and competitive manner
- initiating legal and procedural reforms to promote private sector investments
- encouraging private sector involvement in development and promotion of telecommunication in rural areas

In the IT sector, the Tenth Plan has the major objective of promoting good governance and social services by enhancing accessibility of IT to general people, generating employment opportunities, contributing to form knowledge-based societies and promoting knowledge-based businesses and industries. The Plan also emphasizes on the importance of IT in social development by establishing Community Information Centers in the rural areas for disseminating important information related with agriculture, education, health and other business information. For this, 1500 VDCs across the country are targeted to be brought into the internet access for the use of general people in the community level within the plan period. Internet nodes would be installed in district headquarters with the help of private sectors and internet services would be extended to rural areas.

In terms of IT enabled services, the Plan mentions programmes such as e-commerce, distance-education, distance-health treatment, distance-processing and transfer of necessary technologies to rural areas. The Plan also states the establishment of IT Development Fund to create IT awareness among people, assisting in rural networking, production of skilled manpower and providing social services through IT.

Likewise, in the alternative energy sector, the Tenth Plan has the objective of developing and expanding alternative energy as a powerful tool for alleviating poverty and has targeted the supply of electricity in 1000 VDCs, distributing 52,000 domestic and institutionalized solar electricity systems in 52 districts, etc. Electrification through alternative energy sources is important to operate the community telecenters in rural areas not covered by national grid electricity. The Plan emphasizes on community and private sector participation in the development and expansion of alternative energy and the development of information and communication in the rural areas through the supply of electricity from alternative energy sources.

INFORMATION TECHNOLOGY POLICY, 2000

The main objective of the IT Policy is to make IT accessible to the general public, to increase employment and to promote knowledge-based society and knowledge-based industries. The policy seeks to declare IT sectors a prioritized sector, and to create a conducive environment to attract private sector investment. It also seeks to establish venture capital funds with the joint participation of public and private sectors and to draft necessary laws that provide legal sanctions to the use of IT. Regarding IT development in the rural areas, the policy highlights the following policies

- to provide internet facilities to all VDCs of the country in phases
- to use IT to promote e-commerce, e-education, e-health, among others, and to transfer technology

Likewise, in terms of infrastructure development, an internet node is planned to be established in all development regions by FY 2001/02 and in district headquarters by FY 2003/04 with the participation of the private sector. The use of the internet shall be gradually extended to rural areas as well. It also states that telecommunications and electricity services shall be provided to the IT entrepreneurs as per their demand.

Regarding dissemination of IT, the policy states that development of IT shall be encouraged even in areas where electricity service is not available through solar power system. Likewise, content shall be prepared to enhance materials with Nepali materials on the internet to promote Nepalese arts and culture to develop rural area.

The government commits to make an investment of Rs. 100 million initially for the public and private joint venture capital fund. The IT development fund shall be established to create public awareness about IT, assist rural networking, develop IT with market management, and generate the required manpower for this sector and to make social services available where such technology is used. This fund is to be operated by NITC.

INFORMATION TECHNOLOGY POLICY, 2004 (DRAFT)

The revised IT policy, which is yet to be approved and promulgated, besides reiterating a number of previous provisions, has a few additional features such as

- capacity strengthening of HLCIT and other institutional entities
- according customs duty and tax facilities on the import of specific IT related materials meant for HRD area and for those engaged in export of IT products and services
- establishing multi-media community telecenters at VDC level
- waiver on VSAT and other licensing fees to ISPs that extend their points to rural and underserved areas; easy availability of leased line circuits and reducing charges on calls
- arrangements for easy access to credit, financial support for establishing ISP; provide income tax exemption for 5 years in designated areas
- coordinating all ICT development activities through MoIC and NTA

- accord special facilities to private sector IT companies through tax holiday to registered companies for up to 5 years, special appropriations in accounting for tax benefit, incentive schemes, duty exemptions for export of products and services until the year 2015

TELECOMMUNICATION POLICY, 2004

The main objective of the Telecommunication Policy, 2004 is to make telecommunication services reliable and accessible to all in collaboration with the private sector and to use ICT for poverty alleviation and development of the rural areas. The policy seeks to extend telecommunication services through fixed and mobile telephones and satellite systems and extend ICT enabled services through community centers.

The policy seeks to provide appropriate ICT as per the capacity of users of the rural areas through small service providers. ICT based on radio, television and telephones will be made available in collaboration with the private sector. Internet will be extended to districts and VDC levels to facilitate rural development activities and infrastructure construction. Besides, the policy also highlights the following plans pertaining to ICT services in rural areas

- mobile service providers to be selected for providing services to rural areas without subsidies; services to be extended to rural areas in the Eastern Development Region through licensed service providers on the basis of least subsidies in 2060
- setting up of a rural telecommunication fund (to be operated by NTA) and utilizing it for rural telecommunication development
- levy of only 1% customs duty on import of equipments by the telecommunication service providers to provide services to the rural areas
- exemption of license fees and annual fees to encourage telecommunication service providers to provide services in remote and rural areas
- creating favorable environment to provide facility of ICT to the rural people through the private sector
- extension of network of ICT based on radio, television and telephone that do not require training and literacy; increasing access of community to national radio and television broadcasts through land and satellite

LONG TERM POLICY ON INFORMATION AND COMMUNICATION SECTOR, 2002

The objective of the long term policy has been to utilize the developments in the information and communication sector. This policy covers a wide range of subsectors such as postal, printing, telecommunication, information flow and journalism, cinema, advertisement and also includes broadcasting. It calls for establishing a National Broadcasting Authority with the participation of the private sector to regulate broadcasting activities. The policy also highlights the need for conducting study of different options to have joint ventures between the public and the private sector broadcasting companies. It is also designed to assist for the formulation of clear policy and legislations on the ownership issues of the government and private sector considering the integration of information and communication technology.

NATIONAL COMMUNICATION POLICY, 1992

Besides others subsectors such as journalism, information, postal service, communication, cinema, there is separate policy coverage on broadcasting. The broadcasting policy calls for specific legislation to regulate TV and radio and satellite and cable television. It also seeks to allow the private sector to establish FM radio and television systems for broadcasting and to broadcast educational and entertainment programs operating within the regulatory mechanism of the Broadcasting Act.

3.2 LEGISLATIONS ON ICT

TELECOMMUNICATION ACT, 1997

HMGN retains special powers to operate or cause to operate telecommunication service. It can stop the transmission of information or to control transmission system (due to the state of emergency or national security), to take temporarily the telecommunications line and systems installed, operated or supervised by the licensee under its possession, and the power to issue directives to NTA.

There is a strong provision for licensing. The Act strictly prohibits the operation of any telecommunications services without license. Although there is a provision that exempts the necessity to obtain license for certain cases, no telecommunication service may be operated without license. The licensee may invest for the development, extension and operation of services in rural areas, and licensee is required to deposit an amount specified by NTA in a fund created for the development, extension and operation of telecommunications service in rural areas.

The land, building, plant, equipment and other structures related to the telecommunications service developed with more than 50% of its investment by a foreign person or company shall be under the ownership of HMGN after the expiry of the period of the license.

The licensee may levy and realize, upon approval by the NTA, service charge for the telecommunications service availed by him to the customer. A penalty up to Rs. 5 lakhs or stoppage of telecommunications service may be imposed if operated without obtaining license from NTA or contravenes the regulations of the NTA

ELECTRONIC TRANSACTIONS ORDINANCE, 2004 (CYBER ACT)

The E-Transaction Act or the Cyber Act has been bought out under an ordinance to make legal provisions for authentication and regulation of electronic records, for transactions through electronic data interchange, and for controlling unauthorized use or illegal change of any electronic record. The Cyber Act includes the following provisions relating to

- legitimacy of electronic record and digital signature
- attribution, acknowledgement and dispatch of electronic records
- controller and certifying authority (renewal, suspension and revoking license)
- digital signature and certificates
- functions, duties and rights of subscriber
- electronic record and government use of digital signature

- network services
- offense relating to computer
- cyber tribunal, cyber regulations appellate tribunal

NATIONAL BROADCASTING ACT, 1992

The Act prohibits broadcasting of any type programmes without license from the government. The government holds the authority to issue the license, stop broadcasting and cancel license as needed and to charge specific broadcasting and programme distribution fees. License also has to be obtained for the installation of and broadcasting through satellite or cable television. The Act also provides for the involvement of the private sector in preparing appropriate programmes. Foreign broadcasting companies or media may be allotted time for the broadcasting of educational, entertainment and news.

