Internet Information Network Expansion (Info-Bahan) Project

Loan Contract Number: BGD-006-2005

Loan Approval Date: June 11th, 2007

Country: Bangladesh

The Export-Import Bank of Korea
(Government Agency for the EDCF)

By the Independent Evaluation Group of the
Korea Institute for International Economic Policy

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Background

'Digital Bangladesh' has been declared as the national vision by the government of Bangladesh, for reducing the digital gap and promoting sustainable economic development through expansion of ICT infrastructure. The government's efforts have been focused on expanding broadband network for internet and data communication network. Accordingly, internet service based on the existing telephone network and satellites was introduced in 1996, but provided only the most rudimentary services to Dhaka region.

This project covers six cities in the nation to improve internet backbone networks and expand transmission and subscriber networks to fulfill existing internet demand and to facilitate economic activities. The project area was expanded to 7 cities of Dhaka, Chittagong, Rajshahi, Sylhet, Khulna, Barisal, and Rangpur and 29 districts (zilla) which included Gazipur, Jamalpur, Comilla, Cox's Bazar, Jessore, Magura, Barisal, Bogra from its original plan of 6 cities and 24 districts. The amount of EDCF concessional loan for this project is USD 25 million and BTCL (Bangladesh Telecommunications Company Limited) was responsible for the management of the project.

The project was completed as planned by fulfilling its short-term objectives of improving internet backbone network, building transport network and local loop, and providing necessary equipment for the project to enhance the internet infrastructure in the country covering six major cities beyond Dhaka and twenty nine sub-districts. The project is expected to contribute to bridging the digital gap between cities and rural areas by facilitating access to information and increasing the country's full potential in terms of economic and social development.

Evaluation Results and Findings

The project was deemed a success as a result of assessment according to five evaluation criteria of relevance, efficiency, effectiveness, impact and sustainability.

It was 'highly relevant' to Bangladesh's national development strategies, ICT sector development strategy and EDCF's assistance strategy. The degree of efficiency was measured against project duration, costs, coverage and management of the project and it was rated efficient. Despite the delay in project completion, the project was generally well-implemented in terms of its costs and project operation/management as initially planned, and received a rating of "efficient".

The planned '<u>outputs</u>' of the project to expand and improve the local loop and transport network were achieved, while BTCL has been struggling to meet the local internet demands due to shortages in human and organizational capacity, which assessed the effectiveness of the project as not surpassing the 'effective' level. The project's impact in terms of economic, socio-cultural, and technological aspects was rated as average. Some hurdles in sustaining this achievement for the long-term are expected given changes in the evolving ICT market such as soaring demand of mobile communication. Considering that the project was completed only recently in June 2011, the evaluation report estimated its potential impact.

The project was rated sustainable in terms of the current project operation/management system and financial viability, ownership as well as the correspondence to the priority of Bangladesh's needs in the sector. While the financial capacity of BTCL was judged to be satisfactory, the lack of human resources and internal expertise could hinder the project sustainability. While there was a discrepancy in the level of ownership between the headquarter in Dhaka and sub-regional offices, the sustainability was positive in that the project needs are well in accordance with priorities of Bangladesh in the ICT sector such as those stated in the 'Digital Bangladesh' declaration aiming to reduce digital gaps and to improve information access.

Summary of Evaluation

Evaluation Criteria	Weight	Result	Value
Relevance	20%	High relevant	4.0
Efficiency	20%	Efficient	3.5
Effectiveness	20%	Effective	3.0
Impact	20%	Average	3.1
Sustainability	20%	Sustainable	3.5
Overall		Successful	3.4

Lessons learned and Recommendations

This project achieved its intended 'output' of improving internet infrastructure by providing an internet backbone network, building subscriber networks and providing relevant equipment to meet the demand. It is expected that the expanded access to internet service beyond Dhaka to six cities and 29 sub-districts will make a significant difference in eliminating the digital gap within the country.

Despite this successful outcome, it is necessary to consider the demand side of the project to facilitate the utilization of service, in combination with the supply side of infrastructure building to realize the long-term goal of 'facilitating economic activities and meeting the demand for internet service.' This project was rather focused on the supply side by providing infrastructure and thus overlooked internet service demand which connects is related to its long-term performance. This highlights the importance of marketing and sales to expand the number of subscribers such as corporations, governments, schools as well as individuals. The capacity of partner countries and the responsible agencies, as well as human resources, is vital to enabling this effort that will be implemented through technical assistance and capacity building programs. Considering the nature of BTCL as a public enterprise, it is critical to strengthen its marketing and sales capacity as the basis for increasing its subscribers. The later project should be designed as to consider both demand and supply sides of the project to facilitate the service utilization.

