



# Report and Recommendation of the President to the Board of Directors

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Project Number: 38347  
December 2007

## Proposed Asian Development Fund Grant Nepal: Information and Communication Technology Development Project

Asian Development Bank

## **CURRENCY EQUIVALENTS**

(as of 14 December 2007)

Currency Unit	–	Nepalese rupee/s (NRe/NRs)
NRe1.00	=	\$0.01586
\$1.00	=	NRs63.04

## **ABBREVIATIONS**

ADB	–	Asian Development Bank
ADF	–	Asian Development Fund
CDMA	–	code division multiple access
CeC	–	community e-center
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
HLCIT	–	High-Level Commission for Information Technology
HRD	–	human resources development
ICT	–	information and communication technology
IEE	–	initial environmental examination
ISP	–	Internet service provider
IT	–	information technology
km	–	kilometer
MDG	–	Millennium Development Goal
MOEST	–	Ministry of Environment, Science and Technology
MOIC	–	Ministry of Information and Communications
NGO	–	nongovernment organization
NITC	–	National Information and Technology Center
NT	–	Nepal Telecom
NTA	–	Nepal Telecommunications Authority
OPMCM	–	Office of the Prime Minister and Council of Ministers
PIU	–	project implementation unit
PMU	–	project management unit
PPP	–	public-private partnership
PPTA	–	project preparatory technical assistance
PRC	–	People's Republic of China
PSO	–	public service obligation
SIEE	–	summary initial environmental examination
TA	–	technical assistance
VDC	–	village development committee
VOIP	–	voice over Internet protocol
VSAT	–	very small aperture terminal

## **NOTE**

In this report, "\$" refers to US dollars.

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## GRANT AND PROJECT SUMMARY

<b>Borrower</b>	Nepal
<b>Classification</b>	Targeting classification: General intervention Sector: Transport and communications Subsector: Telecommunications and communications Themes: Sustainable economic growth, inclusive social development
<b>Environment Assessment</b>	Category B. An initial environmental examination was undertaken (a summary is in Appendix 10).
<b>Project Description</b>	The Project involves (i) modernizing rural communities, particularly in remote areas, by improving rural connectivity through wireless broadband networks, mobilizing community socioeconomic activities through village network portals, and building telecenters to improve last-mile access to services in remote rural areas; (ii) building a government information and communication technology (ICT) network, which allows government-to-government exchange of data and information and central management of government data and information; (iii) developing various priority e-government applications; and (iv) developing and implementing human resources development programs.
<b>Rationale</b>	Nepal is a geographically challenged country with about 25.3 million people scattered throughout remote mountainous areas, presenting formidable barriers to sustainable growth and development. The rural population is predominant, at 85% of the total population. Although nonagricultural activities are gradually contributing more to gross domestic product (GDP), agriculture is still Nepal's main economic activity, employing more than 80% of the population and providing 38% of GDP. The Government recognizes ICT as the most effective way of lowering the country's geographic barriers, enabling information and knowledge management, providing new means of service delivery, introducing innovation, and thereby creating opportunities for economic and social development. The Millennium Development Goals (MDGs) include ICT access as a target, as it is important by itself and can help attain other poverty reduction goals and increase access to health and education services. The Second World Summit on the Information Society in Tunis in December 2005 thus encouraged governments "to elaborate, as appropriate, comprehensive, forward-looking and sustainable national e-strategies, including ICT strategies and sectoral e-strategies as appropriate, as an integral part of national development plans and poverty reduction strategies, as soon as possible and before 2010."

Worldwide, rural connectivity—whether physical (such as through road or rail) or ICT connectivity—has hardly drawn interest from private sector investors. Various ways of encouraging private sector investors to extend their connectivity services to rural remote areas have been tested. These include upfront subsidy as gap financing, universal service or public service obligation (PSO) as compensation for licensing, and negative auctioning of PSO (the lowest up-front subsidy). These efforts demonstrate the effectiveness of public-private partnerships (PPPs) in expanding rural connectivity provided they are well designed to motivate private sector investors.

Weak public sector performance and the politics of exclusion have led to a breakdown between government and much of the population in Nepal. The transition toward a new form of government is showing some progress, albeit slow, in improving rapport with the people and genuine participation. However, public services are still weak, supplier-centered, and inaccessible.

Modernization through e-development is imperative in a country like Nepal where the transition towards a new form of government is showing slow progress. ICT can bring services inexpensively and effectively to rural communities that are inadequately served or not at all, and connect them to the rest of the economy and society. This is one of the few affordable options for delivering meaningful outcomes to much of the population in Nepal within a foreseeable time frame.

<b>Impact and Outcome</b>	The Project will help the Government promote economic and social development and reduce poverty by making ICT more accessible to remote rural areas and improving the delivery of government services through the ICT network.
<b>Project Investment Plan</b>	The investment cost of the project is estimated at \$31.2 million, including taxes and duties of \$3.5 million.
<b>Financing Plan</b>	A grant of \$25 million from ADB's Special Fund resources will be provided, subject to conditions set forth in the grant agreement. The Government will finance \$6.2 million of the project cost.
<b>Estimated Project Completion Date</b>	30 June 2014
<b>Period of Grant Utilization</b>	1 July–31 December 2014
<b>Executing Agency</b>	Office of the Prime Minister and Council of Ministers (OPMCM)

**Implementation Arrangements**

A project management unit (PMU) will be established under the OPMCM. Headed by a chief project director (secretary), it will have a project director (joint secretary) for administration, another project director (the executive director of the Nepal Information and Technology Center [NITC]) for technical aspects, and a treasurer. The PMU will be supported by project management consultants in supervising and monitoring project implementation. Each component and subcomponent of the Project will be assigned a ministry as implementing agency.

Each Implementing Agency will set up a project implementation unit (PIU) under a project manager to (i) coordinate with contractors and monitor the day-to-day progress of project implementation, (ii) prepare fund withdrawal applications for endorsement by the PMU, (iii) prepare monthly project progress reports and submit them to the PMU, and (iv) keep the project accounts.

Overall project implementation will be supervised by a project steering committee consisting of the chief secretary of OPMCM (committee chair), the project director (committee vice-chair), the secretaries of the Ministry of Information and Communications and the Ministry of Environment, Science and Technology, the member secretary of the High-Level Commission for Information Technology, and the executive director of NITC (committee secretary). The project steering committee will meet regularly, at least twice a year, to set the direction for overall project implementation, guide the PMU in specific project implementation matters, and resolve any dispute between the PMU and the Implementing Agencies.

**Procurement**

Goods and works for ADB-financed contracts will be procured on a turnkey basis according to ADB's *Procurement Guidelines* (2007, as amended from time to time). Major contracts for works valued at \$1 million or more, and for goods valued at \$500,000 or more, will be awarded through international competitive bidding. Contracts for works valued at \$100,000 up to less than \$1 million, and for goods valued at \$100,000 up to less than \$500,000, will be procured through national competitive bidding (NCB). The NCB procedures will conform to the Procurement Act, 2007 and Procurement Regulation, 2007, with the clarifications and modifications detailed in the NCB annex applicable to Nepal. A procurement plan for goods and works for the first 18 months (Appendix 7), including the contract values and procurement methods, has been agreed on with the Government. This plan will be reviewed and updated every year.

**Consulting Services**

A firm of national consultants will be hired to provide project management support for 108 person-months to the PMU under the OPMCM. The project management consultants will (i) assist the PMU in developing a comprehensive system for monitoring the performance of the Project as prescribed in the project design and performance framework, and in identifying the performance parameters to be monitored during the implementation; (ii) review the monthly progress reports submitted by the Implementing Agencies, identify potential problems in the implementation of each component, develop remedial measures to avoid or correct problems, and prepare a monthly progress report summary including all findings and recommendations, to be submitted to the project director of the PMU and ADB; (iii) organize a monthly progress review meeting with the Implementing Agencies and the contractors concerned, facilitate interagency coordination and cooperation between project components, reconcile different views on system design and implementation plans, and prepare a meeting summary for the project director of the PMU and ADB; (iv) provide technical advice to the Implementing Agencies in case of technical disputes with contractors; (v) review the fund withdrawal applications submitted by the Implementing Agencies, check their appropriateness and accuracy, and advise the project director of the PMU whether or not to endorse them for payment; and (vi) prepare a quarterly project progress report and a quarterly project performance monitoring and evaluation report, to be submitted to ADB and the cofinancier.

The project management consultants will be selected and hired according to ADB's *Guidelines on the Use of Consultants* (2007, as amended from time to time) through quality- and cost-based selection (80:20) and simplified technical proposal.

**Project Benefits and Beneficiaries**

The Project will reduce the geographic barriers that hinder the people of the mountain and hill areas, who compose 52% of the population, from benefiting from the Government's development initiatives. By providing ICT facilities and Internet connectivity, the Project will give these people better access to market information, job opportunities within and outside the country, and information on health, education, tourism, and government programs and policies, leveraging additional support and resources to improve their daily lives.

Further, in rural areas and remote and inaccessible regions, where poverty is significantly high—poverty incidence continues to be above the national average of 31% (2004) in the Mid-Western (45%) and Far-Western (41%) regions, as well as in the Mountain (33%) and Hill (35%) regions—the Project will assist in (i) empowering women by helping them to pursue their educational goals, as higher levels of education among women have been found to lead to higher enrollment among girls; (ii) improving non-income poverty indicators such as child mortality rate and maternal mortality rate; (iii) increasing the income of producers and traders; and (iv) extending the reach of the Government’s pro-poor development initiatives to remote areas.

### **Risks and Assumptions**

A stable political and security situation is essential to the uninterrupted implementation of the Project. ADB will need to monitor the situation closely and coordinate with local and central authorities and the United Nations to ensure the uninterrupted implementation of the Project, particularly in remote rural areas.

The ICT and telecommunications sector of Nepal needs to be managed and regulated according to the principles of the country’s Information Technology Policy of 2000 and Telecommunication Policy of 2004. Even if the Project expands wireless broadband networks into remote rural areas, if voice over internet protocol services remain constrained, the key goal and benefit of the Project—the provision of cheap voice service through wireless broadband in remote rural areas—will be seriously compromised.

Lack of strong leadership from the senior levels of government will make it difficult to overcome resistance from unwilling public servants and vested interests. Moreover, e-government implementation requires interagency coordination and policy control. The activities of even the most enthusiastic e-government champions across government can be significantly undermined if they independently choose incompatible platforms and standards that are not interoperable or that do not take advantage of other options such as reusability of software components.

There should be enough well-trained government staff with adequate technical skills to manage and run the ICT network and e-government applications of the Project. Lack of ICT absorptive capacity in government in general will also jeopardize the successful introduction of e-governance through the Project.



## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed grant to Nepal for the Information and Communication Technology Development Project. The design and monitoring framework is in Appendix 1.

## II. RATIONALE: SECTOR PERFORMANCE, PROBLEMS, AND OPPORTUNITIES

### A. Performance Indicators and Analysis

2. Nepal is a geographically challenged country, its 25.3 million or so people scattered throughout mountains, high peaks, hills, valleys, and terai<sup>1</sup>, presenting barriers to sustainable growth and development. With a gross domestic product (GDP) per capita of \$311 (2006), an average growth rate of 2.9% in the past 3 years, and a poverty incidence of 31% (2004), the economy has not been doing well enough to address the Millennium Development Goals (MDGs) and to make full use of the economic opportunities created by two neighbors, India and the People's Republic of China (PRC). The rural population is predominant, at 85% of the total population. Although nonagricultural activities are gradually contributing more to GDP, agriculture is still Nepal's main economic activity, employing more than 80% of the population and providing 38% of GDP. Remittances are a major source of foreign exchange and of income for many households. Households receiving remittances increased to 32% in 2004 from 23% in 1996, accounting in large measure for the dramatic drop of the incidence of poverty from 42% in 1996 to 31% in 2004.

3. Besides Nepal's geography and dispersed population, the insufficient use of information and communication technology (ICT) is directly relevant to this low economic performance. The Government realizes that ICT is the most effective way of lowering the country's geographic barriers, enabling information and knowledge management, providing new means of service delivery, introducing innovation, and thereby creating opportunities for economic and social development. ICT access is an MDG target, as it is important by itself and can help attain other poverty reduction goals and improve access to health and education services. The Second World Summit on the Information Society held in Tunis in December 2005 thus encouraged governments "to elaborate, as appropriate, comprehensive, forward-looking and sustainable national e-strategies, including ICT strategies and sectoral e-strategies as appropriate, as an integral part of national development plans and poverty reduction strategies, as soon as possible and before 2010."

4. Modernization through e-development is imperative in a country like Nepal where transition towards a new form of government is showing slow progress. ICT can inexpensively and effectively bring services to rural communities that currently have inadequate services or none at all. This represents one of the few affordable options for delivering meaningful outcomes to much of the Nepalese population within a foreseeable timeframe. However, according to various e-readiness indices, Nepal appeared to rank in the range of 5-20% in lowest quantile among the countries assessed, which suggests significant concerns about lagging behind in participating in the information society. Sector analysis is in Appendix 2.

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<sup>1</sup> Terai is composed of a 26 to 32 kilometer-wide broad belt of alluvial and fertile plain in the southern part of Nepal.

## **B. Analysis of Key Problems and Opportunities**

### **1. Government Policy and Strategy**

5. Adapting international best practices and recommendations, the Government has developed a progressive policy, regulatory, and legal framework for harnessing the vast potential of ICT.<sup>2</sup> The Information Technology (IT) Policy of 2000 presents a comprehensive national vision with the following objectives: (i) making IT accessible to the general public, (ii) making IT effective in generating employment, (iii) encouraging the development of a knowledge-based society, and (iv) encouraging the development of knowledge-based industries. This policy has much in common with the IT policies of other countries in Asia and includes the following elements: (i) the development of IT human resources, (ii) e-government; (iii) infrastructure development, (iv) e-commerce, e-education, and e-health, (v) research and development and foreign direct investment, (vi) e-commerce legislation, and (vii) the establishment of community e-centers. In addition, the Telecommunication Policy of 2004 contains substantial proposals for introducing meaningful competition through open licensing, a liberal and autonomous regulatory environment, and the restructuring of the state-owned operator Nepal Telecom (NT) with the help of private investment.

6. However, telecommunications, IT, and broadcasting still have their own policy, legal, and regulatory frameworks. This segregation may not allow the country to adapt to the rapidly converging and innovative technologies, services, and markets and to drive national e-development in a holistic way. Moreover, some of the policy statements have yet to be translated into detailed actions and implementation. The implementation of some policies including the Telecommunication Policy of 2004 has been delayed by the time gap between its announcement and the passage of complementary laws. Effective and fair competition is still at a nascent stage, and the separation between policy setting, operation, and regulation is meager in practice, although improving gradually.

### **2. Low Connectivity and High Cost of Access**

7. The penetration rate nationwide approached 6.48% in 2005: for landlines it was 2.46% and for mobile telephones, 4.03%. This rate is one of the lowest in the world. Development is very much skewed in favor of Kathmandu; rural coverage, with a penetration rate of 0.06% and more than 40% of rural districts with no telecommunication services, leaves much to be desired. NT's 3.5 million line rollout plan for code division multiple access (CDMA), although capable of contributing to the improvement of rural telephone services, is not compatible with high-quality data services and may therefore delay broadband deployment throughout the country by fragmenting the voice-data-multimedia traffic. In the case of the Internet market, there have been positive policy developments including the liberalization of the use of very small aperture terminals (VSATs) in mid-1999. The NT has established an Internet presence in 59 of the 75 districts, providing local dial-up connection to users. As of February 2007, of the 39 licensed Internet service providers (ISPs), 31 were in operation, serving around 210,000 users (0.83% penetration), mostly in Kathmandu. To boost rural ICT, the Government has recently drastically reduced the licensing fees for VSAT users and ISPs, which are keen to provide operating services in the rural areas. Although Internet coverage is very low, the price of Internet service has fallen to \$0.2 per hour—the lowest in South Asia.

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<sup>2</sup> The ICT-related acts and policies are the National Broadcasting Act (1992), the National Communication Policy (1992), the Telecommunication Act (1997), the Information Technology Policy (2000), the Tenth Plan (2002–2007), the Long-Term Policy for the Information and Communication Sector (2002), the Telecommunication Policy (2004), and the Electronic Transactions Ordinance (2004).

8. Worldwide, rural connectivity—physical (such as through road or rail) or ICT connectivity—has hardly drawn interest from private sector investors. Several approaches, such as upfront subsidy as gap financing, universal service or public service obligation (PSO) as compensation for licensing, and negative auctioning of PSO (the lowest upfront subsidy), have been tested to encourage private sector investors to extend their connectivity services to remote rural areas. These efforts demonstrate the effectiveness of public-private partnerships (PPPs) in expanding rural connectivity as long as the program is well designed to motivate private sector investors.

9. The importance of online provision, delivery, and use of services, as well as the enabling environment, has been recognized and proved in other countries. However, as the e-readiness indices mentioned earlier show, the current level of ICT uptake in the community, government, and business in Nepal is far below the optimum. According to a survey for the Project, citizens make an average of two visits, travel for up to 6 hours each time, and wait for about 2 hours at village development committee (VDC) offices to complete public service transactions such as birth, death, marriage, relationship, and migration registrations, as well as vehicle and land registrations. Sometimes, further delays are caused by the absence of VDC staff without notice. In general, government processes are bureaucrat-centric and not citizen- or service-oriented. Because service delivery is not transparent, citizens are faced with the threat of harassment and bribery. These costs fall most heavily on the poorest village communities. Compared with the performance of other countries like the Republic of Korea, where the average transaction takes about 20 minutes, Nepal's performance leaves much to be desired.