DIRECTIVES OF PUBLIC PRIVATE PARTNERSHIP, 2004

The Directives of Public Private Partnership has no provision for partnership in telecenters in its list of 14 areas targeted for partnerships.

3.3 INSTITUTIONS FOR ICT

The ministries responsible for the development of ICT and its application in the country are Ministry of Environment, Science and Technology (MoEST) and Ministry of Information and Communication (MoIC). Besides, other institutions are also mandated to work in this sector. They are High Level Commission for Information Technology (HLCIT), Nepal Telecommunication Authority (NTA) and National Information Technology Center (NITC).

HIGH LEVEL COMMISSION FOR INFORMATION TECHNOLOGY (HLCIT)

The HLCIT has been established through a cabinet decision in 2060 BS (2004) with the expressed mandate to formulate and recommend IT related policies to HMGN, to monitor its implementation, to review the policies and to recommend necessary changes. The Commission established under the chairmanship of the Prime Minister, has three full-time executives – Vice Chairman, Member Secretary and Member. Among others, the HLCIT also has the responsibility of extending IT enabled services to those rural areas where there is no involvement of the private sector. It also has the responsibility for the formulation and implementation of IT related national plans and programs and coordination of programs of various governmental and donor agencies.[2]

The HLCIT operates on an independent fund. The Commission is required to come in contact with the HMGN through the MoEST. HLCIT has commissioned the following specific committees and programmes.

- ***Nepali Language in Information Technology Steering Committee:*** The Nepali Language in Information Technology Steering Committee has been set up with the objective of

[2] Directive related to Remuneration, Facilities, Duties, Responsibilities and Authority and Programmes of High Level Commission for Information Technology, 2060

enhancing the large scale use of Nepali language in IT through research, development, promotion, indexing and standardization and training.[3]

- ***Rural Information Technology Inter-agency Coordination Committee:*** The Rural Information Technology Inter-agency Coordination Committee has been set up with the objective of coordinating the activities of various governmental and non-governmental agencies engaged in the programmes of establishing, operating and ensuring sustainability of rural information centers for promoting the access of IT at the community levels.[4]
- ***National Information Technology Development Board Fund:*** A specific fund has been established by pooling the resources obtained through HMGN grants; assistance, grants or loans obtained from both national and international individuals and organizations; from services rendered by the Board; and other sources. The fund is to be deposited in a commercial bank under the account of NITC.[5]
- ***Rural Information Center Manual:*** In lieu of various information centers established by HLCIT, NITC, MoEST and potential telecenters to be established and operated through governmental, non-governmental, local government and community initiatives, and through participation of the private sector, the Manual has been promulgated to streamline the operation, management and transparency of these rural telecenters. The objective of the manual is to create conducive environment for the establishment and operation of rural information centers, and to clarify the roles of the various agencies in the private, non-government, local government and government sectors. The manual details the operational procedures as well as the management responsibilities.[6]

NATIONAL INFORMATION TECHNOLOGY CENTER (NITC)

The NITC was established in 2058 BS (2002) under the IT Policy 2000 with the MoEST Secretary as the Chairman. NITC has the mandate to operate as the national data depository and information bank on IT. It assists in the computerization of government offices; operation and updating of websites of these offices; ensuring uniformity through coding and standardization; and formulation of policies for operation and management and monitoring of the committee. The NITC is also mandated to look after some 15 community telecenters set up in various rural areas.[7]

Number of licenses provided by NTA

NTA has provided license to a total of 128 service providers (till 2004)[1]:

Basic telecommunication service	2
Cellular mobile	1
VSAT network provider	10
Internet (with e-mail)	26
Radio paging	8
VSAT user	70
GMPCS service	2
Fax mail	6
Local data network	1
Video conferencing	1
Rural telecommunication services	1

Source: Nepal Telecommunication Authority: An Introduction

NEPAL TELECOMMUNICATION AUTHORITY

NTA has been established as an autonomous regulatory body in 1998 after HMGN initiated the involvement of the private sector in the development of the telecommunication services. NTA is empowered to exercise the following regulatory functions:

[3] Nepali Language in Information Technology Steering Committee Manual, 2061
[4] Rural Information Technology Inter-agency Coordination Committee Manual, 2062
[5] National Information Technology Development Board Fund Manual, 2061
[6] Rural Information Center Directive, 2061
[7] Introduction to National Information Technology Center

- determine, impose penalties and enforce decisions of determinations
- propose changes in any original tariff proposal submitted by a licensed network operator and require license holders to submit proposal for tariff review
- ensure that licensed operators comply with the requirements of its guidelines
- use necessary powers to prevent anti-competitive conduct and to promote competition

3.4 PUBLIC-PRIVATE PARTNERSHIP

PUBLIC PRIVATE PARTNERSHIP MODEL

Public Private Partnership (PPP) is defined as any arrangement between a government and the private sector whereby the private sector performs certain infrastructure development or service delivery activities which are traditionally considered to be the responsibility of the government. The partnership is executed in such development activities that have the potential to contribute to significant economic growth in the country. It is a joint effort through capital inflow and technological and managerial innovativeness from the private sector and socio-economic and implementation facilitations through regulatory and enforcement mechanism from the public sector.

Variants of PPP

The application of Public Private Partnership (PPP) is basically found in infrastructure development in developing countries. They are found in various forms such as Build Operate Transfer (BOT), Service Contract, Management Contract, Annuity, Special Project Vehicle (SPV), and Community or User Group based contracts.

BOT, in turn, appear in different forms such as Build and Transfer (BT), Build Own Operate and Transfer (BOOT), Build Transfer and Operate (BTO), Lease Operate and Transfer (LOT), Lease Build and Operate (LBO), and Develop Operate and Transfer (DOT).

Although the first private sector participation in Nepal was ushered in hydropower projects in 1992, the BOT ideas started coming in since 1994. However, the first BOT Policy was approved only in 1999, that too, only on the Roads Sector. A more comprehensive BOT policy covering all kinds of public infrastructures came in 2001 under the name of "Public Infrastructure Build Operate and Transfer Policy 2057" and the BOT Act 2003 (revised in 2004) was promulgated through an ordinance under the name "Private Investment in Infrastructure Build and Operate 2060". With these, a common framework for infrastructures development under BOT system was established in Nepal. The "Public-Private Partnership Policy 2060" was issued by the Ministry of Local Development in 2004 for local bodies to implement development programmes through community participation.

In the development of rural infrastructures such as rural water supply, irrigation, and tracks and trail bridges, PPP involves the local community or user groups in the constructions, operations and maintenance of the infrastructures which are partly funded by government or donor agency funds. The modalities are different depending on the donor agency, location and type of project. However, experiences have shown that the long term sustainability of such infrastructures mostly depends on the continuity of external support in terms of institution and funding. Unlike the commercial private enterprises, members of the local community absolve themselves of any accountability for the sustainability of the projects once external support is discontinued. In this context, it is to be cautiously considered how PPP could be applied in the development of rural information centers.

