Terminal Evaluation

Asia

1. Outline of the Project

Country:
Bhutan

Project title:
The Project for Development of the Domestic Telecommunication Network

Issue/Sector:
Telecommunication

Cooperation scheme:
Grant Aid

Division in Charge:
Project Monitoring and Coordination Division, Grant Aid Management Department

Total cost:
(E/N amount)
3,842 million yen

Period of Cooperation
Fiscal Years 1991, 1992, 1993-1994

Partner Country's Implementing Organization:
Department of Telecommunication, Ministry of Communications(reorganized as a public corporation, Bhutan Telecom (BT), since July 2002)

Supporting Organization in Japan:

Related Cooperation:
Grant Aid; "The Project for Construction of the Domestic Telecommunication Network in the Western Region", Individual Experts, JOCVs

1-1 Background of the Project

The Kingdom of Bhutan is located in the Himalaya range and geopolitically divided into the three western, central and east regions by the chains of mountains running through north to south. The political and economical center is the western region where the capital Thimphu, an international airport (Paro) and Phuentsholing, the largest commercial city are located.

The development of a telecommunication sector in Bhutan had been promoted reflecting above mentioned geographical conditions and the geopolitical environment. More specifically, development of telecommunication networks had been developed in each 3 regions independently, and with a focus on the western region which is the center of politics and economy of Bhutan. At the early stage of the development, India played a role of donor only.

The commencement of development in a telecommunication sector in Bhutan dated back to the 1960's. The full-fledged development began with the telecommunication network and international telecommunication facilities centering on the capital Thimphu based on the 6th Five Year Plan for National Development (1987 - 1992). Consecutively, the Royal Government of Bhutan (RGOB) put the development of a national telecommunication network the prime task in the 7th Five Year Plan (1992 - 1997) and requested the International Telecommunication Union (ITU) to prepare for a telecommunication master plan. The ITU completed "The Bhutan Telecommunication Master Plan (the Master Plan)" in collaboration with United Nations Development Programme (UNDP). In developing the master plan, identified were the following major issues and problems.

1) Disparities between the western region and central/eastern regions were observed as the development of the western region was prioritized in addition to the development of telecommunication lagging behind nationally.
2) As the telephone networks among the 3 regions were not linked to each other, telephone communication across regions was impossible. The only usable communication method was morse code type shortwave but it lacked reliability and accuracy.
3) The whole telecommunication services were degraded because of aging telecommunication facilities (switchboard and telecommunication lines) introduced in 1960s and 1970s.

Under these circumstances, based on the master plan developed by ITU, RGOB proposed to the Government of Japan (GOJ) grant aid cooperation for necessary funds for digital microwave transmission networks), digital switching systems, digital radio concentrator systems and renewal and new development of the local networks.

1-2 Project Overview

In order to establish a nationally integrated digital communication network, the grant aid was extended for the procurement of core transmission line as well as a telecommunication network in central and eastern regions.

(1) Overall Goal

1) Communication network in the government public administration service are improved by the telecommunication system.
2) A nationwide digital communication system is accomplished.

(2) Project Purpose

New digital telecommunication networks in the central and eastern regions are integrated into a unified nationwide system, to the existing networks in the western zones.

(3) Outputs

1) Digital microwave transmission networks are functional.
2) Digital switching systems are functional.
3) Digital radio concentrator systems (DRCS) are functional.
4) Local networks are functional.

(4) Inputs (basic design)

Japanese side:

3,842 million yen(E/N amount)

(1,540 million yen in FY 1991, 1,567 million yen in FY 1992 and 735 million yen in FYs 1993-1994)

Bhutan's Side:

Land for telecommunication facilities

Land improvement/ road for access/construction of incidental facility such as walls

Construction of line for subscriber

2. Evaluation Team

Members of Evaluation Team	General/Telecommunication Network Plan: Osamu MAKINO, Senior Advisor, JICA Evaluation Planning: Katsunori UEHARA, Project Monitoring and Coordination Division, Grant Aid Management Department, JICA Evaluation Analysis: Yutaka YAMAGUCHI, KDTECH Co. Ltd.
Period of Evaluation	11 March 2003 - 25 March 2003
Type of Evaluation:	Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

The only usable communication method was more code type shortwave before the implementation of the project. RGOB put the "development of a unified national telecommunication network" as the prime task in the 7th Five Year Plan (1992 - 1997) and set the project as its subordinating action plan. Therefore, this grant aid cooperation was highly relevant for the development of a nationwide digital telecommunication network by linking and expanding the existing telecommunication network in eastern, central and western regions.

(2) Effectiveness

The number of subscribers within the area covered by the project increased from three hundred in 1991 to 4,879 in March 2003. In addition, all the provincial governments now enjoy phone service whilst only 4 offices were linked to the network before the project. As digital type telephones were introduced, the quality and reliability were also improved remarkably compared with the analogue type that existed.

The number of subscribers in all Bhutan is over 20,000 in 2003 and the penetration rate of the telephone is 3.09%. These numbers are over the average penetration rate of the telephone in low income countries of 2.7% (based on the "UNDP Human Development Report in 2002") and far over the numbers of neighboring countries (1% in Nepal and 2% in Pakistan).

(3) Efficiency

The project adopted digital form in microwave transmission networks, switching systems and the radio concentrator system. As a result, the facilities and equipment have been able to cope with technical innovation since the completion of the project such as internet, and the project turned out to be economical as it did not incur any large-scale investment.