### **3. Early Stage of Development of e-Government**

10. To address these problems, the High-Level Commission for Information Technology (HLCIT)<sup>3</sup> prepared a master plan for e-government in 2006, with the help of the Government of the Republic of Korea. "E-government" refers to government use of ICT, through the Internet, wide area networks, and mobile computing, among others, to improve the delivery of government services to citizens, interactions with businesses and industry, government management, and citizen empowerment through access to information. E-government is considered a tool for public sector reform because its benefits include increased transparency, less corruption, greater convenience, revenue growth, and cost reductions that can transform interactions with citizens, businesses, and other arms of government and make them more convenient, more transparent, and less expensive. Generally, the goal is to help reinvent public administration through ICT.

11. The e-government master plan set a vision, identified the needs and gaps in infrastructure and lead applications, and developed an implementation framework for citizen-centered and business-friendly online services, as well as for optimized, rationalized, and service-oriented back-end office operations. However, e-government in Nepal is still in its infancy. Ministries are not connected by intranet via an integrated information system: the information management system and services of each ministry are developed separately, in a manner that is piecemeal and vendor-driven, and the concept of a centralized data center has not yet taken hold. The communications network is outdated and isolated, and the government websites are mostly static and outdated, and offer a narrow range of online services to citizens. In addition, in view of the recent political transitions, the Government's political commitment to change and to e-government, as well as its understanding and use of ICT, has been limited compared with level in India, the Republic of Korea, and other international leaders in

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<sup>3</sup> Formed in 2003 and chaired by the Prime Minister, it oversees national IT policy and strategy, and provides strategic policy direction and support.

e-government. Also, while there is awareness of the importance of e-governance in general, full understanding is still absent.

12. The Government of Nepal recognizes the importance of using ICT tools for rural development through shared facilities known as “community e-centers” (CeCs). People in the countryside are expected to use the CeCs to gain access to useful information and applications, with which they can make informed decisions that will improve their lives. Policies target the establishment of CeCs at 1,500 VDCs by 2007. Government initiatives, with international support and through nongovernment entities, have resulted in more than 250 CeCs of different types now operating in different parts of the country. Few of these, however, have achieved the expected development outcomes or attained technical and financial sustainability. Maintenance, after the initial funding and technical support, is a major difficulty. Particularly lacking is the participation of the private sector (important for the rapid multiplication of the CeCs and for financial sustainability), locally relevant content and e-applications, and community awareness and capability.

#### **4. New and Emerging Opportunities through ICT**

13. Against the various challenges in Nepal, especially those arising from cultural diversity and geography, as well as political and social developments, ICT can clearly support civil participation and service delivery and thereby complement existing processes and development in a time of rapid change. New service delivery capabilities for rural village communities through public sector reforms are urgently needed. There is also an increasing need to speed up service delivery and not simply provide the supporting infrastructure; without a focus on content, the infrastructure could quickly prove unsustainable. An ICT development plan therefore needs to be designed to strengthen infrastructure through construction and through regulatory reform, as well as to promote viable online public services in the short term. The delivery of online services requires significant developments in government, which has little capacity, understanding, or infrastructure for this purpose but nevertheless has some good, although isolated, developments under way.

14. Enhanced uptake of knowledge technologies by the community and business, not only for government services but also for broader social and economic purposes, is central to the ICT development plan. The Project is built on the premise that information and knowledge are essential ingredients for effective community participation, good governance, poverty reduction, and economic development. The use of new information and knowledge in turn depends on a range of soft and hard infrastructure, as well as on the capacity and motivation of the community to use the technologies to gain access to information and knowledge resources and to the wider social, political, and economic networks. The methodology adopts e-governance infrastructure, systems and applications, and complementary developments as catalysts for greater IT uptake, besides being value-adding interventions in their own right.

15. Technology drives growth, but only after a minimum threshold of ICT development is reached. In other words, ICT penetration must attain a critical level before it can make a significant positive impact on a country's economy. Once countries reach the threshold, increases in ICT development begin to have positive effects on productivity and per capita incomes. There is also a time lag between ICT investment and returns, representing the time it takes for organizations to assimilate and adjust to new technology. Government ICT applications will play two roles: first, they will provide low-cost access to value-adding community services that are otherwise provided inefficiently or often not at all; and, second, they will act as catalysts for the accelerated uptake of knowledge technologies generally, thereby providing communities with the wherewithal to better address their social and economic needs.

## **5. Low-Cost Wireless Broadband**

16. In the past few years, technologies that hold significant promise for expanding rural connectivity at a substantially reduced cost in developing countries like Nepal have become commercially available. Traditional single-purpose networks for voice, data, or video have been overtaken by a single broadband network based on an Internet protocol. Wireless fidelity (WiFi) and worldwide interoperability for microwave access (WiMAX) network solutions promise convergence and economic access by leapfrogging older technologies to advance into the broadband environment. In particular, voice services can be delivered through a lower-cost voice over Internet protocol (VOIP). As far as last-mile access and rural connectivity and broadband are concerned, wireless technologies will play a critical role by lowering costs and increasing bandwidth for applications like VOIP, telemedicine, e-education, e-government services, and videoconferencing. In Nepal, as in other emerging markets, the deployment of many technologies is still at a nascent stage, although wireless technologies are being adopted to push telecom growth and to enhance rural broadband connectivity. However, the regulatory environment requires further clarification of issues of convergence between voice and data. Since the poorest members of the community in the remote villages would benefit most from VOIP, regulatory hindrances to this technological advance primarily hurt this segment of the population.

## **6. Lessons Learned**

17. One of the principal lessons of ICT development worldwide is that the road map for ICT development, while learning from international experience, must also be a home-grown product. Thus, Nepal can learn from the successes of the Republic of Korea, Malaysia, Singapore, Australia, and others, as well as from less successful strategies, but must also take into full consideration its own technical and human resources capacity. An ICT strategy need not have a manufacturing focus for its benefits to be realized, as the experience of the developed countries has shown. The benefits substantially take the form of increases in the use of technology, in the reliability of telecommunications, in ICT skill levels and information access within the community, and in the application of ICT in government service delivery. Other key lessons can be drawn from the global experience in harnessing the potential of ICT, as follows:

- (i) Knowledge technologies transform government services from traditional service provider-centered processes to community-centered services, with the help of a cultural shift nationwide. The cultural shift cannot occur overnight but is essential for growth. Adopting technology without making a concurrent cultural shift would end up wasting national resources.
- (ii) Leadership overcomes resistance to the ICT-led transformation of a country, and is therefore crucial to the success of the transformation.

18. These lessons from other countries will provide guidance to Nepal as it launches its e-government initiative: (i) e-government implementation programs should have a big vision but should take small steps (gradualism rather than a big-bang approach); (ii) e-governance programs should be part of a wider network of modernization initiatives and not merely digitize existing processes and procedures; (iii) change management and business process reengineering should focus on engaging willing volunteers rather than issuing fresh orders to unwilling public servants; (iv) because vendor-driven e-government runs an especially high risk of delivering an inferior outcome at a higher price with also a high risk of corruption, the e-government initiative should be set within a rigorous governance framework to maintain the integrity of the Project and its processes; and (v) large e-government and ICT projects,

particularly in countries where government needs improved procurement capacity, can easily become enmeshed in procurement with poor transparency and processes.

## **8. External Assistance**

19. India funded part of the fiber optic backbone that runs along much of the length of Nepal. This was done in 2002–2004 through a grant of Rs740 million, and a contribution of NRs400 million from the Government of Nepal. The Telecommunications Regulatory Authority of India also provides ongoing policy advice to the Nepal telecommunications regulator. The PRC has been assisting in the development of a 120 kilometer (km) fiber optic network linking Kathmandu to the border with the PRC (Aniko highway). ADB has provided technical assistance (TA) for cross-border connectivity improvement and capacity building under the South Asia Subregional Economic Cooperation program. The Republic of Korea supported the development of the e-government master plan and is providing \$3 million for the building design of a data center. The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) provided TA in 2007 for research on the issues affecting the viability of CeCs in rural Nepal. Since early 2007, the World Bank has supported the laying of dark fiber around Singha Durbar at a cost of about \$50,000, as well as the development of an e-government procurement road map at a cost of about \$40,000. The World Bank has also provided \$22.6 million for a major telecommunications sector project since 2001. The rural telephony access component of this project amounts to \$13 million.

## **9. Policy Dialogue**

20. An enabling policy and regulatory environment is essential for the realization of the expected development impact of the Project. To create such an enabling environment, the Government will

- (i) separate policy setting from regulation and from the operation of the telecommunication sector, as required by the Telecommunications Policy of 2004;
- (ii) expedite the amendment of the Telecommunications Act of 1997, to conform with the Telecommunications Policy of 2004; and
- (iii) fully liberalize VOIP service provision in each district after the spread of the wireless broadband networks of the Project, so that rural ISPs in the districts can be interconnected with telephones and cellular mobile services of the incumbent operator to promote the implementation of broadband Internet, which offers multiple service integration through a single network.

21. The Government will also prepare and issue e-government operating policies and guidelines to the effect that the common enterprise architecture to be developed by the Project should become the government standard for e-government applications, and that other e-government applications should be developed to make government ICT systems interoperable.

### **III. THE PROPOSED PROJECT**

#### **A. Impact and Outcome**

22. The Project will lead to socioeconomic improvements in remote and rural communities through ICT and improved ICT uptake in the community, business, and government. To this end, the Project will (i) make ICT more accessible, affordable, inclusive, sustainable, and useful to remote and rural communities; (ii) make public services more citizen-centered and business-friendly through ICT; (iii) improve accessibility, efficiency, and transparency in government service delivery through ICT; and (iv) enhance ICT business and industry.

#### **B. Outputs**

##### **1. Rural E-Community**

23. The Project will modernize rural communities, particularly in remote areas, by improving rural connectivity through wireless broadband networks in districts, by mobilizing community socioeconomic activities through a village network portal that will allow villagers to share their social capital, and by building telecenters to improve last-mile access to services in remote rural areas.

##### **a. Wireless Broadband Networks**

24. Out of 75 districts, 38 will be provided with wireless broadband networks in a phased manner. In the first phase, the wireless broadband network will be pilot-tested in three selected districts, one each from the hill, mountain, and terai districts, to (i) test the implementation of wireless technology in the planned size and scale, (ii) train local enterprise personnel to implement wireless technology, (iii) develop a mechanism of support for local operators to create a customer base at the local level and operate the wireless network for the provision of services, (iv) develop mechanisms of collaboration with the local community to involve its members in building the network and addressing issues related to the safety and security of the installed access points and the base station, (v) collaborate with the local community in developing a user base for VOIP telephone connections, (vi) coordinate the connection and use of telecenters, and (vii) establish links with other groups interested in cooperating in developing applications in the localities where telecenters are to be installed and operated.

25. The pilot-testing will lead to the development of a recommendable model for network ownership and operation, focused on the involvement of small local enterprises such as rural ISPs through workable PPP arrangements, and their impact on the financial sustainability of telecenters. The rural ISPs to be promoted by the Project's wireless broadband network must be provided with business opportunities for the telecenters to be technically and financially sustainable and benefit the communities. A potential PPP arrangement is to combine the operation of the wireless broadband network and telecenters together with the liberalization of VOIP, and auction the package to rural ISPs. Liberalizing VOIP will enhance the financial viability of the wireless broadband network, as it will enable the selected rural ISPs to operate telecenters, some of them under the Government's universal service obligation, despite insufficient financial returns. Pilot-testing will take place in the first year, and from the second year onward the wireless broadband network will be expanded to the remaining 35 districts in a phased manner, following the recommended network ownership and operation model.

## **b. Village Networks**

26. The experience of many developing countries shows that sound development interventions fail without community interest. The voice of the poor people must be heard to make assistance relevant and sustainable. One important lesson from development interventions is that communities will value those interventions that have a bearing on their daily activities and address their immediate concerns or interests.

27. With community needs in mind, the village network component will establish soft infrastructure to network villages according to their information-generating activities and interests. In the village network environment, information sought by a village contact is provided, conditionally, to every other relevant village in the block, the district, or the country. Such a network makes every village a peer to other villages, with access to what other rural communities are learning and experiencing daily. The principal sources of information, news, opinion, and discussion within the network would be the villages themselves, through the experiences of their peers.

28. The Project will develop a village network portal in Nepali and the local language and in English, establish the functionalities of a village network, and build village networks in 11 districts in Nepal, to be owned by the VDCs. The village networks will be run in such a way that (i) the village network portal will be hosted in a central data center or any other hosting location; (ii) the village network portal or secure connection will be integrated with the government representation portal; (iii) a community content editor will collect content from different sources in the village and elsewhere and regularly update the village network portal; (iv) individual ward officials and organizations in the village will also have access to the information and can update it by themselves; and (v) citizens can gain access to the information through the VDC public computer or a home computer, or at a telecenter, community center, kiosk, cybercafe, library, or other outlet.

## **c. Telecenters**

29. By providing last-mile access to ICT, telecenters can play a pivotal role in connecting those in rural remote areas in Nepal to ICT, particularly the poor who cannot afford to pay for ICT access. Nepal has pilot-tested several types of telecenters—multipurpose community telecenters, rural information telecenters, and CeCs—either with government funding or with help from aid agencies or nongovernment organizations (NGOs). All of these have the same goal: facilitating rural development. With few exceptions, the performance of these initiatives has been hampered by power shortages, low financial sustainability, poor connectivity, meager local content, and other problems.

30. The establishment of telecenters through the Project will be linked to the operation of a rural wireless broadband network to be built and run at the district level to support telecenters that are financially nonviable. National telecenter programs will be rationalized through HLICT's rural telecenter committee and in cooperation with other agencies that have established or managed telecenters such as the National Information and Technology Center (NITC) and the Nepal Telecommunications Authority (NTA). The programs will provide a care and support system for all existing telecenters and those to be established in three VDCs among the 38 selected districts under the Project.

#### **d. Community Mobilization and Capacity Development**

31. To be continuously useful and usable, the rural e-community program will need to reflect the dynamics of the information needs of community. Community mobilization should therefore be a core element of the program, from assessing rural needs to seeking new sources of useful information, alerting the communities to the value of information, raising awareness of information and ICT as a valuable resource for communities, and focusing on ICT applications. Most rural people in Nepal have never used a computer or the Internet before, although youth and job seekers are making significantly increased demands. Without community mobilization and increased awareness and capacity development, the returns on ICT investment in rural areas may be limited. The Project will support community mobilization activities in cooperation with various NGOs and community-based organizations as well as VDCs, identify in detail the training needs of rural communities, and provide capacity development programs using private training institutes.

#### **2. Government Network**

32. The Project will build a government ICT network, which allows government-to-government exchange of data and information, and central management of government data and information, with suitable protection and efficient backup and recovery provisions. The government ICT network component will comprise (i) the establishment of a government information and data center, and (ii) the development of government groupware.

##### **a. Government Information and Data Center**

33. For many governments and enterprises, the data center is at the very heart of business-critical application deployment—providing a central point of access and information delivery. With business processes and services to citizens being provided through online applications that handle the core business and operational data for the government services, government information and data should be protected with efficient backup and recovery provisions. A need thus arises for a strategic infrastructure that facilitates high availability, scalability, and efficient management, and optimized use of information and data. Such an infrastructure in turn will trigger the need for a centralized data center to deliver secure, predictable, and highly available government services and applications, as well as other business demands. The Project will establish a government information data center to facilitate e-government applications and support the Government in its digitization efforts to enhance service delivery and modernization at a central level.

##### **b. Government Groupware**

34. “Groupware” is an umbrella term for technologies designed to facilitate and coordinate e-government work by individuals and groups in different ministries and departments. The principal functions of government groupware are (i) e-mail, (ii) calendaring and scheduling, (iii) document management, and (iv) conferencing and meetings. The current groupware systems in the Government of Nepal vary from department to department, and use systems based both on open sources and on proprietary software. So far, the introduction of groupware systems has been piecemeal, to address individual areas of government activity, such as inventory systems, attendance records, and document management systems within single departments. Accordingly, the Government has ended up with a large number of discrete systems—*islands of information*—installed in different departments, and must address issues of interoperability and information integration in cross-government information flows.

35. The Project will develop a range of groupware applications in the form of a single integrated web service, all of whose individual items can interchange information as required, with open standards for all ministries and departments. Implementation will be limited to selected departments and ministries in selected locations at the start, and then expanded as required.

### **3. e-Government Applications**

36. The Project will develop various priority e-government applications that (i) are priority applications; (ii) are in areas requiring few legislative changes; (iii) provide easily identifiable benefits; (iv) respond to owners' keenness to initiate change and own the application; (v) are relevant to the immediate needs of the community; (vi) hasten the achievement of MDGs; (vii) answer actual or latent demand, cost, and organizational capability; or (viii) are likely to have quick success, with significant dividends to the community. The e-government applications to be developed through the Project include:

- (i) enterprise architecture and standards for developing a common government enterprise architecture based on open standards supporting interoperability, for developing application solutions as well as quality assurance and testing according to the predefined interoperability standards, and for developing an e-government operation policy and guidelines, and a map for the migration of legacy systems to the new architecture;
- (ii) a database for a national identification system that will facilitate other public services such as health, education, welfare benefits, passport control, tax, benefit claims, voting, criminal records, and utility bills;
- (iii) the design and implementation of a new web-based public service recruitment management system (PSRMS) for the Public Service Commission and its integration into a national citizen database, including staff training in the management and technical aspects of PSRMS and increased citizen awareness of the role and importance of the PSRMS;
- (iv) the improvement of land records management and service delivery to citizens and the introduction of user-friendly applications for gaining access to and updating the land records, as manual maintenance of the records leaves unnecessary scope for tampering, leading to land disputes, which require the poor and landowners to spend their resources fighting for their land; and
- (v) an efficient and effective online delivery system for vehicle registration and license issuance and renewal, resulting in fewer opportunities for corruption and shorter delays in service.

37. In the design of the selected e-government applications, the current business processes were reengineered and restructured to suit electronic processing and delivery of services, particularly taking into consideration the Government's decentralization plan and expected changes in civil service rules and regulations. In detailed system design, and the installation and implementation of the e-government applications, the reengineered and restructured business processes will be further refined in such a way as to maximize synergy with other initiatives aimed at improving the efficiency of public sector management such as ADB's ongoing Governance Reform and Decentralization Cluster Project.