Given the growing demand for internet service in Bangladesh, the organizational capacity of BTCL needs to be strengthened further to ensure the project impact can be sustained. While KT is in charge of operation and maintenance of the project, the contract for O&M is to be expired in December 2012, which will increase the burden of BTCL due to its lack of human resources. To train qualified staff to run the project in BTCL, capacity training and education components should be bolstered from the very beginning of the project.

In this regard, it may be useful to learn from what other donor have done, to provide a combined package of policy advice and technical assistance with hardware provision, to enhance the project's effectiveness and sustainability. EDCF may consider ways to cooperate with donor agencies, like KOICA and other NGOs to further improve the utility of the hardware provided in partner countries. It may also take advantage of the LCG (Local Consultative Group) network to gauge the possibility of cooperation and joint projects with other stakeholders such as donors and NGOs, from the early stage of project identification and design.

To effectively address the lack of human resources, future projects may consider specifying the responsibilities of the partner country to secure necessary resources for project maintenance and operation to promote the sustainability of projects. Considering the recent practice of CSR (Corporate Social Responsibility) and increasing participation of corporations in development projects, a PPP (Public and Private Partnership) approach can be a useful solution in providing training components such as curriculum development while the necessary hardware component can be managed by EDCF loans. For example, EDCF could provide financial resources to build vocational training facilities and while inviting ICT companies such as KT to develop the curriculum.

Future projects can also consider diversifying the aid modalities by linking the existing programs such as KSP (Knowledge Sharing Program) and multi-donor trust funds. In Bangladesh's case, the master plan for the ICT sector development of KSP can be applied towards realizing its national plan of 'Digital Bangladesh'. Korea's Trust Fund on ICT4D subscribed to the World Bank may increase the synergy by combining bilateral and multilateral projects.

I. Introduction

1. Basic Data

☐ Loan Information

Loan Agreement No.	Loan Type	Approved amount	Approval Date
BGD-006-2005	Development Project Loan	USD 25 million KRW 34,689 million	2007.6.11

☐ Project Cost

(Unit: Thousand dollars)

Component	Planned	Actual	Difference
Total Cost	USD 46,000	USD 41,294.1	USD 4,705.9
EDCF Loan	USD 25,000	USD 24,999*	USD 1

Source: Project Completion Report

☐ Key Dates

Major Activities	Planned	Actual
Loan request	-	2004.6.8
Feasibility study (F/S)	-	2005.7
Loan Agreement (L/A)	-	2007.6.11
L/A Effective Date	2007.9.27	2007.9.27
Consultant Contract	2008.3.15	2008.5.29
Procurement Contract	-	2009.3.19
Completion**	2010.3.27	(2010.6.22)* 2011.6.20
Final disbursement	2010.9.27	(2010.10.29)* 2011.6.30

  * Dates according to the initial procurement plan
  ** PAC issue date: 2010.10.21 (initial procurement contract), 2011.6.28 (amended procurement contract)

☐ Borrower: Ministry of Finance of Bangladesh

□ Executing Agency: BTTB (Bangladesh Telegraph and Telephone Board)

* The name of the organization was changed to BTCL (Bangladesh Telecommunications Company Limited) in 2008.

□ **Mission Data**

Type of Mission	Time of Trip	Remarks
Appraisal	2005.7.8-7.15	Submitted the appraisal report to MOF (2005.12)
Completion evaluation	2012.4.15-4.19	EDCF Dept. of Latin America/Africa
Ex-post evaluation	2012.6.26-7.5	Dr. Cho, Choong-Jae (KIEP) Ms. Jung, Hyewon (KIEP) Mr. Cho, Sungki (EDCF)
	2012.9.15-19	Dr. Cho, Choong-Jae Dr. Kwon, Yul Ms. Jung, Hyewon (KIEP) Mr. Cho, Sungki Mr. Kang, Jongryo (KOICA)

