

## 添付資料-3

### 添付資料 3: JCC 会議議事録、R/D、MM

添付資料	3-1:	ANNEX3-1	第 1 回 JCC 会議議事録
添付資料	3-2:	ANNEX3-2	第 2 回 JCC 会議議事録
添付資料	3-3:	ANNEX3-3	第 3 回 JCC 会議議事録
添付資料	3-4:	ANNEX3-4	第 4 回 JCC 会議議事録
添付資料	3-5:	ANNEX3-5	第 5 回 JCC 会議議事録
添付資料	3-6:	ANNEX3-6	R/D
添付資料	3-7:	ANNEX3-7	MM

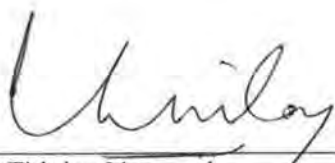
**MINUTES OF MEETING  
BETWEEN  
GROSS NATIONAL HAPPINESS COMMISSION  
AND  
JAPAN INTERNATIONAL COOPERATION AGENCY  
ON  
JAPANESE TECHNICAL COOPERATION PROJECT  
FOR  
PROJECT FOR OPTICAL FIBER TECHNIQUES  
IN TELECOMMUNICATIONS ENGINEERING  
IN KINGDOM OF BHUTAN**

The Japan International Cooperation Agency (hereinafter referred to as "JICA") exchanged views and had a series of discussions with the concerned officials of Gross National Happiness Commission (hereinafter referred to as "GNHC") and Bhutan Telecom Limited (hereinafter referred to as "BT") with respect to desirable measures to be taken for the successful implementation of the Project for Optical Fiber Techniques in Telecommunications Engineering in Kingdom of Bhutan (hereinafter referred to as "the Project").


As a result of the discussions, GNHC on behalf of BT and JICA agreed upon the matters described in the documents attached hereto. This document is what revises the Record of Discussion on the Project signed on 31st October 2013.

Thimphu, July 17, 2014

  
\_\_\_\_\_  
Ms. Yumiko ASAKUMA  
Chief Representative  
JICA Bhutan Office  
Japan International Cooperation Agency

  
\_\_\_\_\_  
Mr. Thinley Namgyel  
Officiating Secretary  
Gross National Happiness Commission

Witnessed by:

  
\_\_\_\_\_  
Mr. Nidup Dorji  
CEO  
Bhutan Telecom LTD.

**THE ATTACHED DOCUMENT****1. Revision of Evaluation Method**

GNHC on behalf of BT and JICA agreed to revise evaluation method as follows.

- (1) "II. OUTLINE OF THE PROJECT, 5.3 Activities for Output (3), (3) and (5) shall be amended as follows;

(3) To carry out the first experiment work in Paro following the plan.

(5) To carry out the second experiment work in Jakar.

- (2) "II. OUTLINE OF THE PROJECT, 7. Implementation Structure, (3) Joint Coordinating Committee " of the Record of Discussion on the Project shall be amended as follows;

Joint Coordinating Committee (hereinafter referred to as "JCC") will be established in order to facilitate inter-organizational coordination. JCC will be held at least once a year and whenever deems it necessary. JCC will approve an annual work plan, review overall progress, conduct evaluation of the Project, and exchange opinions on major issues that arise during the implementation of the Project. A list of proposed members of JCC is shown in the Annex III.

- (3) "II. OUTLINE OF THE PROJECT, 10. Report to JCC" of the Record of Discussion on the Project shall be amended as follows;

BT and JICA experts will jointly prepare the following reports in English:

(1) Inception Report

(2) Monitoring Sheet on biannual basis until the project completion

(3) Project Completion Report at the time of project completion

- (4) "IV. EVALUATION" of the Record of Discussion on the Project shall be amended as follows;

JICA and BT will jointly and regularly monitor the progress of the Project through the Monitoring Sheets based on the Project Design Matrix (PDM) and Plan of Operation (PO). The Monitoring Sheets shall be reviewed every six (6) months.

Also, Project Completion Report shall be drawn up one (1) month before the termination of the Project.

**2. Revision of the PDM**

As per the original PDM (version 0) attached to the Record of Discussions, objectively verifiable indicator have been discussed and approved at the 1<sup>st</sup> JCC. The revised PDM is described in the Annex 1 and this will be utilized from now on for the monitoring of project progress.

**3. Revision of the Participants of JCC**

GNHC on behalf of BT and JICA agreed to strike "Director of Transportation and ICT

Division 2, Economic Infrastructure Department of JICA HQ" off the list as described in the Annex 2.

#### 4. Revision of the Equipment

As GNHC and BT determined to change the system to GE-PON which they can procure themselves, several equipment which is input by JICA is revised. Details of revised list of equipment is described in Annex 3.