#### **4. Human Resources Development for e-Governance**

38. The lack of adequate knowledge and skills in ICT and e-governance in the public sector has given rise to (i) poor-quality or nonexistent services; (ii) persistent corruption due to lack of transparency; (iii) unnecessary duplication and inefficiency in government work; (iv) flawed decisions because of a lack of information and analysis; (v) coordination difficulties and resistance to innovation; and (vi) poor use of financial, human, physical, and technical resources. To address this capacity problem, the Project will (i) build awareness, knowledge, and skills in ICT governance among key stakeholders to help improve efficiency in the delivery of e-services to the community; (ii) establish computer laboratories for the capacity development of institutions promoting ICT human resources development, and strengthen networking between training institutions and support for functional linkages; (iii) revise the training curriculum and develop new curricula for public training institutions, to improve the quality of the training curriculum and materials in ICT governance and enhance the cost-effectiveness of training programs by developing high-quality training materials; (iv) share knowledge and experiences to promote ICT governance and applications through exchange and fellowship programs designed to recognize the contributions and commitment of exemplary civil servants and NGO leaders to the effective and efficient adoption of ICT governance applications; and (v) support the development of ICT governance courses, a new curriculum for ICT governance, and new teaching materials in ICT governance, in association with universities and research institutes.

#### **C. ADF IX Grant Component**

39. Recent internal conflict has endangered the poor, hindered their economic opportunities, damaged infrastructure, and disrupted delivery of basic services to the neediest. The Project is designed to connect rural remote areas to the center through ICT networks and thereby reduce the geographical barriers that have disadvantaged the people of mountain and hill areas, who account for 52% of the population. It will enable them to accrue the benefits of development initiatives of the Government, access market information, access job opportunities both within and outside the country, and access information on health, education, tourism, and government schemes and policies. The proposed ADF grant of \$25 million to the Government will ease the macroeconomic impact of the large financing requirements for ICT development in Nepal.

#### **D. Special Features**

40. The basic purpose of the Project is to improve ICT connectivity in remote rural areas in Nepal and thereby enable the rural poor to gain access to information and data and thus to be included in the economic and social development mainstream. Recent advances in communication technologies, particularly wireless broadband technologies, have drastically lowered the ICT connectivity cost, enhancing the financial viability of broadband connectivity in remote rural areas such as those in Nepal. Aided by the convergence of recent communication technology, wireless broadband delivers not only data service but also voice services at a lower cost through VOIP. In many developing countries, however, VOIP is strictly regulated to protect incumbent operators, which derive their revenues mainly from voice services. Some regulators and incumbent operators justify such strict regulation against VOIP by pointing out that incumbent operators, in many cases key state-owned companies, will lose their key revenue sources if pushed to compete with cheaper VOIP services, that the major beneficiaries from the liberalization of VOIP are not the poor but those who are not poor and can afford to make frequent international calls, and that, accordingly, the liberalization of VOIP should be pursued cautiously and gradually, precisely targeting the poor as a key beneficiary.

41. To achieve the purpose of the Project, however, VOIP must be liberalized in rural areas because one of the greatest benefits the rural poor can obtain from the Project is cheap voice services delivered through wireless broadband. Many research studies on CeCs indicate that the rural poor place the highest value on voice service, among others. Further, the viability of the wireless broadband operation of the Project, which may be auctioned or leased to rural ISPs, will rely on VOIP. The Government fully understands the importance of liberalizing VOIP in project areas, and has agreed to fully liberalize VOIP service provision district by district following the spread of the wireless broadband networks of the Project, so that rural ISPs in the districts concerned can be interconnected with telephones and cellular mobile services of the incumbent operator. Liberalization will be a major breakthrough for VOIP regulation in Nepal, particularly compared with other developing countries.

### E. Project Investment Plan

42. The project investment cost is estimated at \$31.2 million, including taxes and duties of \$3.5 million as shown in Table 1. Details of the cost estimates are in Appendix 4.

**Table 1: Project Investment Plan**  
(\$ million)

Item	Amounts <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Rural E-Community	9.0
2. Government Network	4.4
3. e-Government Applications	12.8
4. Human Resources Development	1.5
5. Project Management Consultants	0.7
<b>Subtotal (A)</b>	<b>28.3</b>
<b>B. Contingencies<sup>c</sup></b>	<b>2.9</b>
<b>Total (A+B)</b>	<b>31.2</b>

<sup>a</sup> Includes taxes and duties of \$3.5 million.

<sup>b</sup> In mid-2007 prices.

<sup>c</sup> Physical contingencies computed at 10% of base cost, except for human resources development and project management consultant services and price contingencies, which were computed at 0.8% of the foreign exchange costs and local currency costs.

Asian Development Bank estimates.

### F. Financing Plan

43. The Government of Nepal has requested a grant of \$25 million from ADB's Special Funds resources to help finance the Project. This amount represents 80% of the Project cost. The Government will finance \$6.2 million of the Project cost in the form of taxes and duties (\$3.5 million) and contingencies (\$2.7 million) (see Table 2). The detailed cost estimate and financing plan is in Appendix 4.

**Table 2: Financing Plan**  
(\$ million)

Source	Total	%
Asian Development Bank	25.0	80.0
Government of Nepal	6.2	20.0
<b>Total</b>	<b>31.2</b>	<b>100.0</b>

Asian Development Bank estimates.

## **G. Implementation Arrangements**

### **1. Project Management**

44. The Office of the Prime Minister and Council of Ministers (OPMCM) will be responsible for overall project implementation and coordination as the Executing Agency. A project management unit (PMU) will be established in the OPMCM, within one month of effectiveness. It will be headed by a chief project director (secretary), who will be supported by two project directors, one for administration (joint secretary) and another for technical aspects (NITC executive director ), and a treasurer, as well as project management consultants, who will provide technical inputs for the appropriate supervision of project implementation. The chief project director will have overall responsibility for project management. Each component and subcomponent of the Project will be assigned an implementing agency as follows: (i) for the rural e-community component, the Ministry of Information and Communications (MOIC); (ii) for the government network component, the Ministry of Environment, Science and Technology (MOEST); (iii) for the enterprise architecture subcomponent, HLCIT; (iv) for the national identification system subcomponent, the Ministry of Home Affairs; (v) for the e-governance in the Public Service Commission subcomponent, the Public Service Commission; (vi) for the land records management subcomponent, the Ministry of Land Reform and Management; (vii) for the vehicle registration and driver's licenses subcomponent, the Ministry of Labor and Transport Management; and (viii) for the human resources development component, the Ministry of General Administration.

45. Project implementation units (PIUs) will be named by the various Implementing Agencies for their respective components and subcomponents, as follows: NITC, for the government network component and the government representation portal subcomponent; the Department of Land Reforms and Management, for the land records management subcomponent; and the Department of Transport Management, for the vehicle registration and driver's licenses subcomponent. For other components and subcomponents, the Implementing Agency will establish a PIU headed by a project manager. The PIUs will be established within one month of effectiveness and will (i) coordinate with the contractors and monitor the day-to-day progress of project management and implementation, (ii) prepare fund withdrawal applications and submit them to the PMU under the OPMCM for endorsement, (iii) prepare monthly project progress reports and submit them to the PMU under OPMCM, (iv) take charge of procurement for their respective areas of assignment, and (v) keep the project accounts and prepare the annual reports.

46. Overall project implementation will be supervised by a project steering committee (PSC). The PSC will be established within one month of effectiveness, will have the chief secretary of OPMCM as chair, and will comprise the project director (vice-chair), the secretaries of MOIC and MOEST, the member-secretary of HLCIT, and the executive director of NITC (committee secretary). The PSC will meet regularly at least twice a year, or more often if necessary, to set the direction for overall project implementation, guide the PMU on specific project implementation issues, and resolve any dispute between the PMU and the project implementation agencies. The chart in Appendix 5 summarizes the implementation arrangements.

### **2. Implementation Period**

47. The wireless broadband network will be built in a phased manner over 6 years. In the first year, the network will be pilot-tested in three selected districts to establish its mode of ownership and operation. In the second year, the pilot-testing will be expanded to 10 more

districts. In the third year, the network, with the established mode of network ownership and operation, will be expanded to the remaining 25 districts. Each phase of the network will be extended to more remote areas a year after it starts operation. Telecenters will be built and operated in step with the expansion of the wireless broadband network, over 4 years. The government network, e-government applications, and human resources development component will be developed, installed, tested, and commissioned over 3 years after contract award. The project implementation schedule is in Appendix 6.

### **3. Procurement**

48. Goods and works for ADB-financed contracts will be procured on a turnkey basis according to ADB's *Procurement Guidelines* (2007, as amended from time to time). Major contracts for works valued at \$1 million or more, and for goods valued at \$500,000 or more, will be awarded through international competitive bidding. Contracts for works valued at \$100,000 up to less than \$1 million, and for goods valued at \$100,000 up to less than \$500,000, will be procured through national competitive bidding (NCB) according to the procedures set forth in the Procurement Act, 2007 and Procurement Regulation, 2007, with the clarifications and modifications detailed in the NCB Annex applicable to Nepal. A procurement plan for goods and works for the first 18 months, including the contract values and procurement methods, has been agreed on with the Government and can be found in Appendix 7. This plan will be reviewed and updated yearly.

### **4. Consulting Services**

49. A firm of national consultants will be hired to provide project management support for 108 person-months to the PMU under OPMCM. The consultants will (i) assist the PMU in developing a comprehensive system for monitoring the Project's performance, as prescribed in the project design and performance framework, and for identifying the performance parameters to be monitored during the implementation of the Project; (ii) review the monthly progress reports submitted by the Implementing Agencies, identify potential problems in the implementation of each component, develop remedial measures to avoid or correct problems, and prepare a monthly progress report summary, including all the findings and recommendations, for the project director of the PMU, ADB, and the cofinancier; (iii) organize a monthly progress review meeting with the Implementing Agencies and the contractors concerned, facilitate interagency coordination and cooperation between project components, reconcile any opposing views on the system design and implementation plans, and prepare a summary of each meeting for the project director of the PMU under OPMCM, ADB, and the cofinancier; (iv) provide technical advice to the Implementing Agencies in case of technical disputes with contractors; (v) review the fund withdrawal applications submitted by the Implementing Agencies, check their appropriateness and accuracy, and advise the chief project director of the PMU whether not to endorse them for payment; and (vi) prepare a quarterly project progress report and a quarterly project performance monitoring and evaluation report to be submitted to ADB. The outline terms of reference for the project management consultants are in Appendix 8.

50. The project management consultants will be selected and engaged in accordance with *Guidelines on the Use of Consultants* (2007, as amended from time to time), using quality and cost based selection (QCBS) - 80:20 procedures and a simplified technical proposal (STP).

## **5. Anticorruption Policy**

51. ADB's *Anticorruption Policy* (1998, as amended to date) was explained to and discussed with the Government. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any alleged corrupt, fraudulent, collusive, or coercive practices relating to the Project. To support these efforts, relevant provisions of ADB's *Anticorruption Policy* are included in the grant regulations and the bidding documents for the Project. In particular, all contracts financed by ADB in connection with the Project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the Executing Agency, the implementing agencies, and all contractors, suppliers, consultants, and other service providers as they relate to the Project. The Government will also allow and assist ADB representatives in carrying out spot checks of the work in progress and the use of funds for the Project.

## **6. Disbursement Arrangements**

52. Grant funds will be disbursed according to ADB's *Loan Disbursement Handbook* (2007, as amended from time to time). To expedite project implementation through the timely release of grant proceeds for the human resources development component, the OPMCM will open an imprest account in a commercial bank acceptable to ADB, immediately after the grant takes effect. The imprest account will be managed and liquidated according to ADB's *Loan Disbursement Handbook* and other arrangements agreed to by the Government and ADB. The initial amount to be deposited into the imprest account will not exceed the estimated expenditures for the human resources development component for the next 6 months or 10% of the grant amount allocated for that component, whichever is less. Statement-of-expenditure procedures will be used in reimbursing eligible expenditures and liquidating the imprest account for individual payment transactions of up to \$3,000.

## **7. Accounting, Auditing, and Reporting**

53. The OPMCM will maintain separate accounts and records for the Project according to sound accounting principles, adequate to identify the goods and services financed from the grant proceeds, financing resources, expenditures incurred for the Project, and the use of local funds. These project accounts and related financial statements will be audited yearly according to sound auditing standards by independent auditors acceptable to ADB. The OPMCM, as the Executing Agency, will submit the audited project accounts to ADB no later than 6 months after the end of the fiscal year. The annual audits will include an audit of the imprest account and statement-of-expenditure records, and a separate opinion on the audit. The Government has been informed that ADB requires the timely submission of audited project accounts and financial statements, and that noncompliance with the requirement could mean the suspension of grant disbursements.

54. The OPMCM will submit quarterly progress reports for performance monitoring, resolution of issues, and periodic action planning. The quarterly reports will serve as feedback to guide the updating and improvement of procedures and project implementation. Within 3 months after the physical completion of the Project, the OPMCM will submit a project completion report on the overall impact of the Project.

## **8. Project Performance Monitoring and Evaluation**

55. The OPMCM will be responsible for overall project monitoring and will establish a comprehensive project performance monitoring system acceptable to ADB. The Implementing

Agencies and their designated PIUs will establish a system for preparing monthly progress reports to allow the monitoring of performance, the resolution of issues resolution, and periodic action planning. The OPMCM will monitor the quantitative and qualitative performance of each project component and evaluate the delivery of the planned facilities and the project benefits accrued. With the help of the project management consultants, the OPMCM will develop a comprehensive system for monitoring the Project's performance, no later than 3 months after the grant takes effect. ADB will review and approve this system. ADB and the Government will then agree on the performance parameters to be monitored during the implementation of the Project and for 3 months after project completion.

## **9. Project Review**

56. ADB and the Government will jointly undertake regular reviews of the Project. The reviews will assess progress in each component, identify issues and constraints, and determine the necessary remedial action and adjustments. A midterm review will be conducted during the third year of implementation. The midterm review will (i) review the scope, design, and implementation arrangements and identify the adjustments required; (ii) assess the progress of the project implementation against the performance indicators; and (iii) recommend changes in the design or implementation arrangements, if necessary.

## **IV. PROJECT BENEFITS, IMPACT, ASSUMPTIONS, AND RISKS**

### **A. Poverty and Social Development Impact**

57. The Project will reduce the geographical barriers that have hindered the people of the mountain and hill areas, who account for 52% of the population, from enjoying the benefits of the development initiatives of the Government—access to market information, job opportunities within and outside the country, and information on health, education, tourism, and government programs and policies. The Project will provide ICT facilities and Internet connectivity to give these people access to the information and enable them to leverage additional support and resources to improve their daily lives.

58. Further, in rural areas and remote and inaccessible regions, where poverty rates are high—poverty incidence continues to be above the national average of 31% (2004) in the Mid-Western (45%) and Far-Western (41%) regions, as well as in the Mountain (33%) and Hill (35%) regions—the Project will assist in (i) empowering women by helping them to pursue their educational goals, since higher education among women is associated with higher levels of enrollment among girls; (ii) improving non-income poverty indicators such as child mortality rate and maternal mortality rate; (iii) increasing the income of producers and traders; and (iv) extending the reach of the Government's pro-poor development initiatives to remote areas. A summary poverty reduction and social strategy is in Appendix 9.

### **B. Environment and Social Safeguards**

59. The Project has been developed to avoid land acquisition and resettlement by adopting wireless technology for voice and broadband Internet connectivity, and by housing the telecenters within existing buildings in rural areas. Similarly, the building for the data center will be constructed on government land within the secretariat complex in Singha Durbar. Therefore, no private land will have to be acquired, and no negative impact on indigenous people or negative resettlement impact is envisaged.

60. The Project is a category “B” project, according to ADB’s Environmental Impact Assessment Requirement (2003); therefore, an initial environmental examination (IEE) was prepared. The IEE indicated that the construction of the data center is the only project activity that may generate environmental impact, and this impact is expected to be minor, temporary (only during the construction period), and localized in the project area. The mitigation measures are simple and manageable because the data center building will be located in the government secretariat complex in Singha Durbar and the building will be around 500 square meters only. Therefore, no detailed environmental impact study is required. Adequate levels of technical supervision and monitoring during construction will be carried out by the PMU staff. No environmental clearance from MOEST is required, but a building permit will be obtained from Singha Durbar secretariat. The summary IEE is in Appendix 10.

### C. Economic Analysis

61. An economic analysis of the individual components and subcomponents and the Project as a whole was conducted according to ADB’s *Guidelines for the Economic Analysis of Projects* (1997). The project benefits were estimated on the basis of the Balanced Score Card framework<sup>4</sup> in the case of the e-government applications and interconnectivity components, and macroeconomic impact in the case of the ICT network and ICT enabler (human resources development) components.

62. The major inputs to the Balanced Score Card analysis were (i) improved quality and supply of information, (ii) reduced processing time, (iii) reduced administrative burden, (iv) reduced cost, (v) improved service level, (vi) increased efficiency, and (vii) increased community satisfaction. Beyond these tangible benefits, broader societal, political, or economic benefits were identified, as follows: (i) openness and transparency, (ii) increased participation, (iii) enhanced policy effectiveness, and (iv) increased economic development. For the analysis, 105 parameters were defined as performance indicators in the areas of process efficiency and customer satisfaction, and were used in evaluation by the project preparatory consultant team and in a household and business survey.

63. The impact of the ICT network and enabler components, on the other hand, is more nationwide and not specific to certain beneficiary groups. The benefits therefore derive from the increased efficiency, wider choice, and improved quality of services, and had to be estimated through their impact on the growth of the economy. International evidence shows that ICT network and infrastructure increases GDP growth by 0.25%. However, the economic analysis assumed a 0.125% increase in the GDP growth rate by the tenth year, gradually increasing from 0%, since the investment will be mainly in the rural areas.