2. Map of the Project Site
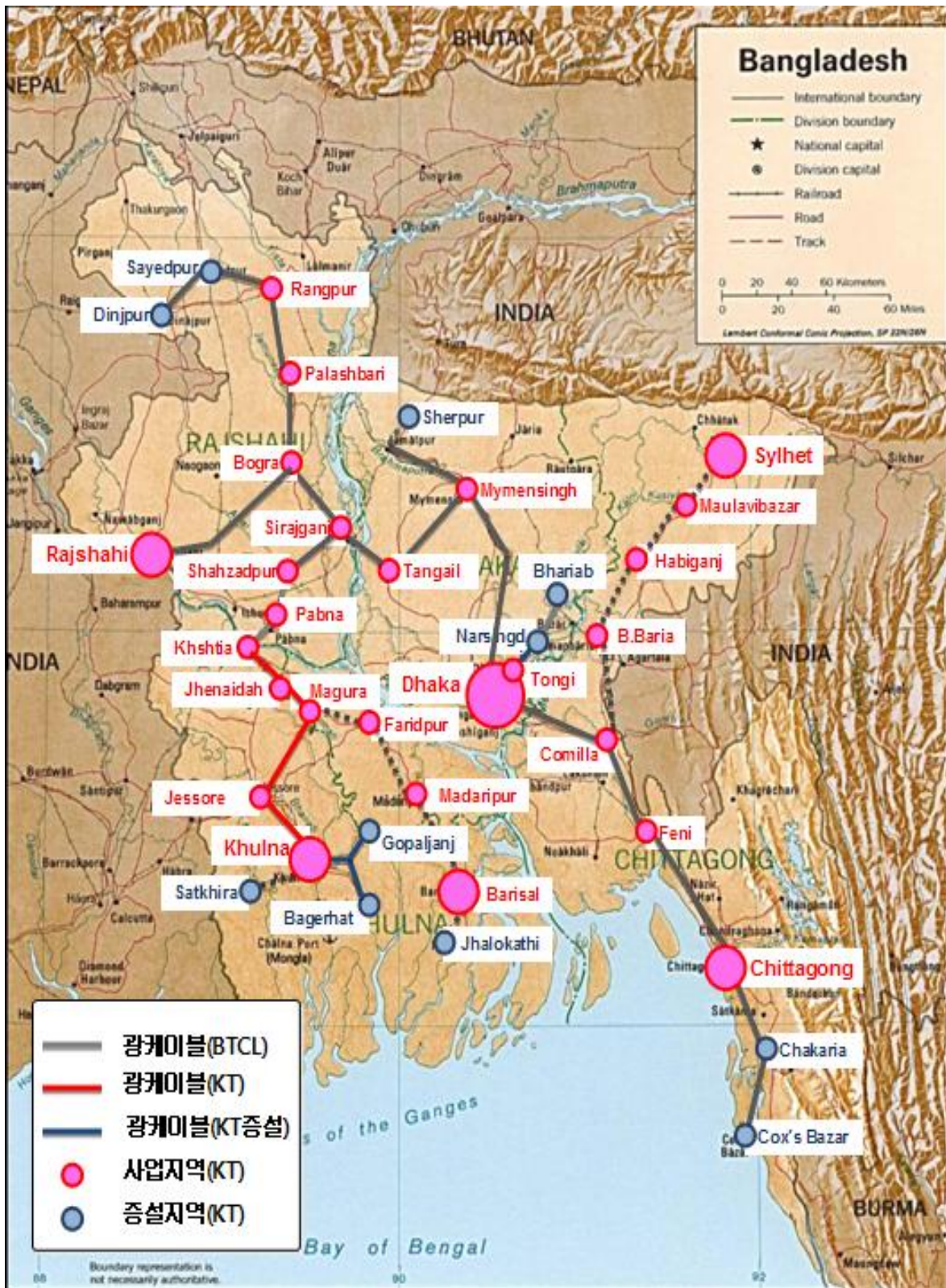
3. Evaluation in Brief and Process

Major Activities	Date	Remarks
Preliminary Literature Review	2012.5-7	Related literature research & analysis*
Post Evaluation Execution Notice	2012.5	PMU and MOF
Distribution of Evaluation Compilation Document	2012.6.24	Project site assessment, interviews w/ related agencies
Site Visit	2012.6.26-7.5	Consultative meetings and interviews with stakeholders
Expert Consultative Meetings	2012.5.22 2012.6.8 2012.6.19	Expert meetings
Mid-term Review Report	2012.9.7	
Final Evaluation Report Completion	2012.10	

*Preliminary literature reviews included, Feasibility Study (F/S), Project Completion Report (PCR), Loan Agreement (L/A) and etc.