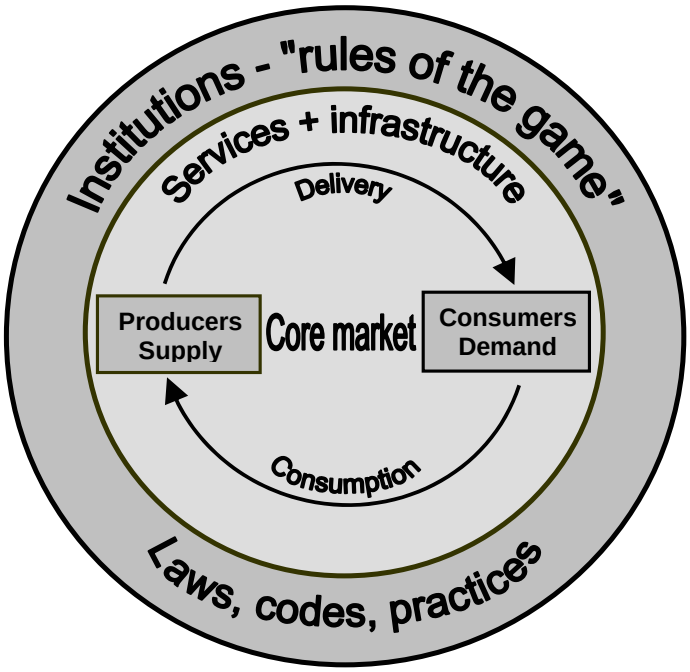
At present, whether it is due to lack of appropriate coverage in the legislation or due to lack of interest of VDCs, rural telecenters have been established only with the partnership of the NGOs with local communities, and not with the local governments (except for Kavre Rural Telecenter of Panauti).

CHAPTER 4

ISSUES ON ICT ENABLED SERVICES IN RURAL NEPAL

4.1 MAKING MARKET SYSTEMS WORK BETTER FOR THE POOR

A well functioning system ICT enabled services in rural areas is affected by the prevailing 'market dynamics' and environment. The rural telecentres, with larger social objectives (without undermining the economic objectives), have to function on the market concept. The premises are different especially when the focus is on the market for the 'poor'. Since one of the key objectives of extending ICT facilities in the rural areas is to make the rural poor 'informed' and benefited through sustainable access and affordability for the rural poor to ICT enabled services, it would be worthwhile to relate the market system of rural telecentres through the framework of *Making Market Systems Work Better for the Poor (M4P)* [8] concept.



Components of a functional market

A working market has four components in layers as shown in the figure. In the centre is the 'core market' which is conditioned by the forces of 'demand' and 'supply'. The demand is driven by the consumers within the community who 'buy' or wish to access services provided or produced the telecentres. The demand has to be stimulated through large scale awareness campaigns by the government, NGOs or private initiatives. Information is hard to sell to mostly illiterate and poor rural people and long traditions difficult to be changed. The demands are met by the private service providers, small local entrepreneurs or users groups through the telecentres who provide various services relating to health, education, markets, entertainment or e-governance. If the dynamics of demand and supply provide sufficient

[8] *Making Market Systems Work Better for the Poor or (M4P) – An introduction to the concept.* Discussion paper prepared for the ADB-DFID 'learning event', ADB Headquarters, Manila. DFID, February 2005

returns, then suppliers will overcome problems of institutions and infrastructure themselves. The market structure in terms of number, size and type of 'consumers' will vary greatly among market sectors based on their history, their stage of growth and the barriers to entry.

The market is supported in the 'first layer' by infrastructure and services that provide the physical requirements of a rural market for information and services. This layer also provide services to the market players such as ISPs, power suppliers, content developers, hardware suppliers, the franchise owners for specific information, local agents etc. The transportation infrastructure may not be very relevant, but other infrastructure such as reliable communication, means of financial transactions, repair and maintenance etc are important determinants of the market for ICT enabled services. These may be provided by the government and/or private providers at certain direct or indirect prices. In the next layer, the institutional context of the market involves a set of pro-poor and friendly formal policies, government laws, rules and regulatory mechanisms, private sector business codes, and local norms and practices in the informal level. Special interests may prevail that influence the market to their favour through "rules of the game" established by them. Since this is a new market, the roles of the different players are in the process of definition.

In terms of contributing to pro-poor growth, the key indicator will be the average rate of growth of the incomes of the poor. From the perspective of the poor, the important criteria are improvements in access to important markets and overcoming any forms of market exclusion, affordability (for purchases), and returns (for sales) including wages from the sale of labour, choice, and risk reduction.

4.2 LEARNING FROM THE NEIGHBOUR

Among various ICT enabled services in rural areas of developing countries, India's experiences provide good insights into some creative and innovative forms of services delivered by the government and the private sector with close participation of the local communities. The sheer economy of scale and the benefits provided by these services make them successful ventures.

DRISHTEE

Drishtee is a private sector initiative that provides technical expertise and management consultancy to build IT infrastructures (in the form of kiosks) and the human capacity to link service providers with the rural people. The kiosks are owned and operated by small rural entrepreneurs. Drishtee provides computer education, commercial services, photo studio and other services like rural employment, e-health etc. Through a franchise system and partnering, these kiosks also offer, at a low price, services for the rural people to acquire caste certificate and land title and post complaint to the government by e-mail regarding their pensions, health services, water facilities etc. These kiosks are sustainable.

E-CHAUPAL

E-Chaupal is the sole initiative of ITC, a large agro-processing Indian company that links rural farmers directly with the company's procurement network. This initiative overcomes the traditional practice of buying and selling of agricultural commodities in rural areas through numerous intermediaries. Farmers now negotiate prices directly with the ITC and also obtain

vital information on market prices, good farming practices and place orders for seeds and fertilizers.
An ITC kiosk has access to internet and is operated by a trained farmer from his house. The computer is linked to the internet through phone lines or by VSAT connection. The kiosk serves farmers within the radius of 5 km. The operating cost borne by the farmer operating the kiosk is compensated by commission for transactions done through his kiosk or eChaupal. The warehouse hub is managed by designated middlemen who act as local commission agent for ITC. The eChaupal services have significantly benefited the farmers economically because of rise in yields, improvement in quality of outputs and decreased transaction costs. Likewise, ITC saves on procurement costs.

BHOOMI

Bhoomi delivers a signed copy of land title in 15 minutes for a fee as low as Rs. 15 from its 177 telecenters in Karnataka. Bhoomi is now offering private operators of rural telecenters permission to access its Bhoomi database on land ownership and issue land titles. The private operators can charge an additional Rs. 10 and offer the land titles to the farmers. This saves the farmers time and cost of traveling to the land offices for the titles. The Bhoomi telecenters were established on a central government grant.

N-LOGUE

The n-Logue project is based on least cost technology –preparing a business model that is technology based and costs the least. The project has been using CorDECT technology (developed by TeNet Group of IIT, Chennai). The business model of e-Logue is designed in line with the public call operators (PCO). It identifies and helps an entrepreneur set up a kiosk equipped with a computer with multimedia and web camera, a CorDECT wall set and accessories to connect to the internet, printer, a UPS etc.

4.3 CHALLENGES

PRIORITIZATION AT THE POLICY LEVEL

It is not clear whether information technology is accorded a priority sector of the state as stated in the specific sector policy. The facts that a number of government institutions have been created to work in this sector, liberalized policy in communication, broadcasting and telecommunications is being brought out, and the Tenth Plan's target of establishing tele-centres in 1500 VDCs (out of 3915 VDCs) during the plan period point to the priority mentioned. However, after reviewing the present status of ICT enabled services practiced in the country, it is difficult to accept that 'professed priority setting' of IT. It is quite obvious that the government has not taken ICT as an important vehicle for development and poverty reduction. For according ICT a priority sector, the government has to take sincere and effective measures to adopt this fast technology, and to use the services to empower the rural and poverty ridden population. It is not clear how the government plans to place the ICT sector as a priority sector amidst its other development priorities such as primary health and education, and infrastructure like road, electricity and power, telecommunication, etc.

ASPIRATION FOR SERVICE BY RURAL COMMUNITY

The level of awareness regarding the importance of information in our daily lives and livelihoods is quite poor especially among the rural poor. For the urban and literate population, information may be used for the entertainment, education, business, official work and others. Whereas, given their educational and economic background it is very difficult for the rural and poor people to really aspire for the information. The majority of the population is not aware of the importance of information – leave alone the services that can be generated from the information. The ICT enabled services are far from their comprehension. Rural communities are more often concerned with their daily maneuverings around basic problems of drinking water, cooking fuel and livelihoods. Some have concerns regarding educational and health problems. Those that get off these concerns actually aspire for 'luxuries' like electricity and telecommunication. Only after these are taken care of, their aspirations may turn toward acquiring and using information for their real need. As yet, the rural population has not developed the level of aspiration to acquire information leave alone availing the ICT enabled services.