#### Annexes

1. Project Design Matrix
2. Project Organization Chart
3. List of Equipment
4. Record of Discussions





### Project Design Matrix

Project Title : Technical Cooperation Project for Optical Fiber Techniques in Telecommunications Engineering

Implementing Agency : Bhutan Telecom Limited


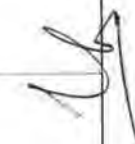
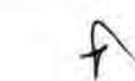
Period of Project : May 2014 to January 2017 (33 months)

Project Site : Paro / Jakar

Model Site : Thimphu


version 1

17th July 2014

<b>Narrative Summary</b>	<b>Objectively Verifiable Indicator</b>	<b>Means of Verification</b>	<b>Important Assumption</b>	<b>Achievement</b>	<b>Remarks</b>
<b>Overall Goal</b> Unified ICT network is provided in Bhutan.	By 2019, Fiber Access Network services will cover 90% Dzongkhag in the country.	Annual Report of MoIC or BT	Politics condition is stable There is no significant technological change in ICT sector		
<b>Project Purpose</b> Capacity of BT's engineering in optical fiber access network design, construction, and maintenance will be developed.	BT's Fiber Access Network team can design, construct and maintain FTTX access network.	<ol style="list-style-type: none"> <li>1. Interview/interaction to C/P and experts</li> <li>2. Work report prepared by the experts (i.e. monitoring of OJT on the experimental work)</li> <li>3. Training Report on OJT</li> <li>4. Conduct exam/Test after training</li> </ol>	<p>There is no significant change for the activities of BT for expansion of FTTX in country.</p> <p>There is no significant change in BT's institutional arrangement for the expansion of FTTX in country.</p>		
<b>Output</b> 1. Three technical manuals are developed. [ i ) FTTX design/construction manual, ii ) Quality inspection and FTTX specification, iii ) Safety work management]	Technical manuals are adopted, distributed to each exchange OSP/FAN section ( 30 copies)and utilized	<ol style="list-style-type: none"> <li>1. Printed technical manuals</li> <li>2. Report on usefulness of the manuals (Field staff will submit feedback to CHQ through Regional Managers)</li> </ol>	<ol style="list-style-type: none"> <li>1. There is no significant change in C/P's</li> <li>2. Developed manuals are adopted by BT as its official rule or regulation.</li> </ol>		
2. O&M system for FTTX is developed.	<ol style="list-style-type: none"> <li>1. 2(two) GIS/GPS operation engineers are trained.</li> <li>2. 20(twenty) O&amp;M operator of regional staff are trained.</li> </ol>	<ol style="list-style-type: none"> <li>1.1 Assessment result Pre and Post assignment of GIS expert.</li> <li>1.2 BT Annual Reports</li> <li>1.3 Training Report on OJT</li> <li>2.1 Exams/Tests after each training.</li> </ol>	There is no significant change in C/P's		

<p>3. Experiment work in trial sites (two areas) is completed.</p>	<p>Trial sites completion report submitted.</p>	<p>1. Completion report of the experimental work. 2. Acceptance test Check list for network parameter by Design Expert. 3. Acceptance test report of physical Installation by C/A, BT(P/D,P/M).</p>	<p>There is no significant change in C/P's</p>		
Activities		Input		Pre-conditions	
<p><b>【Activities for Output 1: "Three technical manuals are developed. (1. FTTX design/construction manual, 2. Quality inspection and FTTX specification, 3. Safety work management)."]</b> 1. Collect information regarding actual technical standards and design guidelines of optical fiber in Bhutan, 2. Develop solution guideline, clarifying problems in work procedure and identifying solutions for each problem. 3. Conduct experiment work according to the guideline. 4. Review and evaluate the experiment work. 5. Elaborate manuals reflecting the result of experiment work.</p>		<p><b>Japanese Side</b> 1. Experts [ Long term Expert] -Chief Advisor/FTTX Technology and Quality Control of material and safety work [ Short term Experts] - FTTX Design Expert - FTTX Construction Expert - GIS/GPS Operation Expert for Engineering - FTTX R&amp;D engineering Expert - Advanced BB Application Expert -Other fields, if necessary 2. Provision of machinery and equipment for Training and Field trial work 3. Training of counterpart personal in Bhutan and in Japan 4. Local expenses for the project activities Teaching materials for training //workshop/seminars</p>	<p><b>Bhutan side</b> 1. C/Ps 2. Necessary Expenses (e.g. Salaries, local traveling costs and daily subsistence allowance (DSA) for the Bhutan counterpart personnel) 3. Assignment of C/P Office space, Furniture for Japanese experts(e.g. desks, etc.), and transportation vehicle to project sites 4. Maintenance for machinery and equipment provided by JICA</p>	<p style="text-align: center;">↓</p> <p style="text-align: center;">&lt;Issue and countermeasure&gt;</p>	
<p><b>【Activities for Output 2: "O&amp;M system is developed."】</b> 1. Verify existing equipment including GIS/GPS system</p>					