4. Expected Results

The goal of the project is to provide enhanced telecommunication network of transport network, and a local loop; to enhance the internet service in six major cities in Bangladesh to fulfill the project's ultimate goal of economic development in the country.

The project area covers Dhaka, Chittagong, Rajshahi, Sylhet, Khulna, and Barisal.

II. Project Design and Implementation

1. Project Formulation

The goal of the project is to provide enhanced telecommunication network of transport network and local loop and thus to enhance the internet service in six major cities in Bangladesh to fulfill the project's final goal of economic development in the country.

The initial project area was initially intended to cover six cities of Dhaka, Chittagong, Rajshahi, Sylhet, Khulna, and Barisal but was expanded to seven cities by including Rampur; and to twenty nine districts including Dhaka, Gazipur, Jamalpur, Comilla, Cox's Bazar, Jessore, Magura, Barisal, Bogra.

The project scope is as follows:

- To improve the country's IP base(backbone) to enable to provide a service integrating existing telephone services and internet service
- To create internet transport network that connects major telephone nodes and branches nationwide
- To install internet local loop such as ADSL (household users) and FTTx (commercial and residential area)
- To procure or install other necessary systems and equipment for the project

Table 1. Project Scope

Category	Details	Plans
Installation	Improving IT base(backbone)	-Router and switch in major telephone offices nationwide
	Building transmission network	-Optical transmission network connecting MSPP -Optical fiber cables
	Installing internet local loop	-Internet connection equipment (FTTx/PON) -ADSL receiver (DSLAMs)

		-Copper and optical fiber cable
Other (procurement)		-Air conditioners and auxiliary equipment -copper and optical fiber cable
Training		-Equipment installation and operation
Consulting		-Research, design, bidding documentation, supervision of the project

2. Rationale

The ICT sector in Bangladesh was at rudimentary stage providing only an early-stage of internet service using the existing telephone network and satellites. The government set a vigorous policy direction to vitalize its ICT sector to reduce the digital divide, to strengthen human resource capacity and to foster sustainable economic development. This project proposed by BTCL to develop nationwide internet and data communication networks was in line with this direction. It was also fitted with EDCF's area of focus and Korea's expertise in IT sector.

3. Cost, Financing and Executing Process

The appraised total cost of the project was USD 46 million. EDCF pledged to finance USD 25 million out of the total and the remaining USD 21 million was borne by the Bangladeshi government. The project was completed within the planned cost.

Table 2. Initial Project Financing according to Project Appraisal

(unit: thousand USD)

	Foreign Currency	Local Currency	Sub Total
EDCF	25,000	-	25,000 (54.3%)
Bangladeshi	2,000	19,000	21,000 (45.7%)

Government			
Total	27,000	19,000	46,000 (100%)

EDCF funds were used for purchase of construction materials, construction, technology transfer, and staff training. Bangladeshi government funds were used for taxes, road rehabilitation, and local telecommunication equipment procurement.

4. Consultants

The project was implemented based on EPC (engineering, procurement and construction) to reduce the project cost and ensure efficiency of the project as agreed in the contract. Daeyoung Ubi Tech was selected as a consultant on May 29th, 2008 through the Limited Competitive Bidding process according to the EDCF consultant procurement guidelines. The actual contract amount was USD 559,978.

5. Procurement, Construction

The tendering process was open to Korean companies through Limited Competitive Bidding (LIB) according to the procurement guidelines of the EDCF. The successful bidder was Korea Telecom (KT) and the contract was signed in March 2009 for USD 23.95 million.

The eligible sourcing countries for goods and services were limited to Korea and Bangladesh However, due to complications related to equipment specification, performance and standard measurements changes, the Bangladeshi government requested for a change of procurement source for copper cables which is produced in Bangladesh but with imported materials. Additionally, IP network equipment, Metro Ethernet switches were purchased from China, GPS clocks from USA and test equipment for transport network from France and Japan.