64. The overall economic internal rate of return (EIRR) of the Project is 26.5%, given the combined costs and benefits of the components and subcomponents and on the assumption that the Project will have an economic life of 15 years. When all the negative scenarios are factored in, the overall EIRR is 15.3%. When the benefits of the ICT network and the enabler component are assumed to be zero, the overall EIRR is 16.4%—still higher than the threshold of 12%. Details of the economic analysis are in Appendix 11.

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<sup>4</sup> The Balanced Score Card (BSC) was developed by Professors Robert S. Kaplan and David P. Norton at Harvard Business School in 1992. Its purpose is to manage the performance of organizations from the balanced perspective of finance, process, customer, innovation, and growth. The BSC has since been diversified into several methods, among them, information technology (IT). This tool is widely used in economic analysis and management especially for IT projects including e-government.

## **D. Risks**

65. The implementation of the Project entails a number of risks:

- (i) A stable political and security situation is essential to the uninterrupted implementation of the Project. ADB will need to closely monitor the situation and coordinate with local and central authorities and the United Nations to ensure the uninterrupted implementation of the Project, particularly in remote rural areas.
- (ii) The ICT and telecommunications sector needs to be managed and regulated in line with the principles of the country's Information Technology Policy of 2000 and Telecommunication Policy of 2004. ADB will closely coordinate with the Government to expedite the amendment of the Telecommunications Act of 1997 to be consistent with those policies.
- (iii) Even if the Project expands wireless broadband networks into remote rural areas, if VOIP services remain constrained, the key goal and benefit of the Project—the provision of cheap voice service through wireless broadband in remote rural areas—will be seriously compromised.
- (iv) Lack of strong leadership from the most senior levels of government will make it difficult to overcome resistance from unwilling public servants and vested interests. ADB will continue to elicit full support from the government authorities at the highest levels for the e-governance initiatives of the Project.
- (v) e-government implementation requires interagency coordination and policy control. The preparation and issuance by the Government of the e-government operating policies and guidelines prescribing the adoption of the common enterprise architecture as the government standard for e-government applications is essential for the interoperability of government ICT systems. ADB will closely coordinate with the Government in preparing and issuing the e-government operating policies and guidelines.
- (vi) Lack of ICT absorptive capacity among government staff in general will jeopardize the successful introduction of e-governance intended by the Project. ADB will continue to dialogue with the Government to highlight the importance of the capacity development of government staff, and closely monitor the implementation of the human resources development component of the Project.
- (vii) Lack of technical and project monitoring and implementation capacity in the Executing Agency and Implementing Agencies may delay project implementation. The Executing Agency will be supported by a team of project management consultants, who will assist the PMU under the OPMCM in the day-to-day monitoring of project implementation. The technical capacity of the Implementing Agencies will be strengthened by human resources development programs to be developed and implemented by the Project.

66. The integrated benefits and impact are expected to outweigh the costs, given the likelihood of the risks occurring and the risk mitigation measures to be applied.

## **V. ASSURANCES AND CONDITION**

### **A. Specific Assurances**

67. In addition to the standard assurances, the Government has given the following specific assurances, which will be incorporated in the legal documents:

- (i) **Security.** The Government will make its best effort to provide adequate security for the smooth and uninterrupted implementation of the Project.
- (ii) **VOIP service provision.** The Government will fully liberalize VOIP district by district following the spread of the wireless broadband networks of the Project, so that rural ISPs in concerned districts can be interconnected with telephones and cellular mobile services of the incumbent operator, to promote the implementation of broadband Internet, which offers multiple service integration through a single network.
- (iii) **e-government operating policies and guidelines.** The Government will prepare and issue the e-government operating policies and guidelines to the effect that the common enterprise architecture to be developed by the Project should be adopted as the Government's standard for e-government applications, followed by the further development of e-government applications to establish interoperability among government ICT systems, within 6 months after the awarding of the contract for the development of the enterprise architecture application.
- (iv) **Land acquisition and resettlement.** The Government will ensure that the equipment for wireless broadband network will be colocated with NT's tower facilities whenever required, and that telecenters will be built on existing government land. In the event of (i) any unanticipated or unforeseen involuntary resettlement, (ii) land acquisition, or (iii) resettlement activities during project implementation, the Government will ensure that the Project is implemented in accordance with ADB's *Involuntary Resettlement Policy* (1995) and with all applicable laws and regulations in Nepal. The awarding of the civil works contract will be subject to ADB's prior review of the resettlement plan(s).
- (v) **Environmental protection.** The Government will ensure that any unexpected negative environmental impact will be addressed by consulting ADB. The Government will ensure that the construction of the data center is carried out by taking into account the recommendations from the IEE and will strictly follow the conditions attached to the building permit. The implementation of the Project will conform to ADB's *Environment Policy* (2002) and the Environment Protection Regulation of 1998 of the Government of Nepal.
- (vi) **Labor laws.** The Government will ensure that all civil works and systems development and installation contractors (i) comply with all applicable labor laws; (ii) do not employ child labor for construction and maintenance activities; (iii) do not differentiate between men and women when it comes to wages, particularly for work of equal value; (iv) encourage employment of the local poor who meet the job and efficiency requirements, particularly women, dalits, indigenous/ethnic communities and other disadvantaged groups; and (v) provide timely wages on at least a monthly basis, and safe working conditions to all workers. All civil works contracts will include specific clauses on these undertakings.
- (vii) **Good governance and anticorruption measures.** Consistent with ADB's and the Government's commitment to good governance, accountability, and transparency, the Government will ensure that the project funds are utilized effectively and efficiently to implement the Project and to achieve its objectives. The Government will (a) undertake necessary measures to create and sustain a corruption-free environment; (b) ensure that ADB's *Anticorruption Policy* (1998, as amended to date) are strictly enforced and are complied with during project implementation, and that the relevant provisions of ADB's *Anticorruption Policy* are included in all bidding documents for the Project; (c) facilitate ADB's exercise of its right to investigate, directly or through its agents, any alleged corrupt,

- fraudulent, collusive, or coercive practices relating to the Project; (d) conduct periodic inspections of the project contractor's activities related to fund withdrawals and settlements; and (e) ensure that all contracts financed by ADB in connection with the Project include provisions specifying the right of ADB to audit and examine Project related records and accounts of the Executing Agency and all contractors, suppliers, consultants, and other service providers as they relate to the Project. The Government will cooperate with any audit and investigation and extend the necessary assistance, including access to all relevant books and records, as well as the engagement of independent auditors and experts that may be needed for the satisfactory completion of such audits and investigations.
- (viii) **Project performance monitoring system.** Within 3 months of grant effectiveness, the Government will cause the PMU to establish a project performance monitoring system in a manner acceptable to ADB.
  - (ix) **Project review.** The Government and ADB will carry out review missions semiannually. On the third year of project implementation, the Government and ADB will carry out a joint midterm review of the Project to (a) review progress, (b) review the project implementation schedule, (c) review the implementation arrangements, (d) identify any necessary changes in the project design, and (e) assess compliance with the terms of the grant agreement.
  - (x) **Counterpart support.** The Government will ensure that, throughout the implementation of the Project, adequate budgetary allocations for the required counterpart funds are made, approved, and released in a timely manner to ensure the efficient and timely implementation of the Project.
  - (xi) **Project implementation reporting.** The OPMCM will submit to ADB (a) a monthly progress report, (b) a summary of the monthly progress review meeting with the Implementing Agencies and the contractors concerned, and (c) a quarterly project progress report and a quarterly project performance monitoring and evaluation report.

## **B. Condition for Loan Effectiveness**

68. **Draft Telecommunication Act.** Before grant effectiveness, the Government will complete its internal clearance procedure for the draft new Telecommunications Act and submit it to the Cabinet for approval.

## **VI. RECOMMENDATION**

69. I am satisfied that the proposed grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the grant not exceeding the equivalent of \$25,000,000 to Nepal, from ADB's Special Funds resources, for the Information and Communication Technology Development Project, with such terms and conditions as are substantially in accordance with those set forth in the draft Grant Agreement presented to the Board.

Haruhiko Kuroda  
President

20 December 2007

## DESIGN AND MONITORING FRAMEWORK

<b>Design Summary</b>	<b>Performance Targets/Indicators</b>	<b>Data Sources/Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p><b>Impact</b> Socioeconomic improvements in remote and rural communities through ICT</p> <p>Improved ICT uptake in the country (community, business, and government)</p>	<p>20% improvement in the livelihood and well-being of rural communities in 38 districts, within 3 years after project completion</p> <p>10% increase in the weighted average composite index of e-readiness, within 5 years after project completion</p>	<p>Compilation of government statistics</p> <p>Baseline study and impact monitoring report</p> <p>ADB project completion report</p> <p>ADB evaluation missions</p> <p>E-readiness and e-government index published by the United Nations, the International Telecommunication Union (ITU), and other organizations</p>	<p><b>Risk</b> Volatile political and security situation in the country and particularly in remote rural areas, and therefore a slowdown in economic growth</p>
<p><b>Outcome</b> ICT made more accessible, affordable, inclusive, sustainable, and useful to remote and rural communities</p> <p>Public services made more citizen-centered and business-friendly through ICT</p>	<p>10% increase in teledensity (both in terms of individual household and shared-facility telecenters) and 10% reduction in communication cost in project areas, within 3 years after project completion</p> <p>Financially and technically sustainable telecenter and wireless network operations of rural Internet service providers (ISPs), within 3 years after project completion</p> <p>20% increase in satisfaction with access and use of services (health, education, remittance, and government services) in rural communities and among businesspeople in 38 districts, within 3 years after project completion</p> <p>10% yearly increase in the ratio of online to over-the-counter government services, within 3 years after project completion</p> <p>10% increase in government service efficiency, within 3 years after project completion</p>	<p>ITU teledensity statistics</p> <p>Financial reports of rural ISPs</p> <p>ADB project completion report</p> <p>Project household, business, and government survey report</p>	<p><b>Assumptions</b> Management and regulation of ICT and telecommunications sector in line with amended of Telecommunication Act of 1997</p> <p>Strong leadership in government to steer changes in information management by government, and in the way civil servants do their jobs and interact with the community</p> <p><b>Risk</b> Communities' resistance to and unfamiliarity with new technologies</p>

<b>Design Summary</b>	<b>Performance Targets/Indicators</b>	<b>Data Sources/Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p>Improved accessibility, efficiency, and transparency in government service delivery with the application of ICT</p> <p>Enhanced ICT business and industry</p>	<p>10% reduction in transaction costs to citizens for government services affected by the Project, within 3 years after project completion</p> <p>10% increase in job and business opportunities in the ICT industry, within 3 years after project completion</p>		
<p><b>Outputs</b></p> <p>1. Voice and broadband Internet connectivity through wireless fidelity (WiFi) technology and telecenters in all 75 districts in the country</p> <p>2. e-government framework and data infrastructure</p>	<p>WiFi broadband network and telecenters to be put up and tested initially in three districts—one each from the hill, mountain, and terai districts—within 2 years after the start of the Project</p> <p>Rural network operation and business model, as well as the related policy, legal, and regulatory framework, to be established in the remaining districts in the country after pilot-testing, within 3 years after the start of the Project</p> <p>WiFi broadband network and telecenters to be expanded and operated in the remaining 35 districts</p> <p>Enterprise architecture to be developed and adapted by the Government as the standard framework for e-government applications, within 1 year after the start of the Project</p> <p>Government information and data center (GIDC) to be established within 1 year after the start of the Project</p> <p>Government groupware comprising the principal functions of e-mail, document management, calendaring and scheduling, and conferencing and meetings, to be developed within 2 years after the start of the Project</p> <p>National identification (NID) system to be developed as a central database to share identification information commonly</p>	<p>Reports on the bid evaluation and awarding of contracts</p> <p>Project monitoring and progress reports</p> <p>Consultant reports</p> <p>ADB review missions</p> <p>Government policy, legal, and regulation statements</p>	<p><b>Assumptions</b></p> <p>Liberalization of voice over Internet protocol (VOIP)</p> <p>Existence of strong rural entrepreneurs, who go into the Internet service provider (ISP) business</p> <p>Strong interagency coordination and policy control among different ministries and departments for e-government development</p> <p><b>Risks</b></p> <p>Incumbent operator Nepal Telecom's predatory pricing strategy in rural areas</p> <p>Civil servants' resistance to adopting ICT in their work</p> <p>Civil servants' resistance to providing online services because of traditional rent-seeking behaviors</p>

<b>Design Summary</b>	<b>Performance Targets/Indicators</b>	<b>Data Sources/Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p>3. E-citizen services and applications for driver's license and land registration</p> <p>4. Nationwide human resources development (HRD) for e-government and ICT</p> <p>5. National ICT operating policies and guidelines to ensure interoperability with online technologies of government, business, and the broader community</p>	<p>required for public administration and services, within 2 years after the start of the Project</p> <p>Information and record management systems to be enhanced or developed as new systems for land and vehicle registration and licensing, and for government personnel information, within 3 years after the start of the Project</p> <p>Portal sites to be enhanced or developed as new systems, including government one-stop service and village network portal, within 3 years after the start of the Project</p> <p>Awareness building and training to be provided to the communities and governments affected by the Project, during project implementation</p> <p>ICT infrastructure, curriculum, and materials to be provided to civil servant training institutions, within 1 year after the start of the Project</p> <p>Academic courses in e-governance to be developed in cooperation with universities and colleges, within 2 years after the start of the Project</p> <p>National ICT operating policies and guidelines to be developed and endorsed by the Government, within 1 year after the start of the Project</p>		<p>Lack of general ICT absorptive capacity and specialized technical capacity among government staff</p>

<b>Activities with Milestones</b>	<b>Inputs</b>
<p><b>Component 1: Rural E-Community</b></p> <p>1.1. Develop a trial operation and business model for the wireless network and telecenters, by the end of month 3.</p> <p>1.2. Supply and install equipment, and commission network, by the end of month 12.</p> <p>1.3. Construct the network and install hardware and software in nine telecenters in three districts, by the end of month 18.</p> <p>1.4. Conduct community mobilization and training and awareness program in the pilot communities, by the end of month 24.</p> <p>1.5. Evaluate the pilot experiences, by the end of month 24.</p> <p>1.6. Develop a rural network operation and business model, as well as the related policy, legal, and regulatory framework, for scaling up, by the end of month 24.</p> <p>1.7. Construct the network and install hardware and software in 105 telecenters in the rest of the 35 districts, by the end of month 48.</p> <p><b>Component 2: e-Government Framework and Data Infrastructure</b></p> <p>2.1. Develop the enterprise architecture, by the end of month 18.</p> <p>2.2. Establish the GIDC, by the end of month 24.</p> <p>2.3. Develop government groupware, by the end of month 27.</p> <p>2.4. Develop the NID system, by the end of month 24.</p> <p><b>Component 3: E-Citizen Services</b></p> <p>3.1. Conduct business process reengineering as necessary, by the end of month 12.</p> <p>3.2. Develop 10 information and records management systems and five portal sites, by the end of month 36.</p> <p><b>Component 4: Human Resources Development (HRD)</b></p> <p>4.1. Carry out a national awareness campaign and conduct regular training during project implementation.</p> <p>4.2. Provide the ICT infrastructure, curriculum, and materials to civil servant training institutions, by the end of month 12.</p> <p>4.3. Develop academic courses in e-governance in cooperation with universities and colleges, by the end of month 24.</p> <p><b>Component 5: National ICT Operating Policies and Guidelines</b></p> <p>5.1. Develop the national ICT operating policies and guidelines for endorsement by the Government, by the end of month 6.</p>	<p>ADB grant of \$25 million, and Government of Nepal financing of \$6.2 million</p> <p>108 person-months of national project management consultants, comprising a team leader/ICT human resources development adviser (36 person-months), a network integration specialist (36 person-months), and a systems integration specialist (36 person-months)</p>

ADB = Asian Development Bank, EDCF = Economic Development Cooperation Fund, HRD = human resources development, ICT = information and communication technology, TA = technical assistance.

## SECTOR ANALYSIS

1. **E-Development.** The world has experienced a remarkable transformation toward an information society fueled by the development of the information and communication technology (ICT) sector through a combination of technological, market, policy, and regulatory progress. ICT has become a major sector with one of the highest growth and export potentials driving economic prosperity, as is the case in India (software and business process outsourcing) and in the People's Republic of China (PRC) (hardware). It also serves as a means and an enabler for improving national efficiency and competitiveness through connections within and across government, business, and communities, lowering transaction cost, transferring knowledge, and promoting innovation. As such, ICT development has two facets: the development of ICT as a sector and ICT-enabled socioeconomic development (e-development). A holistic approach encompassing the development of the ICT sector, as well as the broader uptake (in depth and width) of ICT, is necessary. A 2006 study by the United Nations Conference on Trade and Development (UNCTAD) revealed that a 1% increase in the ICT index of a country resulted on average in a 0.1% increase in per capita gross domestic product (GDP) in 1996 and in a 0.3% increase in 2003.<sup>1</sup> According to Cisco Systems' "Net Impact 2004,"<sup>2</sup> a 100% increase in the number of citizens using online services in a year could result in an increase in citizen satisfaction of up to a 45%, as well as a 10% reduction in operating costs. A 100% increase in the number of cases resolved through self-service could reduce operating costs by 15%.