5

<p>and check their conditions of deterioration.                  2. Identify problems in operation and maintenance system related to the fiber optical network in Bhutan.                  3. Develop guideline of equipment substitution and calculate annual budget to keep good condition of it.                  4. Conduct technical guidance through local training for engineers working at BT headquarters office and local telephone exchange station.</p>			
<p>【Activities for Output 3: "Experiment work in trial site (two areas) is completed."】                  1. Conduct site survey as a preparation for the experiment work.                  2. Design and plan the experiment work including identification of necessary equipment and budget.                  3. Carry out the first experiment work in Paro following the plan.                  4. Review and evaluate the first experiment in order to plan the second experiment work.                  5. Carry out the second experiment work in Jakar.                  6. Review and evaluate the second experiment.</p>		<p>Preconditions                  Bhutan side provides:                  1. Ensure the site for experimental work (Paro and Jakar)                  2. The importance of personnel training does not change in the Bhutan telecom.</p>	




ANNEX III: Organization Chart of the Project

	Bhutan side	Japanese side
Joint Coordinating Committee	<ul style="list-style-type: none"> <li>● Chief ICT Officer, Ministry of Information and Communication (MoIC)</li> <li>● Chief Program Coordinator, Gross National Happiness Commission(GNHC)</li> <li>● CEO, Bhutan Telecom Limited(BT)</li> </ul>	<ul style="list-style-type: none"> <li>● JICA Expert of the Project(Long Term Expert)</li> <li>● Representatives of JICA Bhutan Office</li> </ul>
Project Director	<ul style="list-style-type: none"> <li>● General Manager of Operation Division, BT</li> </ul>	-
Project Manager	<ul style="list-style-type: none"> <li>● Project Manager of Druknet Division, BT</li> </ul>	-
Counterparts	<ul style="list-style-type: none"> <li>● Engineer, Fiber Access Network, DrukNet Division(FTTX Design)</li> <li>● Technician, Fiber Access Network, Druknet(FTTX Construction)</li> <li>● Engineer, Fiber Access Network, DrukNet Division(GIS/GPS Operation)</li> <li>● Manager, Corporate Office(FTTX R&amp;D Engineering)</li> <li>● Engineer, IP services, Druknet Division(Advanced BB)</li> </ul>	<ul style="list-style-type: none"> <li>● JICA Experts of the Project(Short Term Experts)</li> <li>● Project Formulation Adviser of JICA Bhutan Office</li> <li>● Program Officer of JICA Bhutan Office</li> </ul>

*Handwritten signatures and initials on the right side of the table.*

*Handwritten letter 'A' at the bottom right of the page.*

**List of Equipment (MATERIALS NEED FOR FIBER ACCESS NETWORK SECTION)**

1. Splicing VAN ..... 1 No.
2. Splicing Machines ..... 2 sets
3. Small Excavator (wheeled mini excavator) with attached: Mini bucket, Skid steer for trenching and soil clearance ..... 1 set
4. OTDR ..... 2 sets
5. Power Meter ..... 2 sets
6. Fault locator ..... 2 sets
7. Tools kits ..... 1 sets
8. FTTH passive Indoor materials: Outlets, patch cords, etc
9. Ducting Rods, 200 mtrs. .... 3 Nos.
10. Shimelar..... 10 pairs
11. Safety belts ..... 10 Nos.
12. Wretch range ..... 10 Nos.
13. Side cutter ..... 20 Nos.
14. Cable web cutter ..... 20 Nos
15. Water Pump ..... 3 Nos.
16. Connector Punching tools .....20 Nos.
17. Cable ladder ..... 5 Nos.
18. Soil remover ..... 10 Nos.
19. Air blower 3 Nos.
20. Gas detector 3 Nos.
21. Optical fiber cables, etc.
  
22. Leakage voltage detector ..... 5 Nos.
23. Bitumin Road surface cutter (Hydraulic Power) with attached: Disc cutter(Concrete, metal & stone),Trash Pump, Hydraulic Power Pack-Beaver (Rock breaking, concrete & cement cutting and demolishing) ..... 1 No.

**FOR GIS/GPS:**

1. Hybrid Computer desktop (24") with High resolution Graphic card with CPU for digitizing the network infrastructure system. .... 1 Set
2. High version Lap top for mapping of GIS system ..... 1 Nos
3. Two in one Color Printer & scanner for printing of maps (A3 & A4 size paper) .....1 Nos
4. Plotter for printing of Maps max A0 size paper ..... 1 Nos
5. Tablet ipad..... 1Nos
6. External Hard drive(terabyte) for GIS data backup ..... 1Nos
7. GPS Pathfinder office .....: 1 No.

**ANY OTHER EQUIPMENTS/TOOLS REQUIRED FOR THE EXPERIMENTAL PROJECT SITES AND TRAINING**