6. Output

The project aimed to install the internet IP backbone optical fiber cable (308 km), local loop (ADSL 23,880 lines), transmission network, and other auxiliary facilities such as NOC, LAB, and telephone offices in seven cities of Dhaka, Chittagong, Rajshahi, Sylhet, Khulna, Barisal and Rangpur.

7. Loan Agreement

This part of the report is an evaluation of the recipient's commitment to the loan conditions. The conditions can be summarized as purchasing and consultant contracts, fulfillment of execution (implementation) plans, loan repayment fulfillment, timely submission of project appraisals and project completion reports and etc.

The loan contract was made between the Ministry of Finance of Bangladesh (borrower) and Korea Eximbank on June 11, 2007 and became effective as of September 27, 2007. The annual interest rate is 0.5% with a 30-year repayment period (10-year grace period included) according to the EDCF operation guidelines. The Concessionality Level (C.L.) is 62.4% which meets the OECD minimum standard of C.L. for tied aid to LDCs.

III. Assessment For Each Evaluation Criterion

1. Overall Assessment

The project was assessed as satisfactory based on five evaluation criteria of relevance, efficiency, effectiveness, impact and sustainability. It was 'highly relevant' to Bangladesh's ICT sector development strategy and EDCF's assistance strategy. The project was implemented within the planned timeframe and expenses, which put the efficiency at a high level. Regarding the fulfillment of goals, the project successfully delivered its intended results, to give it a rating of "effective." Its impact in terms of economic, socio-cultural, technological and environmental aspect was rated substantial and the sustainability was assessed as likely.

2. Relevance

The project was consistent with priorities set in Bangladesh's national development plan, ICT strategies, MDGs as well as those of EDCF's priority countries; the programs showed high relevance of the project to the needs of the borrower and the operational direction of the EDCF.

(i)   The government of Bangladesh has espoused the policy to promote the ICT sector as the main driver of sustainable development and pro-poor growth since 2008. In accordance with the motto 'Make Vision 2021 a Reality,' its long-term development plan emphasized the importance of the IT sector development for poverty eradication, economic growth, job generation, and social protection and the same direction was adopted in its 6th Five Year Plan (2011-2015). According to Vision 2021 and SFYP, the stated objectives include the expansion of the broadband network and local loop to meet the growing demand for internet services and to facilitate the economy.

(ii)   The 8th goal of MDGs specifies the importance of ICT for development in developing countries and suggests an indicator to make available the benefits of new technologies, especially information and communications. In this regard, this project is of strong relevance to MDGs in Bangladesh as it intends to expand a backbone network to increase the number of internet users.

(iii)   This project was also aligned with the EDCF's country assistance strategy (2008-2011) which suggests transportation and ICT as key areas of development in Bangladesh. The EDCF mid-term operation strategy has also included ICT sector as a core assistance area since 2006.

(iv)   BTCL as the project management unit under the Ministry of Posts and Telecommunications has the exclusive role as a specialized entity in the operation of the backbone network, telegraphs and international telecommunication. It has participated in various projects related to expansion and improvement of internet services and public data network building. Considering its expertise and experiences in the ICT sector, BTCL was an appropriate selection as the PMU.

3. Efficiency

The project was rated fairly efficient based on duration of implementation, costs, scope and management system of the project.

The project was expected to be completed within 30 months since the effective date of the loan agreement (2007.9) but experienced a delay of 15 months and was completed in June 2011. The delays were linked to consultant and procurement contract mainly due to complicated local procedures in Bangladesh, in addition to time required for additional procurement and installation as well as extension of the internet information network.

Table 3. Implementation Duration

Loan request - Government approval	Government approval-L/A effective	Project Duration (L/A effective-completion)	
		Planned	Actual
18 months (2004.6-2005.12)	21 months (2005.12-2007.9)	30 months (2007.9-2010.3)	45 months (2007.9-2011.6)

Source: Project Completion Report and Appraisal Report

In terms of project cost, the planned amount of the loan was USD 25 million and the project was completed within this amount.

The scope of the project was to build 308 km's of internet backbone transfer optical cable and ADSL local loop for 23,880 individual subscribers. The scope has been revised during the project to reflect the changes in the ICT market, particularly the expansion of mobile communication, to increase the share of transfer network by allocating 15.12 million dollars, compared to the initial investment of 6.1 million dollars. The project area was also expanded to seven cities and twenty nine districts from six cities (Dhaka, Chittagong, Rajshahi, Sylhet, Khulna, Barisal) in the initial plan.