SERVICE-IS-FREE SYNDROME

When it comes to paying for services, majority of the people, especially in the rural areas, shows reluctance or opposition. They consider it the 'duty' of the government to deliver services, that too 'freely'. They would however be willing to pay for 'physical' products like basic food stuffs or even for the tea at the tea shop, for cigarettes, instant noodles, clothing and other consumables. But when it comes to paying for services which are not seen as tangible and physical products, they may not be inclined to do so. They hesitate to pay for education, health, water, electricity. ICT enabled services are something beyond their imagination. Two factors can explain this. For the community, ICT service is really not their 'want' or 'priority' and they feel that the government is putting pressure on them to use such a service. So why should they pay for something they do not want? Secondly, why should they pay for something that has no 'physical' value?

AFFORDABILITY OF RURAL COMMUNITY

40% of the country's population is below the poverty line and most of these comprise of the rural population. Except for some landlords and farmers with remittance money, the majority of the rural population barely manages their necessities such as food and clothing. These people do not have the kind of money required to pay for the 'return on investment' demanded by capital intensive infrastructure such as ICT. ICT enabled services in the rural areas will be another burden if they have to pay for the services.

CAPITAL INTENSIVE BUSINESS

The project on ICT enabled services is quite capital intensive. The investment for connectivity, power, computer peripherals, networking, telecommunication equipments, software and specialized ICT service utilities for health, education, digitization the content development, etc. is costly. Large investment is required for effective and efficient delivery of services, for reliable connectivity and electrical power, and skilled manpower. ICT development may provide quick returns, but ICT for development, i.e., extending ICT enabled services to rural population will not be the domain of private sector for whom return on investment is an overriding concern.

HAAT-FAILAUNE (DONOR DEPENDENT) PSYCHOLOGY

It is a fact that Nepal's development has always been and is aid/grant dependent. Policy makers rely on external support for formulating grand policies, and the government unabashedly seeks aid/grants to implement the development projects. The I/NGOs are in every sphere with their own sources while numerous donor agencies try to 'help' Nepal in this regard. Rather than developing the mindset of paying for one's development, the psychology of 'free development' has percolated down to the population. In the rural areas where private sector business is at micro-enterprise level, the very concept of initiating development or service is tantamount to 'asking' for money from others – meaning, some external donors or the governments or some urban business people. With such prevailing psychology, neither the ICT service providers nor others think of the sustainability of the services. They can only hope for or expect 'free support' for the development, maintenance and operation of services.

URBAN-PULL LITERATES

The educated rural population is affected by the urban-pull factor. Once a person passes school, he aspires to go to the urban cities for higher study or employment. Thanks to the 'unbalanced' development in the country, opportunities are centered in urban places. This has hampered the rural economy. Educated villagers shy away from the traditional agricultural work or the village stores. The rural development calls for local literate manpower. This is all more relevant when we consider service delivery through modern technology like ICT.

SECURITY SENSITIVITY

ICT enabled services need powerful telecommunication wireless connectivity and reliable electrical power besides other equipments. In the prevailing insurgency and security situation especially in the rural areas, it is quite difficult to extend ICT based services using security sensitive telecommunications technology.

4.4 PROSPECTS

Nepal Living Standard Survey 2003/04 indicates gap in the government's services delivery in education, health, commercial sectors etc. prominently in rural areas.[9] The gaps between the demand and supply can be narrowed through ICT, i.e., there is a vast demand for ICT. However, poor 4Cs deprive private sector from participating in ICT enabled programs in the rural areas. Feasibility of ICT as a means of development may be there if the government provides required infrastructure. In general, there is demand for various services in rural areas because of the need for services such as health, commerce etc. The private sector will be willing to enter the scene only if the demand is supported by "capacity to pay", that is, local rural people capable of meeting a minimum level of the costs to generate operating profit for the rural telecenters. PPP is also possible in such cases.

[9] The distribution of self-reported adequacy of government services (or people assessing as "bad" performance of existing government facilities) indicates high gaps in all basic services like health and education and infrastructures like drinking water, electricity, roads etc. in health services at 30.7% in rural mountains and 21.3% in rural Terai; 16.2% gap in education in rural mountains and Terai. Likewise, there is a wide gap in telephone services in the rural mountains, i.e., at 51% (against all Nepal gap of 28%). The reported gaps can be perceived as the demands for the respective services by the people.

The private sector will be interested in establishing telecenters in areas with substantial demand potential. Detailed study is required to identify prospective small townships or places near such townships that have adequate economic activities to enable "capacity to pay" of potential users for the ICT enabled services if started. Some potential areas are as follows:

- **Areas with high tourism potential:** Areas popular for domestic tourists (such as Muktinath, Swargadwari, Ridi, Barahachhetra, Tatopani etc. for their religious significance) or for foreign tourists for adventure tourism such as trekking, rafting, safari etc. in Namche, Tehrathum, Lukla, Ghandruk, Sauraha, etc. There would be significant demand for email and internet services in these areas.
- **Areas with significant number of population dependent on remittances:** Areas such as Baglung, Myagdi, Gulmi, Dhankuta, Ilam, Tehrathum, Okhaldhunga etc. receive large remittance from those employed in foreign services in countries such as the Gulf, Korea, Malaysia etc. Here too, IT services like email and internet would be in large demand.
- **Areas having indigenous products and/or natural resources:** Areas rich in agriculture or minor forest resources such as medicinal herbs or fruits having surplus marketing commodities having comparative advantage in global or regional markets. Demand for e-commerce services could exist or be generated in those areas.
- **Areas having numerous government offices:** District headquarters and other concentrate areas demand for services created by government's budgets itself for quick service delivery to local communities. The private sector could provide ICT enabled services to different government offices.

'Need' can be transformed into 'demand' if 'capacity to pay' of the local community exists. In such a case, suppliers (both government and the private entrepreneurs) will come in to fill the gap between the need and demand. After demand for primary services like internet and email are fulfilled, other ICT enabled services in health, education, and e-commerce etc. will gradually be developed.

The government is responsible for the investment on reliable power and broadband connectivity, the two basic infrastructures for establishing telecenters especially in rural areas. For connectivity, the Rural Telecommunication Fund (RTF) could be the appropriate source for allocating subsidy by the government through a mechanism to cross-subsidize rural areas from charges in urban areas. In fact, such a policy already exists, and it is only a matter of implementation. To facilitate the development of power, government should also provide subsidy for micro-hydro and solar power systems. If the government invests on electricity and connectivity, private entrepreneurs will come forward with appropriate services.

CONSIDERATION TO OPERATE MULTIPURPOSE COMMUNITY TELECENTERS IN POST OFFICES

Nepal's postal services, established as far back as 1935 BS, covers all 75 district headquarters (*jilla*), 927 areas (*ilaka*) including the district headquarters and 3,074 additional post offices (*atirikta*). They cover all 54 municipalities and 3,914 VDCs. Almost all district post offices have their own buildings and most of them located in prime commercial and government service areas. There are altogether 20,000 permanent and contractual employees in the postal services.

Given its nature of the services, wide coverage and infrastructure and manpower, among other set ups, a fair consideration may be given to develop them into centers for delivering ICT enabled services as well especially in the rural areas. In fact, since last year, Postal Services Department/ HMGN has started e-post in some units equipped with a computers. The buildings maybe of use for extending the ICT services, but the manpower need to be appropriately trained for the operation and maintenance of ICT equipments.