2. **E-Readiness and ICT Uptake.** The importance of online service provision, delivery, and consumption has been recognised and proved through international experiences. Various international organizations have developed indices to measure the readiness to participate in the information society, using a series of standardized indicators representing the level of ICT connectivity, utilization, and uptake, as well as school enrollment and literacy. The major indices are (i) the Digital Opportunity Index of the International Telecommunications Union,<sup>3</sup> (ii) the ICT Diffusion Index of UNCTAD,<sup>4</sup> (iii) the Network Readiness Index of the World Economic Forum,<sup>5</sup> (iv) the InfoStates Index of Orbicom,<sup>6</sup> (v) the e-Government index of the United Nations,<sup>7</sup> and (vi) the World Bank Knowledge Assessment Methodology. As shown in Table A2.1, Nepal's rank within the 5–20% range places it in the lowest quartile among the countries assessed, suggesting that it lags significantly behind in participating in the information society. The current level of broad ICT uptake in the community, government, and business in Nepal is far below the optimum. ICT is increasingly accessible to the public but has had no perceptible impact on job creation and national productivity improvement so far because it has not reached a critical level of application. There is no significant evidence of progress toward a knowledge-based society. The local ICT industry has significant capability but receives little support or recognition from government. There is no strategic ICT skills program for civil servants. According to the project survey,<sup>8</sup> only 23% have had some exposure to computers and know to use computers.

<sup>1</sup> UNCTAD. 2006. *Global Information Economy Report 2006*. Geneva.

<sup>2</sup> Cisco Systems. 2005. *Net Impact 2004*. San Jose.

<sup>3</sup> ITU. 2006. *World Information Society Report*. Geneva.

<sup>4</sup> UNCTAD. 2005. *The Digital Divide Report: ICT Diffusion Index*. Geneva.

<sup>5</sup> World Economic Forum. 2007. *The Global Information Technology Report, 2006–2007*. Geneva.

<sup>6</sup> Orbicom. 2005. *From the Digital Divide to Digital Opportunities*. Paris.

<sup>7</sup> UN. 2005. *Global e-Government Readiness Report 2005: From e-Government to e-Inclusion*. New York.

<sup>8</sup> The survey covered a total of 1,354 businesses and urban and rural households, spread over 21 village development committees (VDCs) chosen from among 7 districts covering all 5 administrative regions: rural areas of seven districts (Solukhumbu, Sunsari, Kathmandu, Bhaktapur, Dang, Myagdi, and Achham), urban areas of Kathmandu and Bhaktapur and Lalitpur districts, and business houses in Kathmandu.

**Table A2.1: Selected County Rank in E-Readiness Indices**

Country	Digital Opportunity Index	ICT Diffusion Index	Network Readiness Index	InfoStates Index	e-Government Index	Knowledge Assessment Methodology
Korea, Rep. of	1	19	14	16	5	15
Japan	2	22	16	18	14	23
China, People's Rep. of	74	90	50	69	57	73
Philippines	94	97	70	79	41	77
India	119	142	40	103	87	105
Pakistan	128	165	67	108	136	113
Viet Nam	123	121	75	100	105	91
Nepal	143	167	108	120	126	121
Cambodia	161	140	104	122	128	–
Bangladesh	139	171	110	121	162	119
Out of:	180	180	122	134	179	128

ICT = information communication technology.

1. **Policy.** Modernization through e-development is imperative in a country like Nepal, where weak governance and political instability have led to a breakdown between government and the communities, besides the geographic hindrance posed by the hilly and mountainous areas. ICT can bring public services and economic opportunities inexpensively and effectively to rural communities that are now inadequately served or not at all. To harness the vast potential of ICT, the Government of Nepal has developed a progressive policy, regulatory and legal framework for ICT.<sup>9</sup> Telecommunications are the responsibility of the Ministry of Information and Communications (MOIC) and are regulated under the terms of the Telecommunications Act of 1997, which established a regulatory body, the Nepal Telecommunications Authority (NTA). The responsibility for promoting information technology (IT) rests with the Ministry of Environment, Science and Technology (MOEST) and is guided by the Information Technology Policy of 2000. Various government policies follow international best practices and recommendations such as a liberal and autonomous regulatory environment, fair and effective competition, an open licensing regime, and privatization of the incumbent state-owned operator, Nepal Telecom (NT).

2. **Performance.** However, telecommunications, IT, and broadcasting are still governed by separate policy, legal, and regulatory frameworks. This segregation may not allow the country to adapt to the rapidly converging and innovative technologies, services, and markets and to drive national e-development in a holistic way. Also, some ambitious policy statements have not yet been translated into detailed actions and implementation mechanisms. The Telecommunication Policy of 2004 is not yet being implemented because of the time gap between policy promulgation and the enactment of complementary laws. The degree of effective and fair competition is still low and full separation of policy making from operation and from regulation is meager in practice although improving. Therefore, market growth has yet to meet expectations since liberalization in 1997.

3. **Voice Communication.** Although a penetration rate of 6.48% has been achieved nationwide, with landlines at 2.46% and mobile telephones at 4.03%, it is very much skewed in favor of Kathmandu. Meanwhile, the coverage of rural areas, with a penetration rate of 0.06%, leaves much to be desired. More than 40% of rural districts have no telecommunication services.

<sup>9</sup> The ICT-related acts and policies are the National Broadcasting Act (1992), the National Communication Policy (1992), the Telecommunication Act (1997), the Information Technology Policy (2000), the Tenth Plan (2002–2007), the Long-Term Policy for the Information and Communication Sector (2002), the Telecommunication Policy (2004), and the Electronic Transactions Ordinance (2004).

This performance is one of the lowest in the world, as shown in Figure A2.1. Currently, four companies—the state-owned incumbent operator, NT, and three private operators, United Telecom Ltd. (UTL),<sup>10</sup> STM Telecom Sanchar Pvt. Ltd. (STM),<sup>11</sup> and Spice Nepal Pvt. Ltd. (SNPL)—provide telephony services in the country.<sup>12</sup>

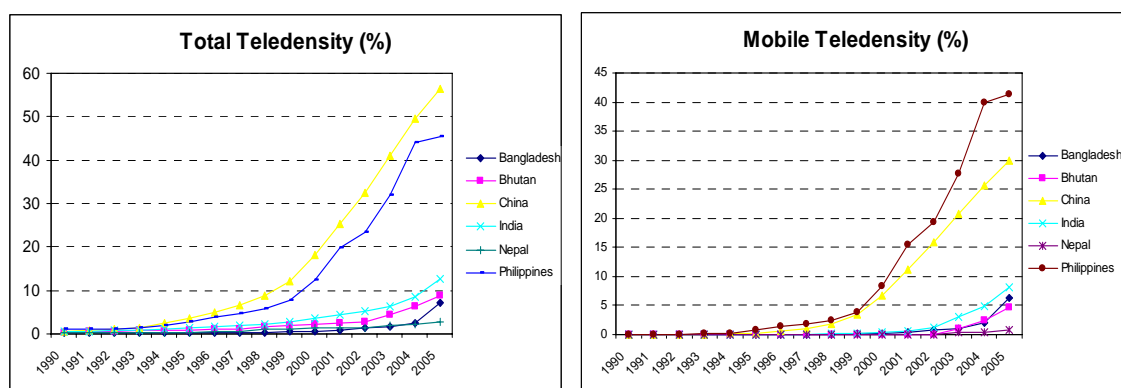
**Table A2.2: Core ICT Indicators**

Indicator	Nepal	Low-Income Countries	Asia
GDP per person (2005)	271	1,320	3,391
GDP % growth (constant dollars, 2005)	2.5	–	5.2
Government, as % of GDP	17.4	–	35.0
Effective teledensity	1.79	7.93	23.43
Percentage of pupils finishing grade 5 (2000–2004)	67	–	80
Literacy rate for 15- to 24-year-olds (2000–2004)	70	–	91
Public phones per 1,000 persons	0.09	1.1	8.52
Telephone tariffs, \$ (% of GDP per capita)	25 (12.0%)	48 (11.4%)	62 (2.5%)
Internet users per 100 persons	0.83	4.22	9.69
PCs per 100 persons	0.47	1.46	6.42
Broadband subscribers per 1,000 persons	0.00	0.83	23.23
International bandwidth bits per person	1.7	12.6	159.0
Internet traffic, \$ as % of GNI per capita	38.93	190.07	20.89

GDP = gross domestic product, PC = personal computer.

Sources: Nepal Telecommunication Authority. 2007. *MIS Report*, Issue 14, February; International Telecommunications Union (ITU). 2007. *Measuring the Information Society*; UNESCAP. 2007; and UNCTAD. 2007.

**Figure A2.1: Selected Country Teledensity Comparison**



Source: ADB analysis based on ITU's World Telecommunication Indicators 2006.

<sup>10</sup> UTL was licensed in 2002 to provide basic telephone service based on wireless local loop technology for the entire country. UTL at present has no presence in the rural areas.

<sup>11</sup> STM was licensed in 2003 as a rural telecom operator only for the Eastern Development Region.

<sup>12</sup> SNPL was licensed in 2004 to provide global system for mobile communication-based mobile telephone service for the entire country. SNPL at present has no presence in the rural areas.

4. **Rural Telecommunications.** Nepal has around 4,000 village development councils (VDCs). Under the Special Rural Telecom Program, NT has used very small aperture terminal (VSAT) technology to provide 786 telephone lines in 216 VDCs in remote mountainous regions. Under the \$13 million rural telecom component of the World Bank's telecommunications sector project in Nepal since 2001, 534 VDCs in the Eastern Development Region have received at least two public call offices (PCOs) each. The NT also has around 2,000 PCOs around the country. To promote rural telecommunications, the NTA manages the Rural Telecommunication Development Fund (RTDF), with contributions from a 2% tax on all licensed operators including Internet service providers (ISPs) since 2000.<sup>13</sup> The NT's recently launched code division multiple access (CDMA) wireless deployment plan for extensive rural coverage envisages some coverage in every district, and is likely to benefit 81% of the rural population. A second stage of NT's CDMA deployment should further extend this coverage, to about 98% of the rural population by 2010. However, there are concerns that this current CDMA rollout plan is not compatible with high-quality data services and may therefore delay the broadband deployment by fragmenting the voice-data-multimedia traffic, without supplementary broadband technologies such as wireless fidelity (WiFi) and further regulatory intervention.

**Table A2.3: Rural Connectivity**

Region	Total VDCs	VDCs Served with at Least One PCO		% of VDCs Served with at Least one PCO <sup>a</sup>
		NT	STM	
Country	3,915	2,028	516	51.8% (NT); 2.9% (STM)
Eastern Development Region	893	465	516	52.1% (NT); 57.8% (STM)
Central Development Region	1,199	605		50.47 % (NT)
Western Development Region	865	535		61.92 % (NT)
Mid-Western Development Region	575	226		39.30 % (NT)
Far-Western Development Region	383	197		51.44 % (NT)

NT = Nepal Telecom, PCO = public call office, STM = STM Telecom Sanchar Pvt. Ltd., VDC = village development council.

<sup>a</sup> Because of possible overlap between NT and STM coverage, the two figures do not add up.

Source: Nepal Telecommunication Authority. 2007. *MIS Report*, Issue 14. February.

5. **Data Communication.** Nepal's Internet market was dramatically boosted in mid-1999 when ISPs were allowed to have their own international gateways, and the use of VSAT was liberalized. The NT has established an Internet presence in 59 of the 75 districts, providing local dial-up connections to the Internet connection. The price of Internet service has fallen to \$0.2 per hour, the lowest in South Asia. As of February 2007, of the 39 licensed ISPs, 31 are operating and serve around 210,000 users (0.83% penetration), mostly in Kathmandu. To boost rural ICT and reduce the digital disparity between the rural and urban areas, the Government of Nepal is set to drastically reduce license fees for VSAT users and ISPs keen to operate in the rural areas.<sup>14</sup> The construction of a 900 kilometer (km) fiber optic cable connecting Bhadrapur in the East and Kohalpur in the West along the east-west highway was recently completed with the assistance of the Government of India. In the second phase of this project there are plans to connect Kohalpur in the west to Mahendranagar in the Far West. Nepal and the PRC have also been constructing a 120 km fiber optic network linking Kathmandu to the border with the PRC (Arniko highway). The implementation of the fiber optic network linking Butwal-Pokhara-

<sup>13</sup> The Fund now amounts to about NRs520 million (\$8.5 million). About NRs200million was provided to NT for rural telecom development, under which NT is undertaking to provide at least two public phones to each VDC.

<sup>14</sup> The license fee for opening an ISP in the rural areas is set at NRs100 for 5 years and the renewal fee at NRs90. The VSAT license for rural areas and for education and health institutions has been reduced to NRs100.

Kathmandu–Dhulikhel–Bardibas–Janakpur is likewise expected to provide an alternate national route for capacity expansion and telecommunications services of improved quality. The total international bandwidth is 37.92 megabytes per second (Mbps) for uplink and 90.3 Mbps for downlink, for a total of 128 Mbps.

6. **Low-Cost Wireless Broadband.** In the past few years, a few technologies that hold significant promise for expanding rural connectivity in developing countries like Nepal at a substantially reduced cost have become commercially available. Traditional single-purpose networks for voice, data, or video have been overtaken by a single broadband network based on the Internet protocol. WiFi or the Worldwide Interoperability for Microwave Access network is a promising solution to providing convergence and economic access, leapfrogging older technologies to advance into the broadband environment in developing countries. In particular, voice services can be delivered through lower-cost voice over Internet protocol (VOIP). As far as last-mile access and rural connectivity and broadband are concerned, wireless technologies will play a critical role by lowering costs and increasing bandwidth for applications like VOIP, telemedicine, e-education, e-government services, and videoconferencing. In Nepal, as in other emerging markets, the deployment of many technologies is still at a nascent stage, although wireless technologies are being adopted to push telecom growth and to enhance rural broadband connectivity. However, a regulatory environment requires further clarification of issues of convergence between voice and data. Since the poorest members of the community in the remote villages would benefit most from VOIP, regulatory hindrances to this technological advance are primarily at the cost of this segment of the population.

7. **e-Government.** In 2006, the High-Level Commission for Information Technology (HLCIT)<sup>15</sup> prepared the e-government master plan with the assistance of the Government of the Republic of Korea. The master plan set the vision, identified the needs and gaps in infrastructure and lead e-applications, and developed an implementation framework toward citizen-centered and business-friendly online services, as well as optimized, rationalized, and service-oriented back-end office operations. However, the development of e-government in Nepal has been very limited. Ministries are not connected by intranet via an integrated information system. Each ministry's information management system and services are developed separately in a piecemeal and vendor-driven manner; the concept of centralized data centers has not yet taken hold; the communications network is outdated and isolated; and the government presence on the Internet consists mostly of static and outdated websites, and online e-citizen service is limited. In addition, because of the recent political transitions, the political commitment to change toward e-government, as well as deeper understanding and use of ICT within the Government, is limited compared with that in international e-leaders like India and the Republic of Korea. Also, while there is awareness of the importance of e-governance in general, full understanding is still absent.

8. **Off-Line Government Services.** According to the survey for the Project, citizens have to make an average of two visits and spend 6 hours traveling and 2 hours waiting at the VDC offices each time to complete public service transactions such as birth, death, marriage, relationship, and migration registrations, as well as vehicle and land registration. Moreover, VDC staff are sometimes absent without notice, creating additional delays. In general, government processes are bureaucrat-centered and not citizen- or service-oriented. Because of the non-transparent nature of service delivery, citizens are faced with the threat of harassment and

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<sup>15</sup> Formed in 2003 and chaired by the Prime Minister, it oversees national IT policy and strategy and provides strategic policy direction and support.

bribes. In comparison, the average transaction time in the Republic of Korea is only about 20 minutes. Evidently, much more needs to be done in Nepal, with the help of ICT.

9. **Community E-Centers.** The Government of Nepal, recognizing the importance of using ICT tools for rural development, has made available shared facilities called “community e-centers” (CeCs). Through CeCs, rural people can use information and applications and, hence, make informed decisions leading to improvements in their lives. Policies target the establishment of CeCs at 1,500 VDCs by the end of 2007. Several initiatives taken by the Government, with international support and through nongovernment entities, have resulted in 250-plus such CeCs of different types operating in different parts of the country. Not many of these CeCs have achieved the development outcomes expected of them or attained technical and financial sustainability. Maintenance is a major difficulty. However, some of those working under an umbrella organization seem to be facing fewer problems with sustainability than the stand-alone centers. Particularly lacking is the participation of the private sector, important for the rapid multiplication of the CeCs and for financial sustainability, as well as the dearth of locally relevant content and e-applications, and inadequate community awareness and capability.

## EXTERNAL ASSISTANCE

ICT Development	e-Government	Community E-Center	Telecommunication Sector
<p><b>Asian Development Bank (ADB)</b> Enhanced cross-border connectivity and capacity building</p> <ul style="list-style-type: none"> <li>▪ Preparing South Asia Subregional Economic Cooperation (SASEC) Information Highway (\$500,000, approved in 2006)</li> </ul> <p><b>Government of India</b></p> <ul style="list-style-type: none"> <li>▪ Building 900 km fiber optic cable connecting Bhadrapur in the East and Kohalpur in the West along the east–west highway (Rs740 million, 2002–2004)</li> </ul> <p><b>Government of the People’s Republic of China (PRC)</b></p> <ul style="list-style-type: none"> <li>▪ Building a 120 km fiber optic network linking Kathmandu to the border with the PRC (Arniko highway)</li> </ul>	<p><b>World Bank</b></p> <ul style="list-style-type: none"> <li>▪ Developing e-procurement road map (\$40,000)</li> <li>▪ Building dark fiber around Singha Durbar (\$50,000)</li> </ul> <p><b>Government of the Republic of Korea</b></p> <ul style="list-style-type: none"> <li>▪ Developing e-Government Master Plan (2006, completed)</li> </ul>	<p><b>ADB and UNESCAP</b></p> <ul style="list-style-type: none"> <li>▪ Empowering Rural Areas through Community E-Centers under the SASEC program (\$1 million, approved in 2005)</li> </ul> <p><b>UNDP</b></p> <ul style="list-style-type: none"> <li>▪ Piloting 15 telecenters (2002–2004)</li> </ul> <p><b>Government of the Republic of Korea</b></p> <ul style="list-style-type: none"> <li>▪ Piloting 10 telecenters (\$1 million, approved in 2007)</li> </ul> <p><b>USAID</b></p> <ul style="list-style-type: none"> <li>▪ Piloting 8 telecenters (\$500,000, approved in 2006)</li> </ul>	<p><b>World Bank</b></p> <ul style="list-style-type: none"> <li>▪ Telecommunication Sector Reform and Increasing Rural Access (\$22.6 million, approved in 2001)</li> </ul>

ADB = Asian Development Bank, PRC = People’s Republic of China, SASEC = south asia subregional economic cooperation, UNDP = United Nations development programme, USAID = United States Agency for International Development.