4. Effectiveness

In terms of effectiveness, the project was assessed to be generally effective when compared against the initial plan for the achievement of project results, level of project completion and

actual execution. The project achieved its intended objectives to expand and improve IT backbone to transfer large volume of data and to utilize the ADSL local loop as a base to provide internet service for 24,000 subscribers. However, the internet usage rate in the project region remained low at 27.8 per cent which was below the target for fully meeting the local internet demand.
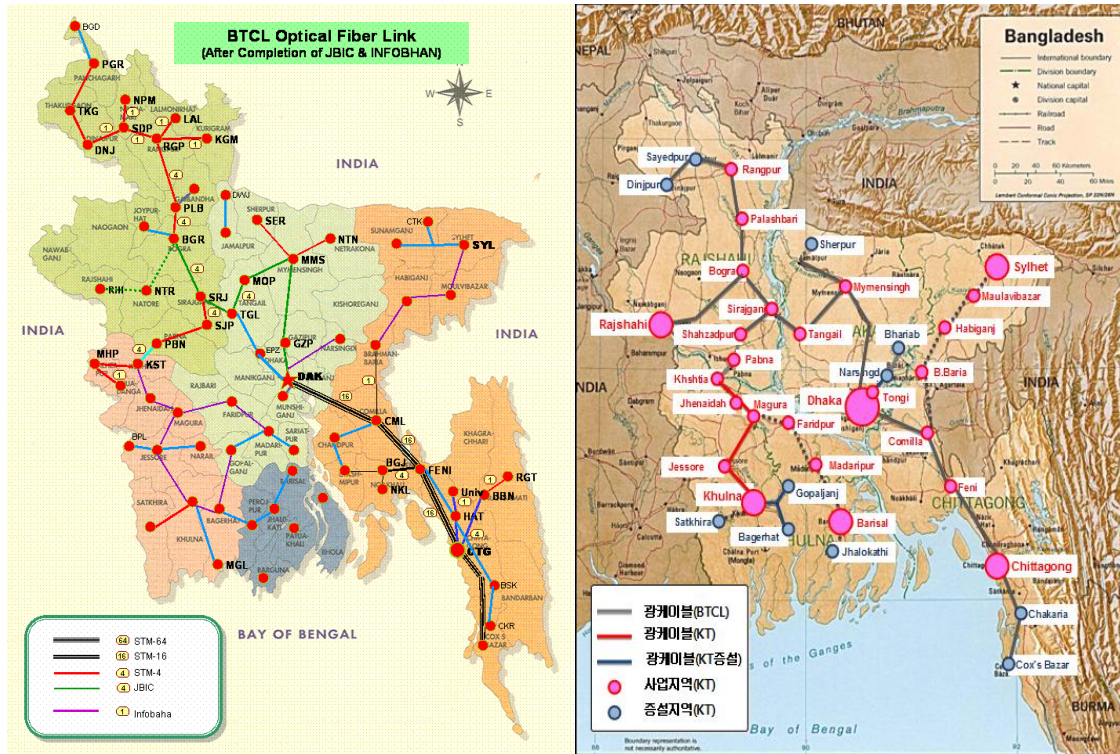
(i) Expansion and Improvement of Internet Transfer Network

The initially planned output to expand and improve internet transfer network and local loop was achieved by the project. The optical cable was installed in the seven project areas and 32 districts which extend 308 km. In addition to the optical fiber network, MSPP (Multi Service Provisional Platform for Convergent Network) and other equipment was installed to provide service integrating the existing telephone and internet service.

Table 4. Internet Transmission Network Installation

Major optical fiber cable connection	km
Dhaka Central-Mymensingh-Tangail-Bogra-Rajshahi Central	180
Chittagong Central-Feni-Comilla-Dhaka Central	
Comilla-BrahmanBaria-Sylhet Central	
Barisal Central-Faridpur-Jessore-Khulna Central	
Khalispur-Bagerhat-Gopalganj(Khulna Division)	128
Tongi-Narsingdi(Dhaka Division)	
Total	308

Figure. Internet Information Network Expansion

(ii) Expansion and Improvement of Local Loop

The 40,000 lines of ADSL for individual subscribers and FTTx/PON (Fiber to the Home/Building, Passive Optical Network) were planned to be installed according to the initial plan. The actual output was 23,880 lines of ADSL and 16 FTTx/PON which was a large scale back from the plan.