However, PPP led telecenters in the post offices is not viable as post offices are operated fully under the government budget. The Postal Service Department has total revenue of Rs. 25 crore against expenditures of Rs 92 crore. Meeting the communication objective of the Postal Services Department through the post offices and their coverage makes the proposition of operating them as multipurpose telecenters as well quite attractive, but they are not financially viable. The government alone cannot meet the costs of operating the post offices as multipurpose telecenters even in selected areas. The prospect of involving private sector investment to provide services maybe considered if the post offices provide their infrastructure rent-free for the purpose.

CHAPTER 5

POLICY CONSTRAINTS AND MITIGATION

The government is committed to utilize ICT to realize the Millennium Development Goals and has included the ICT sector perspectives in its policies. The Telecommunications Policy, 2004, IT Policy, 2004 and Long Term Policy for Information and Communications, 2002 all profess the nation's development through the promotion of ICT. Likewise, a number of institutions such as MoEST, MoIC, NTA, HLCIT and NITC cover the ICT sector. There are two clear dimensions of ICT development that must be clearly distinguished and understood if Nepal is to harness the potentials of ICT. Firstly, it is the development of ICT and ICT infrastructure itself. Secondly, utilizing ICT as a means for achieving the poverty reduction goals through a variety of services in developmental sectors such as health, education, agriculture, social inclusion etc. Emphasis on these two dimensions has to be made through coordinated policy interventions and institutional arrangements.

The development of telecenters or MCT in rural areas is possible through a two-pronged approach, i.e., through Public-Private Partnership and through private sector initiative taken simultaneously. It would be more beneficial if the two-pronged approach is taken to develop telecenters in rural areas.

- ***PPP approach*:** The government should take the initiative to establish telecenters in rural areas to fulfill the needs of the community where significant needs are felt but where the prospects are not very favorable for the private sector to show interest. Such rural telecenters may be established in identified areas by mobilizing local CBOs, NGOs and even interested private groups. Potential areas should be identified based on criterion such as population size, levels of education, economic activities etc. The local government should make the space available while facilitating the connectivity with required frequency through budgetary sanction. The manpower and operating cost of the telecenters should be the responsibility of the partners. The government should sanction certain e-governance activities to the telecenters so that they can provide service to the rural users at certain charges or fees. This would contribute to revenue generation for the centers.
- ***Private sector initiative*:** This is possible in areas where there is substantial prospect in terms of user base and paying capacity of the users. The government should provide incentives such as waiver of license/user fees on VSAT, subsidy for power use, rebate on import customs duty etc. to the private operators. The procedures and requisites for registration and establishment of telecenters should be simplified and streamlined so that potential operators can avail sanctions at the VDC level itself.

The following recommendation has to be seen in this context. The existing policies on IT and telecommunications and the Tenth Plan have reiterated the common objectives – the expansion, development and operation of information and communication sector to the rural areas; ICT as a basis of socio-economic development of the rural areas; large scale participation of the private sector etc. Much of what is enunciated has not been supported with appropriate legislation and/or administration. Implementation has been lacking. The constraints identified in the recommendations are more of shortfalls in the existing policies and legislations rather than incompatible or missing structures which stand as barriers.

5.1 POLICY

CONSTRAINT 1: ***Uncoordinated policies govern ICT development and development through ICT.*** The enunciations in the IT Policy, Telecommunication Policy and Information and Communication Policy do not portray the coordination required for addressing the two dimensions of ICT in the developmental perspective of the country – that is, development of ICT (means) and socio-economic empowerment through ICT (end).

RECOMMENDATION: One comprehensive Broadband ICT Policy needs to be brought out by integrating the existing IT policy, the broadcasting component of the communication policy and the telecommunication policy. For example, if a private sector health care institution wants to serve the rural community by establishing tele-medicine through ICT, the Broadband ICT Policy should have provisions to facilitate such activity. Likewise, the policy should cover the provision for facilitate the extension of distance learning through electronic media.

Detailed study needs to be carried out to identify economically feasible rural areas for the establishment of telecenters. Rural telecenters cannot be established just for the sake of achieving targets. Potential prospective areas in terms of population, education levels and economic activities should be considered criteria to assess paying capacity and user base.

CONSTRAINT 2: ***Lack of clarity in developing "4-C" dimensions of ICT enabled services that are required to empower people in rural areas.*** The overall policies do not give a balanced focus on the four dimensions of ICT – connectivity, content, computing and (human) *capability* – which are the key drivers of ICT-led development. The policies do not make clear reference to their development.

RECOMMENDATION: Policies must be designed to enhance *connectivity* in different parts of the country; to encourage resourceful local *contents* to utilize the ICT services effectively for development; to encourage research on *computing* technology; and to support *capacity* building of manpower and institutional capacity. The policies must also be designed to encourage private sector participation in improving the four dimensions.

In this regard, connectivity must be made affordable in the district headquarters, peri-urban areas and rural areas. The immediate response to this is delicensing for establishing and extending broadband connectivity by the private sector. The private sector must be encouraged to take up activities to establish and extend broadband connectivity. Likewise, policies should allow integration of ICT with the media through mobile technology, TV, radio, sensors and controllers in the policy.

Again the private sector has to be encouraged in the development of locally specific contents that add value to the end users. For example, standards need to be developed in local languages such as Newari, Tamang, Maithili, etc. to develop contents in the respective languages so that even the less literate rural people can understand the content. The academia and research institutes must be encouraged to develop ICT equipments which are affordable, robust, which require minimum maintenance, security efforts or other specialized skills. They should be encouraged to take up research initiatives for natural language computing such as text-to-speech, speech-to-text and machine translation. There should be provisions to promote integration of computer literacy and non-formal education to adults, women and disadvantaged rural population.

Government budgets should be allocated for localization of contents, for research and development of computing technologies and capacity building for training and education of local people.

CONSTRAINT 3: ***Lack of coordinated policy efforts to make power available to the rural ICT enabled service delivery.*** More than half of the VDCs in the country have no access to national grid electricity. The Tenth Plan envisages coverage of some 52 districts through renewal alternative energy source through specific number of institutional solar photo voltaic systems which are quite costly and brings the question of affordability.

RECOMMENDATION: Provide subsidy and other incentives to the private sector to generate power to operate ICT enabled services in rural areas. This should be done by promoting affordable power supply through alternative energy sources such as solar PV systems to use in ICT enabled services in rural areas not covered by national grid electricity. Subsidy allocation should be made in similar lines with that of subsidy for solar home systems and institutional systems. Promote the involvement of private sector for generation and distribution of power to the service providers.

CONSTRAINT 4: ***ICT broadband policy not in place to reflect the fast developing technology of information and communication.*** The information technology is developing so rapidly that any research findings in the area come to the market in very short period. This abruptly disturbs the balance of the market and society. If the changes are not taken care by the policy immediately, the ICT enabled service business will suffer.

RECOMMENDATION: ICT sector is probably the fasting growing and developing sector. If policies and legislation on ICT are not reviewed periodically, the ICT development in the country would lag behind, and players of the sector would not get the benefit of the technology. New developments not covered by the present ICT policy environment need to be incorporated through bi-annual review and update of the policy and legislation.

CONSTRAINT 5: ***Lack of clarity in incorporating ICT enabled services to support the development agenda of the country.*** There are no strong policy options to utilize the potential of ICT and integrate it in the development programmes of various sectors.

RECOMMENDATION: Policies should be prepared such that they are designed to encourage development agencies to use ICT for development, especially in rural areas. Encourage private sector initiatives in extending ICT enabled services in health care, education, market linkages, agriculture extension, and government service delivery in rural areas by addressing in concerned policies.

5.2 LEGISLATION

CONSTRAINT 6: ***Individual acts for telecommunication, broadcasting and IT rather than one act incorporating the requirements of ICT sector.*** At present, there is only the Telecommunication Act that focuses on telecommunication and the Broadcasting Act that focuses on radio and television. Lack of one umbrella act can cause anomalies when dealing with different subsectors and coordinating different laws.

RECOMMENDATION: Formulation and enactment of one umbrella act covering telecommunication, broadcasting and IT infrastructures for promoting ICT enabled services. This act should have provisions for various incentives and also to facilitate the control of telecenters that come under the purview of different laws.