Source: Asian Development Bank estimates.

## COST ESTIMATES AND FINANCING PLAN

**Table A4.1: Detailed Cost Estimates by Expenditure Category**

Item	NRs Million			\$ Million <sup>a</sup>			% Base Cost
	Foreign	Local	Total	Foreign	Local	Total	
<b>A. Base Cost<sup>b</sup></b>							
1. Rural e-Community	538	283	581	8.3	4.4	9.0	31.6
2. Government Network	295	162	284	4.5	2.5	4.4	15.5
3. e-Government Applications	556	1,083	830	8.6	16.7	12.8	45.2
4. Human Resources Development				0.2	2.5	1.5	
5. Project Management Consultant				0.0	1.0	0.7	
<b>Subtotal (A)</b>	<b>1,399</b>	<b>1,755</b>	<b>1,838</b>	<b>21.6</b>	<b>27.1</b>	<b>28.3</b>	<b>100.0</b>
<b>B. Contingencies<sup>c</sup></b>							
1. Physical	76	93	169	1.2	1.4	2.6	9.2
2. Price	13	4	17	0.2	0.1	0.3	0.9
<b>Subtotal (B)</b>	<b>89</b>	<b>97</b>	<b>186</b>	<b>1.4</b>	<b>1.5</b>	<b>2.9</b>	<b>10.1</b>
<b>Total</b>	<b>1,488</b>	<b>1,852</b>	<b>2,024</b>	<b>22.9</b>	<b>28.6</b>	<b>31.2</b>	<b>110.1</b>

<sup>a</sup> Includes taxes and duties of \$3.5 million.

<sup>b</sup> In 2007 prices.

<sup>c</sup> Physical contingencies computed at 10% of base cost except for human resources development and project management consultant and price contingencies at at 0.8% on foreign exchange costs and local currency costs.

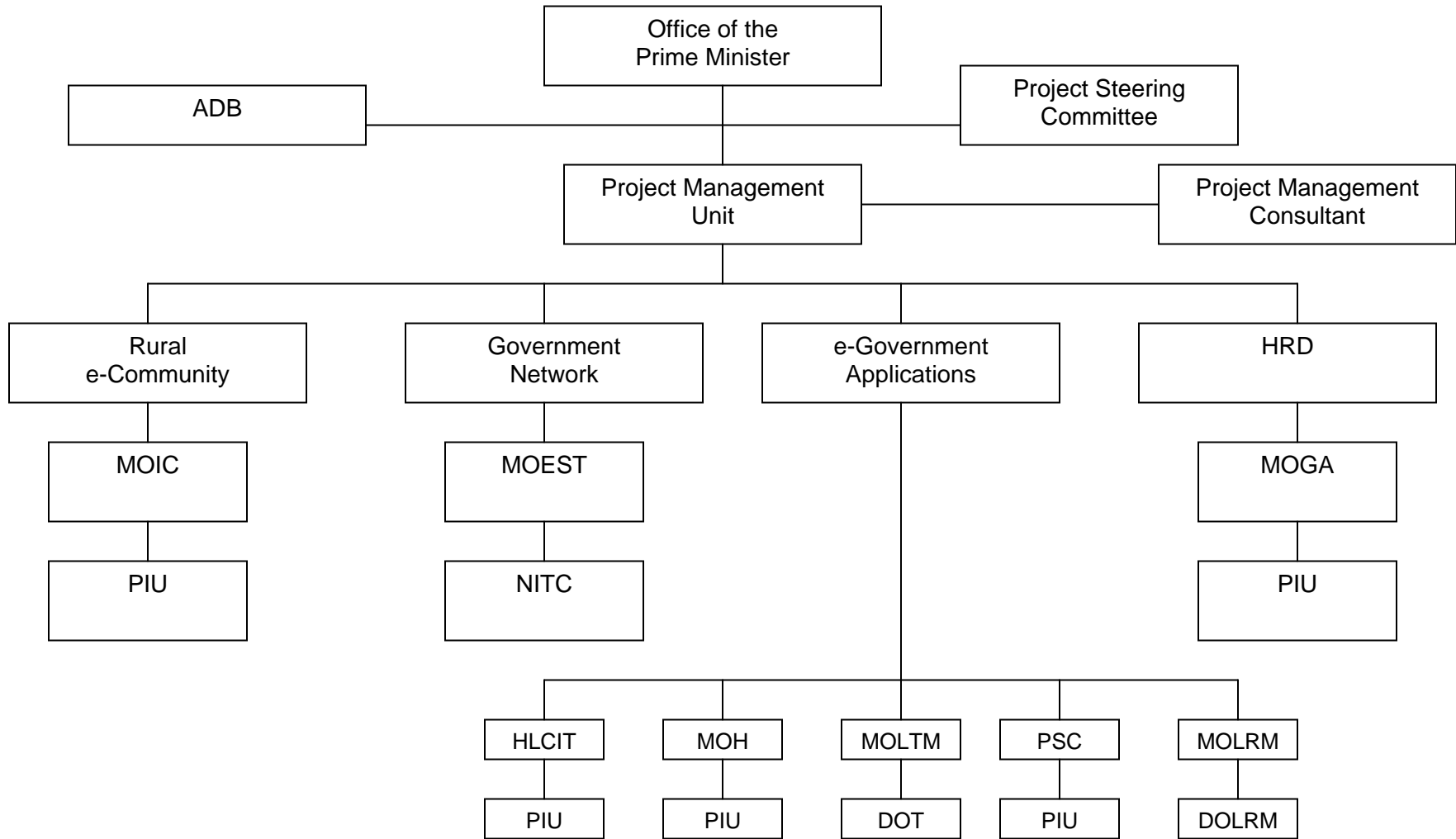
Source: Asian Development Bank estimates.

Table A4.2: Detailed Cost Estimates by Financier

Item	Cost	ADB		Government	
		\$ Million	% of Cost Category	\$ Million	% of Cost Category
<b>A. Base Cost</b>					
1. Rural e-Community	9.0	7.9	89	1.0	11
2. Government Network	4.4	3.7	83	0.7	17
3. e-Government Applications	12.8	11.0	86	1.8	14
4. Human Resources Development	1.5	1.5	100	0.0	0
5. Project Management Consultant	0.7	0.7	100	0.0	0
<b>Subtotal (A)</b>	<b>28.3</b>	<b>24.8</b>	<b>88</b>	<b>3.5</b>	<b>12</b>
<b>B. Contingencies</b>					
1. Physical	2.6	0.2	7	2.4	93
2. Price	0.3	0.0	0	0.3	100
<b>Subtotal (B)</b>	<b>2.9</b>	<b>0.2</b>	<b>7</b>	<b>2.7</b>	<b>93</b>
<b>Total</b>	<b>31.2</b>	<b>25.0</b>	<b>80</b>	<b>6.2</b>	<b>20</b>

Source: Asian Development Bank estimates.

## IMPLEMENTATION ARRANGEMENTS



ADB = Asian Development Bank; DOLRM = Department of Land Reforms and Management; DOT = Department of Transport; HLCIT = High Level Commission for Information Technology; HRD = human resources development; MOEST = Ministry of Environment, Science, and Technology; MOGA = Ministry of General Administration; MOH = Ministry of Home; MOIC = Ministry of Information and Communications; MOLRM = Ministry of Land Reforms and Management; MOLTM = Ministry of Labor and Transport Management; NITC = National Information and Technology Center; PIU = project implementation unit; PSC = Public Service Commission.

Source: ADB estimates.

## IMPLEMENTATION SCHEDULE

Milestones	2008		2009				2010				2011				2012				2013			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>A. Rural E-Community</b>																						
<b>Wireless Broadband Network</b>																						
First Phase Design of Network for Pilot Testing (3 districts)																						
Supply of Equipment, Installation, and Commissioning																						
First Phase Design of Network (10 districts)																						
Supply of Equipment, Installation, and Commissioning																						
Extension of Phase 1																						
Second Phase Design of Network (25 districts)																						
Supply of Equipment, Installation, and Commissioning																						
Extension of Phase 2																						
<b>Telecenters</b>																						
First Phase Supply of Equipment and Installation																						
First Phase Training and Capacity Development																						
Second Phase Supply of Equipment and Installation																						
Second Phase Training and Capacity Development																						
<b>Village Network</b>																						
System Analysis and System Specification																						
Application Design and Development																						
Supply of Equipment and Installation																						
Training and Capacity Development																						
Digitization and Data Import																						

Milestones	2008			2009				2010				2011				2012			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<b>B. Government Network</b>																			
<b>Government Information and Data Center</b>																			
System Sizing and Requirement Analysis		■	■																
Supply of Equipment, Installation, and Commissioning				■	■	■	■												
Communications and Government Network Set-Up								■	■	■									
Training and Capacity Development						■	■	■	■	■	■	■	■	■					
Operation Testing										■	■								
Systems Rollout											■	■	■	■					
<b>Government Groupware</b>																			
System Sizing and Requirement Analysis		■	■																
Application Development and Localization				■	■	■	■												
Supply of Equipment and Installation								■	■	■	■								
Training and Capacity Development						■	■	■	■	■	■	■	■	■					
System Integration Audit											■	■							
System Rollout												■	■	■					
<b>C. E-Government Applications</b>																			
System Analysis and System Specification		■																	
Application Design and Development			■	■	■	■													
Supply of Equipment and Installation						■	■												
Training and Capacity Development				■	■	■	■	■	■										
Digitization and Data Import								■	■	■	■	■	■	■					
<b>D. Human Resources Development</b>																			
■																			
<b>E. Legal and Policy Aspects</b>																			
Submission of New Telecommunication Act to Cabinet	■																		
Preparation and issuance of e-government operation policies and guidelines			■	■															
Liberalization of VOIP in 3 Districts of Phase 1 Wireless Broadband					■	■													
Liberalization of VOIP in 10 Districts of Phase 1 Wireless Broadband								■	■										
Liberalization of VOIP in 25 Districts of Phase 2 Wireless Broadband													■	■					

VOIP = voice over internet protocol

Source: Asian Development Bank estimates.

## PROCUREMENT PLAN

**Project Name:** Nepal: Information and Communication Technology Development Project

**Grant Number:**

**Grant Amount:** \$25 million

**Executing Agency:** Office of the Prime Minister and Council of Ministers

**Date of First Procurement Plan:**

**Date of This Procurement Plan:** 7 December 2007

### A. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree to, the following process thresholds shall apply to the procurement of goods and works.

Procurement of Goods and Works	
Method	Threshold
ICB for Works	> \$1,000,000
ICB for Goods	> \$500,000
NCB for Works	≤ \$1,000,000 but > \$100,000
NCB for Goods	≤ \$500,000 but > \$100,000
Shopping for Works	≤ \$100,000
Shopping for Goods	≤ \$100,000
Direct Purchasing	≤ \$10,000

ICB = international competitive bidding, NCB = national competitive bidding.

### B. ADB Prior or Post Review

2. Except as ADB may otherwise agree to, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the Project.

Procurement of Goods and Works		
Procurement Method	Prior or Post	Comments
ICB for Works	Prior	Usage subject to ADB's <i>Procurement Guidelines</i> (2007, as amended from time to time) (Chapter III) and Project Administration Instruction (PAI) 3.03.
ICB for Goods	Prior	Usage subject to ADB's <i>Procurement Guidelines</i> (Chapter III) and PAI 3.03.

ADB = Asian Development Bank, ICB = international competitive bidding.

NCB for Works	Prior	Usage subject to the provisions of NCB Annex, <sup>a</sup> <i>Procurement Guidelines</i> (para. 3.3/3.4), and PAI 3.04.
NCB Goods	Prior	
Shopping for Works	Post	Usage subject to ADB's <i>Procurement Guidelines</i> (para. 3.5) and PAI 3.04 C.
Shopping for Goods	Post	
Limited International Bidding	Prior	Usage subject to ADB's <i>Procurement Guidelines</i> (Section 3.2) and PAI 3.03.
Direct Contracting	Post	ADB needs to be satisfied that the prices to be paid are reasonable, and the method applied is in accordance with ADB's <i>Procurement Guidelines</i> (para. 3.6) and PAI 3.05 A.

<sup>a</sup> NCB Annex to Grant Agreement.

Recruitment of Consulting Firms		
Recruitment Method	Prior or Post	Thresholds / Comments
<b>Quality- and Cost-Based Selection (80:20) of firm by ADB</b>	Prior	Threshold: >\$200,000 Executing Agency selects, negotiates, and manages the contract. Three EA submissions (to ADB) are required, namely: (i) draft RFP and shortlist, (ii) technical evaluation report, (iii) overall ranking report, (iv) draft negotiated contract. See Consulting Guidelines (Chapter II, A.1.a.) and PAI 2.02 (Part E, B). Type of proposal dependent on budget (see footnote 1 above).
<b>Consultants Qualification Selection</b>	Prior	Threshold: ≤ \$200,000 Included as a possible option. Executing Agency selects, negotiates and manages the contract.
<b>Least-Cost Selection</b>	Prior	Threshold: ≤ \$100,000 Included as a possible option. Executing Agency selects, negotiates, and manages the contract.

**C. Goods and Works Contracts (in excess of \$1 million)**

General Description	Value (\$'000)	Procurement Method	Prequalification of Bidders (Yes/No)	Advertisement Date	Comments
<b>System Development, Supply, and Installation</b>					
(Rural E-Community) Wireless Broadband Network, Telecenters	<b>7,700</b>	ICB	Yes	December 2007	Single bid, multiple lots, following ADB's <i>Procurement Guidelines</i>
(Government Network) Government Information and Data Center, Government Groupware	<b>4,400</b>	ICB	Yes		Single bid, multiple lots, following ADB's <i>Procurement Guidelines</i>
(e-Government applications) Enterprise Architecture, Village Network, National Identification System, e-Governance for Public Service Commission, Land Records Management, Vehicle Registration and Driver's Licenses	<b>13,900</b>	ICB	Yes		Single bid, multiple lots, following ADB's <i>Procurement Guidelines</i>

ADB = Asian Development Bank, ICB = international competitive bidding.

**D. Consulting Services Contracts (in excess of \$100,000)**

General Description	Contract Value (\$'000)	Recruitment Method	Advertisement Date	International or National Assignment	Comments
Project Management Advisers	700	QCBS (80:20), STP	December 2007	National	EA selects, negotiates, and contracts

EA = executing agency, QCBS = quality- and cost-based selection, STP = simplified technical proposal.

3. For the sake of economy and administration, the Executing Agency may call for bids in multiple lots as appropriate. Bids will be evaluated and compared on the basis of a lot or a combination of lots, or as a total of lots, to arrive at the least-cost combination for the Executing Agency.

## OUTLINE TERMS OF REFERENCE FOR PROJECT MANAGEMENT CONSULTANTS

### A. Introduction

1. A firm of national consultants will be hired to assist the project management unit (PMU) established under the Office of the Prime Minister and Council of Ministers (OPMCM) in supervising and monitoring the implementation of the project components by various ministries. The project management consultant team will consist of (i) a team leader/information and communication technology (ICT) human resources development adviser (36 person-months), (ii) a network integration specialist (36 person-months), and (iii) a systems integration specialist (36 person-months).

### B. Scope of Works

2. The consultant team will undertake the following tasks during the engagement:
- (i) Assist OPMCM in establishing the PMU by preparing the job descriptions of PMU assignees and organizing the PMU reporting structure.
  - (ii) Assist OPMCM in administering the procurement plan and in evaluating proposals for civil works and systems development and installation contracts according to ADB's *Procurement Guidelines* (2007, as amended from time to time), and in coordinating with the Asian Development Bank (ADB) counterpart to obtain ADB's approval for key milestones in the course of awarding the contracts.
  - (iii) Assist the PMU in developing a comprehensive system for monitoring the Project's performance, as prescribed in the project design and performance framework, and in identifying the performance parameters to be monitored during the implementation of the Project.
  - (iv) Review the monthly progress reports submitted by the Implementing Agencies, identify potential problems in the implementation of each component, develop remedial measures to avoid or correct problems, and prepare a monthly progress report summary, including all findings and recommendations, to be submitted to the project director of the PMU, ADB, and the cofinancier.
  - (v) Coordinate closely with the project manager of each Implementing Agency and keep track of day-to-day implementation status to identify any technical or contractual implementation problems in advance.
  - (vi) Organize a monthly progress review meeting with the Implementing Agencies and contractors concerned, facilitate interagency coordination and cooperation between project components, reconcile differing views on system design and implementation plans, and prepare a meeting summary to be submitted to the project director of the PMU, ADB, and the cofinancier.
  - (vii) Coordinate closely with the project manager for the human resources development (HRD) component, and provide technical assistance in developing and implementing the HRD programs prescribed in the project design.
  - (viii) When requested by the Implementing Agencies, examine the contractors' work progress in comparison with the work plan, evaluate their performance, and recommend any remedial action for Implementing Agencies to undertake to better supervise the contractors.
  - (ix) Provide technical advice to the Implementing Agencies in case of technical disputes with contractors.

- (x) Review the fund withdrawal applications submitted by the Implementing Agencies, check their appropriateness and accuracy, and advise the project director of the PMU whether or not to endorse them for payment.
- (xi) Assist the PMU in maintaining the imprest account, preparing the statement of expenditure for liquidation, maintaining the project account by component and preparing annual project account report, maintaining the record of withdrawal applications, hiring an external auditor for the annual audit of the project account, and reviewing the audit report and providing feedback.
- (xii) Prepare a quarterly project progress report and a quarterly project performance monitoring and evaluation report to be submitted to ADB and the cofinancier.
- (xiii) Assist the PMU in meeting and coordinating with ADB's or the cofinancier's project inception and review missions, preparing the project administration memorandum, and examining the progress of the Project for their purposes.
- (xiv) Assist the PMU in preparing a project completion report to be submitted to ADB and the cofinancier.
- (xv) Provide technical and contractual management assistance to the PMU as requested by the project director.