(iii) Meeting the Internet Demands

The initial target for internet subscribers has not been achieved despite the provision of infrastructure platform through this project. According to the appraisal report in 2005, the internet usage rate was assumed to have increased from 50 per cent to 80 per cent, but the current share of internet connection compared to the broadband internet connection capacity is only 27.9 per cent as of 2012.

Table 5. Internet Information Network Broadband Internet Capacity and Usage Rate by Region

제 1 절Region	Capacity	Connection	Usage rate (%)
Dhaka	28,000	7,000	25.0
Chittagong	4,400	1,000	22.7
Rajshahi	570	300	52.6
Khulna	920	350	38.0
Sylhet	800	75	9.4
Comilla	335	325	97.0
Jessore	224	220	98.2
Mymensingh	128	125	97.7
Bogra	425	400	94.1
Barisal	324	75	23.1
Rangpur	400	150	37.5
Dinajpur	300	175	58.3
Pabna	300	175	58.3
Cox's bazar	200	50	25.0
total	37,326	10,420	27.9

Source: BTCL

5. Impact

The level of impact of the project considering economic, socio-cultural, technology transfer and follow-up project prospect was rated average. Because it was still too early to assess its long-term performance since the project was only completed in June 2011, the evaluation team assessed its potential impact instead.

The project contributed to creation of a foundation upon which to strengthen the business environment and economic activities through the enhanced and expanded internet backbone network and local loop. It is expected to directly lessen the digital, and indirectly the economic, gap between urban and rural areas in the country. However, the impact of the project is weakened by the challenges in increasing the number of internet subscribers despite

the high potential for great economic impact. The current usage rate of internet compared to the serviceable capacity remains at a low level, which calls for further efforts to expand the subscriber base to fully realize the impact of the project.

In terms of socio-cultural aspect, this project was assessed as being able to strengthen access to information and bridge the digital divide between urban and rural areas. The internet service once exclusive only to Dhaka is now available to government agencies and educational institutions in thirty districts, thus significantly improving the quality of public service.

The project may have a positive impact on technology transfer in the ICT sector: the training programs were conducted for the managers and engineers of BTCL in Dhaka, China and Korea; and the budget for the training modules has been doubled compared to the initial plan. Despite some factors that limited the impact such as the unbalanced selection of trainees, frequent staff transfers after the training, and lack of retraining in the organization, the training program was received with a high level of satisfaction from the participants.

This project had high level of impact to induce follow-up projects as the contractors of the project (KT, Daeyoung Unitech) could carry forward other similar business opportunities with other donors and MBDs. The project had no significant impact on the environment.

6. Sustainability

The project was rated sustainable in terms of the current financial/human/organizational capacity, ownership as well as the correspondence to the priority of Bangladesh's needs in the sector.

While the financial capacity of BTCL was deemed satisfactory, the lack of human resources and internal expertise could hinder project sustainability.   The lack of human resources for the operation and maintenance of network service may reduce the sustainability of the project after the phase-out of KT's support for the project. That w0uld leave only 57 engineers and technicians in Internet/Telex Division and Exchange Installation Division in BTCL in Dhaka

responsible for the operation and maintenance for the entire nation and this may cause a shortage of prompt service outside of the capital city.

There was discrepancy in the level of ownership on the project between Dhaka and other smaller cities. The BTCL headquarter had a stronger sense of ownership partly due to its position as the organization responsible for the operation and management of the project in the future. On the other hand, sub-divisions in other districts with deficient expertise and maintenance capacities were not able to express the same level of ownership.

BTCL as the profit-making public enterprise in Bangladesh has sufficient financial resources to sustain the project benefits of the project while the shortage of qualified staff can be an issue. BTCL's current expenditure for maintenance is 15-20 per cent of its budget and it reaches up to 50 per cent when operation costs are considered. However, BTCL needs to put forth greater efforts in marketing and sales to expand the number of subscribers and maintain its profit level.

While there is discrepancy in the level of ownership between the headquarter in Dhaka and sub-regional offices, sustainability is positive in that the project needs are well in accordance with the priority of Bangladesh in the ICT sector such as the aims of 'Digital Bangladesh' aiming to reduce digital gaps and improve information access.