CONSTRAINT 7: ***Provisions of the prevailing Telecommunication Act do not complement with the provisions of the Telecommunication Policy.*** While the Telecommunication Policy mentions the provision of various facilities to encourage private sector participation, the corresponding laws do not have specific provisions to address the facilities.

RECOMMENDATION: Include the provisions in the legislations regarding facilities in the spirit of the liberalized telecommunication policy which encourages the private sector participation. Provisions must include full waiver of VSAT fees to ISPs and ICT enabled service providers established in rural areas; customs duty on ICT equipments for rural areas reduced to less than 5%; and tax exemption for a period of at least 10 years to private sector ISPs and ICT enabled service providers.

Likewise, appropriate legislations must be immediately enacted incorporating special tariff for connectivity and power to the ICT enabled services operating in rural areas; facilitating credit access to ISPs and service providers in rural areas based on project lending concept; waiver on licensing; and provisions for registration of the business with the local government (DDCs or VDCs) for the purpose of monitoring.

5.3 INSTITUTION

CONSTRAINT 8: ***Lack of coordination among various policy level institutions for promoting private sector participation in ICT enabled services in rural areas.*** Different institutions are involved in the ICT sector. They have almost similar objectives and terms of reference. For example, the HLCIT has sweeping powers to control the establishment of rural telecenters and, strangely, to promote telecenters in those areas where there is no involvement of the private sector.[10] HLCIT has been designated the key agency responsible for ensuring effective implementation of IT Policy. Nepal Telecommunication Authority is entrusted with licensing all kinds of communication service providers.

RECOMMENDATION: Develop a strong policy level institution for coordinating information technology, communication and broadcasting subsectors. It is essential to develop coordination among MoEST, HLCIT, NITC, NTA and MoIC to facilitate promotion of ICT enabled services in rural areas. A new institution, the Ministry of Information and Communication Technology for Development (MoICT-D) should be formed to coordinate the above subsectors that are concerned with telecenters among others.

[10] The National Information Technology Center (NITC) established earlier than the HLCIT, functions as the secretariat of HLCIT. The Commission members do not comprise of any ICT expert (in a real sense, even the CAN President not necessarily be an ICT expert). While an earlier cabinet decision provided for the MoEST Secretary as the Member Secretary of the Commission, a later decision appointed the NITC Executive Director as the Member Secretary of HLCIT. The secretaries of MoEST and MoIC were appointed as the ex-officio members (also non-IT members) of the Commission. It appears that there is no coordination between the ministry and the HLCIT. It also appears that HLCIT has the responsibility of *extending IT enabled services only to those rural areas where there is no involvement of the private sector* implying that it has no role in promoting public-private participation in rural areas.

CONSTRAINT 9: ***Lack of responsible mechanism to look after mobilized funds in a concerted manner.*** The Telecommunication Policy, 2004 enunciates the setting up of a Rural Telecommunication Fund (RTF) and utilizing it for rural telecommunication development. The IT Policy, 2000 provides for a public private joint Venture Capital Fund (VCF)[11]. These funds are not being used in the intended manner because of the lack of responsible institutional mechanism in the management and application of these funds. This could lead to misuse of the funds.

RECOMMENDATION: Utilize the RTF mobilized through Telecommunication Policy and the VCF mobilized through IT Policy for the development of rural telecommunication and facilitation of ITC enabled services in the rural areas. Appropriate mechanism should be designed to utilize the RTF for enhancing the connectivity and power supply for ICT development in rural areas. Likewise, there should be appropriate mechanism to utilize the VCF for enhancing the computing research and development applicable for ICT development in rural areas

5.4 ADMINISTRATION

CONSTRAINT 10: ***Sustainability of rural information center mobilized through government initiatives.*** Except for some rural telecenters operated with the support of I/NGOs, the government supported telecenters are not operating in sustainable manners. They are not in the position to get adequate revenues to cover their operating costs. There is very low demand in the rural areas for services such as computer literacy classes, photocopying and other secretarial services generally offered by them. It is usually the staff of these telecenters that suffer the loss of their salaries.

RECOMMENDATION: It is very important to establish need-based and business-oriented multipurpose community telecenters by private entrepreneurs. Environment must be created to encourage the national and international civil societies, donor communities and private sectors to participate in developing the telecenters in various rural areas only after identifying the specific needs of the communities in those areas.

To support the revenue generation of the telecenters, the government should outsource a number of jobs to the rural telecenters on fee or commission basis so that community users could save time and resources by availing of various essential services of e-governance at the telecenters themselves. Likewise, certain amount of budgetary allocation from RTF be made for awareness building activities, content development and promotion and satellite frequency fees.

CONSTRAINT 11: ***Harassment for private operators to obtain license and to establish ICT enabled services in rural areas.*** Except in some cases, private entrepreneurs have to go through a multi-window process that extends possibly to six months or more just. This is quite harassing to the potential entrepreneurs.

[11] It is believed that a Rs. 50 crore fund has already been set up, but is being unutilized constructively as envisaged by the policy.

RECOMMENDATION: Reengineer the process of licensing to shorten the establishment time and streamline the whole procedure of. Develop mechanism to allow registration only at respective VDCs and also for establishment and availing incentives at the respective VDCs rather than go through the journey of ministries, NTA etc.

CONSTRAINT 12: ***Restriction on availing advantage of cheaper technology.*** This is in reference to the restriction imposed by the government on the use or operation of VOIP and people have to pay larger per minute call charges for international calls which they could have done at cheaper costs had they been allowed to use the VOIP. In the context of rural telecommunication, such restriction would be a disadvantage to the service options

RECOMMENDATION: It is very important that the prevailing restriction on VOIP be immediately revoked so that this service can be initiated in rural areas.

CHAPTER 6
CONCLUSION

ICT must be viewed in two different dimensions – ICT development and ICT for sustainable development. A congruent and powerful policy must be made by integrating various policies that cover the application of technologies in information, communication and broadcasting. The policy with an appropriate institutional umbrella must promote these as vehicles for the sustainable development of the rural and remote areas. Appropriate policies focusing the improvement of the 4C dimensions of ICT – connectivity, content, computing and capacity building can promote the sustainable development through ICT.

The study concentrates on the second dimension, that is, ICT for sustainable development. The scope of the study has been to look at the policy level how ICT enabled services can be promoted in rural areas through increased participation of the private sector in a market system dominated by the poor.

Experiences in PPP are available in infrastructure development. This model may be applicable in sectors which involve management of natural resources such as in irrigation, energy, forest or basic infrastructures such as roads, telecommunications and terminals. In sectors such as ICT enabled services in rural areas, PPP concept may be difficult to apply when it comes to operating the telecentres as profitable enterprises. However, a two-pronged approach is possible for establishing and expanding telecenters in rural areas.

Under the Public Private Partnership approach, the government should take the initiative to establish telecenters in rural areas where there is significant need but not favorable prospects to attract the private sector in the venture. The government may mobilize local CBOs, NGOs and even interested private groups. Likewise, the government should also encourage private sector initiatives to set up telecenters in areas with substantial business prospects. This can be done be providing specific incentives such as waiver of license fees on VSAT, subsidy for power by solar PV systems, relief on import customs duty

The present policy documents on information technology, communications and broadcasting and practices have depicted some constraints for extending ICT enabled services in rural areas of Nepal. A policy action matrix is developed with detailed constraints observed and recommendations to address the constraints. These are supported with necessary actions to be taken, including their monitoring indicators, responsible agencies and the time frame. The Policy Action Matrix is given below.