3. The team leader/ICT HRD adviser will undertake the following tasks:

- (i) Design programs to build awareness, knowledge, and skills among the key stakeholders in ICT governance to help in improving the efficiency of e-service delivery to the community in consultation with the Implementing Agency, for the human resources development (HRD) component.
- (ii) Develop an action plan to strengthen networking between training institutions and support for functional linkages.
- (iii) Assist the Implementing Agency for the HRD component in revising the existing training curriculum and developing new curricula for public training institutions, to improve the quality of the training curriculum and materials in ICT governance.
- (iv) Assist the Implementing Agency for the HRD component in developing an arrangement for sharing knowledge and experiences to promote ICT governance and applications through exchange and fellowship programs designed to recognize the contributions and commitment of exemplary civil servants and NGO leaders to the effective and efficient adoption of ICT governance applications.
- (v) Assist the Implementing Agency for the HRD component in developing ICT governance courses, a new curriculum for ICT governance, and new teaching materials in ICT governance, in association with universities and research institutes.

## SUMMARY POVERTY REDUCTION AND SOCIAL STRATEGY

### A. Linkages to the Country Poverty Analysis

<b>Is the sector identified as a national priority in country poverty analysis?</b>	<input checked="" type="checkbox"/> Yes  <input type="checkbox"/> No	<b>Is the sector identified as a national priority in country poverty partnership agreement?</b>	<input checked="" type="checkbox"/> Yes  <input type="checkbox"/> No
<b>Contribution of the ICT sector to reduce poverty in Nepal:</b>			
<p>The Government of Nepal emphasizes the need for information technology in various sectors such as education, health, agriculture, tourism, and trade. By using information technology and making information available to the people, the Government strongly believes that: the people can gain access to and enjoy resources equally; people can be empowered, resulting in better standards of living; and poverty levels can be reduced.</p> <p>The Project envisages providing voice and broadband Internet connectivity through wireless fidelity (WiFi) technology to the people of Nepal and in particular to the rural community in 38 districts in the country. To provide access to the rural people, telecenters will be established in all village development committees (VDCs). The Project also proposes to augment the e-government initiative to improve the accessibility, efficiency, and usability of public service through electronic means.</p>			

### B. Poverty Analysis

**Targeting Classification:** General intervention

#### What type of poverty analysis is needed?

The main objective of the Project is to make information available to the people who are currently unable to gain access to services and facilities because of geographic isolation or lack of information. As information becomes more easily available to more people, the inequalities in the society, and ultimately poverty, will be reduced. The information will be made available through telecenters established in all 3,915 VDCs in the country.

A socioeconomic survey was carried out, from 28 May to 15 June 2007, to assess the socioeconomic condition of the people, in particular the rural people, who make up 86% of the population. The survey covered a representative sample of 578 households and businesses spread over 21 VDCs in 7 districts. Forty-four percent of the respondent households had families with at least six members. The English literacy level of those above 6 years in the sample population was 56%. The proportion of uneducated women (35%) was much higher than the proportion of uneducated men (14%). The percentage of men who had graduated from university was 7%; among women only 2% were college graduates. Among the 10-and-over age group, only 23% had had some exposure to computers and knew how to use computers. Cultivation and agricultural labor accounted for 30% of the workforce, followed by 22% salaried employees, 16% in business or trade or petty shops, and 10% with earnings from abroad. Seventy-four percent of the households surveyed owned land.

Ninety-one percent of the respondents said that it would be useful to have a telecenter that would enable them to: gain access to information on job opportunities, market information on agricultural products, and health- and education-related information; do a course online; and communicate at low cost through e-mail and VoIP. Information on jobs was the most-favored service and was chosen by 48% of those who said telecenters would be useful. Information on health had the next-highest preference (44%), followed by information on education (36%). Preference was higher for e-governance than for e-communication (e-mail and e-phone). Ninety-nine percent were willing to pay for the services. This high willingness to pay is a rare phenomenon and it only confirms that the people are currently unable to gain access to information and services.

Poverty levels have declined, from 42% in 1995–1996 to 31% in 2003–2004. Thus, the incidence of poverty has been reduced, by 26% over an 8-year period. However, the drop in poverty incidence is not uniform and varies vastly between the urban and rural areas. In the urban areas, the incidence of poverty decreased from 22% in 1995–1996 to 10% in 2003–2004, or by more than half. In the rural areas, on the other hand, the incidence of poverty decreased by only 8 percentage points, from 43% in 1995–1996 to 35% in 2003–2004. In other words, in the rural areas the incidence of poverty is higher and it is decreasing more slowly. The Project is expected to make pro-poor development initiatives of the Government more accessible to the rural poor.

**C. Participation Process**

**Is there a stakeholder analysis?**       Yes       No  
**Is there a participation strategy?**       Yes       No

Consultations were held with officials, VDC functionaries, key opinion makers, and members of civil society members to gain a better understanding of the socioeconomic condition of the people and to gauge their views on ICT.

Focus group discussions among women, school students, and youth were held in the mountain and hill areas to capture the social and economic standards and to assess the impact that ICT would have on the lives of the people. These discussions and consultations confirmed the need for the Project, which had an overwhelming positive response from the community and different stakeholders, in particular those in the mountain, hill, and rural areas. The participants acknowledged the fact that dearth of information has affected their progress.

The Project will identify telecenter locations (either in the VDC office or in a community building) in consultation with the local community and hand over the management of the telecenter to the user community at the end of the Project.

**D. Gender Development**

**Strategy to maximize impact on women:**

Gender participation was ensured during the socioeconomic study through gender analysis to assess the impact of the Project. Focus group discussions were undertaken with women belonging to different socioeconomic groups.

The discussions showed that the Project would benefit women through better access to higher education and to information on prenatal and postnatal care (including better awareness of diet restrictions during pregnancy), immunization, feminine hygiene practices, etc.

**Has an output been prepared?**       Yes       No

**E. Social Safeguards and other Social Risks**

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
<b>Resettlement</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	The Project has been developed in such a manner that there will be no need for land acquisition and resettlement. By adopting WiFi technology for voice and broadband Internet connectivity and by housing the telecenters in existing buildings in rural areas, the need for land has been avoided. Similarly, the building for the data center will be constructed on government land within the government secretariat complex.  The Project will involve no land acquisition or resettlement, and will not require a resettlement plan.	<input type="checkbox"/> Full <input type="checkbox"/> Short <input type="checkbox"/> RF <input checked="" type="checkbox"/> None
<b>Affordability</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	User charges will be nominal and, as evident from socioeconomic survey, users are willing to pay. Further, for an initial period of a year or so, the user charges will be subsidized by the Government so as to attract the rural community to the telecenter.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Item	Significant/ Not Significant/ None	Strategy to Address Issues	Plan Required
<b>Labor</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	The Project has no negative impact on the labor market or retrenchment. Social safeguards for labor issues do not apply to the Project.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b>Indigenous Peoples</b>	<input type="checkbox"/> Significant <input type="checkbox"/> Not significant <input checked="" type="checkbox"/> None	<p>In Nepal, there are about 100 odd communities with distinct language and culture of which 41 are classified as Janajatis or indigenous people. The Project envisages Internet connectivity to telecenters in VDCs through WiFi technology; the Project will not have any adverse impact on the communities and in particular the Janajatis.</p> <p>Further, these IPs are part of the mainstream community to be covered by the Project. The positive impact on IPs is very similar to the impact on non-IPs. Therefore, no IPDP is required.</p>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> IPDP
<b>Other Risks and/or Vulnerabilities</b>	<input type="checkbox"/> Significant <input checked="" type="checkbox"/> Not significant <input type="checkbox"/> None	The EA will ensure that the civil works for the data center will comply with all applicable labor laws, do not employ child labor for construction and maintenance activities, encourage employment of the poor particularly women and IPs, and will not differentiate between wages for men and those for women particularly for work of equal value. The EA will ensure that the civil works contractors disseminate information at worksites on the risks of sexually transmitted diseases and HIV/AIDS for those employed during construction. Contracts for all components and subcomponents of the Project will include specific clauses on these undertakings, and compliance will be strictly monitored by the Government during project implementation.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

EA = executing agency, HIV/AIDS = human immunodeficiency syndrome/acquired immune deficiency syndrome, ICT = information communication technology, VDC = village development committee, WiFi = wireless fidelity.

## SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

### A. Introduction

1. This summary initial environmental examination (SIEE) is based on the IEE report prepared by the national environmental consultant as part of the project preparatory technical assistance (PPTA). The study was carried out from June to July 2007.
2. The SIEE highlights the project activities, environmental conditions in the project areas, and potential impact of the Project. The SIEE concludes that no further environmental impact study is required.

### B. Project Description

3. The Project has four components: (i) rural e-community, (ii) government network, (iii) e-government application, and (iv) human resources development for e-government.
4. Essentially, all the project components involve only soft infrastructure. The only physical infrastructure will be the data center to be established in the government complex in Singha Durbar, Kathmandu. The construction of the data center, now in progress, is being funded by the Government. The telecenters in three VDCs in 38 districts will use existing rooms in the community village building.
5. The Singha Durbar area is the main administrative center of the Government, with elaborate security systems and other facilities such as power, water supply, and parking. The whole complex is physically stable, and threats from natural disasters such as landslides and floods are minimal.
6. For the e-project component, the Project will use the existing telecommunication network. There will be no installation of fiber optic or other information technology (IT) network for data transmission.

### C. Description of the Environment

7. Singha Durbar, in the heart of Kathmandu city, is an area with no significant ecological features. It is dominated by settlements and a business center.

### D. Potential Environmental Impact and Mitigation Measures

8. The Project is not expected to have any significant environmental impact, and therefore will not require a complex effort to ensure that the Project complies with the requirements of the Government and ADB. It is in essence a project to enhance communication ability and data management at all levels of the Government. Its long-term and indirect benefits for the environment are significant and are discussed in Table A10.
9. The construction of the data center will not create any public disturbance. The environmental problems, caused mainly by the construction activities, include: the noise from the preparation of the building foundations, noise and dust from the transport of construction materials, dust due to construction works, and wastes from construction work mostly in the form of excess earth from construction. The impact will be limited in the nearby project areas,

because the size of the office building for the data center will be only around 500 square meters. The impact will occur during the construction period of around 6 months.

10. A substantial amount of waste, such as batteries, disposables, and electronic equipment, will be generated during the implementation of the Project. These wastes are known as electronic waste (e-waste) and are categorized as a hazardous or toxic waste. At present, the Government has no policy or rule for dealing with hazardous e-wastes. Although the amount of these wastes related to the Project will not be significantly high compared with the e-wastes from the same activities all over the country and in other sectors, this type of waste must be handled carefully through the proper channels. Several private vendors export such wastes for recycling.

11. The electromagnet impact from using computers has been discussed worldwide. However, because of the limited availability of equipment, the IEE study did not cover this matter.

12. The overall activities of the Project are not expected to result in adverse environmental consequences. On the other hand, several positive environmental results are expected as indirect effects of the use of the e-network to be built under this Project. These indirect effects are presented in the table below.

**Table A10: Indirect Environmental Impact of Main Applications**

<b>Application</b>	<b>Impact/Benefit</b>	<b>Environmental Implications</b>
National ID System	Beneficial	Central database to assist environmental planning
Village Network Application	Beneficial	Empower communities with information relevant to their interests such as information regarding natural disasters, local technologies, natural resources management; Raise awareness of citizens about socioeconomic and environmental aspects and promote citizen participation in the development process; Provide basic knowledge on the environment, primary health, agriculture, and other development issues.
e-governance in Public Service Commission	Beneficial	Indirect and long-term benefits
e-governance for Department of Land Records	Beneficial	Easy and timely availability of land records for development projects at all levels; Land acquisition for development works made easy, etc.
Vehicle Registrations and Driver's Licenses	Beneficial	Vehicular emission certification will be made easy. Vehicular emissions are considered to be a major cause of urban air pollution in Nepal.

Source: Asian Development Bank estimates.

## **E. Institutional Requirements and Environmental Monitoring Program**

13. The Project will create a minor disturbance in a very limited location. The project management unit (PMU) under the Office of the Prime Minister and Council of Ministers (OPMCM) will be responsible for monitoring and supervising the construction of the office

building for the data center to minimize its environmental impact. Since the building will be located in the government complex in Singha Durbar, only a building permit from the local authorities will be required.

14. No other environmental aspect needs to be monitored. However, the overall management of e-wastes nationwide may need to be addressed by the Ministry of Environment, Science and Technology (MOEST). The government of Nepal has been a part of the international convention on trans-boundary movement of hazardous wastes. Under this convention, e-wastes classified as hazardous are allowed to be exported to other countries that have the facilities to recycle. It is suggested that the Executing Agency (OPMCM) work closely with MOEST to monitor the disposal of these e-wastes from the centers developed under this project.

15. A consultation with the affected people was undertaken during the fieldwork when the IEE study was conducted. Different government agencies, community organizations, and NGOs were part of the public consultation and information dissemination process of the proposed project. The participants were more concerned about the technical aspects of the program than the environmental and social aspects. The Panauti Municipality was selected for the consultation because an IT Park was located in this Municipality. The participants were more concerned about the social and cultural impacts of the program. Impacts on physical and biological environment were also discussed during the consultation meeting, which supported the findings that the impact on environment will be very minimal.

## **F. Conclusions and Recommendations**

16. The Project, as a software and hardware development project for e-governance, is not expected to create any significant environmental impact. The environmental impact of the application of the information and communication system has been identified as mostly indirect, long-term, and positive. The construction of the data center building will not involve any environmental complications such as rehabilitation, acquisition of private land, or zoning restrictions.

17. Therefore, the Project does not require further detailed environmental study or environmental impact assessment. However, adequate levels of technical supervision, monitoring, and awareness are crucial for the successful implementation of the environmentally sound approach proposed for information communication technology project activities.

## ECONOMIC ANALYSIS

### A. Introduction

1. The Project is aimed at improving the socioeconomic status of remote and rural communities through information and communication technology (ICT) and increasing ICT uptake in the country. ICT is proven to reduce the geographic barriers that bar the people of mountain and hill areas from government, business, and the market, and, by doing so, drive national productivity and growth in a more inclusive manner. At the completion of the Project, more than 75% of the population of Nepal is expected to have much better access to communications (voice and data), public services (including education and health), and market information and business opportunities both within and outside the country. With this access, rural people will also be able to leverage additional support and resources to improve their lives.

2. The objective of economic analysis is to support investment decisions by examining the economic viability of projects on the basis of a quantitative analysis of net present value and economic internal rate of return (EIRR). The economic analysis of the Project was carried out on its four components and their subcomponents, as follows (see Table A11.1): (i) an e-government interconnectivity component with three subcomponents, (ii) an e-applications component with five subcomponents, (iii) an ICT network component with two subcomponents, and (iv) an ICT enabler component with a human resources development (HRD) subcomponent.

3. Different assumptions and methodologies were applied to each component for the economic analysis but were based mainly on the Balanced Score Card (BSC) framework<sup>1</sup> in the case of components 1 and 2, and on macroeconomic impact evaluation comparing the “with component” and “without component” scenarios in the case of components 3 and 4. For the benefit estimation, 105 parameters (55 for process efficiency and 50 for customer satisfaction) representative of the project benefits and monetary measurability were chosen, and the evaluation was made by the project preparatory technical assistance (PPTA) consultant team and through a household and business survey.<sup>2</sup>

4. The economic life of the Project was assumed to be 15 years. All cost elements were valued at border prices, using a world price numeraire, with all taxes and duties excluded. A standard conversion factor of 0.9 was applied to non-tradable items and labor. ICT penetration and usage ratio was assumed to increase gradually to the target ratio, on the basis of the survey results for each subcomponent. Instead of considering critical mass and time lag, the analysis already considered the gradual uptake of the Project by dispersing the expected benefits over the years.

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<sup>1</sup> The Balanced Score Card (BSC) was developed by Professors Robert S. Kaplan and David P. Norton at Harvard Business School in 1992. Its purpose is to manage the performance of organizations from the balanced perspective of finance, process, customer, innovation, and growth. The BSC has since been diversified into several methods, among them, information technology (IT). This tool is widely used in economic analysis and management especially for IT projects including e-government.

<sup>2</sup> When an IT or e-government project is introduced, most government officials cannot project the potential benefits. Therefore, a survey of government officials would not have provided the right information on the benefits most likely to accrue from the e-government project. The analysis instead used a heuristic evaluation by the PPTA consultant team, which comprised professional IT and e-government experts from Nepal. Survey research was carried out only among households and businesses.