(4) Impact

The internet data transmission services were commenced from 1999 using the digital telecommunication network. The publication activities by RGOB utilizing a home page were commenced as the internet diffused. For the future, with aims of further improvement of governmental services, promotion of "e-governance", applying information techniques such as internet, was included in the development objectives.

The following cooperation was implemented by other donors taking advantage of the telecommunication network developed through the project.

1) Grant assistance for grassroots projects of Japan: diagnosis equipment was provided for distance medical service.

2) UNDP: with cooperation of Ministry of Trade and Industry in Bhutan, UNDP supported the handcraft "e-business" utilizing information techniques.

There were some positive impacts in the economic industry of Bhutan. Almost all the 124 tourist agents registered to RGOB use not only telephone and fax but also internet services and thirty six of them use the web site for publication now, which means that the digital telecommunication network developed through the project was well utilized. The number of travelers was tripled from 1991 to 2000 and the tourism revenue increased by four hundred percent. Development of a digital telecommunication network played a huge role, such as streamlining procedures for reservation by introducing telephone and fax and publications utilizing internet to promote the tourist business.

(5) Sustainability

1) Organizational system (Human Development): As a result of improvement of technical levels of staff on a whole, the number of staff per one thousand subscribers decreased from 136 in 1991 to 29.6 in 2003, while the accident rate was improved. As for the system to foster human resources, BT implemented training for newly-recruited, inviting JICA experts as well as its' overseas training system and dispatched staff to seminars and workshops. Since July 2000, when BT became a public corporation, 1.5 million ngltraum (4 million yen) has been allocated for human development by the end of 2001.

2) Technical Level: To introduce digital techniques into Bhutan that used mostly analogue telecommunication systems, its human resources were necessary to cope with that. As RGOB implemented technical training to its BT staff with the cooperation of GOJ and other international organizations, Bhutan engineers could operate, maintain and manage the facilities.

3) Financial Status: BT has a surplus on its balance. From July 2000, when BT was established as a public corporation, to the end of 2001, BT had 147 million ngltraum (370 million yen) net profit and distributed the proceeds to shareholders in 70 million ngltraum (180 million yen). As a result of the management effort, BT cut user fee twice. In addition, BT has developed a database about information on organizational management and has a Telecom Integrated Information Management System to connect operation areas one by one.

3-2 Factors that Promoted Realization of Effects

(1) Factors Concerning the Planning

Technical relevance: Through the project it was decided to introduce a digital type telecommunication system which was the latest at the planning stage. By adopting a digital type telecommunication system, RGOB could cope with needs rapidly increasing in Bhutan and information technical innovation such as the internet. Furthermore, a digital type system enabled further development of telecommunication infrastructure possible.

(2) Factors Concerning the Implementation Process

N/A.

3-3 Factors that Impeded Realization of Effects

Although not directly related to the realization of project effects, the Ministry of Foreign Affairs of Japan obtained information that had procured equipment and facilities which had changed from that which was originally proposed in the basic design studies of the project and had been consecutively "The Project for Construction of the Domestic Telecommunication Network in the Western Region" conducted in the western region. In response to this information, the government in Japan implemented an investigation and identified 24 revisions from the original design. Among them, five revisions that had no reasonable ground were found; consequently the five items were removed from the scope of grant aid.

3-4 Conclusion

(1) Condition of facilities and equipment: The facilities and equipment procured through the project have been well utilized, maintained and managed. This was partly due to the cooperation by Japanese experts and JOCVs after the completion of the project. The Bhutan side implemented the planned responsibilities such as assuring land, construction of road for access, development of phone offices and its incidental facilities and allocation of management staff to those facilities. As a result of this study, there was no major damage or defect on facilities and equipment after the delivery. The Bhutan side overhauled the electric generator and set the antenna cover periodically.

(2) Project effects: The project was in line with the development policy in the field of telecommunications of Bhutan. Telecommunication networks in less developed central and eastern regions were remarkably improved and the project contributed to the correction of regional disparities. Therefore, the project was deemed as relevant. Also, adoption of digital techniques was crucial in terms of technical relevance, which improved the quality and reliability of telecommunications, as well as enabling later introduction of IT technologies such as internet.

The nationwide telecommunication network was developed and the number of subscribers in the project target areas rapidly increased exceeding an initially expected level, which showed the project's achievement of its purpose.

The facilities constructed by the project have been under proper operation and maintenance by BT. The Financial situation of BT was favorable and had financial sustainability. In addition, BT has taken a proactive stance on human resource development of its staff, which indicates high sustainability of project effect overall.

The project contributed to construct a key telephone network in the agricultural villages in Bhutan where scarce telephone services existed, and to promote the governmental services offered to the regionally isolated people such as education and health care. Therefore, the project accomplished its purpose of correction of regional disparities.

3-5 Recommendations

1) As for the Outside Plant Section (OPS) in charge of development, operation and maintenance of subscriber network, coverage areas were wide compared with its manpower. To cope with the problem, further improvement of techniques and knowledge are necessary for its staff.

2) The survey team recommended to the BT side the necessity of fostering human resources through internal training, and other opportunities such as seminars and workshops by donors, regardless of the sections.

3-6 Lessons Learned

N/A.

3-7 Follow-up Situation

N/A.