Policy Action Matrix
Enhancing ICT Enabled Services in Rural Areas

S.N.	CONSTRAINTS	RECOMMENDATION FOR IMPROVEMENT	ACTIVITIES	INDICATORS	RESPONSIBLE AGENCIES	TIME FRAME
POLICY						
1	Uncoordinated policies govern the policy of ICT development and development through ICT	Develop one comprehensive Broadband ICT policy	Integrate IT Policy, Broadcasting Policy (which is a part of Communication Policy) and Telecommunication Policy and prepare one comprehensive policy	ICT Broadband Policy promulgated	MoEST, MoIC, HLCIT, NTA	Short term
		Detail study on identifying economically feasible rural areas for establishment of telecenter	Provide coverage to facilitate private sector in specified small townships identified as immediate prospective areas for facilitating ICT enabled services	Policy formulated with provision for facilitating private sector in identified rural areas		
2	Lack of clarity to develop "4-C" dimensions of ICT enabled services required to empower people in rural area	Provide encouragement for enhancement of **Connectivity** in different parts of the country by the state and also encouraging private sector participation	▪ Provide connectivity in the district headquarters, peri-urban areas and rural areas ▪ Encourage private sector by delicensing for establishing and extending broadband connectivity ▪ Integrate ICT and media, such as mobile technology, TV, radio, sensors and controllers in the policy	Connectivity issues included in the ICT Broadband Policy	MoEST, MoIC, HLCIT, NTA	Short term
		Provide encouragement for resourceful local **Contents** to utilize the ICT services effectively for development	▪ Encourage private sector in the development of locally specific contents that add value to the end users ▪ Develop standards for local languages such as Newari, Tamang, Maithili, etc. to develop content in respective languages ▪ Allocate government budget for localization and local knowledge farming activities	Content development issues included in the ICT Broadband Policy	MoEST, MoIC, MoF, HLCIT, academia	Short term
		Provide encouragement for research on **Computing** technology	▪ Encourage academia and research institutes for developing ICT equipments which are affordable, robust requiring minimum maintenance, security efforts or other specialized skills	Computing technology issues included in the ICT Broadband Policy	MoEST, MoIC, HLCIT, UGC, academia	Short term

			▪ Encourage academia and research initiatives for natural language computing, such as text-to-speech, speech-to-text and machine translation ▪ Allocate government budget for research and development activities			
		Provide support for **Capacity** building for ICT enabled services	▪ Integrate computer literacy and non-formal education to adults, women and disadvantaged rural population ▪ Allocate government budget for training and education to rural women and disadvantaged people	Capacity building issues included in the ICT Broadband Policy	MoEST, MoIC, HLCIT, MoEdS	Short term
3	Lack of coordinated policy efforts to make power available for rural ICT enabled service delivery	Provide special encouragement to the private sector for generating power for ICT enabled services at rural areas	▪ Promote affordable power supply through alternative energy sources to use in ICT enabled services in rural areas not covered by national grid electricity ▪ Promote the involvement of private sector for generation and distribution of power to rural ICT enabled service providers ▪ Provide subsidy incentives to solar PV systems used by private VSAT operators and ICT enabled service providers as provided for solar home systems	Power availability issues included in the ICT Broadband Policy	MoEST, MoIC, MoWR, NEA, HLCIT	Short term
4	ICT broadband policy not in place to reflect the fast developing technology of information and communication	Review and update policy and legislation to get benefit of fast changing technology	Review and update every 6 months	Periodically updated policy	MoEST, MoIC, HLCIT, NTA	Long term
5	Lack of clarity in incorporating the ICT enabled support in all development agenda of the country	Encourage all development agencies to use ICT for development especially in rural areas	Encourage private sector initiatives in extending ICT enabled services in health care, education, market linkages, agriculture extension, government service deliveries in rural areas by addressing in concerned policies	ICT enabled service issues incorporated in all concerned policies	MoEST, MoIC, HLCIT and all concerned ministries	Medium term
LEGISLATIONS						
6	Individual acts for telecommunication, broadcasting and IT rather than one act incorporating the requirements of ICT	Enact one umbrella act specifically for ICT	Consolidate legislations on telecommunication, broadcasting and IT to develop one ICT act	Umbrella act enacted	MoLJ	Immediate

	sector					
7	Provisions of prevailing Telecommunication Act do not complement with the Telecommunication Policy	Include the provisions in the legislations regarding facilities made in the liberalized policy of 2004 which encourage the private sector participation	▪ Waiver on VSAT user fees to ISPs and ICT enabled service providers established at rural areas ▪ Customs duty reduced to less than 5% on ICT equipments used at rural areas ▪ Tax exemption for a period of at least 10 years to private sector ISPs and ICT enabled service providers	Legislation enacted and enforced	HMG, MoIC	Immediate
		Include the provisions in the legislations regarding facilities to encourage private sector participation	Immediately enact appropriate legislations by incorporating the following ▪ Special tariff for connectivity and power to the ICT enabled services operating at rural areas ▪ Facilitation for credit against project collateral to entrepreneurs of ISPs and service providers in rural areas ▪ Waiver on licensing and make provision of registration for monitoring purposes at the local governments like DDCs and VDCs	Legislation enacted and enforced	HMG, MoIC	Immediate
INSTITUTION						
8	Lack of coordination at various policy level institutions for promoting private sector participation in ICT enabled services at rural areas	Develop a policy level institution for coordinating policies and programmes on information technology, communication and broadcasting	Develop coordination at policy level to facilitate ICT enabled services at rural areas, among ▪ Ministry of Environment, Science and Technology ▪ High Level Commission for Information Technology ▪ National Information Technology Centre ▪ Nepal Telecommunication Authority ▪ Ministry of Information and Communication	A policy level institution for ICT for Development established (e.g., Ministry of ICT-D)	HMGN	Medium term
9	Lack of responsible mechanism to look after mobilized funds in a concerted manner	Utilize the Rural Telecommunication Fund (RTF) mobilized through the Telecommunication Policy	Develop mechanism to utilize appropriately the RTF for enhancing the connectivity and power supply for ICT development in rural areas	Mechanism developed	NTC	Immediate Short term
		Utilize the Venture Capital Fund (VCF) mobilized through the IT Policy	Develop mechanism to utilize the VCF appropriately for enhancing research and	Mechanism developed	NTC	Immediate Short term

			development in computing applicable for ICT development in rural areas			
ADMINISTRATION						
10	Sustainability of rural information centers mobilized through government initiative	Develop need-based business-oriented rural community telecenters	Encourage national and international civil societies, donor communities and the private sector to participate in developing MCT in various rural townships only after identifying needs of the particular areas	MCT developed in various rural townships	MoICT-D	Short to Long term
		Government outsource jobs to the rural telecenters on fee or commission basis	Outsource e-governance services such as distribution of various government forms, land certificates, public health and education related services etc.	Volume of jobs outsourced	Various government agencies	Short to long term
		Budget allocation from RTF	▪ Budget for awareness building on the advantages of telecenters ▪ Budget for content development and promotion etc. ▪ Budget for satellite frequency fee	Budgets allocated	MoICT-D	Short term
11	Harassment for private operators to obtain license and to establish ICT enabled services in rural areas	Reengineer the process of licensing to shorten establishment time	Develop mechanism to allow registration only at respective VDCs and also for establishment and availing incentives at the respective VDCs	Number of registrations	NTA, MoICT-D, MoLD	Immediate
12	Restriction on availing advantage of technology for cheaper technology	Stop restriction	Allow Voice Over Internet Protocol (VOIP) for telecommunication	VOIP allowed	NTA, MoIC	Immediate