**Table A11.1: Components and Subcomponents of the Project and Their Expected Benefits**

Component	Subcomponent	Description	Expected Benefits (up to 3 major benefits were selected)
<b>A. e-Government Inter-connectivity</b>	1. Enterprise Architecture	Develop a common e-government enterprise architecture based on open standards to support interoperability, and thereby reduce the total cost of ownership and the software development life cycle	<ul style="list-style-type: none"> <li>■ Increased efficiency and interoperability of e-government systems and software development across ministries and departments</li> <li>■ Increased efficiency in government business processes</li> </ul>
	2. Government Information Data Center (GIDC)	Establish GIDC to provide a central point of access and information delivery and to store data on citizens	<ul style="list-style-type: none"> <li>■ Increased efficiency of centralized operations and low total cost of ownership, as opposed to distributed data center and resources, requiring the supervision of distributed systems</li> <li>■ Increased security for citizens and government data</li> </ul>
	3. Groupware	Develop groupware solutions, and customize, localize, and deploy solutions first in the Kathmandu valley and later in the regional government offices	<ul style="list-style-type: none"> <li>■ Increased efficiency of government-to-government communication</li> <li>■ Better performance through collaboration</li> <li>■ Increased efficiency of government information processing, sharing, and distribution</li> </ul>
<b>B. e-Application</b>	4. National Identification (NID) System	Create NID system, a national database on citizens, to establish a common identity for various government services and to integrate e-applications with the central NID database	<ul style="list-style-type: none"> <li>■ Quick retrieval of information on citizens</li> <li>■ Central database on citizens helps in data analysis and plan projections</li> </ul>
	5. Village Network Portal	Generate interest in online services by encouraging indigenous content generation and knowledge sharing among villages, contributing to the overall development of the villages	<ul style="list-style-type: none"> <li>■ Increased social capital, as citizens are able to interact and also exert pressure for high-quality service delivery</li> <li>■ Increased economic benefits through sharing of information and basic knowledge on education, health, agriculture, and others</li> <li>■ Increased awareness and citizen participation</li> </ul>
	6. Public Service Commission	Improve public access to government employment opportunities through online application facility and integrate public service recruitment system with government representation portal	<ul style="list-style-type: none"> <li>■ Reduced time for filling vacancies</li> <li>■ Reduced transaction cost and easier access to service for applicants</li> <li>■ Improved efficiency through central database, which helps in data analysis and plan projections</li> </ul>
	6. E-Land (Land Records System)	Improve the existing record management system and promote online services for efficient and effective land transactions	<ul style="list-style-type: none"> <li>■ Easy, transparent, and quick land records services to citizens</li> <li>■ Improved revenues and administrative efficiency through easy maintenance and updating of land records</li> <li>■ Reduced litigations and disputes related to land records</li> </ul>
	7. Vehicle Registration and Driver's License Issuance	Improve governance for online vehicle registration and driver's license issuance and renewal by reducing corruption and delay in service provision	<ul style="list-style-type: none"> <li>■ Easy, transparent, and cost-effective service for vehicle registration and issuance of driver's licenses to citizens</li> <li>■ Improved administrative efficiency through central database, which helps in data analysis and vehicle forecasting</li> </ul>
<b>C. ICT Network</b>	8. Rural WiFi Broadband Network	Provide voice and broadband Internet connectivity to rural communities in all 75 districts in the country	<ul style="list-style-type: none"> <li>■ Improved nationwide rural broadband infrastructure with voice, data, and video communication capability</li> <li>■ Increased ICT uptake by government, business, and community</li> <li>■ Increased job and employment and business opportunities</li> </ul>

Component	Subcomponent	Description	Expected Benefits <sup>a</sup>
	9. Community E-Centers (CeCs)	Provide ICT services including Internet connectivity to rural communities through shared facilities, CeCs	<ul style="list-style-type: none"> <li>■ Improved accessibility of ICT and ICT-enabled services to rural communities</li> <li>■ Improved sources of information relevant to rural development and community interests</li> <li>■ Increased job and employment and business opportunities</li> </ul>
<b>D. ICT Enabler</b>	10. Human Resources Development	Build awareness, knowledge, and skills of key stakeholders in ICT governance particularly training institutes for civil servants, private training facilities, and universities	<ul style="list-style-type: none"> <li>■ Improved capacity of government personnel to implement e-applications effectively and to work more efficiently</li> <li>■ Improved awareness and behavioral change among citizens and government toward ICT uptake</li> <li>■ Improved academic courses in e-government and ICT skills</li> </ul>

<sup>a</sup> Up to three major benefits were selected.

CeC = community e-center, ICT = information communication and technology, NID = national identification system.

Source: Asian Development Bank staff.

## B. Methodology and Benefit Estimation

4. The BSC framework for information technology (IT) was used in estimating the benefits from components 1 (e-government interconnectivity) and 2 (e-applications). These project components are aimed at linking government ministries and departments, and supporting interaction between government, business, and citizens through various e-applications. The selected 105 parameters were aggregated into project performance indicators for each subcomponent and translated into monetary values to estimate benefits.

5. The parameters were defined in such a way as to capture the tangible benefits such as (i) improved quality of information and information supply, (ii) reduced processing time, (iii) reduced administrative burden, (iv) reduced opportunity cost, (v) improved service level, (vi) increased efficiency, and (vii) increased community satisfaction. Beyond these tangible benefits, broader societal, political, or economic benefits were also identified: (i) openness and transparency; (ii) increased participation; (iii) enhanced policy effectiveness; and (iv) increased economic development.

6. Unlike the first two components, component 3 (ICT network) will have an impact that is more nationwide and not specific to certain beneficiary groups. International evidence from organization for economic cooperation and development countries shows that similar ICT investment would contribute to 0.2–0.9% of gross domestic product (GDP) growth.<sup>3</sup> Since Nepal is a least-developed country and the Project is mainly rural, 0.125% of incremental GDP growth was assumed to be achieved gradually in 10 years' time as a potential benefit of the ICT network component.

7. In the case of component 4 (ICT enabler–HRD), enabling people to adjust to the new technology environment more quickly and thereby increasing the ICT adaptation rate beyond that which is possible without the HRD component will have indirect effects on components 1 and 2. Therefore, the potential benefit was estimated as the difference between the monetary values for components 1 and 2 with HRD (0.5% yearly increase in the ICT adaptation rate) and the values for those same components without HRD (original ICT adaptation rate).

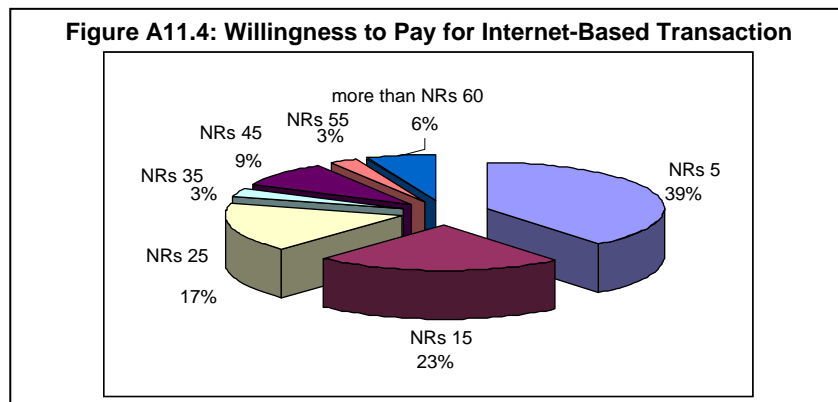
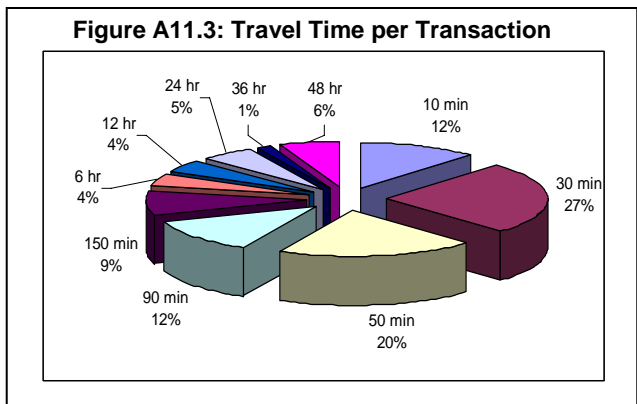
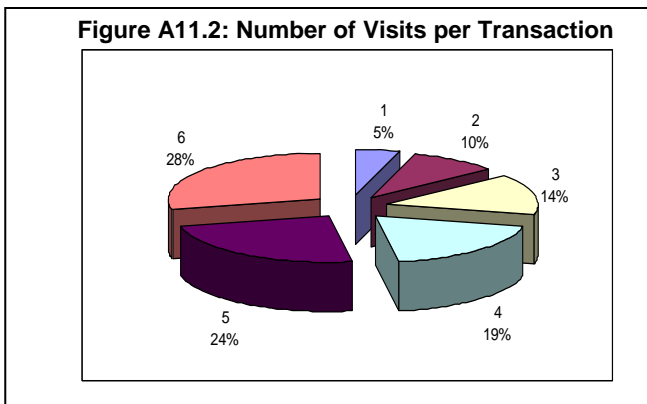
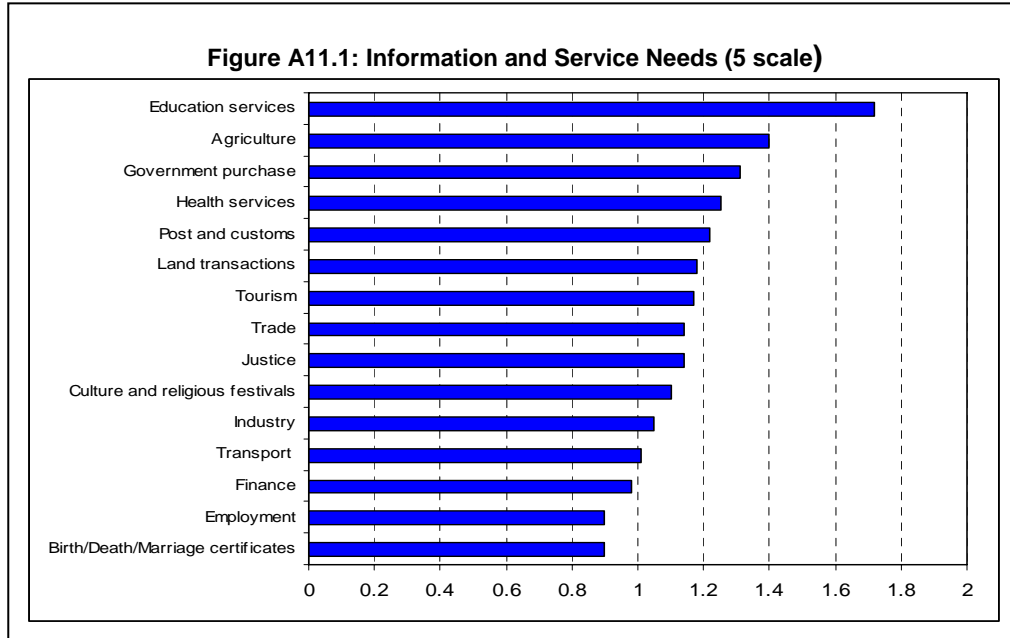
## C. Survey

8. To gather the information required for the economic analysis, a survey was carried out among 1,354 urban businesses as well as urban and rural households in the following districts: (i) Sunsari (Tarai region, in the Eastern Development Region); (ii) Solukhumbu (high hills, in the Eastern Development Region); (iii) Kathmandu, Lalitpur, and Bhaktapur (Central Development Region); (iv) Myagdi (remote hill district, in the Western Development Region); (v) Dang (Chure Bhawar, in the Mid-Western Development Region); and (vi) Achham (remote hill district, in the Far-Western Development Region). Comprehensive questionnaires were prepared to capture e-readiness, information and service needs, conventional transaction cost, and willingness to pay for ICT.

9. The survey results showed a remarkably high willingness to use ICT. Although many rural people are not familiar with ICT, they expressed eagerness to use ITC when told about it. As shown in Figure A11.1, the need for ICT use is strong in education, agriculture, government

<sup>3</sup> According to the OECD Productivity Database of September 2005, the average contribution of ICT investment to GDP growth in 1995–2003 was 0.55%. In the case of developing countries, such statistics do not exist because of the relatively short history of ICT investment and poor or nonexistent data. In ADB's Maldives ICT Development Project (2001), incremental GDP growth of 0.25% was assumed.

procurement, and health. People have to pay an average of two visits, traveling 6 hours each time, to complete off-line transactions for government services, as shown in Figures A11.2 and A11.3. The time spent can be much shortened when online services become available. The weighted average of willingness to pay for Internet-based transactions is NRs36.2, as shown in Figure A11.4.



## D. Assumption

10. The factor values in Table A11.2, based on the survey results, macroeconomic data, and the evaluation made by the PPTA consultants, were assumed in deriving monetary values for the defined performance indicators for the subcomponents.

**Table A11.2: Assumed Factor Values**

Factor	Estimate	Rationale
Average Hourly Income of Customers	\$0.20 per hour  Average annual increase in per capita GDP: 5.4%	Average hourly income of customers = Per capita GDP ÷ 12 months ÷ number of working days ÷ average number of working hours a day  6-day workweek (25 days per month) and average of 5.75 working hours per day (weighted average of 5 working hours in winter and 6 working hours the rest of the year) assumed  Average annual increase in per capita GDP: 5.36% (based on per capita GDP data for 2001–2005)  \$347 assumed per capita GDP in 2008, given 5.4% increase rate
Average Hourly Income of Government Staff	\$1 per hour	Average hourly income of government staff = Average annual income ÷ 12 months ÷ number of workdays ÷ average working hours a day  6-days workweek (25 days per month) and average of 6 working hours per day assumed  \$1,800 average annual income  Average annual increase in income: 5.00% (based on opinions of government staff and national consultants) in 2008
Average Travel Expenses for Each Service	\$10 per trip	Based on survey research
Average Travel Time for Each Service	6 hours	Based on survey research
Average Mailing Cost	\$0.7 per piece of mail	Average cost = Cost of stamp and document + average income of government staff per half hour  \$0.2 for cost of stamp and document + \$0.50 for half an hour of processing a mailing service assumed

GDP = gross domestic product.

Sources: Central Bureau of Statistics, Nepal. 2005. *National Accounts of Nepal*.

11. ICT adaptation rates for each government service were calculated on the basis of survey research data. It was assumed that it takes 10 years to reach target demand for government information and services, considering the time lag between system deployment and service use. ICT adaptation rates were assumed at 60% of potential demand since not all the people who gave positive answers would actually use e-government information and services. This adaptation rate was assumed to be achieved gradually over 10 years.

12. A higher adaptation rate of 80% was assumed for projects that were related not to services to citizens, but to business processes within government, because government staff

tend to adapt ICT much more easily and quickly in that case.<sup>4</sup> This rate was also assumed to be achieved gradually in 10 years time.

13. The overall ICT adaptation rates used in economic analysis are shown in Table A11.3.

**Table A11.3: ICT Adaptation Rate**  
(%)

Application	ICT Adaptation Rate (60% of potential demand)			Potential Demand (willingness to use ICT)	
	General	Information	Services	Information	Services
Government Staff Only	80.00				
Birth Registration		47.81	50.29	79.69	83.82
Education		46.99	51.73	78.32	86.21
Cultural		40.31	38.36	67.18	63.93
Employment		22.31	46.39	37.19	77.32
Health		43.48	44.59	72.46	74.31
Land		43.48	44.56	72.47	74.26
Tourism		36.18	47.86	60.30	79.76
Transport		41.57	42.10	69.29	70.16
Finance, Tax		44.92	46.87	74.87	78.11
Justice		36.62	36.62	61.03	61.03
Procurement		24.17	7.36	40.28	12.26
Industry		40.79	51.59	67.99	85.99

Source: Asian Development Bank estimates.

## E. Results

14. The EIRR for component 1 (e-government interconnectivity) is 30.5%. It is sensitive to the rate of ICT adaptation, which could be slower if the skill and competency uptake of users is lower, e-champions and IT experts are less involved, and the integration of groupware into the daily workflow systems is not high enough. The impact of a slower pace in achieving the ICT adaptation rate with those risks has been assumed to be 10% less than the rate in an optimistic scenario over 15 years. In the pessimistic scenario, EIRR goes down to 24.8%.

15. The EIRR for component 2 (e-applications) is 21.0%. It is sensitive to the rate of ICT adaptation, which could be slower if ongoing political changes delay the required changes in business process and deployment of applications deployment, citizens and bureaucrats show greater resistance to online services and e-applications, and lack of sustainable IT support and maintenance causes the e-applications to malfunction. The adaptation rate with these risks was assumed to be 10% less than the rate in an optimistic scenario over 15 years. In the pessimistic scenario, the EIRR goes down to 14.9%.

16. The EIRR for component 3 (ICT network) is 29.0%, on the assumption that GDP grows yearly by 0.125%. The EIRR is sensitive to the assumption of economic growth during the evaluation period. The switching value of the incremental increase in GDP growth that would result in an EIRR of 12% is 0.06%.

<sup>4</sup> In developed countries, more than 95% of the adaptation rate for government staff is commonly achieved in e-government projects.

17. The EIRR for component 4 (ICT enabler, HRD component) is 45.7%, on the assumption that the ICT adaptation rate will increase by 0.5% yearly. The switching value of the incremental increase in GDP growth that would result in an EIRR of 12% is 0.32%.
18. The overall EIRR for the Project, with the combined costs and benefits of the components and subcomponents, is estimated at 26.5%. With all the negative scenarios factored in, the overall EIRR drops to 15.3%. If the benefits of components 3 and 4 are excluded, the overall EIRR becomes 16.4%—still higher than the threshold of 12%.
19. The Project will also generate economic benefits for the country by creating business opportunities and employment. The main economic driver of ICT is the potential to affect the livelihood strategies of small-scale enterprises and local entrepreneurs in the areas of (i) natural capital (opportunities for gaining access to national government policies), (ii) financial capital (communication with micro-credit and other lending organizations), (iii) human capital (increased knowledge of new skills through distance learning and processes required for certification), (iv) social capital (cultivation of contacts beyond the immediate community, and (v) physical capital. With improved rural connectivity, rural entrepreneurs will be able to upgrade their capital, which can be translated into better business opportunities.
20. Considering that the vast majority of the poor live in the rural areas and derive their livelihood directly or indirectly from agriculture, support for farming is a high priority for rural development. The Project can deliver useful information and data to farmers on crop care, animal husbandry, fertilizer and feedstock inputs, drought mitigation, pest control, irrigation, weather forecasting, seed sourcing, and market demand and prices. Research studies suggest that increasing agricultural productivity benefits the poor and landless through increased employment opportunities. The Project will generate employment opportunities in three ways: (i) the unemployed can use the improved accessibility through ICT to find job opportunities; (ii) the unemployed can become employed in new jobs created through the expansion of the businesses of rural entrepreneurs; and (iii) even the employed can acquire new skills through specific education programs that could be facilitated by CeCs.