Ⅳ. Lessons Learned and Recommendations

This project achieved its intended results of creating an internet backbone network, building a subscriber network, and providing relevant equipment for the purpose of enhancing the weak internet infrastructure in Bangladesh. The project expanded internet access, heretofore limited to the Dhaka region, to other 6 cities and 29 sub-regions and also contributed to better information access and promoted the country's potential to achieve greater economic and social development. Despite the positive outcome of the project, some lessons were learned that would help further enhance the effectiveness and impact of the project in the longer-term.

1. Lessons Learned

More consideration of the demand side - The project is assessed to have fulfilled its stated aims of improving the IT backbone, building the internet local loop and providing relevant equipment to expand internet access to cities and sub-regions in Bangladesh. Despite this achievement, the long-term goal of the project to facilitate economic activities and to satisfy internet demands has yet to be realized. The project was more focused toward the supply side, on providing hardware and equipment, than on utilization of the infrastructure to meet the long-term objective. Future projects should pay more attention on the means to expedite the internet service utilization and assist partner country stakeholders to build their capacity to maximize this aspect.

Improving sustainability - The foremost condition in deriving a positive outcome from the project is the human and organizational capability of the BTCL to manage the project. As the maintenance contract with KT expires at the end of 2012, Bangladesh is expecting a daunting task of managing the project on its own. The educational component of the project should be strengthened and incorporated from the early phase of the project to address similar issues for future projects. Other organizations specializing in education and training such as KOICA may take on the role on behalf of the EDCF. There are also shorter-term solutions such as extending a maintenance service contract with private companies, for the interim.

Reinforcing the performance management system - This project was approved in 2005 without setting up a specific project baseline, performance indicators or targets to be used as measures for monitoring and evaluation, which imposes a limitation on quantitative and objective ex-post evaluation. While the project outputs were visible, the evaluation team could not gauge to what extent the project achieved its goals relative to the initial condition of the project site before the project initiation. While statistical data was obtained through local consultants to measure the long-term achievement of the project, the accomplishments of this project was still ambiguous without baseline data, and regular monitoring of progress against this baseline was also absent. EDCF needs to do more to bolster the Development Results Framework to make objective evaluations possible.

2. Recommendations

Stronger focus on the utilization of infrastructure - Future projects on the 'software' component should be combined with those in ICT infrastructure. This means ICT is not only be regarded as an industry but as a vital instrument to achieve overall development in the country, effecting economic development and poverty reduction by providing high-tech opportunities for the partner country to utilize. The technical assistance aspects including strengthening marketing/sales capacity, organizational capacity, policy advice and vocational training should be given greater emphasis to maximize the impact of project. EDCF could take advantage of the partnership with other aid agencies who can play a role in this regard. The grants-loans combination for a project is not a new concept, as other donors such as Germany, has adopted the modality with great effectiveness.

Strengthening Post-completion Operation and Maintenance (O&M) - Despite the overall satisfactory performance of project participants and contractors, the prospect for sustainability is reduced by insufficient O&M capacity of BTCL. While it is a concern mainly for the donor side, efforts from the partner country side is also indispensable. EDCF may proceed with the project based on the plans of the Bangladeshi government to guarantee its human resource recruiting and training at the beginning of the project so that the risks associated with project sustainability can be minimized.

Another possible solution is to take a PPP (public-private partnership) approach where private companies or educational institutions with sectoral expertise participate as a partner to develop training curricula. Considering the recent boom in CSR activities of private enterprises, EDCF can take advantage of the CSR initiatives to design a partnership project.

Diversifying aid modality - Korean government has recently engaged in efforts to enhance the consistency of its ODA projects in partner countries and create synergy by linking various project components together. In this regard, EDCF can also consider the possibility of diversifying its aid modalities by aligning KSP (Korea Knowledge Sharing Program) and multi-donor trust funds with its own projects.

For example, as Bangladesh has yet to set up a national ICT master plan, KSP on ICT sector can be applied to establish its ICT development plan, considering the existing expectations in the partner country for Korea's proven comparative advantage in the sector. Furthermore, the

World Bank's multilateral trust fund (Korea Trust Fund on ICT4D) for the ICT sector specifically designed for sharing Korea's experience in the ICT sector can be utilized to propose appropriate projects in the sector in combination with existing EDCF projects.