ANNEX 1

LIST OF PERSONS MET

1. Mr. Atmaram Ghimire	Member Secretary, High Level Commission for Information Technology (HLCIT)
2. Mr. Dambar Bahadur Khadka	Permanent Member, HLCIT and Chairman, Nepali Language in Information Technology & Rural Information Centre Coordination Committee
3. Mr. Damodar Adhikari	Chairman, e-Zone and Web College, Kathmandu
4. Ms. Laxmi Kanta Shrestha	Director, Rural Telecommunication Directorate, Nepal Telecom
5. Mr. Mahesh Singh Kathayat	Executive Director, National Information Technology Centre (NITC)
6. Mr. Pavan Singh Shakya	Director, Public Relations, Worldlink Communications
7. Ms. Prerana Thapa	Coordinator, Rural Information Centre, NITC
8. Mr. Ramesh Adhikari	National Program Manager, Rural Urban Partnership Program, HMGN/Ministry of Local Development/ UNDP
9. Mr. Ramesh Kumar Adhikari	Under Secretary, Ministry of Information and Communication
10. Ms. Ramita Shrestha	Social Mobilizer, Rural Information Centre, Sankhu
11. Mr. Rajendra Poudel	Technical Advisor, Nepal Wireless Project, Myagdi
12. Mr. Rajendra Prasad Sharma	Acting Director-General, Postal Services Department/ HMGN
13. Mr. Rajesh Shakya	IT Expert
14. Mr. Rupesh Bahadur Shrestha	Vice President, ISP Association of Nepal
15. Mr. Samir Thapa	End Use Specialist, WINROCK International
16. Mr. Sanjiv Rajbhandari	Executive Director, Mercantile Office System
17. Mr. Saroj Rai	Coordinator, Solar Component, Alternative Energy Promotion Center/ Energy Sector Assistance Programme (AEPC/ESAP)
18. Mr. Sharad Babu Shrestha	Country Director, Rural Education And Development Nepal (READ Nepal)
19. Mr. Suresh Pudasaini	Executive Chairman, Nepal Telecommunication Authority

ANNEX 2

PARTICIPANTS OF FOCUS GROUP DISCUSSION

Date: 26th August 2005

Venue: RIC Panauti, Ward No. 2, Subba Gaun, Panauti, Kavre

Participants:

1. Mr. Gopal Bahadur Thapa, Vice-Chairman, RIC Users Board & former Chairman Panauti Municipality Ward no.2
2. Mr. Kumar Thapa, Member, RIC Users Board & Employee at Nepal Investment Bank, Banepa
3. Mr. Subodh Tripathi, Member, RIC Users Board and FIT Nepal & Asia Online (ISP), Banepa
4. Mr. Pawan Shah, FIT Nepal, Asia Online (ISP), Banepa
5. Mr. Suresh Thapa, Manager, Rural Information Centre, Panauti
6. Ms. Mina Shrestha, Social Mobilizer, Rural Information Centre, Panauti
7. Mr. Binod Dhakal, Coordinator, Rural Information Centre, HLCIT
8. Mr. Ramesh M. Singh, Consultant, BISCONS Development and Management Consultants

ANNEX 3

SURVEY QUESTIONNAIRE

Policy and Structural Constraints on Establishment and Management of Rural Multipurpose Telecommunication Centre [RMTC]

This information is sought from the existing RMTC (Including Rural Tele Center) operators to identify existing problems of RMTCs at Nepal and suggestions for their improvement.

1. **Background Information**

   a. **Name: _____**

   b. **Location:** (VDC, Municipality/District)_____/_____

   c. **Established on (year)**_____B.S.

   d. **External Support received to cover expenses on** *(Please highlight with GREEN at appropriate items)*
   Equipments, Land, Work space, Manpower, Electrical power, Internet connectivity, Telephone, Maintenance, Others_____.

   e. **Service provided on** *(Please highlight with GREEN at appropriate items)*
   Telephone, Fax, Photocopy, Computer work, Computer training, e-mail, Internet browsing, Radio, Television, VCD, information bulletin, Local content (web) development, Distribution of government forms, Library, Distance learning, tele-Medicine, Disaster mitigation, Agricultural market information, Others _____.

2. **Problems Encountered**
   Some possible problems are listed below. Please highlight with GREEN at appropriate box, depending on the degree of problem you are facing. Here, "0" means NO PROBLEM, '9' means SEVERE PROBLEM and '4' means PROBLEMS BUT MANAGABLE.

	LOW--------PROBLEM---------HIGH										
ESTABLISHMENT											**REMARKS**
1. Availability of equipments	0	1	2	3	4	5	6	7	8	9	
2. Meeting equipments cost	0	1	2	3	4	5	6	7	8	9	
3. Availability of Land and work space	0	1	2	3	4	5	6	7	8	9	
4. Buying the land and building space	0	1	2	3	4	5	6	7	8	9	
5. Availability of operating license	0	1	2	3	4	5	6	7	8	9	
6. Harassments in establishment	0	1	2	3	4	5	6	7	8	9	
7. Internet connectivity	0	1	2	3	4	5	6	7	8	9	
8. Telephone connectivity	0	1	2	3	4	5	6	7	8	9	
9. Availability of electrical powers	0	1	2	3	4	5	6	7	8	9	
10. Awareness of the community	0	1	2	3	4	5	6	7	8	9	
11. Others:	0	1	2	3	4	5	6	7	8	9	

OPERATIONS AND MANAGEMENT											REMARKS
1. Demand of service from community	0	1	2	3	4	5	6	7	8	9	
2. Capability of community to pay	0	1	2	3	4	5	6	7	8	9	
3. Payment of electricity charge	0	1	2	3	4	5	6	7	8	9	
4. Payment of house rent	0	1	2	3	4	5	6	7	8	9	
5. Availability of skilled manpower	0	1	2	3	4	5	6	7	8	9	
6. Payment of manpower cost	0	1	2	3	4	5	6	7	8	9	
7. Payment of telephone charge	0	1	2	3	4	5	6	7	8	9	
8. Payment of internet cost	0	1	2	3	4	5	6	7	8	9	
9. Payment to equipment maintenance expenses	0	1	2	3	4	5	6	7	8	9	
10. Management committee	0	1	2	3	4	5	6	7	8	9	
11. Financial sustainability	0	1	2	3	4	5	6	7	8	9	
12. Others:	0	1	2	3	4	5	6	7	8	9	

ANNEX 4

RURAL INFORMATION CENTRES IN NEPAL

1. High Level Commission for Information Technology

Silgadi, Doti
Panauti, Kavre
Bashamadi, Makawanpur
Tukuche, Mustang
Birendranagar, Surkhet
Gaighat, Udaypur

2. National Information Technology Centre

Jomsom, Mustang
Jomsom Airport, Mustang
Marpha, Mustang
Kobang, Mustang
Rumjatar, Okhaldhunga
Katuwachaupari, Parbat
Majhphant, Parbat
Milan Chowk, Parbat
Dumraha, Sunsari
Singhiya, Sunsari
Madhesa, Sunsari
Krishna Chowk, Chitwan
Devighat, Nuwakot
Gerkhutar, Nuwakot
Sankhu, Kathmandu

3. Rural and Urban Partnership Project of UNDP/MoLD

Kohalpur, Banke
Dulegaunda, Kaski
Pokhara – 18, Kaski
Bhimphedi, Makawanpur
Rangeli, Morang
Biratnagar – 6 and 16, Morang
Devithan, Itahari, Sunsari

4. Rural Education and Development Nepal

Baglung, Baglung
Bachhauli, Chitwan
Silgadi, Doti
Barbote, Ilam
Madhumalla, Morang
Kobang, Mustang
Marpha, Mustang
Tukuche, Mustang
Nangi Community, Myagdi
Agyoli, Nawalparasi
Khanigaun, Parbat

Kamala Mai, Sindhuli
Namche, Solukhumbu
Putali Bazaar, Syangja
Katari, Udaypur

5. South Asia Partnership Nepal

Nagarik Samaj Bikas Parishad Nepal, District Branch, Kaski
Nagarik Samaj Bikas Parishad Nepal, District Branch, Chitwan
Nagarik Samaj Bikas Parishad Nepal, District Branch, Makawanpur
Nagarik Samaj Bikas Parishad Nepal, District Branch, Banke
Nagarik Samaj Bikas Parishad Nepal, District Branch, Bardiya
Nagarik Samaj Bikas Parishad Nepal, District Branch, Ilam
DEC-N Resource Center, Sauraha, Chitwan
Digo Samajik Bikas Kendra, Nepalgunj, Banke
Shrot Bikas Kendra- Nepal, Biratnagar

6. Nepal Wireless Project of Himanchal Higher School, Myagdi

Ghara, Myagdi
Shika, Myagdi
Histan Tikot, Myagdi
Pawder, Myagdi
Khopra, Myagdi
Mohoriya, Myagdi
Nagi, Myagdi

Source: HLCIT

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